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## When Passions Collide: Passion Convergence in Entrepreneurial Teams

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# When Passions Collide: Passion Convergence in Entrepreneurial Teams

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Extant research on passion is replete with individual-level studies. Although team-level studies have emerged, these empirical studies have adopted a static approach. We pivot from the predominant static focus on passion by examining passion convergence, or the dynamic pattern of increasing similarity in passion among members of a team. Drawing on multilevel theory of emergence in teams and using the novel consensus emergence model approach, we theorize the phenomenon of passion convergence and focus on how within-team experiences of progress and setback shape passion convergence. We also analyze the impact of passion convergence on team performance. Data from 314 individuals nested in 82 new venture teams indicate that experiencing team progress facilitated passion convergence, whereas experiencing team setbacks did not have a significant impact on passion convergence. Results also suggest that teams with members converging on a high level of passion positively predicted team performance. We discuss the theoretical and practical significance of our study.

*Keywords:* passion convergence, team progress, team setback, team performance, consensus emergence model

Often described as the “fire in the belly that makes the improbable possible,” *passion* has been touted as the most evident phenomenon of the entrepreneurial process (Smilor, 1997, p. 342).

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Passion, which reflects people’s intense positive feelings for a domain or target activity that is personally important, highly valued, or central to their identity (Cardon, Wincent, Singh, & Drnovsek, 2009; Vallerand et al., 2003), plays a pivotal role in entrepreneurship, specifically in facilitating the acquisition of resources for developing businesses (Baum & Locke, 2004; Baum, Locke, & Smith, 2001), influencing venture funding decision process (Chen, Yao, & Kotha, 2009; Mittens, Sudek, & Cardon, 2012), stimulating venture-directed effort and persistence (Cardon & Kirk, 2015; Murnieks, Mosakowski, & Cardon, 2014), and improving chances of crowdfunding success (Davis, Hmieleski, Webb, & Coombs, 2017; Li, Chen, Kotha, & Fisher, 2017). Taken together, these studies substantiate the functional importance of passion.

Given the significance of passion in entrepreneurship, scholars sought to unravel the nature of passion, that is, whether it is fixed or subject to changes over time. Empirical evidence reveal that passion is a dynamic construct that fluctuates over time (Collwaert, Anseel, Crommelinck, De Beuckelaer, & Vermeire, 2016; Gielnik, Spitzmuller, Schmitt, Klemann, & Frese, 2015; Lex, Gielnik, Spitzmuller, Jacob, & Frese, 2020). Although extant research has deepened our understanding of passion dynamics, passion studies have largely focused on the individual level; limited empirical attention has been given to the dynamics of passion at the team level. Notwithstanding the contributions of a couple of empirical studies on passion at the team level that surfaced in

recent years (de Mol, Cardon, de Jong, Khapova, & Elfring, 2020; Santos & Cardon, 2019), these studies used static indicators, such as aggregate mean and diversity scores, which are cumulative constructs that do not capture the temporal dynamics critical to understanding the functioning of teams (Cronin, Weingart, & Todorova, 2011). This is unfortunate because just as passion is dynamic, start-up teams are also inherently dynamic entities (Knight, Greer, & De Jong, 2020).

More broadly, the use of a static approach is also prevalent among extant empirical studies on affective dynamics in groups and teams. Barsade and Knight's (2015) review on affect research in groups and teams identified the pattern of affective dynamics over time within groups and teams as the area with the most critical research need from an empirical standpoint. Although there are conceptual articles (e.g., Hareli & Rafaeli, 2008; Kelly & Barsade, 2001; Walter & Bruch, 2008), "without empirical research on group affect over time, however, the temporal dynamics of group affect and group processes remain relatively unknown" (Barsade & Knight, 2015, p. 27).

Our study focuses on *passion convergence*, which we conceptualize as the pattern of increasing similarity in the affective intensity of passion for founding among members of a team. We build on the multilevel theory of emergence and regard passion convergence as an emergent phenomenon (Fulmer & Ostroff, 2016; Kozlowski, 2015; Kozlowski & Klein, 2000). An emergent phenomenon "originates in the cognition, affect, behaviors, or other characteristics of individuals, is amplified by their interactions, and manifested as a higher-level, collective phenomenon" (Kozlowski & Klein, 2000, p. 55). Figure 1 presents an illustrative example of two hypothetical teams to explain passion convergence. Team A and Team B are equivalent in average passion, that is, both teams attained an average passion of 4.00 at the final wave. Conventional wisdom based on aggregate static levels would suggest that the two teams are similar. However, despite having identical average passion, the plots reveal that the two teams differ, because Team A (in contrast to Team B) demonstrated passion convergence as members' individual passion became increasingly similar over time. Investigating increasing similarity in team mem-

bers' affective states is important because convergence is the prerequisite for the emergence of consensus and shared feelings among team members. The emergence of consensus in affective states among team members is critical to understand team performance (Mathieu, Maynard, Rapp, & Gilson, 2008, 2017). Importantly, convergence has been used as basis for theorizing bottom-up, multilevel processes (Kozlowski & Klein, 2000; Lang, Bliese, & de Voogt, 2018). Furthermore, we focus on passion because of the crucial motivating function of intense positive feelings experienced by members of a new venture team in particular (Cardon, Post, & Forster, 2017) and the pervasiveness of affective experiences within work teams in general (Kelly & Barsade, 2001).

Our study advances research by examining the dynamic process of passion convergence in new venture teams and factors facilitating or constraining the process. Collins, Lawrence, Troth, and Jordan (2013) noted that "to adequately capture the process of affective convergence, we need a clearer idea of how affect is passed between members and also the impact of the affective context, which will fluctuate over time (e.g., the occurrence of setbacks or successes)" (p. S55). We analyze passion convergence in a coherent manner that includes the critical elements of time, individual, and team (Bell & Kozlowski, 2012; Mathieu & Chen, 2011) by using the consensus emergence model or CEM approach (Lang et al., 2018). Moreover, we theorize how passion convergence is shaped by dynamic team-relevant experiences in terms of team progress and team setback. We thus break from the static approach of studying affective experiences in teams and adopt a dynamic approach that explicitly includes temporal features.

Furthermore, we highlight how passion convergence impacts team performance. Performance is vital especially for new venture teams because unlike other forms of work teams, the new venture team context involves high stakes such that a poor performance could potentially result in the eventual dissolution of the entire venture team (Klotz, Hmieleski, Bradley, & Busenitz, 2014). Because of the unpredictability and ambiguity surrounding the entrepreneurial landscape (Baron, 2008), new venture teams operate in a relatively weak situation where people (i.e., team members) tend to wield a direct influence on

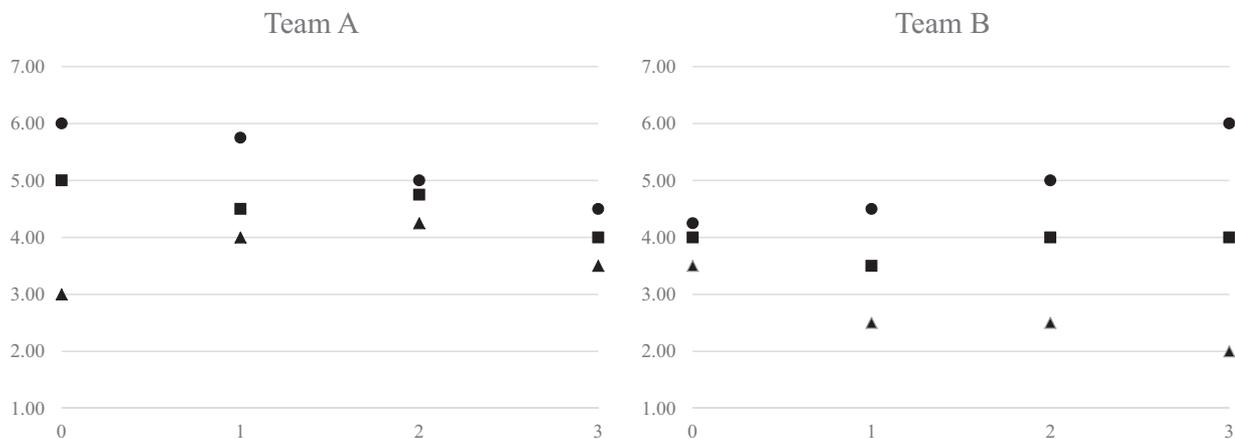


Figure 1. Conceptual illustration of the phenomenon of passion convergence in teams. For both graphical illustrations of Team A and Team B, x-axis is time, y-axis is passion. Team members are represented by circle (Member 1), square (Member 2), and Triangle (Member 3). Teams A and B are hypothetical examples.

venture performance (Hmieleski & Ensley, 2007). We contend that the pattern of increasing similarity of passion among team members offers unique insights beyond static aggregation. Although prior research emphasized the importance of emergent states for team performance (Mathieu et al., 2008), the focus was on the end state that emerged (e.g., cohesion or a specific climate). By focusing on the performance implications of the process of passion convergence alongside the end-state passion level toward which members converged, we advance a more complete account of the dynamic forces that drive team members to work together and enable their venture team to perform well.

## Theory and Hypotheses

### The Concept of Passion and Passion Convergence

Passion is a multifaceted construct, and extant literature reveals various ways to study passion. Vallerand consistently used “passion toward activities” (Vallerand et al., 2003, p. 757) and highlighted that the strong emotions inherent in passion are linked to a target domain or activity that people value and regard as personally meaningful. Cardon et al. (2009, 2013) conceptualized passion to include intense positive feelings and identity centrality. Chen et al. (2009) emphasized that passion has affective and cognitive dimensions because “passionate individuals not only experience intense emotions—their minds are also extremely active” (p. 201). Importantly, Newman et al.’s (2019) comprehensive review on passion emphasized that scholars can either take a more holistic approach to examine passion using all relevant facets or simply focus on a single facet to deepen our knowledge about that specific facet; they also encouraged scholars to clarify their approach (whether singular or multifaceted) explicitly by explaining the relevance of their focus to the context of their study.

In this study, our focus is on the affective component of passion. We focus on the affective component for three reasons. First, the affective component is the predominant facet of passion (Newman et al., 2019; Stroe, Thorgren, & Wincent, 2019). Second, Cardon, Gregoire, Stevens, and Patel (2013) stated that intense positive affect and identity centrality are “conceptually and empirically distinct from each other” (p. 374). Research confirmed this notion and demonstrated that it is reasonable to disentangle the two components in studies of the development of passion, because the two components develop differently over time (Collewaert et al., 2016; Lex et al., 2020). Specifically, the affective component is more prone to fluctuations over time. Third, by focusing on the affective component of passion, we can embed our study in the broader literature on affective dynamics in teams. We also note that we focus on the domain of founding, as our context involves new venture teams who are at the founding stage of their ventures (see Collewaert et al., 2016). Accordingly, our use of the term *passion* refers to the affective intensity of passion for founding. From here on, unless otherwise indicated, we use *passion* as a more concise label that refers to affective intensity of passion for founding.<sup>1</sup>

We clarify the affective component of passion in view of the broad literature on affect (e.g., Frijda, 1986; Watson, 2000). Affect encompasses moods (general or diffuse feelings without a clear target) and emotions (specific, discrete feelings that have known

targets). Passion goes beyond moods and is closer to emotions because passion is associated with a clear activity (Cardon et al., 2009; Perrewé, Hochwarter, Ferris, Mcallister, & Harris, 2014; Vallerand et al., 2003). We focus on passion as a discrete positive emotion as opposed to general positive affect in response to Barsade and Gibson’s (2012) appeal for more research on distinct positive emotions in groups and teams. Furthermore, affect can be conceptualized as a trait (i.e., dispositional and relatively stable) or state (i.e., changeable across situations and time; Watson, 2000). Past research has examined both trait and state effect of entrepreneurs (Baron, Hmieleski, & Henry, 2012; Foo, Uy, & Baron, 2009). Our focus is on state affect since we are interested in passion convergence which involves changes over time.

Passion is different from other positive emotions such as joy, interest, and pride. Joy is a positive emotional state synonymous to pleasure, happiness, joviality, and gladness (Ekman, 1994; Frijda, 1988). When compared with passion, joy is less intense and a fairly general positive emotion (Shaver, Schwartz, Kirson, & O’Connor, 1987). Interest is “an emotion associated with curiosity, exploration, and information seeking” (Silvia, 2005, p. 89). However, interest has been regarded as an “eccentric emotion” (Silvia, 2008), that is, some scholars do not regard interest as an emotion (Ekman, 1992). In contrast, passion is recognized as an emotional construct (Frijda, 1986; Solomon, 1976). Pride is a self-conscious, positive emotion experienced when something is achieved and the outcome is attributed to the self (Leary, 2007; Pekrun & Frese, 1992). Pride is experienced after an activity, as pride results from a self-attributed achievement that has already happened (Pekrun & Frese, 1992). In contrast, passion may be experienced before and during an activity.

### Passion Convergence in New Venture Teams

Passion fluctuates over time particularly among early stage entrepreneurs setting up their business ventures (Collewaert et al., 2016; Gielnik et al., 2015). When a team begins to work on a new venture idea, members may not necessarily have the same degree of individual passion (Cardon et al., 2017). As new venture team members go about interacting with each other while implementing their new business, passion convergence could develop over time. Based on the multilevel theory of emergence, emergence occurs in work teams as members communicate and interact with each other while pursuing a common goal (Kozlowski, 2012; Kozlowski & Chao, 2012; Kozlowski & Klein, 2000). Emergent processes are time sensitive, and interpersonal interactions are fundamental building blocks of the phenomena (Morgeson & Hofmann, 1999).

Starting a new business is a collective endeavor whereby new venture team members have a shared venture goal and are highly dependent on each other (Francis & Sandberg, 2000; Klotz et al., 2014). Because the new venture team context is characterized by high interdependence, working on the new business venture involves members interacting, communicating, and dealing with one another (Bygrave & Minniti, 2000). We theorize that as members work together, their passion becomes more similar over time because the affective component of passion is transmitted among

<sup>1</sup> See also Chen et al. (2009) who conceptualized passion as “an entrepreneur’s intense affective state” (p. 201), and used the term *passion* to refer to the affective dimension.

members. Our theorizing is consistent with research on emotional contagion or the interpersonal transfer of emotions (Hatfield, Cacioppo, & Rapson, 1993). Past studies both in the laboratory (Neumann & Strack, 2000; Sy, Côté, & Saavedra, 2005) and in the field (Bartel & Saavedra, 2000; Totterdell, Kellest, & Briner, 1998) have consistently shown support for emotional contagion. As such, emotional states of work group members tend to converge over time (Elfenbein, 2014). This phenomenon is more prevalent for emotions that characterize passion, such as positive, high-energy/high activation, and instrumental to the tasks at hand (Bartel & Saavedra, 2000; Bhullar, 2012; Totterdell, 2000).

We hypothesize that new venture team members converge in passion as they work together over time. We argue that team members influence each other in passion because they express overtly their passion and are exposed to other members' passion. In teams, people tend to display their passion to individuals with whom they work (Cardon, 2008). People are also more emotionally expressive when they are with others than when they are alone (Hess, Banse, & Kappas, 1995). Moreover, high-activation, positively valent emotions such as passion have more pronounced and blatant facial, vocal, and behavioral manifestations (Bartel & Saavedra, 2000). Accordingly, people are more responsive and attentive to positive and high-activation emotional expressions. In teams, passion is thus visibly expressed, noticed, and detected by others (Chen et al., 2009; Li et al., 2017). Members perceive and extract observable emotional information from other members of the team, and as a result, experience that emotion in the process (Bartel & Saavedra, 2000). Taken together, and as a starting point, we hypothesize the following:

*Hypothesis 1:* New venture team members converge in passion over time.

### **Team Progress, Team Setback, and Passion Convergence**

Proponents of the multilevel theory of emergence asserted the importance of theorizing not only about the emergent phenomenon per se, but also about factors that facilitate or inhibit the phenomenon (Kozlowski, 2015; Kozlowski & Klein, 2000). The variability of the phenomenon of emergence is largely due to team-relevant events, with some enhancing while others weakening or constraining the process (Kozlowski, 2015; Kozlowski & Klein, 2000). Shared events or experiences within a team tend to influence the occurrence of convergence on specific constructs or phenomena (Allen & O'Neill, 2015). Following this line of reasoning, we theorize that the development of passion convergence is shaped by shared events experienced by members as they work together on their venture. We focus on team-relevant experiences in terms of experiencing team progress and team setback as venture-relevant positive and negative events, respectively. Consistent with research on the separability of positively and negatively valent constructs (Cacioppo & Berntson, 1994), we regard team progress and team setback as separate constructs (albeit related) and not opposite ends of the same pole.

Experiencing team progress signifies that members are on the right track in terms of their venture-related efforts. Past research has shown that the entrepreneur's perceived progress increased venture-related effort intensity (Uy, Foo, & Ilies, 2015), and the

experience of venture progress also enhanced passion (Gielnik et al., 2015). Although we acknowledge the impact of progress on passion levels, we theorize that team progress facilitates the pattern of increasing similarity in passion among new venture team members. According to the multilevel theory of emergence, the process of emergence is enhanced by factors that promote more interactions among members, thereby facilitating convergence, and constrained by factors that lessen interactions among members, thus inhibiting convergence (Kozlowski & Klein, 2000). We build on this premise to theorize that experiencing team progress enhances passion convergence.

Experiencing team progress is defined as a positive event that is indicative of "small wins" (Amabile & Kramer, 2011). Using a classic psychological approach, Isen (1970) argued that people who experience "the warm glow of success" tend to be more attentive to their social environment and are more inclined to reach out to people around them. Specifically, Isen (1970) found that when people experienced a small victory in terms of successfully completing an experimental task, they initiated more conversations with others. On the other hand, those who were not successful in completing the assigned task were less attentive to people around them. One explanation is that people who experienced small wins feel less in need of focusing on themselves (Isen, 1970). Accordingly, we argue that experiencing team progress prompts members to attend to and interact more with one another in the team, creating more opportunities for members to be infected by other members' passion as they work on their business venture. Furthermore, the shared experience of making progress also fosters members' interpersonal relationships (Costa, Passos, & Bakker, 2014; Rousseau, Aube, & Savoie, 2006), promoting interaction and open communication within a new venture team (Walter & Bruch, 2008) as well as avenues for reciprocity and interpersonal exchange (Smilor, 1997). Thus, we hypothesize the following:

*Hypothesis 2a:* Experiencing team progress increases passion convergence within a new venture team.

While working on their new venture, team members also encounter negative events. In complex and uncertain contexts such as those faced by new venture teams, the occurrence of setbacks is inevitable (Klotz et al., 2014). Team setback poses a threat to team members' entrepreneurial pursuit and represents an unsettling episode for the new venture team (Rauter, Weiss, & Hoegl, 2018; Shepherd, Haynie, & Patzelt, 2013). Team setback can compromise members' motivation to continue engaging in their venture tasks and even trigger members to blame fellow members for possibly causing the setback (Elfenbein, 2014). Accordingly, setbacks potentially increase the likelihood of interpersonal conflict (De Dreu & Weingart, 2003; Gamero, González-Romá, & Peiró, 2008) and consequently stifle the formation of a positive team climate (Pirola-Merlo, Härtel, Mann, & Hirst, 2002).

We theorize that team setback impedes the emergence of a pattern of increasing similarity in passion among members of a new venture team. Encountering team setback represents a threatening and stressful situation that could result in individuals engaging and interacting less with other team members. Indeed, threatening stressors tend to prompt withdrawal (LePine, Podsakoff, & LePine, 2005). Past research revealed that when teams are subjected to stressful events and threatening conditions, members

interacted less (Driskell, Salas, & Johnston, 1999; Driskell & Johnston, 1998; Gladstein & Reilly, 1985). Driskell et al. (1999) uncovered that members of teams subjected to a highly stressful condition had reduced team awareness and fundamentally lost their sense of team perspective because stressful situations evoked a shift from a broad team perspective to a narrow individual-level (or self) focus. Relatedly, Gladstein and Reilly (1985) hinged on the threat rigidity reasoning to support their finding that members of groups facing goal-threatening events used fewer communication channels and engaged in less discussion and information exchange compared to members of groups in nongoal-threatening situations. Therefore, we expect that encountering team setback would decrease opportunities for members to interact and observe openly their fellow members' passion, and consequently weaken the pattern of passion similarity among members of a new venture team. Taken together, we hypothesize the following:

*Hypothesis 2b:* Experiencing team setback decreases passion convergence within a new venture team.

### Passion Convergence and New Venture Team Performance

Finally, we examine the relationship between passion convergence and new venture team performance. Starting a new business is a collective undertaking and team members are highly interdependent (Klotz et al., 2014). To facilitate the achievement of collective tasks, individual member efforts need to be aligned and coordinated (Chen & Kanfer, 2006). Being able to coordinate members' efforts is particularly important for new venture teams because members of a new venture team have relatively fluid and ambiguous roles and are expected to "wear many hats" or assume a wide range of functions in various areas of the business (Mathias & Williams, 2018). Such context renders coordination and cooperation even more crucial (Klotz et al., 2014).

The process of developing affective linkages among members shapes team performance especially for members working interdependently (Barsade, 2002; Totterdell, 2000). People's tendency to converge, that is, the process of becoming similar in their emotional states, facilitates interpersonal coordination (Hatfield et al., 1993). Convergent emotional linkage implies that team members develop a form of cooperation with each other (Elfenbein, 2014) and become more effective in coordinating activities (Beal, Cohen, Burke, & McLendon, 2003; LePine, Hanson, Borman, & Motowidlo, 2000). Moreover, positive emotional convergence is essential for effective social interactions (Anderson, Keltner, & John, 2003; Bartel & Saavedra, 2000; Knight & Eisenkraft, 2015) and denotes greater confidence that the team can complete the tasks at hand (Barsade, 2002). We argue that the development of the process of emotional convergence promotes better cooperation, coordination, and alignment. Alignment among team members is critical in the new venture team context where members are working toward a common goal (Kozlowski & Chao, 2012) and operating in an environment filled with uncertainty (Baron, 2008). Therefore, we hypothesize the following:

*Hypothesis 3a:* Passion convergence positively relates to new venture team performance.

We recognize, however, that it would be insufficient to consider only the main effect of passion convergence on new venture team

performance because our conceptualization of passion convergence focuses primarily on the pattern of increasing similarity of passion. Some teams may have members converging to a high level of passion, while others may have members converging to a modest/low level of passion. Although passion convergence denotes developing coordination and cooperation among members, the level of passion toward which members are converging could serve as the motivational force that drives action directed to the new venture. Thus, we theorize that the impact of passion convergence on new venture team performance is moderated by the end state of passion toward which team members are converging.

The level of one's passion drives goal-directed actions relevant to new business creation (Cardon et al., 2009; Gielnik, Uy, Funken, & Bischoff, 2017; Murnieks et al., 2014). This is largely because of the positive-valence and high-activation characteristics of passion which facilitate approach-oriented behaviors (Fredrickson, 1998; Watson, 2000) and foster collective effort toward goal attainment (Bartel & Saavedra, 2000). In the new venture context, collective effort would primarily involve searching for customers or buyers to generate sales for the new venture (Baron & Tang, 2008). Generating sales typically require motivation (Montgomery, 1995). Scholars have found that passion (in terms of level) is a significant driver of motivation such that a high level of passion prompted greater effort (Cardon & Kirk, 2015). Therefore, a high level of passion toward which new venture team members are converging would heighten the linkage between members' coordinated efforts (as denoted by convergence) and new venture team performance. Conversely, if team members are converging to a low level of passion, such situation indicates an apparent lack of energy to propel venture-relevant actions. Thus, a combination of high passion convergence but low level of passion toward which members are converging would fail to enhance new venture team performance. In sum, we hypothesize the following:

*Hypothesis 3b:* The positive relationship between passion convergence and new venture team performance is stronger if the end state of passion toward which members are converging is high.

## Method

### Participants and Procedures

We recruited participants from a business incubator program in a university located in Indonesia.<sup>2</sup> Being the fourth largest country in the world with a population of more than 250 million people, Indonesia has a relatively stable economic growth as indicated by its rising gross domestic product, and its economic activity is fueled by new business creation (Tambunan, 2007). According to the 2016 Global Entrepreneurship Monitor report, Indonesia has the highest total early stage entrepreneurship activity rate among the six participating countries in the Southeast Asian region (Nawangpalupi et al., 2016). In emerging markets such as Indonesia, business incubators function as a vital institutional interme-

<sup>2</sup> This study received ethical approval from the Institutional Review Board (IRB) at the Nanyang Technological University ("Team Entrepreneurial Passion: Investigating Its Effect on New Venture Teams"; IRB-2016-06-028).

diary to facilitate the creation of new enterprises (Dutt et al., 2016). The increasing use of business incubators to cultivate entrepreneurship makes it important to understand factors that help new venture teams flourish (Bruneel, Ratinho, Clarysse, & Groen, 2012).

Participants consisted of new venture teams based in a university-linked business incubator. In line with its vision to nurture entrepreneurs, the university runs a business incubation program to promote entrepreneurship to all its students regardless of their majors or specialization. All students are required to participate in the business incubation program. Notably, this is not a mere business simulation program, as all participants must legally register their ventures, launch their products or services, invest their own financial capital, and hire employees. Students could either go solo or form teams to launch their business ventures. In this program, most ventures were started by teams, as typically observed among startups (Klotz et al., 2014).

We collected data from entrepreneurial teams during the implementation phase of the business incubation program. During this 15-week implementation phase, participants undertook activities that led to the launch of their business ventures. For our study, we included teams with at least 3 members (average team size = 3.83). Our sample consisted of 82 new venture teams (314 individuals). The average age of participants was 19.2 years old; 48% were men, and 36% had prior entrepreneurial experience. Examples of ventures launched in the business incubation program were ventures related to software development, design, fashion, gastronomy, and travel.

We collected data from participants four times—in Weeks 3 (Time 1 [T1]), 6 (Time 2 [T2]), 9 (Time 3 [T3]), and 12 (T4 [T4]). The questionnaires for individual-entrepreneur participants were translated from English to Bahasa Indonesia using the forward-translation, back-translation procedures (Brislin, 1980). In each time point, participants independently reported their individual passion, and the extent of team progress and team setback experienced within their respective ventures. The response rate across four time points for the individual-entrepreneur participants was 91.3%. Participants were incentivized to participate by means of certificates of participation and feedback reports.

## Measures

**Passion.** We measured the affective intensity of passion of each team member in Weeks 3, 6, 9, and 12. Although Cardon et al.'s (2013) passion instrument had three domains, namely, passion for inventing, passion for founding, and passion for developing, they emphasized that “scholars may choose to explore just one or multiple domains of passion as appropriate for their particular research question” (p. 390). For example, Collewaert et al. (2016) only focused on the founding domain (i.e., they did not assess the inventing and developing domains) because they studied participants who were at the founding stage of their ventures. Similarly, Mueller, Wolfe, and Syed (2017) only focused on the developing domain (and did not capture the inventing and founding domains) because their sample involved entrepreneurs who were operating established firms and engaging in developing activities. We used the founding domain because it was the relevant domain given our context—our study participants were at the founding stage of their ventures.

Moreover, within each domain, there are two dimensions—intense positive feelings and identity centrality. Because of our short timeframe and given our focus on pattern of increasing similarity in affective intensity of passion for founding, we used only the items for intense positive feelings of passion for founding. We used the affective items on passion for founding with a seven-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Participants were asked to focus on the recent past 3 weeks of working on their venture and individually rated their passion. An example was “Establishing a new company excites me.” The reliability coefficients across four waves were as follows: T1,  $\alpha = .79$ ; T2,  $\alpha = .88$ ; T3,  $\alpha = .89$ ; T4,  $\alpha = .87$ .

**Team progress.** Participants rated their team progress in Weeks 3, 6, 9 and 12 using two items adapted from Uy et al. (2015). We adapted the items which were originally designed for individual-level measures using the referent shift-consensus approach (Chan, 1998). Team members rated the extent to which they experienced team progress in the past 3 weeks on a scale of 1 (*strongly disagree*) to 7 (*strongly agree*). The items were as follows: “My team has made a great deal of progress concerning our venture goal” and “My team has had quite a lot of success in pursuing our venture goal.” The levels of agreement and reliability were acceptable: T1,  $\alpha = .84$ ,  $M$  within-group agreement (Rwg) = .85, intraclass correlation coefficient ([ICC]1) = .34, ICC(2) = .66,  $F = 2.96$ ,  $p < .01$ ; T2,  $\alpha = .82$ ,  $M$  Rwg = .88, ICC(1) = .33, ICC(2) = .64,  $F = 2.76$ ,  $p < .01$ ; T3,  $\alpha = .82$ ,  $M$  Rwg = .93, ICC(1) = .40, ICC(2) = .70,  $F = 3.36$ ,  $p < .01$ ; T4,  $\alpha = .86$ ,  $M$  Rwg = .91, ICC(1) = .29, ICC(2) = .58,  $F = 2.40$ ,  $p < .01$ .

**Team setback.** We asked team members to rate team setback in Weeks 3, 6, 9, and 12 using the scale developed by Funken, Gielnik, and Foo (2020). Team members were asked to think of the most severe problem or setback they faced in the course of working on their respective business ventures in the last 3 weeks, and subsequently rated the severity of this problem or setback using the following items: “How threatening was this problem or setback for the success of your business venture?” (1 = *not all threatening*, 7 = *absolutely threatening*), “How negative was this problem or setback for the success of your business venture?” (1 = *not at all negative*, 7 = *absolutely negative*), and “How drastic was the impact of this problem or setback on the success of your business venture?” (1 = *not at all drastic*, 7 = *absolutely drastic*). Agreement and reliability parameters yielded acceptable values: T1,  $\alpha = .90$ ,  $M$  Rwg = .88, ICC(1) = .42, ICC(2) = .73,  $F = 3.70$ ,  $p < .01$ ; T2,  $\alpha = .93$ ,  $M$  Rwg = .87, ICC(1) = .32, ICC(2) = .63,  $F = 2.68$ ,  $p < .01$ ; T3,  $\alpha = .93$ ,  $M$  Rwg = .88, ICC(1) = .27, ICC(2) = .57,  $F = 2.32$ ,  $p < .01$ ; T4,  $\alpha = .94$ ,  $M$  Rwg = .88, ICC(1) = .27, ICC(2) = .56,  $F = 2.29$ ,  $p < .01$ .

**New venture team performance.** We operationalized new venture team performance using sales that the teams generated during the 15-week venture implementation period. Sales is an important outcome in entrepreneurship research because it indicates the viability of the business in the early stage of venture development (Dencker & Gruber, 2015). Sales is arguably one of the most important and most common objective indicators of new venture team performance (Brush & Vanderwerf, 1992). Sales data (in Indonesia Rupiah) were obtained from the business incubator at the end of the 15-week venture implementation period. The QQ-plot tests reveal that the raw sales data violate the assumption of normality. Thus, consistent with the approach used to deal with

nonnormality by prior research that used sales as dependent variable (Berge, Bjorvatn, & Tungodden, 2014; Delmar & Shane, 2006), we used the log-transformed sales values in our analyses.

**Control variables.** We included the following control variables for models predicting new venture team performance: the line of industry, team size, proportion of team members with prior entrepreneurial experience, diversity in educational background, and diversity in gender. These control variables were included based on prior studies that revealed significant impact on entrepreneurial team outcomes (Beckman, Burton, & O'Reilly, 2007; Hoogendoorn, Oosterbeek, & van Praag, 2013; Klotz et al., 2014). Consistent with past research (Short, McKelvie, Ketchen, & Chandler, 2009), we added industry dummies (art and design industry as reference) to account for differences among the industries in our sample (trading, food and beverage, hospitality and technology). For prior entrepreneurial experience, we asked participants whether they had founded a company before (1 = yes, 0 = no), and calculated the score for the proportion of team members with prior entrepreneurial experience. We used Blau's (1977) index of heterogeneity to compute for diversity in educational background and gender. We captured educational background using participants' areas of specialization. The 10 areas represented in our sample were business information systems, culinary business, fashion design and business, information and multimedia technology, interior architecture, international and hospitality tourism business, international business accounting, international business management, psychology, and visual communication design.

### Analytical Strategy

We tested Hypotheses 1, 2a, and 2b using CEM developed by Lang et al. (2018). The purpose of CEM is to model systematically the changes in residual variance over time to provide insights into the process of developing convergence in a group (please refer to Lang et al., 2018, p. 261 for the CEM equations). CEM allowed us to study how members' passion became more (or less) similar over time within a new venture team. By capturing changes in residual variances over time as an outcome of interest within the growth model framework, CEM supplied a formal test on whether convergence in groups emerged as well as factors that predicted convergence over time (please see Lang et al., 2018 for detailed instructions on how to perform CEM). Because the criterion variable in CEM is the change in residual variance, a negative coefficient denotes that over time the residual variance decreases, which suggests the occurrence of passion convergence.

In using CEM, Lang et al. (2018) noted that it is the residuals—not the mean levels of the variable—that need to be normally distributed. Importantly, Lang also emphasized that “even when the dependent variable is heavily skewed, the residuals are frequently still normally distributed and thus the model assumptions are not violated” (J. W. B. Lang, personal communication, October 11, 2018). To verify the distribution of the residuals, we examined the QQ-plots and confirmed that the residuals are normally distributed. Thus, our use of CEM is appropriate.

As suggested by Lang et al. (2018), we used the three-level CEM model specifications for our analysis because the three-level version increases the power of the CEM analyses by including a person-random effect that accounts for baseline differences among participants (e.g., a priori systematic between-person differences in

response sets that could impact the outcome). The analysis to examine the predictor of convergence over time involves contrasts among three different models. The baseline model only included time as a predictor of the within-group variance; the second model incorporated the predictor of differences in within-group variance; and the third model involved the interaction between time and the predictor of the within-group variance. Contrasts between different models using  $-2 \log$  likelihood tests provided the statistical test for the factors that were hypothesized to predict convergence (or similarity over time). It is important to note that the interaction between time and predictor does not reflect a moderation effect from a conceptual perspective, but a main effect of the predictor on convergence or pattern of similarity over time (similar to the logic of growth modeling; see Bliese & Ployhart, 2002).

In testing Hypothesis 3a which describes the main effect of passion convergence on new venture team performance and Hypothesis 3b which describes the interactive effect of passion convergence and the level of passion toward which team members are converging on new venture team performance, we based our analysis on the CEM model and estimated team-specific coefficient that indicates each team's pattern of passion convergence over the course of our study. This coefficient is the slope that captures the change in similarity (or dissimilarity). We also estimated each team's passion similarity at the start of the study to control for between team differences in the initial level of passion similarity in our analyses. We operationalized this using the intercept obtained from the model that estimated each team's pattern of passion convergence during our study. To facilitate interpretation, and only in testing Hypotheses 3a and 3b, we reversed the direction of the scores by subtracting the scores from 2 (i.e.,  $2 - \text{Score}$ ; this approach keeps the original level of measurement intact and reverses the direction of the variable; see Sy & Choi, 2013) so that larger values denote greater convergence. The level of passion toward which members are converging was measured using the team aggregated individual passion at T4. We used ordinary least square regression to test Hypotheses 3a and 3b. For Hypothesis 3b, we analyzed the interactive effect of the team-specific coefficient of passion convergence and team members' average level of passion at T4 on new venture team performance at T5. We computed the interaction term by multiplying the grand-mean centered passion convergence and team members' average level of individual passion at T4. All other variables were grand-mean centered.

## Results

### Test of Hypotheses

Table 1 presents the descriptive statistics. In Hypothesis 1, we proposed that new venture team members converge in passion over time. Table 2 provides the omnibus likelihood test of whether convergence exists in our data. The contrast of Model 1b and Model 1a returns  $\chi^2(1) = 6.53, p < .05$ , suggesting that including an exponential variance function into the model increased the model fit. We present the model estimates in Table 3, which shows that exponential variance function weight for time was  $\delta_1 = -0.07$ . Based on the model parameters for Model 1b in Table 3, we used the formula by Lang et al. (2018) to obtain the estimates of the residual variance. The residual variance changed from 0.30 in T1 to 0.20 in T4. Taken together, the results in Tables 2 and 3

Table 1  
Means, Standard Deviations, and Intercorrelations Among Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
1. T1 team aggregated individual passion	6.13	.45	—																						
2. T2 team aggregated individual passion	5.97	.55	.60**	—																					
3. T3 team aggregated individual passion	5.99	.53	.62**	.69**	—																				
4. T4 team aggregated individual passion	5.95	.51	.63**	.55**	.71**	—																			
5. T1 team progress	5.04	.73	.38**	.29*	.38**	.34**	—																		
6. T2 team progress	5.34	.72	.34**	.48**	.54**	.45**	.39**	—																	
7. T3 team progress	5.60	.61	.38**	.43**	.60**	.49**	.28*	.55**	—																
8. T4 team progress	5.59	.61	.52**	.50**	.64**	.71**	.40**	.57**	.54**	—															
9. T1 team setback	2.82	.86	-.17	-.20	-.18	-.26*	-.31**	-.24*	-.32**	-.13	—														
10. T2 team setback	2.86	.80	-.09	-.05	-.16	-.06	-.05	-.21	-.33**	-.14	.44**	—													
11. T3 team setback	2.92	.82	-.20	-.22	-.27*	-.28*	-.17	-.31**	-.47**	-.29*	.47**	.55**	—												
12. T4 team setback	2.94	.74	-.40**	-.29*	-.18	-.16	-.20	-.31**	-.31**	-.29**	.22	.43**	.53**	—											
13. Industry: Trading	.11	.32	.09	.21	.05	.00	.10	-.03	.19	.10	.10	.08	.01	.04	—										
14. Industry: Food and beverage	.49	.50	.12	.11	.20	.23	.29*	.32*	.16	.27*	-.05	-.06	-.04	-.06	-.35**	—									
15. Industry: Hospitality	.06	.23	-.08	-.04	.01	.06	-.05	-.15	-.08	-.04	.07	.14	.25*	-.01	-.09	-.24*	—								
16. Industry: Technology	.04	.20	-.26*	-.28*	-.33**	-.27*	-.11	-.04	-.25*	-.20	.04	-.01	-.10	.02	-.08	-.21	-.05	—							
17. Industry: Art and design	.30	.46	-.04	-.11	-.12	-.16	-.31*	-.23	-.16	-.25*	-.07	-.06	-.05	.04	-.24	-.64**	-.16	-.14	—						
18. Team size	3.83	.80	.05	.03	.01	-.04	.21	.09	-.01	.13	.06	-.23*	-.08	-.15	-.03	.33**	-.17	.05	-.28*	—					
19. Past entrepreneurial experience	.37	.35	.11	-.06	-.04	.11	.19	-.11	-.08	.08	-.11	-.11	.02	.07	.10	-.16	.08	.06	.03	-.16	—				
20. Educational background diversity	.28	.26	.25*	.08	.17	.10	.11	.13	.11	.11	.10	.05	.06	-.12	-.02	.08	.07	-.12	-.06	.21	-.15	—			
21. Gender diversity	.24	.22	-.06	.08	.01	.04	.11	.11	.08	-.04	-.21	-.15	-.06	.07	.04	.14	-.18	-.11	-.03	.15	-.07	.17	—		
22. Sales <sup>a</sup>	14.35	3.32	.37**	.47**	.31*	.33**	.44**	.35**	.17	.26*	-.16	-.05	-.15	-.18	.06	.22	-.26*	-.35**	.00	.12	.11	.26*	.28*	—	

Note. N = 65–82. T1 = Time 1; T2 = Time 2; T3 = Time 3; T4 = Time 4.

<sup>a</sup> Sales was logarithmically transformed.

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

Table 2  
*Extended Consensus Emergence Models (CEM): Model Comparisons*

Model	AIC	BIC	Log likelihood	df	Versus previous model
					$\chi^2$
Model 1a: Three-level model, no emergence	2200.31	2235.61	-1093.16	7	
Model 1b: Three-level CEM	2195.79	2236.13	-1089.89	8	6.53*

Note. For all models,  $N = 1,147$  observations nested in 314 team members and 82 teams. AIC = Akaike information criterion; BIC = Bayesian information criterion.

\*  $p < .05$ .

indicate that within-group residual variance in our data significantly decreased over time, which demonstrates the occurrence of passion convergence. Hence, Hypothesis 1 was supported.

In Hypothesis 2a, we proposed that experiencing team progress increases passion convergence within a new venture team. The results are summarized in Tables 4 and 5. Table 4 presents three different models as a formal test of whether experiencing team progress increased passion convergence within a new venture team. The baseline model (Model 2a) included an interaction between time and team progress for mean differences (fixed effect) and time as a predictor in the within-group variance (random effects) part of the model. Model 2b added team progress as additional predictor of differences in within-group variance. Model 2c added the interaction between time and team progress to the within-group variance part of the model. Contrast between Model 2c and Model 2b provided the formal test for Hypothesis 2a. Results from the contrast between Model 2c and Model 2b indicated that experiencing team progress significantly related to passion convergence,  $\chi^2(1) = 10.22, p < .01$ . As shown in Model 2c of Table 5, we found a significant interaction between experiencing team progress and time ( $\delta_3 = -.12$ ). We followed the procedure suggested by Lang et al. (2018) to estimate the residual variance for within-team experience of progress at one standard deviation below and above the sample mean at the start of the study (T1) and at the end of the study (T4). When a team experi-

enced more progress over time (one standard deviation above the sample mean), the residual variance declined from 0.21 at T1 to 0.08 at T4, suggesting passion convergence. When a team experienced less progress over time (one standard deviation below the sample mean), the residual variance increased from 0.38 at T1 to 0.60 at T4. Overall, these results suggest that teams that had experienced more progress had higher convergence by three weeks (T1) and continued to converge over the remaining nine weeks whereas teams that experienced less progress had lower convergence at three weeks and continued to experience low convergence over the remaining nine weeks. Altogether, these results supported Hypothesis 2a.

In Hypothesis 2b, we proposed that experiencing team setback reduces passion convergence. We present the results in Tables 4 and 6. In Table 4, we contrasted three different models to test whether experiencing team setback was associated with the occurrence of passion convergence. The baseline model (Model 3a) included an interaction between time and team setback for mean differences (fixed effect) and time as a predictor in the within-group variance (random effects) part of the model. Team setback was added as additional predictor of differences in within-group variance in Model 3b. The interaction between time and team setback was added to the within-group variance in Model 3c. Contrast between Model 3c and Model 3b provided the formal test for Hypothesis 2b. Results from the contrast between Model 3c and Model 3b indicated that experiencing team setback did not predict group-level change in passion convergence over time,  $\chi^2(1) = 1.14, ns$ . We present the model estimates in Table 6. Based on the results, Hypothesis 2b was not supported.

Hypothesis 3a states that passion convergence positively predicts new venture team performance. Results in Model 2 of Table 7 indicated a nonsignificant coefficient ( $b = -.01, SE = .18, ns$ ). Thus, Hypothesis 3a was not supported. In Hypothesis 3b, we proposed that passion convergence relates to new venture team performance when the end state of passion toward which members are converging is high. Result in Model 3 of Table 7 indicated a significant interaction term ( $b = 2.50, SE = .79, p < .01$ ). We conducted simple slopes analysis at high (+1 SD above the  $M$ ;  $b = 1.01, SE = .37, p < .01$ ) and low (-1 SD below the mean;  $b = -1.48, SE = 0.49, p < .01$ ) levels of team members aggregate passion at T4 (see Figure 2). The plots suggest that passion convergence positively impacted new venture team performance when team members converged to a high level of passion but had a negative impact when team members converged to a low level of passion. We further probed the boundaries of the interaction using the Johnson-Neyman region of significance technique (Preacher, Curran, & Bauer, 2006) which generates the lower bound and the

Table 3  
*Consensus Emergence Models: Model Estimates for Passion Convergence*

Parameter	DV = passion	
	Model 1a	Model 1b
Intercept, $\gamma_{000}$	6.10**	6.10**
Time, $\gamma_{100}$	-0.06**	-0.06**
Group intercept variance, $\sigma_{\beta 00}^2$	0.11	0.11
Group variation for TIME, $\sigma_{\beta 10}^2$	0.01	0.01
Covariance, $\sigma_{\beta 00\beta 10}$	-0.00	-0.00
Person intercept variance, $\sigma_{\pi 0}^2$	0.18	0.18
Residual variance, $\chi_c^2$	0.25	0.30
Time, $\delta_1$		-0.07

Note. For all models,  $N = 1,147$  observations nested in 314 team members and 82 teams. In presenting their result tables, Lang, Bliese, and de Voogt (2018) did not indicate the significance of fixed effects because fixed effects are not the focus of the Consensus Emergence Models (CEM) statistical analyses. Nonetheless, we reported the significance of fixed effects in the table to provide a more comprehensive presentation of results. DV = dependent variable.

\*\*  $p < .01$ .

Table 4  
Extended Consensus Emergence Models (CEM): Model Comparisons

Model	AIC	BIC	Log likelihood	df	Versus previous model
					$\chi^2$
Model 2a (M2a): Three-level CEM + Team Progress and Team Progress $\times$ Time interaction as predictors	2150.25	2200.61	-1065.13	10	
Model 2b (M2b): M2a + Variance Function for Team Progress	2096.63	2152.01	-1037.31	11	55.63**
Model 2c (M2c): M2b + Variance Function for Team Progress $\times$ Time interaction	2088.41	2148.83	-1032.21	12	10.22**
Model 3a (M3a): Three-level CEM + Team Setback and Team Setback $\times$ Time interaction as predictors	2187.90	2238.26	-1083.95	10	
Model 3b (M3b): M3a + Variance Function for Team Setback	2183.08	2238.47	-1080.54	11	6.82**
Model 3c: M3b + Variance Function for Team Setback $\times$ Time interaction	2183.94	2244.36	-1079.97	12	1.14

Note. For all models,  $N = 1,140$  observations nested in 314 team members and 82 teams. AIC = Akaike information criterion; BIC = Bayesian information criterion.

\*\*  $p < .01$ .

upper bound estimates (i.e., the values beyond which the coefficient becomes statistically significant). Figure 3 presents the confidence bands around the conditional effect of passion convergence on new venture team performance across the distribution of the standardized team mean (end-state) individual passion. The vertical axis represents the coefficient of the relationship between passion convergence and new venture team performance. Based on the 95% regions of significance, we calculated the lower bound estimate to be  $z = -0.08$  and the upper bound estimate to be  $z = 0.28$ . Any given simple slope outside this range is statistically significant. In our final analysis, we had a total of 66 new venture teams with complete data on all variables included in the model. The minimum (standardized) team mean individual passion was  $-2.65$  and the maximum value was  $2.11$ . In total, 23 teams were above the upper bound ( $>.28$ ) exhibiting a positive significant moderation, 14 teams were between the bounds ( $\leq .28$ ;

$\geq -.08$ ) exhibiting a nonsignificant moderation, and 29 teams were below the lower bound ( $<-.08$ ) exhibiting a negative significant moderation. Taken together, our results provided support for Hypothesis 3b.

Our disordinal interaction illustrated in Figure 2 suggests that sales for teams with low average passion and low passion convergence were nearly as high as the ones for teams with high average passion and high passion convergence. This suggests that teams with low mean (aggregate) passion can be successful as long as members do not converge on that low level. Figure 3 also suggests that passion convergence has a negative effect on performance when members are converging to low levels of passion, and a positive effect when converging to high levels of passion. One plausible explanation could be that for teams with low average passion and low passion convergence, there could be one (or two) highly passionate members who are carrying the rest of the mem-

Table 5  
Extended Consensus Emergence Models: Model Estimates for Team Progress

Parameter	DV = passion	
	Model 2b	Model 2c
Intercept, $\gamma_{000}$	6.13**	6.13**
Time, $\gamma_{100}$	-0.10**	-0.10**
Team progress, $\gamma_{010}$	0.07	0.06
Time $\times$ Team Progress, $\gamma_{110}$	0.10**	0.10**
Group intercept variance, $\sigma_{\beta 00}^2$	0.08	0.08
Group variation for time, $\sigma_{\beta 10}^2$	0.00	0.00
Covariance, $\sigma_{\beta 00\beta 10}$	-0.01	-0.01
Person intercept variance, $\sigma_{\pi 0}^2$	0.15	0.15
Residual variance, $\chi_e^2$	0.26	0.28
Time, $\delta_1$	-0.04	-0.05
Team progress, $\delta_2$	-0.29	-0.15
Time $\times$ Team Progress, $\delta_3$		-0.12

Note. For all models,  $N = 1,140$  observations nested in 314 team members and 82 teams. In presenting their result tables, Lang et al. (2018) did not indicate the significance of fixed effects because fixed effects are not the focus of the Consensus Emergence Models (CEM) statistical analyses. Nonetheless, we reported the significance of fixed effects in the table to provide a more comprehensive presentation of results. DV = dependent variable.

\*\*  $p < .01$ .

Table 6  
Extended Consensus Emergence Models: Model Estimates for Team Setback

Parameter	DV = passion	
	Model 3b	Model 3c
Intercept, $\gamma_{000}$	6.10**	6.10**
Time, $\gamma_{100}$	-0.06**	-0.06**
Team Setback, $\gamma_{010}$	-0.01	-0.00
Time $\times$ Team Setback, $\gamma_{110}$	0.01	0.01
Group intercept variance, $\sigma_{\beta 00}^2$	0.10	0.10
Group variation for TIME, $\sigma_{\beta 10}^2$	0.01	0.01
Covariance, $\sigma_{\beta 00\beta 10}$	0.01	0.01
Person intercept variance, $\sigma_{\pi 0}^2$	0.17	0.17
Residual variance, $\chi_e^2$	0.31	0.31
Time, $\delta_1$	-0.08	-0.08
Team setback, $\delta_1$	0.09	0.04
Time $\times$ Team Setback, $\delta_3$		0.04

Note. For all models,  $N = 1,140$  observations nested in 314 team members and 82 teams. In presenting their result tables, Lang et al. (2018) did not indicate the significance of fixed effects because fixed effects are not the focus of the Consensus Emergence Models (CEM) statistical analyses. Nonetheless, we reported the significance of fixed effects in the table to provide a more comprehensive presentation of results. DV = dependent variable.

\*\*  $p < .01$ .

Table 7

Regression Results: New Venture Team Performance as Outcome Operationalized Using Sales (Log)

Variable	DV = Sales (Log)					
	Model 1		Model 2		Model 3	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Constant	14.25**	.36	14.25**	.33	13.95	.32
Industry: Trading	-.28	1.30	-.52	1.22	.38	1.16
Industry: Food and beverage	.60	.89	.32	.85	1.07	.82
Industry: Hospitality	-3.43*	1.63	-3.59*	1.53	-3.07*	1.42
Industry: Technology	-4.83**	1.86	-3.10	1.80	-1.49	1.74
Team size	-.03	.51	.24	.50	.15	.46
Past entrepreneurial experience	2.14*	1.07	1.76	1.03	1.22	.96
Educational background diversity	3.16*	1.40	2.24	1.34	2.45	1.24
Gender diversity	3.21	1.72	2.21	1.63	2.22	1.51
Passion similarity at T1			.90**	.31	1.28**	.31
Passion convergence (slope)			-.01	.18	-.23	.18
T4 team aggregated ind. passion			1.39	.74	1.72*	.69
Passion Convergence (slope) × T4 Team Aggregate individual passion					2.50**	.79
$R^2$	.35**		.47**		.55**	
$\Delta R^2$			.12*		.09**	

Note. DV = dependent variable; T1 = Time 1; T4 = Time 4.

\*  $p < .05$ . \*\*  $p < .01$ .

bers. To test this, we compared teams in the low-convergence/low-average with those in the high-convergence/high-average categories. Specifically, we examined the gap between the maximum passion and the team average passion and compared the gaps of the teams in the two categories. Results indicate that the low-convergence-low-average teams have higher maximum-passion-to-team-mean-passion gap ( $M = 0.60$ ) than the high-convergence-high-average teams ( $M = 0.30$ ), and the  $t$  test shows that the difference is statistically significant ( $t = -2.90$ ,  $df = 35.96$ ,  $p < .01$ ). We will revisit this in the Discussion.

### Supplemental Analyses

Our theorizing on the development of passion convergence hinged on the contagion of passion. We conducted additional analysis to ascertain the robustness of our explanations. Guided by past studies on contagion (e.g., Totterdell, 2000), we analyzed whether an individual member's passion was associated with the aggregate passion of other team members within each new venture team. Results indicated that within each team, other members' aggregate passion positively and significantly predicted the focal

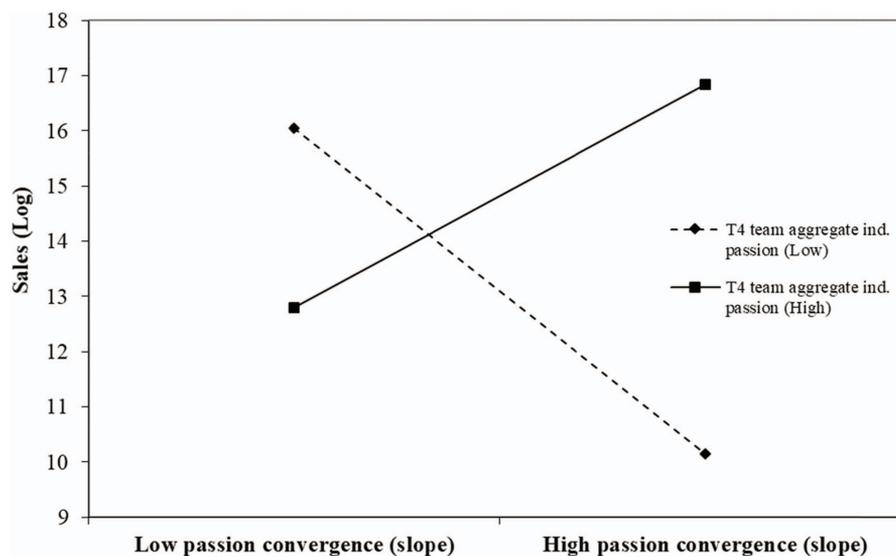
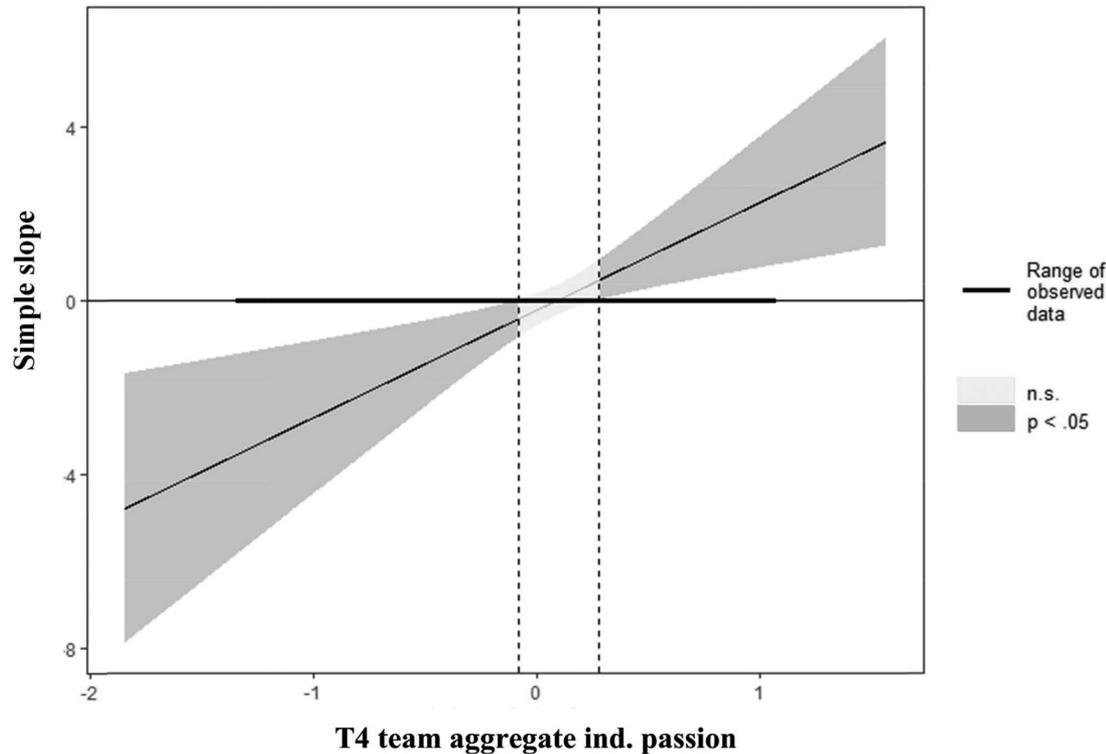


Figure 2. Interaction between passion convergence and T4 (end-state) team aggregated individual (ind.) passion.



*Figure 3.* Johnson-Neyman regions of significance for the conditional effect of passion convergence on T5 new venture team performance (sales) at values of mean-centered T4 (end-state) team aggregated individual (ind.) passion. The figure presents the confidence bands around the conditional effect of passion convergence on new venture team performance across the distribution of the standardized team mean individual passion. The vertical dashed lines indicate the lower bound (i.e., the value beyond which the coefficient becomes statistically significantly negative) and the upper bound (i.e., the value beyond which the coefficient becomes statistically significantly positive) estimates. The vertical axis represents the coefficient of the relationship between passion convergence and new venture team performance.

member's passion ( $b = .22, p < .01$ ), suggesting positive inter-linkages among members' passion within a new venture team.

Although we were not able to capture momentary team member interactions in situ while working on their ventures, we obtained supplementary data at the end of the 15-week study period on team reflexivity, or "the extent to which group members overtly reflect upon, and communicate about the group's objectives, strategies, and processes, and adapt them to current or anticipated circumstances" (West, Garrod, & Carletta, 1997, p. 296) as an indicator of member interactions. Team reflexivity imply more interactions among members because they tend to trust each other and are comfortable discussing with one another (de Jong & Elfring, 2010). We performed a bivariate correlation analysis with T4 team progress and T4 team setback, respectively. Sample items include "We regularly discussed whether the team was working effectively together" and "The methods used by the team to get the job done were often discussed". Team progress positively correlated with team reflexivity ( $r = .57, p < .01$ ), whereas team setback negatively correlated with team reflexivity ( $r = -.24, p < .05$ ). These results bolster our theoretical explanations for why team progress enhanced passion convergence.

We also conducted additional analyses to examine whether team processes such as team reflexivity could be an omitted variable

that explained both passion convergence and new venture team performance. We reanalyzed Models 2 and 3 of Table 7 by including T4 team reflexivity in the regression equation predicting performance. For Model 2, results indicated that T4 team reflexivity was not related to sales ( $b = -0.94, p = .31$ ) and the effect of passion convergence (slope) on sales was not statistically significant ( $b = .01, p = .94$ ). For Model 3, our reanalysis revealed that T4 team reflexivity had no significant effect on sales ( $b = 2.47, p = .34$ ) and the interaction between passion convergence (slope) and T4 team aggregated individual passion on sales remained robust ( $b = 2.50, p < .01$ ). Overall, these results suggest that team functioning as represented by team reflexivity was not an omitted factor that accounted for the link between passion convergence and new venture team performance.

Another potential issue that might confound our results concerns mentorship. Because mentors were assigned to the new venture teams, it may be plausible to attribute the results we uncovered to mentorship effects. We conducted three additional tests to verify this. First, we tested for between-mentor differences in passion convergence slope and sales. We conducted analysis of variance (ANOVA) on passion convergence slope and sales to ascertain whether these variables differed by mentors. Results indicated that

the passion convergence slope,  $F(20, 45) = .90, p = .59$ ; and sales,  $F(20, 45) = .90, p = .59$ , did not differ by mentors, suggesting no systematic differences in passion convergence slope and sales across mentors.

Second, we obtained supplementary data at the end of the 15-week study period on the positive feedback and negative feedback given by the mentors to the venture teams, and examined how mentors' feedback related to passion convergence and sales. Using the items adapted from Steelman, Levy, and Snell (2004), participants rated (1 = *strongly disagree*, 7 = *strongly agree*) the following statements for positive feedback provided by the mentor: "Our mentor praised the performance of our team," "Our mentor told our team that we did a good job," and "We received positive feedback from our mentor"; and the following items for negative feedback provided by the mentor: "Our mentor told our team that our performance fell below expectation," "Our mentor told our team that our performance did not meet his/her standards," and "We received negative feedback from our mentor." Agreement and reliability yielded acceptable values—for positive feedback:  $\alpha = .81, M Rwg = .95, ICC(1) = .26, ICC(2) = .55, F = 2.22, p < .01$ . For negative feedback: T4,  $\alpha = .75, M Rwg = .85, ICC(1) = .29, ICC(2) = .58, F = 2.39, p < .01$ .

To analyze the impact of mentor's positive feedback and negative feedback, we included both mentor's positive feedback and negative feedback in the analysis using the equation for Model 3 of Table 7. Results indicated that both mentor's positive feedback ( $b = -.38, p = .70$ ) and negative feedback ( $b = 1.51, p = .14$ ) had nonsignificant effects on sales. Furthermore, the interaction between passion convergence (slope) and T4 team aggregated individual passion on sales remained robust ( $b = 3.41, p < .01$ ). We also tested the correlation between mentor's positive feedback and negative feedback with passion convergence (slope). Results indicated that passion convergence (slope) was not significantly correlated with both mentor's positive feedback ( $r = .13, p = .28$ ) and negative feedback ( $r = .05, p = .71$ ) suggesting that mentors' feedback (which can be regarded as an indicator of mentor encouragement) did not impact passion convergence.

Third, we obtained additional data on the evaluation of business mentors at the end of the 15-week study period. Two items reflected the effectiveness of business mentors. Participants rated (1 = *strongly disagree*, 5 = *strongly agree*) the extent to which (1) the mentor provided useful feedback to them and (2) the mentor facilitated active discussion. We computed the average of each of these evaluation scores given by the members of each team and included them in the equation for Model 3 of Table 7. Results indicated that while the usefulness of mentor's feedback was not related to sales ( $b = -1.81, p = .08$ ), helping members engage in active discussion was positively related to sales ( $b = 3.08, p < .01$ ). Nonetheless, the interaction between passion convergence (slope) and T4 team aggregated individual passion on sales remained robust even when mentorship-related items were included ( $b = 3.45, p < .01$ ). We also examined the correlation among the variables and found that passion convergence was not correlated with the usefulness of mentor's feedback ( $r = .09, p = .45$ ) and mentor's facilitation of active discussion ( $r = .05, p = .69$ ). Collectively, our additional tests indicated that the key relationships we uncovered were not primarily due to mentorship and the

pattern of results remained robust even when mentorship-related variables were included in the analyses.

One might also wonder about the impact of the end-state (i.e., T4) within-team variability in passion and whether accounting for the end-state within-team variability in passion would significantly change our conclusions. We reanalyzed Model 3 of Table 7 by including T4 standard deviation in passion. Results indicated that T4 standard deviation in passion had a negative but nonsignificant effect on sales ( $b = -1.77, p = .13$ ). The interaction between passion convergence (slope) and T4 team aggregated individual passion on sales remained significant ( $b = 2.42, p < .01$ ), suggesting that our results are robust. Thus, it was not the end state of the similarity level per se but the dynamic pattern of becoming similar over time that mattered more.

In our analysis on team setback, we used the severity of team setback as a measure. As a robustness check, we used an alternative measure of the overall quantity of team setbacks. Specifically, participants reported the number of setbacks experienced by their teams in the past three weeks. In line with previous research (Funken et al., 2020), we winsorized the responses to the open question to five to avoid potential outliers (see Kennedy, Lakonishok, & Shaw, 1992). The measure showed satisfactory levels of reliability and agreement within teams for each time point (T1,  $M Rwg = .86, ICC(1) = .76, ICC(2) = .92, F = 12.12, p < .01$ ; T2,  $M Rwg = .81, ICC(1) = .70, ICC(2) = .89, F = 8.73, p < .01$ ; T3,  $M Rwg = .81, ICC(1) = .49, ICC(2) = .73, F = 3.65, p < .01$ ; T4,  $M Rwg = .69, ICC(1) = .32, ICC(2) = .60, F = 2.47, p < .01$ ). The results of the CEM analyses using the quantity of setbacks were similar to the results based on the severity measure. We did not find significant effects of the overall quantity measure on group-level change in passion convergence over time,  $\chi^2(1) = 0.00, ns$ . The results suggest that regardless of the measure, team setback did not significantly impact passion convergence.

## Discussion

Our study contributed empirically to research on affective dynamics in groups and teams. Extant theorizing underscored that affect and team processes are dynamically interlinked as members work together over time (Barsade, 2002; Kelly & Barsade, 2001). Yet, validating the core theoretical assumptions in this research stream has been significantly limited because the methodological tools scholars typically use for studying multilevel phenomena (e.g., intraclass correlations, within-group standard deviations, etc.) are insufficient to ascertain dynamic patterns of development in group consensus (Kozlowski, Chao, Grand, Braun, & Kuljanin, 2013; Lang et al., 2018). By using CEM, we were able to ascertain whether members' passion became more (or less) similar over time.

Our study advanced multilevel theory of emergence in teams (Chen, Mathieu, & Bliese, 2004; Kozlowski & Chao, 2012; Kozlowski et al., 2013; Kozlowski & Klein, 2000) by theorizing and empirically testing the development of passion convergence in new venture teams. In team research, studies on temporal dynamics adopt either a developmental perspective, which focuses on qualitative changes in teams over time, or an episodic perspective, which focuses on demands and processes that recur in a cyclical fashion (cf. Mathieu et al., 2008). Our study integrated the two perspectives by demonstrating how episodic events in terms of

experiencing team progress facilitated the process of development of teams over time in terms of passion convergence.

Notably, our study highlighted the critical role of experiencing team progress in shaping passion convergence. Consistent with the multilevel theory which states that any form of emergence is brought about by individuals working together and interacting with one another over time (Kozlowski & Klein, 2000), our findings offered suggestive evidence that experiencing team progress is a form of emergence enabler (Ployhart & Moliterno, 2011) that stimulates members to engage and interact with each other (Amabile & Kramer, 2011; Costa et al., 2014; Isen, 1970). Past research asserted that experiencing progress spawns greater confidence (Klein, 1991; Weick, 1984) which motivates team members to continue working together on the venture, thus intensifying opportunities to interact with fellow members (Morgeson & Hofmann, 1999).

We did not find support for the main effect of passion convergence on new venture team performance. While past research found passion intensity separation (a cumulative construct that captures the diversity of passion intensity levels) negatively predicted team performance (de Mol et al., 2020), our finding on the interaction effect suggests that it is critical to verify the process whether passion convergence developed and the end state of passion to which members converged. However, we acknowledge that the entire story may be more complex than our initial theorizing. The disordinal interaction implied that the way to achieve high new venture team performance was not simply by having both passion convergence and a high passion level toward which members converged. Somewhat surprisingly, the interaction plots seem to suggest that low-convergence-low-average passion teams could also successfully generate sales. Our deeper probing as shown in our additional analysis supported one possible explanation that for teams with low average passion and low passion convergence, there could be one (or two) highly passionate members who were carrying the rest of the members. It is also possible that these teams may be experiencing moderate levels of task conflict—past research suggests that task conflicts may be energizing and could engender favorable attitudes and outcomes among those experiencing it (Todorova, Bear, & Weingart, 2014). Although our study did not examine these mechanisms, future studies can consider accounting for pathways through which low-convergence-low-average-passion teams may benefit new venture team performance.

We did not find statistical support for the experience of team setback inhibiting passion convergence, suggesting that when a new venture team encounters setback, passion convergence is not necessarily weakened. However, it is possible that our study context could have precluded us from detecting the effects. The incubation program provided a business mentor for each venture, and these mentors were tasked to coach the new venture teams. Yet, our additional analyses indicated that mentorship did not account for the results. We also considered an alternative measure of setback (quantity) but did not find any significant effects. The lack of a significant relationship is consistent with past research on setbacks in entrepreneurship, which showed that team setback may not necessarily be bad for the new venture team; rather boundary conditions, such as error management orientation, define when experiencing setback could lead to positive or negative venture team outcomes (Funken et al., 2020).

Although our results point to the benefits of developing high passion convergence and high aggregate end-state passion levels among members of a new venture team, we acknowledge that there could also be a dark side to passion. Passion convergence taken to the extreme could intensify group-centrism which tend to prioritize agreement over meaningful dissent and could likely be detrimental to outcomes that require divergent thinking (George & King, 2007). Accordingly, it is important to explore the implications of the different combinations of passion convergence and aggregate passion levels to guard against unfavorable consequences that could emerge from having “too much of a good thing” (Pierce & Aguinis, 2013).

## Limitations and Future Research

Our study is not without limitations. First, we note that beyond the affective component, identity is another prominent facet of passion. Future research could examine the development and convergence of team members' identity centrality alongside their affective development to adopt a more holistic perspective of passion. Prior research that used an individual-level approach suggested that intense positive affect and identity centrality developed over different time horizons, with identity requiring a much longer cycle time to develop (Lex et al., 2020). It is therefore possible that experiencing team progress could also influence convergence in members' identity centrality, but this process would unfold over longer periods than the 3-week interval used in our current study. Nevertheless, such research could provide novel insights into the emergent state of a shared identity among team members and performance implications (Haslam & Reicher, 2006), and subsequently advance our understanding of team entrepreneurial passion (Cardon et al., 2017).

Second, we acknowledge that besides passion, there are other emotions that can be examined, including broader positive emotions (e.g., joy, pride, interest) and even negative emotions (e.g., fear, sadness, anger). We chose passion because passion occupies a prominent role in entrepreneurship and is inherently motivational. However, every emotion bears a distinct function and conveys unique cues that are recognizable from the rest (Sauter, 2010). For instance, happiness is easily recognized from facial cues (Ekman, 2003), calmness is best detected from vocal cues (Sauter & Scott, 2007), and pride is reliably inferred from postural cues (Tracy & Matsumoto, 2008). However, not all positive emotions propel actions, and thus different emotions would reasonably vary in their performance implications (Hu & Kaplan, 2015). Future research can consider including a broad spectrum of modalities and emotions to uncover their differential relationships in team functioning.

Second, because our sample comprised relatively young entrepreneurial teams, our results may not be generalizable to older teams. Gielnik, Zacher, and Wang (2018) unraveled the impact of age in the entrepreneurial process and demonstrated that the role of age is more nuanced than initially assumed. Future research can consider extending our study to older teams, and perhaps consider a combination of old and young members, to illuminate potential boundary conditions. Moreover, because our study is confined to incubator-based new venture teams, our findings may not be generalizable to non-incubator-based new venture teams. A related contextual limitation of our study associated with generalizability

involves the timeframe we used (i.e., 15 weeks). Studies that employ longer time frames (beyond 15 weeks) are needed to extend our study and potentially capture other venture-relevant experiences, including changes in new venture team composition (Chandler, Honig, & Wiklund, 2005), such as member turnover and new members joining, and new venture teams undergoing transitions (Bush, LePine, & Newton, 2018) perhaps from early stage to growth stage. These emotion-laden events could reasonably bring about significant changes in the dynamic process of passion convergence. Employing longer time frames could also accommodate a more intensive longitudinal study by capturing in-the-moment episodes of interactions among members over time (Marks, Mathieu, & Zaccaro, 2001), ideally having at least 30 or more measurement points (Walls & Schafer, 2006) and exploring how momentary interactions transform into event cycles over time (Morgeson & Hofmann, 1999). A notable example is LePine (2005) who examined role adaptation in teams following a disruption to the communication structure by assessing 50 trials postdisruption.

Third, although our research design (multiwave survey with objective outcome) and analytical tool (CEM) are strengths of our study, future research can extend our research by examining dynamic elements impacting convergence as they unfold in situ by adopting more fine-grained tools such as mobile phone-based experience sampling techniques (Uy, Foo, & Aguinis, 2010) and wearable wireless sensors (Yilmaz, Foster, & Hao, 2010) to capture real-time microprocesses and physiological data. Scholars can also use alternative approaches to study emergence such as computational modeling techniques (Kozlowski et al., 2013), social network analysis (Burt, Kilduff, & Tasselli, 2013), and qualitative approaches (Gehman, Treviño, & Garud, 2013).

Finally, we recognize that while our study found support for team progress facilitating passion convergence, team progress is not the only factor that could contribute to enhanced passion convergence. Importantly, other team-relevant experiences such as team-member exchange quality or members' social exchange relationships with their teammates (Seers, 1989) and task conflict (Bradley, Postlethwaite, Klotz, Hamdani, & Brown, 2012) could likely shape passion convergence in new venture teams. Future research should consider exploring other team-relevant experiences to extend our model and deepen our understanding of the development of passion convergence.

### Practical Implications and Conclusions

Our findings highlight the need to pay close attention to the passion convergence of team members. The development process of passion convergence among team members can be situationally altered by managing team-relevant events and experiences. Venture teams could benefit from establishing multiple milestones and progress markers as well as celebrating small wins or attainment of interim milestones to foster passion convergence. Furthermore, converging to a high level of passion is beneficial for generating sales during the initial weeks of business venture implementation. In this stage, generating sales is important for the new ventures to establish legitimacy and enhance survival and success chances in the long run (Zimmerman & Zeitz, 2002). Entrepreneurial teams and investors alike should therefore consider focusing on the development and convergence of passion in new venture firms,

especially given its joint impact with the end-state level of passion on new venture team performance.

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