**DOES TEAM ENTREPRENEURIAL PASSION MATTER FOR RELATIONSHIP CONFLICT AND TEAM PERFORMANCE? ON THE IMPORTANCE OF FIT BETWEEN PASSION FOCUS AND VENTURE DEVELOPMENT STAGE**

**ABSTRACT**

This study advances the literature on entrepreneurial passion, which struggles to explain when and how the experience of passion impacts venture-level performance, by shifting the focus to the team level and investigating the mechanisms and contingencies underlying this relationship. Drawing on identity control theory and the literature on new venture life cycle stages, we theorize and empirically test that team entrepreneurial passion (TEP) affects new venture team performance via relationship conflict, and that this mechanism differs depending on whether the team’s passion focus is aligned with the venture’s development stage. Based on survey data and start-up competition scores from 86 new venture teams, we find that a prerequisite for a team to benefit from the experience of TEP, is that its passion focus at least reflects the entrepreneurial activities that external stakeholders deem appropriate for the specific development stage the venture operates in. Otherwise, these stakeholders will question the activities the team is passionate about, leading to adverse outcomes. Implications for research and practice are discussed.

**Keywords:** entrepreneurial passion, new venture teams, relationship conflict, team performance, new venture life cycle stages

# Executive summary

While it is widely acknowledged that an individual entrepreneur’s passion serves as an important motivational source during the pursuit of entrepreneurship activities (Cardon, Wincent, Singh, & Drnovsek, 2009), the consequences of a joint experience of entrepreneurial passion in new venture teams still remain unclear while many new ventures are actually managed by a *team* of individuals (Chen, Liu, & He, 2015; Klotz, Hmieleski, Bradley, & Busenitz, 2014). In that respect, entrepreneurial passion researchers have recently suggested that new venture teams may benefit from favorable team dynamics and enhanced performance when team members collectively experience passion, also labelled team entrepreneurial passion (TEP) (Cardon, Post, & Forster, 2017). Yet, the only study that has empirically investigated TEP to date suggests that it does not unilaterally lead to improved performance (Santos & Cardon, 2018). In their study, Santos and Cardon (2018) find that TEP for inventing activities for instance improves team performance, while this effect does not hold for TEP for founding activities. They further also report mixed findings for comparisons between teams that are passionate about multiple entrepreneurial roles (polyfocal TEP) and teams that are passionate about a single entrepreneurial role (monofocal TEP).

In this study, we shed light on the way in which TEP relates to new venture team performance, and advance the academic understanding of when TEP for certain entrepreneurial activities is beneficial, and when it is not. We draw on identity control theory and literature about new venture life cycle stages to theorize that TEP leads to increased or decreased relationship conflict, and thus better or worse performance, depending on whether external stakeholders see a fit between the activities a team is passionate about and the development stage of the venture.

We rely on survey data and jury assessments from 86 new venture teams to test our theorizing in two different multi-group mediation models. Our results show that new venture teams in the conception stage, whose challenge is to develop a working prototype and identify market opportunities, engage in less relationship conflict as long as they display TEP for inventing. When a team in this stage is only passionate about founding activities, however, they experience more relationship conflict because external stakeholders question this focus on founding activities for ventures that are this early in the development process. Furthermore, teams that operate in the more advanced commercialization stage, and thus work towards a product launch, experience less relationship conflict when they display both TEP for inventing and for founding compared to when they are only passionate about one of both. Interestingly, while these effects on relationship conflict lead to the expected performance implications in the commercialization stage, this is not the case in the conception stage.

Overall, we contribute to the entrepreneurial passion literature by demonstrating that TEP impacts relationship conflict, a crucial yet underexposed team process that helps explaining how the experience of passion relates to venture-level outcomes. We further suggest that external stakeholders value different entrepreneurial activities in different venture development stages, and that teams need to be at least passionate about these valued activities in order to benefit from the experience of TEP. At the same time, we add to the new venture team literature by showing that relationship conflict and team performance do not only stem from demographic team characteristics, but also from team passion. More practically, our findings help new venture teams understand the importance of fit between their passion focus on the one hand, and goals and stakeholder expectations peculiar to their development stage on the other hand. Teams can best try to nurture positive group affect towards entrepreneurial activities that are deemed appropriate for ventures in their stage, because jointly experienced positive feelings towards these activities enable them to benefit from enhanced team functioning. In addition, we provide useful insights for stakeholders such as grant suppliers, start-up support initiatives, and investors, by showing them that their opinion impacts team dynamics, and that they can foster constructive dynamics and enhance performance in their portfolio companies by stimulating the appropriate kind of team passion for the stage the venture is operating in.

# Introduction

While research on individual entrepreneurs agrees on the importance of their individual passions as motivational constructs for engaging in entrepreneurial activities (Cardon & Kirk, 2015; Cardon et al., 2009; Huyghe, Knockaert, & Obschonka, 2016; Murnieks, Mosakowski, & Cardon, 2014), the field encounters difficulties to identify how entrepreneurial passion impacts venture-level outcomes such as performance (Chen et al., 2015). Scholars have emphasized that, in order to better understand the drivers of new venture performance, we ought to examine motivations, cognitions, and behavior at multiple levels of analysis (Hitt, Beamish, Jackson, & Mathieu, 2007), and have to build insights into how these constructs interplay in a team context (Klotz et al., 2014). After all, many new ventures are managed by a team rather than by a solo entrepreneur (Klotz et al., 2014).

Recently, Cardon et al. (2017) have theorized that new venture teams may differ in the extent to which they experience team entrepreneurial passion (TEP), i.e. “shared intense positive feelings for a collective team identity that is high in identity centrality for the [new venture team]” (p. 286). They have further suggested that TEP could lead to better-quality team processes and performance. However, Santos and Cardon (2018), in the only empirical study investigating TEP to date, find that whereas TEP for inventing has a positive effect on team performance, TEP for founding has a negative (although insignificant) effect. Also, when comparing teams that are passionate about multiple entrepreneurial roles (polyfocal TEP) with teams that are passionate about a single entrepreneurial role (monofocal TEP), their findings are mixed.

In order to better understand how and in which circumstances TEP is beneficial for new venture team performance, this study follows prior work (Baum & Locke, 2004; Baum, Locke, & Smith, 2001; Hmieleski & Baron, 2008) stating that an investigation of complex linkages should consider both the mediating mechanisms and the moderating factors that determine when such mediating effects take place. Specifically, we focus on the role of relationship conflict, i.e. conflict that arises from personal-related disaffection (Amason & Sapienza, 1997), and investigate under which circumstances this relationship conflict plays a positive versus negative mediating role in the link between TEP and new venture team performance. By focusing on the mediating effect of relationship conflict, we follow the suggestion of Cardon et al. (2017) that team entrepreneurial passion may help a team avoid adverse team processes such as dysfunctional conflict. It is surprising that the construct of relationship conflict has been largely overlooked in the passion literature, given that – just like passion – the phenomenon is emotional in nature (Amason & Sapienza, 1997), and given its importance in the literature on entrepreneurial teams (Klotz et al., 2014). In fact, relationship conflict is known to be highly common in the context of new ventures (Chandler, Honig, & Wiklund, 2005; Schjoedt, Monsen, Pearson, Barnett, & Chrisman, 2013) and, in contrast to other forms of conflict (like, for example, task conflict), has consistently been proven to have detrimental effects on new venture team turnover (Vanaelst, Clarysse, Wright, Lockett, Moray, & S'Jegers, 2006) and performance (de Wit, Greer, & Jehn, 2012).

Building on identity control theory, this study proposes that teams experience reduced or increased relationship conflict – and thereby also perform better or worse – depending on the extent to which they experience TEP, and whether they perceive that the focus of their TEP on particular entrepreneurial roles is validated or rejected by the external stakeholders they approach. Incorporating insights from the literature on new venture life cycle stages, we theorize that a team’s TEP is only validated through stakeholder interactions when these stakeholders see a fit between the specific activities the team is passionate about and the development stage of the venture. We hypothesize that in the early conception stage, when the goal is to develop a working prototype and identify market opportunities, TEP for inventing reduces relationship conflict, while TEP for founding increases relationship conflict, leading to increased and decreased team performance, respectively. In the commercialization stage, when the objective is to launch the product or technology, we expect both TEP for inventing and for founding to reduce relationship conflict and improve team performance. As such, we expect monofocal TEP for inventing to be optimal in the conception stage, and polyfocal TEP for inventing and founding in the commercialization stage. We focus on TEP for inventing and for founding, as these are paramount in new ventures (Cardon et al., 2009; Gielnik, Spitzmuller, Schmitt, Klemann, & Frese, 2015).

These hypotheses are tested and partially confirmed using survey data and jury assessments from 86 new venture teams that participated in a start-up competition in Switzerland. Results from a linear multi-group mediation model and a polynomial multi-group mediation analysis with response surface analysis demonstrate that new venture teams in the conception stage engage in less relationship conflict when they experience monofocal TEP for inventing or polyfocal TEP for both inventing and founding, as opposed to when they experience monofocal TEP for founding. Furthermore, teams that have advanced into the commercialization stage experience less relationship conflict when they display polyfocal TEP for both inventing and founding than when they experience monofocal TEP for either inventing or founding. While in the commercialization stage, these effects on relationship conflict have performance implications as expected, this is not the case in the conception stage.

This study answers the call of Chen et al. (2015) and Cardon et al. (2017) to investigate the role of team-level passion for new venture performance in more detail. First and foremost, the study shows that not all types of TEP are equally helpful in each development stage. Instead, TEP is only beneficial when the new venture team is passionate about entrepreneurial activities that fit the venture’s development stage, because only then will their passion focus be confirmed by external stakeholders. Second, this study demonstrates that relationship conflict, a construct that has hitherto largely been ignored in the entrepreneurial passion literature, is core to understanding the relationship between TEP and team performance, especially in the commercialization stage. It thereby also answers the call, raised in the new venture team literature, to directly unravel the cognitions, motivations, and emotions that determine relationship conflict (Klotz et al., 2014). By relying on secondary data such as demographic characteristics of new venture teams, prior work has fallen short of uncovering the actual underlying psychological properties that impact team processes and outcomes (Klotz et al., 2014; Priem, Lyon, & Dess, 1999). Finally, by distinguishing between different venture development stages, our study cultivates a more fine-grained understanding of passion, relationship conflict, and team performance in new venture teams, and stresses the importance of investigating these phenomena from a contingency perspective.

In the next section, we first provide the theoretical background on TEP, and the mechanisms underlying its relationship with relationship conflict and team performance. We then apply these insights to develop hypotheses about how TEP for specific entrepreneurial roles differently influences team performance via relationship conflict depending on the new venture’s development stage.

# Theory and hypotheses

## Team entrepreneurial passion

According to Cardon et al. (2009), an individual entrepreneur experiences entrepreneurial passion when (s)he has intense positive feelings from being engaged in activities related to meaningful entrepreneurial roles, such as inventing a product or service, founding a company, and/or growing and expanding the business. However, as new ventures are often managed by a team rather than a solo entrepreneur (Klotz et al., 2014), scholars have recently raised the importance of entrepreneurial passion at the team level (Cardon et al., 2017). In a new venture team, defined as “the group of individuals that is chiefly responsible for the strategic decision making and ongoing operations of a new venture” (Klotz et al., 2014, p. 227), we talk about TEP when team members acknowledge that the team *as a whole* has a passion for certain entrepreneurial activities (Cardon et al., 2017). A team thus experiences TEP for a specific entrepreneurial role if, irrespective of the individual team members’ entrepreneurial passions, this role (1) is meaningful to the team and is internalized as a collective team identity and (2) gives rise to collective positive feelings.

On the one hand, Cardon et al. (2017) argue that TEP can only emerge if a team has a collective central role identity, meaning that the team as an entity shares this identity. Prior literature states that team identity is a group-level phenomenon that enables the team members to think, feel, and act as if they were the team as a whole (Gundlach, Zivnuska, & Stoner, 2006). Ashforth, Rogers, and Corley (2011) similarly argue that a collective identity reflects a situation where the “*who we are as a collective* exists separately from any individual in the collective” (p. 1146, italics added). They describe several instances through which this collective identity can be manifested, such as values, goals, routines, information flows, and activities (Ashforth et al., 2011). Given the entrepreneurial context of this study, we focus on activities related to entrepreneurial roles (Cardon et al., 2009).

On the other hand, for TEP to arise, the team must experience collective positive feelings – also referred to as positive group affect (Walter & Bruch, 2008) – towards the previously discussed team identity (Cardon et al., 2017). As mentioned by Knight and Eisenkraft (2015, p. 1215), “group affect is the collective-level analogue to individual state affect and represents the jointly experienced, shared feelings that group members hold in common at a given point in time”. Prior research states that the transfer of individual emotions is a prerequisite for group affect to emerge (Barsade & Knight, 2015; George, 1990). Individual emotions are likely to be transferred to others in the group when emotional expressions, whether deliberately conveyed or not, concern attributes that other group members perceive as group-defining (Parkinson, Fischer, & Manstead, 2005). In the context of this study, team members are therefore likely to adopt emotions of others when the expressed emotions are related to an entrepreneurial role that is considered relevant for the team (Cardon et al., 2017).

Overall, TEP can thus be seen as a multiplicative construct reflecting the existence of collective positive feelings towards entrepreneurial activities that are central to the team’s identity. And just as an individual can be passionate about one or multiple types of entrepreneurial activities (Cardon et al., 2009), also a team can display collective positive feelings for one or multiple meaningful entrepreneurial roles. In particular, a team is said to experience monofocal TEP if it experiences collective positive feelings for one primary entrepreneurial role, whereas polyfocal TEP reflects a situation in which a team is passionate about different entrepreneurial roles simultaneously (Cardon et al., 2017).

In line with prior research, we let our research question determine the choice of entrepreneurial roles incorporated in our study (e.g. Collewaert, Anseel, Crommelinck, De Beuckelaer, & Vermeire, 2016; Gielnik et al., 2015; Mueller, Wolfe, & Syed, 2017). Because of our specific interest in emerging new venture teams, we follow Gielnik et al. (2015) and investigate entrepreneurial roles related to inventing and founding activities. As such, we also remain consistent with recent findings of Santos and Cardon (2018) that emerging new venture teams are not yet engaged in activities related to growing and expanding the company. TEP for developing is therefore not relevant yet, and expressions related to TEP for developing can merely be seen as aspirations rather than reflections of actual collective positive feelings from being engaged in growth activities (Farmer, Yao, & Kung–Mcintyre, 2011). Hence, the focus of our study is on inventing and founding activities. Whereas an inventor role involves activities related to new product development and the search for new and disruptive opportunities in the market, a founder role is characterized by activities related to the establishment of the venture and preparing the business for commercializing and exploiting opportunities. In this context of emerging new venture teams, we are interested in whether a team experiences collective positive feelings related to entrepreneurial activities, and if so, whether the team has a passion for inventing activities (monofocal TEP for inventing), for founding activities (monofocal TEP for founding), or for both (polyfocal TEP).

## Team entrepreneurial passion, relationship conflict, and team performance

Cardon et al. (2017) have suggested that team entrepreneurial passion can lead to better-quality team processes, and thereby to better team performance. But while Santos and Cardon (2018) - in the only study that has so far empirically investigated TEP - find that TEP for inventing has a positive effect on team performance, they observe a negative (although insignificant) effect of TEP for founding. They further find that the positive effect of (monofocal) TEP for inventing on performance is reduced when the team also displays passion for an additional role (i.e., polyfocal TEP for inventing and founding or polyfocal TEP for inventing and developing), whereas the insignificant effect of (monofocal) TEP for founding on performance becomes significantly negative when combined with TEP for other roles (i.e., polyfocal TEP for inventing and founding or polyfocal TEP for founding and developing). In order to better understand these puzzling findings, and comprehend why and under which circumstances TEP is beneficial, we theorize that the link between TEP and team performance is mediated by relationship conflict, and that this mechanism differs according to the venture’s development stage, as a result of different stakeholder interactions. In the following sections, we first argue that relationship conflict in a team will reduce team performance. We then explain that TEP will impact relationship conflict either negatively or positively, depending on whether the specific entrepreneurial activities the team is passionate about fit the venture’s development stage.

### Relationship conflict and team performance

Based on the new venture team literature, it can be argued that relationship conflict in a team reduces team performance. Relationship conflict is common in new venture teams (Steffens, Terjesen, & Davidsson, 2012) and has been proven to have troublesome consequences (Klotz et al., 2014). Vanaelst et al. (2006), for instance, have observed that interpersonal affective conflict is the main reason for team members to leave the venture. Moreover, relationship conflict has negative effects on the profit, sales, and growth of new ventures (Ensley & Pearce, 2001). Also, in the broader top management team literature, relationship conflict has been shown to be detrimental to a range of outcomes. It for instance reduces collaborative problem solving and team member commitment, and increases turnover intentions (de Wit et al., 2012). Furthermore, it harms team member satisfaction, team creativity and performance (De Dreu & Weingart, 2003; de Wit et al., 2012). In sum, it is generally accepted that relationship conflict has a negative impact on new venture team performance (Ensley & Pearce, 2001; Klotz et al., 2014).

### TEP and relationship conflict

Relationship conflict is inherently affective in nature (Jehn & Mannix, 2001). It includes emotional disputes, tensions and frictions, and involves feelings such as frustration, irritation, and annoyance (Amason & Sapienza, 1997; Jehn & Mannix, 2001). It arises when individuals perceive themselves as different from and incompatible with other team members, which goes hand in hand with feelings of dislike and a lack of trust in the team (Amason & Sapienza, 1997; Li & Hambrick, 2005). We theorize that teams will to a different extent experience relationship conflict depending on whether team members jointly experience passion, and whether the focus of this TEP is aligned with the expectations of the external stakeholders they approach. We more specifically expect that TEP will differently relate to relationship conflict as a result of self-verification processes that occur when a team engages in social interactions with external stakeholders.

Based on identity control theory, prior research states that individuals or organizations attempt to validate their identity by looking for interactions with external actors that are expected to show a similar focus[[1]](#footnote-1) (Ashforth & Mael, 1996; Stryker & Burke, 2000). In other words, when a team for instance experiences TEP for inventing, and thus identifies with the inventor entrepreneurial role, it will seek relationships with stakeholders that are also focused on inventing, such as research institutes or grant administrators that fund technology development. A team that displays TEP for founding, however, will look for interactions with stakeholders that focus on launching and commercializing the product, such as customers, angel investors or venture capitalists.

This interaction triggers a process during which the team draws on input from these external parties to verify its role identity (Gioia, Schultz, & Corley, 2000; Stryker & Burke, 2000). As described in prior literature, “a role is a set of expectations prescribing behavior that is considered appropriate by others” (Hogg, Terry, & White, 1995, p. 257), and a role identity reflects the internalized meanings associated with that role (Burke & Reitzes, 1981). Stakeholder interactions serve as a basis for the team to assess whether its role identity - and thus its passion focus - is aligned with the reflected appraisals (i.e. the team’s perception of what external parties consider appropriate behavior) (Gioia et al., 2000; Stryker & Burke, 2000). The outcome of this verification process can be twofold. The comparison can yield a sense of validation when the team’s passion focus corresponds to the perceived external expectations, or a sense of rejection when the team perceives a mismatch between its passion focus and how it perceives the stakeholders’ expectations (Corley & Gioia, 2004). We on the one hand expect that a team that experiences TEP towards a certain role will engage less in relationship conflict when it feels that the role it is passionate about is approved by its external stakeholders. On the other hand, perceived divergence between the focus of the team’s passion and the perceived external expectations may prevent the team from leveraging their TEP, and increase relationship conflict instead. We explain these mechanisms in more detail below.

***Stakeholders’ validation.*** Prior research shows that when the expectations of significant others are aligned with an entity’s identity, the entity feels more assured about its identity (Corley & Gioia, 2004). This secure sense of self enables favorable behavioral outcomes, such as more cooperative behavior and enhanced relationship quality (Ashforth & Schinoff, 2016; Swann, Johnson, & Bosson, 2009). We expect that in this case, TEP will reduce relationship conflict, because the team identity as well as the collective positive feelings related to this team identity increase perceived similarity and foster trust between the members of the new venture team (Amason & Sapienza, 1997; Li & Hambrick, 2005).

First, from an identity point of view, TEP serves as a common denominator. The team identity experienced towards a certain entrepreneurial role comes forth from a situation in which team members similarly realize that this role is meaningful and important to the team as a whole (Cardon et al., 2017). This common viewpoint leads them to perceive themselves as similar to each other, and as a result emphasize the common attributes in the team (Rink & Ellemers, 2007; Simon, Pantaleo, & Mummendey, 1995). Team members will for instance internalize the team’s goals and communicate more openly to reach these goals (Han & Harms, 2010), which fosters trust and therefore reduces relationship conflict in the team (Li & Hambrick, 2005; McKnight, Cummings, & Chervany, 1998). Prior research, mainly conducted in operating firms, has found that team members tend to be more loyal, display more cooperative behavior, and avoid destructive conflict when they experience a team identity (Foo, Sin, & Yiong, 2006; Gundlach et al., 2006; Hinds & Mortensen, 2005).

Second, the literature on group affect argues that there will be “greater feelings of familiarity, attraction and trust” when a team experiences collective positive feelings (Barsade, Ward, Turner, & Sonnenfeld, 2000, p. 807). Walter and Bruch (2008) for instance argue that positive group affect reinforces and validates individuals’ attitudes and beliefs, giving rise to feelings of attraction and liking, resulting in constructive interpersonal relations. Barsade et al. (2000, p. 805) describe the mechanism as follows: “I *feel* the same way you do (i.e. upbeat and energetic), which I find reinforcing, which makes me feel good, which then makes me attracted to you, which is then reciprocated by you” (italics in original). Consequently, team members feel more comfortable together, and the team benefits from mutual trust, social integration, and reduced relationship conflict (Barsade, 2002; Walter & Bruch, 2008; Williams, 2001).

***Stakeholders’ rejection.*** On the other hand, when the team notices that it is passionate about a role that is questioned by external actors, the doubt and ambiguity following from these interactions are expected to prevent the team from leveraging the collective positive feelings they experience towards that role, but increase relationship conflict instead. Prior research shows that when a team is confronted with ambiguity following from external viewpoints that diverge from its own, team members are likely to feel a sense of frustration and anxiety (Fisher & Gitelson, 1983; Pearce & Ensley, 2004). This in turn leads to team members paying more attention to other members’ deficiencies (Peterson & Behfar, 2003; Staw, Sandelands, & Dutton, 1981). As a result, team members have less faith in each other, and the emerged distrust induces relationship conflict (Amason & Sapienza, 1997; Li & Hambrick, 2005). Similarly, Gioia, Price, Hamilton, and Thomas (2010) describe that the rejection of an organization’s identity leads to internal tensions. We therefore expect that TEP towards a certain entrepreneurial role will increase the level of relationship conflict when external stakeholders make clear that the activities the team is passionate about are not aligned with their expectations. In the next section, we explain that new ventures go through different development stages, and describe why it is important for our study to take these stages into account.

## The role of TEP in different new venture development stages

New ventures typically progress through different development stages, each characterized by distinct challenges that need to be overcome to proceed into the next one (Fisher, Kotha, & Lahiri, 2016; Vohora, Wright, & Lockett, 2004). In order to tackle these challenges and achieve the goals of a given development stage, new ventures need to adapt their activities accordingly (Boeker & Wiltbank, 2005; Vohora et al., 2004). Kazanjian (1988), for example, identifies four development stages, each characterized by different goals and activities: (1) conception and development, (2) commercialization, (3) growth, and (4) stability. Because of our specific interest in emerging new venture teams, we limit our discussion to the first two stages, which can be seen as the early stages of venturing (Koberg, Uhlenbruck, & Sarason, 1996). In the following sections, we describe for both the conception and the commercialization stage what the challenges and corresponding activities are, how these impact interactions with external stakeholders, and how all this influences the links between TEP for specific roles, relationship conflict, and team performance.

### Conception stage

During stage one of Kazanjian’s framework (1988), which we re-label the conception stage (Fisher et al., 2016), the goal is to identify a good product-market fit and to develop a working prototype. In order to achieve this goal, the venture primarily needs to engage in activities related to inventing the technology, developing the product or service, and on testing the potential strength of the business idea. Stakeholders that are generally interested in ventures in the conception stage, and thus expect to see these very early stage activities, are friends, family, grant suppliers and/or research institutes. They mainly pay attention to technological advancements and framing opportunities (Fisher et al., 2016; Pahnke, Katila, & Eisenhardt, 2015; Vohora et al., 2004), implying that their expectations are particularly in line with the inventor role, which according to Cardon et al. (2009) involves activities such as new product development and the exploration of new opportunities.

Since teams look for interactions with external audiences whom they expect to confirm their passion focus, teams that display TEP for inventing will approach the above-mentioned stakeholders, as they have a similar affinity with inventing activities. These stakeholders will indeed validate the team’s focus on inventing activities, because they expect ventures in the conception stage to engage in these kinds of activities. As a result, teams that experience TEP for inventing in this early conception stage will perceive a social validation of their passion focus, enabling them to leverage their TEP and thus reduce the level of relationship conflict (as explained in section 2.2.2). As an example, during a round of exploratory interviews, a co-founder of a venture in the conception stage said:

*“We want to focus on creating products. […] Now we’re developing a prototype […] We’re doing one thing at the time basically, and we’re testing these ideas, and if we feel it doesn’t work, then we stop it. [...] We get along super well. I think this common mindset really helps us to collaborate. [...] We developed the idea, which we submitted for some entrepreneurship thing at [the university], and it actually got some funding. And then we took this idea to [a start-up course at the university] to convince other people of our idea. And so it became the project as it is today.”*

This reflection clarifies that the team experienced better quality team processes thanks to the shared focus on inventing activities, and shows that the university validated this passion, as it provided financial support. The interviewee talks about the university’s approval shortly after discussing how well the team gets along, suggesting that the external stakeholder support provided the necessary acknowledgment that enabled the team to leverage its TEP for inventing, and as such benefit from favorable team dynamics.

In sum, we expect that teams displaying TEP for inventing activities in the conception stage will perceive external validation from stakeholders who positively assess the fit between the team’s focus on these specific activities and its development stage. This external approval will help the team to limit its engagement in relationship conflict. Given that prior research has already established a negative link between relationship conflict and team performance (as explained in section 2.2.1), we hypothesize that:

*Hypothesis 1a: In the conception stage, TEP for inventing has an indirect positive effect on new venture team performance through reduced relationship conflict.*

On the other hand, when a team experiences TEP for founding in the conception stage, it will look for stakeholders that focus on launching and commercializing the product, such as angel investors and venture capitalists (Fisher et al., 2016; Pahnke et al., 2015). These stakeholders, however, consider founding activities only relevant once the key objectives from the conception stage are accomplished, and the team has progressed into the commercialization stage (Fisher et al., 2016). They will thus perceive a mismatch between the team’s passion focus and the venture’s development stage, and will make this clear to the team. As a result, the team will perceive a rejection of its TEP, and the subsequent feelings of frustration and anxiety will lead to increased relationship conflict. This also became clear during an exploratory interview, when a co-founder of a blockchain start-up reflected on the difficulties his team had experienced when trying to raise funds for an initial coin offering (ICO):

*“We always got the feedback of investors “you’re a bit too early”. We heard that over and over again, and to me that was kind of a message to step back a bit and work on the prototype again to be able to have something to show. [...] We had a lot of friction because of that. [...] We always wanted to push further and kind of start, but what I’ve learned [...] is really that you should take enough time to find your place and be really sure that this is the right way to go.”*

In other words, the mismatch between the stakeholder expectations and the team’s passion focus is expected to increase relationship conflict amongst team members, and therefore also to hamper team performance. As a result, we hypothesize:

*Hypothesis 1b: In the conception stage, TEP for founding has an indirect negative effect on new venture team performance through increased relationship conflict.*

The prior hypotheses suggest that a team operating in the conception stage benefits from TEP for inventing, but experiences negative consequences from TEP for founding. As such, we expect to find different results for teams who experience monofocal TEP for inventing, monofocal TEP for founding, or polyfocal TEP for both roles. More specifically, we hypothesize that:

*Hypothesis 1c: In the conception stage, monofocal TEP for inventing is better for reducing relationship conflict and enhancing team performance than polyfocal TEP for inventing and founding, which in turn is better than monofocal TEP for founding.*

### Commercialization stage

Once a team has successfully reached the objectives of the conception stage, it progresses into the commercialization stage (Kazanjian, 1988; Vohora et al., 2004). During this second stage, the goal is to launch the product or technology (Kazanjian & Drazin, 1990). To realize this objective, the venture needs to focus on improving the product and on learning how to commercialize it. Challenges in this stage are, for instance, starting the production of marketable products and intensifying marketing efforts (Kazanjian, 1988; Kazanjian & Drazin, 1990). There are several types of stakeholders that typically show an interest in ventures that operate in this commercialization stage, such as early-stage investors and lead customers (Jawahar & McLaughlin, 2001). Each of these assess ventures through their own evaluative lens (Zhao, Fisher, Lounsbury, & Miller, 2017), and together they display a variety of expectations (Carter & Deephouse, 1999; Fisher, Kuratko, Bloodgood, & Hornsby, 2017).

For instance, angel investors and venture capitalists emphasize market positioning and the potential for future above-average financial returns (Fisher et al., 2016). The main objective of these investors for ventures in this stage is to start exploiting opportunities for economic gain, and they will oftentimes even take an advisory role to help portfolio ventures succeed in that aim (Fisher et al., 2016; Pahnke et al., 2015). In other words, these stakeholders expect new venture teams to focus on founding activities, which deal with preparing the venture for commercializing and exploiting opportunities (Cardon et al., 2009). Therefore, when a team in the commercialization stage displays TEP for founding, it will typically approach these early-stage investors, who in turn will confirm the fit between the team’s focus on inventing activities and its development stage, enabling the team to leverage the TEP experienced, and thus display lower relationship conflict and perform better.

At the same time, lead customer acceptance is key to generating a continuing cash flow, and thus a cornerstone for progressing through the commercialization stage and building legitimacy towards a larger target market as well as towards resource providers (Jawahar & McLaughlin, 2001; Shepherd & Zacharakis, 2003). Lead customers predominantly pay attention to the product features, and typically provide feedback on the technical specifications as well as on their willingness to buy the product (Carter & Deephouse, 1999; Coviello & Joseph, 2012). They thus expect a new venture team to engage in inventing activities, as to improve and fine-tune the venture’s offer (Cardon et al., 2009). A team with TEP for inventing, operating in the commercialization stage, will therefore sense a validation of its passion focus when it interacts with lead customers. This TEP is therefore expected to reduce relationship conflict, allowing the team to enhance its performance.

In sum, in the commercialization stage, both TEP for inventing and TEP for founding will lead to stakeholder interactions that result in the social validation of a team’s passion focus, because stakeholders see a fit between the venture’s development stage and inventing as well as founding activities. We therefore expect that both TEP for inventing and TEP for founding will reduce relationship conflict and thus enhance performance, and hypothesize that:

*Hypothesis 2a: In the commercialization stage, TEP for inventing has an indirect positive effect on new venture team performance through reduced relationship conflict.*

*Hypothesis 2b: In the commercialization stage, TEP for founding has an indirect positive effect on new venture team performance through reduced relationship conflict.*

We further expect that teams who display TEP for inventing and founding simultaneously, and thus experience polyfocal TEP, will benefit more from their jointly experienced passion compared to teams that display monofocal TEP for one of these roles, as teams with polyfocal TEP are aligned with a broader set of stakeholder expectations, and perceive social validation for multiple dimensions of their TEP. Prior research argues that an entity will see its multiple, co-activated role identities as compatible when the different identities are all acknowledged by significant others (Ramarajan, Rothbard, & Wilk, 2017; Rothbard & Ramarajan, 2009). This perceived compatibility between different identities has been found to strengthen the outcomes of the identities even more, and thus to elicit positive emotions and improve interpersonal relations toward one another (Greenhaus & Powell, 2006; Ramarajan, 2009). We therefore hypothesize that:

*Hypothesis 2c: In the commercialization stage, polyfocal TEP for inventing and founding is better for reducing relationship conflict and enhancing team performance than monofocal TEP for either inventing or founding.*

# Method

## Context

In order to gain a better understanding of the phenomenon under study, we obtained diverse and rich data from new venture teams that participated in an annual start-up competition in Switzerland between 2017 and 2018. The contest was open to young start-ups from all sorts of industries, and was publicly known for its focus on technology. Entrepreneurs and teams of entrepreneurs were allowed to participate if at least one team member was a Swiss resident.

All start-ups that registered for the competition could benefit from a five-month program of support events and coaching. Participants could choose between two competition tracks, “business ideas” or “business plans”, according to the development stage of their venture. Start-ups were advised to enter the business idea track if they had an initial business idea and felt the need for a professional reality check. In general, these start-ups were in the process of developing and fine-tuning a prototype. For them, the focus of the program was on specifying the customer benefit and working towards a product-market fit. The business plan track, on the other hand, targeted start-ups that already had a clearer understanding of the market. In this track, the focal point of the program was on establishing an actionable roadmap and preparing the start-ups for communicating with strategic partners. Two months after the program had started, participants of the business idea track had to submit a two to six-page summary of the idea. Participants of the business plan track were expected to hand in a business plan of 20 to 30 pages. The start-ups decided themselves in which competition track they participated, and could alter their competition track until the submission deadline. The contest organizers, however, guided start-ups towards the most suitable competition track in several ways. First, the two competition tracks offered different incentives, tailored to the development stage of the participating start-ups. In the business idea track, the contest only offered prizes to the start-ups that were ranked in the top five of that track. The five winning start-ups received cash prizes up to 15,000 CHF[[2]](#footnote-2). Furthermore, the same start-ups gained a “consulting package” from a renowned consultancy firm, and they battled for the contest’s audience award, which was broadcasted by the national television and radio company. In the business plan track, the first 25 start-ups were invited to pitch for a large pool of different types of investors. Furthermore, the five winning start-ups gained cash prizes up to 60,000 CHF, and received media attention from the written press in Switzerland. Furthermore, as another measure to ensure that start-ups participated in the right track, the contest organizers browsed through all submitted documents upon the registration deadline and redirected start-ups to the other track if there was a mismatch between the start-up’s development stage and the chosen track. The contest organizers’ rigorous approach assures that the competition track truly reflects the development stage of the ventures.

Over the two years, the competition had a total of 483 participating start-ups, out of which 396 submitted a document by the time of the deadline and were thus considered during the evaluation process of the competition. These 396 start-ups (51% in the business idea track, 49% in the business plan track) were the focus of our data collection.

## Data

The data for this study stem from different sources. First, we rely on competition scores determined by jury assessments as an indication of team performance. In our section about quantitative measures, we explain how we used these assessments to calculate the dependent variable. Furthermore, we rely on survey data obtained from the new venture team members. From the total number of 396 start-ups that submitted a document in the competition, 442 individual entrepreneurs from 254 start-ups provided us with their insights. After eliminating 80 solo entrepreneurs, and 88 teams for which not all members had responded, our final sample consists of 86 teams, representing data of 219 individuals in total. On average, respondents filled out the survey 24 days before the jury assessments were made available on the online platform of the contest.

In order to assure that the data collection was not impacted by non-response bias or sample selection bias, we compared our final sample with (a) other participants that enrolled for the contest, and (b) government data on a broader representative sample of 1,593 hi-tech Swiss start-ups (Grichnik, Vogel, & Burkhard, 2016). None of the analyses revealed significant differences, indicating that our final sample is representative for the broader population of early-stage hi-tech start-ups in Switzerland[[3]](#footnote-3).

## Quantitative measures

### Team performance

For each team, performance is measured by how well it scored in the start-up competition. The contest’s jury consisted of carefully selected individuals, ranging from experienced entrepreneurs, over senior consultants, seed and early stage investors, to authorities in the start-up ecosystem. Over the two years, a total of 211 judges were involved, out of which 153 judges evaluated start-ups from our final sample of 86 teams. Judges were instructed to evaluate submitted documents using confidential, standardized templates on the online platform of the contest. They were only assigned to documents within one track (business ideas or business plans). Furthermore, the contest organizers used an algorithm to allocate judges to start-ups, which took into account the start-ups’ industry sector, the judges’ expertise and potential conflict of interest. Judges rated different aspects of a submitted document with “not covered”, “very poor”, “poor”, “fair”, “good”, or “very good”, and supplemented the chosen option with written feedback. The rating of each evaluation criterion was automatically translated into a score ranging from 0 (not covered) to 5 (very good), after which the scores of all criteria were summed and scaled to a score with a minimum of 0 and a maximum of 100. In addition, if a judge considered a submission a potential winner, (s)he could check a box, resulting in 20 extra points. The maximum score that could be obtained was therefore 120. For each team, their submitted document was evaluated by two to four jurors, depending on which round the team reached in the contest. In a first round, each submission was separately evaluated by two judges. Afterwards, the average score of these evaluations was used to establish a ranking of all submissions. In both the business idea and business plan track, start-ups passed onto the second round if their submission was ranked amongst the top 50% of their track. In the second round, the submission was again evaluated by two other judges, who had not been judges in round one. In the end, the final competition score was determined by averaging all evaluations a certain start-up had received. This calculation is justified, as the intraclass correlation coefficient ICC(K) was 0.70, indicating that the mean rating assigned by a group of judges was reliable (LeBreton & Senter, 2008). In our sample, the final competition score ranges between 15.0 and 111.5, with an average score of 71.14 (Shapiro-Wilk normality test=0.983, p=0.331; kurtosis=0.383, skewness=-0.114). For the remainder of this paper, this final competition score reflects our conceptualization of team performance. Although judges evaluated the start-ups based on a written document rather than on observations directly related to the new venture team, our operationalization is deemed appropriate, as prior research states that a company’s strategic choices and performance levels are reflections of its top management team (Hambrick, 2007; Hambrick & Mason, 1984). Scholars argue this is even more so for new venture teams, because “the influence of their inputs, processes, and emergent states on firm performance is likely clearer and more direct than for executive teams leading large, established firms” (Klotz et al., 2014, p. 245). Furthermore, given that we focus on emerging new ventures, performance measures such as sales growth or return on assets are not relevant in the context of this study (Jin, Madison, Kraiczy, Kellermanns, Crook, & Xi, 2017). This externally determined competition score therefore provides a good alternative.

### Relationship conflict

Relationship conflict was measured using the widely accepted items of Jehn and Mannix (2001). Respondents indicated the level of relationship conflict in the team by responding to three survey items (Cronbach’s alpha = 0.867), such as “How much relationship tension is there in the team?” (Jehn & Mannix, 2001). Answers were measured on a 7-point Likert scale, ranging from “none” to “a lot” (Jehn, Northcraft, & Neale, 1999). The individual’s perception of relationship conflict in the team was obtained by averaging the answers of the three items. Afterwards, we averaged the individual results to obtain team-level relationship conflict. This aggregation is justified, as the within-group agreement measure rwg(J) for relationship conflict is 0.83, and thus surpasses the minimum acceptable value of 0.7 (James, Demaree, & Wolf, 1984).

### Team entrepreneurial passion

To measure TEP, we followed Santos and Cardon (2018), who shifted the reference point of the entrepreneurial passion scale of Cardon, Gregoire, Stevens, and Patel (2013) from the individual to the team level, meaning that respondents were asked to evaluate the statements baring the team in mind rather than themselves as an individual (see Table A.1 in Appendix A) (Chan, 1998; Santos & Cardon, 2018). Following Santos and Cardon (2018), respondents were inquired about their team identity (TI) related to each entrepreneurial role (inventor, founder), as well as the team’s collective positive feelings (CPF) experienced related to each role. Parallel to Santos and Cardon (2018), and to the original scale of Cardon et al. (2013), team identity was measured using one item per entrepreneurial role. For instance, to indicate the importance of inventor activities to the team, all team members answered the item “inventing new solutions to problems is an important part of who we are as a team” on a 7-point Likert scale, ranging from “strongly disagree” to “strongly agree” (Cardon et al., 2013; Cardon et al., 2017). Furthermore, in line with Santos and Cardon (2018), the extent to which the team experienced collective positive feelings related to inventor activities was measured through four items (Cronbach’s alpha = 0.863), and collective positive feelings related to founder activities were measured using three items (Cronbach’s alpha = 0.906). The individual’s perception of the team’s collective positive feelings towards an entrepreneurial role was calculated by averaging the corresponding collective positive feeling items.

To analyze TEP at the team level, team member responses of each subscale were averaged to obtain the team-level score. Here as well, the aggregation is justified, as the within-group agreement measure rwg(J) scored higher than 0.7 for each subscale (James et al., 1984). The scores were as follows: rwg(J)‑TI\_inv = 0.85 for the centrality of the inventor role in the team identity; rwg(J)-CPF\_inv = 0.91 for the collective positive feelings towards the inventor role; rwg(J)-TI\_fnd = 0.75 for the centrality of the founder role in the team identity; and rwg(J)-CPF\_fnd = 0.91 for the collective positive feelings towards the founder role. Given that TEP is conceptualized as an interaction between team identity and collective positive feelings, we multiplied both team-level constructs to obtain the final TEP score for each entrepreneurial role (see also Cardon & Kirk, 2015, and Drnovsek et al., 2016 for a likewise operationalization at the individual level). This multiplication resulted in the variables TEP for inventing and TEP for founding.

### Venture stage

We used the competition track to measure the stage of the venture, with the business idea track representing the conception stage and the business plan track reflecting the commercialization stage. The variable venture stage received the value 0 if the venture participated in the business idea track, and the value 1 if the venture participated in the business plan track. 45 out of 86 teams participated in the business idea track; the other 41 joined the business plan track. We consider this a better measure for venture stage than venture age for two different reasons. First, start-ups involved in the competition are active in different industries. As the lead-time to market differs between industries (e.g. it typically takes much longer to take a pharmaceutical drug to the market than to launch a software application), a venture’s age is likely to reflect a different development stage depending on industry. Second, this study focuses on nascent ventures, including ventures that have not officially incorporated yet, making it impossible to include a measure of venture age based on incorporation date. We decided to include nascent ventures that are not incorporated yet, because of our specific interest in early-stage new venture teams. Overall, in line with Klotz et al. (2014), we avoid setting boundary conditions that are context-specific (e.g. industries that are characterized by different complexity and technological intensity).

### Control variables

In the regression equation determining team performance, we controlled for *industry sector*. Similar as in previous research, we took into account that the competitiveness and turbulence of an industry influence the performance of new ventures (e.g. Beckman, Burton, & O'Reilly, 2007; Brannon, Wiklund, & Haynie, 2013). In order to limit the number of variables in our model, we clustered teams in our sample into three industries, and operationalized the variable industry sector as two dummy variables: (1) healthcare and life sciences (23.3%), and (2) software, hardware and ICT (39.5%), scoring the value of 1 when the team operated in the respective industry sector, and 0 otherwise. The baseline category contained all other industries (37.2%) (commercial and financial services; consumer goods; industrial sector, utilities and transportation).

Upon predicting relationship conflict, we controlled for team diversity and team size in our analyses, as prior research shows that these can lead to relationship conflict (e.g. Amason & Sapienza, 1997; Choi & Sy, 2010; Horwitz & Horwitz, 2007; Jehn et al., 1999; Mooney, Holahan, & Amason, 2007; Pelled, Eisenhardt, & Xin, 1999). First, we incorporated a variable measuring the *functional diversity* in the team, consisting of four dimensions: diversity in degree level, degree area, years of working experience and area of working experience. Individual survey responses were combined to obtain the team-level diversity score for each of the dimensions. In accordance to the suggestions of Harrison and Klein (2007), we used the most appropriate operationalization for each diversity measure. Variety in degree area and variety in area of working experience were measured using the Blau’s index, calculated as 1 – Σpi2, with p the proportion of team members in the ith category (Blau, 1977). Disparity in degree level was operationalized through the coefficient of variation. Diversity in years of working experience was conceptualized as a separation measure, reflected by the standard deviation (we refer to Harrison and Klein (2007) for a detailed explanation). Following Hmieleski and Ensley (2007), we combined the four measures to create an overall index of functional diversity. In order to obtain this final score, we averaged the four measures after having standardized them. Second, we also included a variable representing *demographic diversity* in a team. In order to obtain this variable, we combined gender (Blau’s index) and age diversity (standard deviation) (Chowdhury, 2005; Hmieleski & Ensley, 2007; Pelled et al., 1999), by averaging the standardized scores of both measures. Third, we controlled for *team size*, as prior research reports an augmenting effect on relationship conflict (Amason & Sapienza, 1997; de Jong, Song, & Song, 2013; Mooney et al., 2007). Finally, we took into account whether a team participated in the competition in 2017 or 2018, and labeled this variable *cohort*.

# Results

In this section, we first discuss the appropriateness of our measurement model. We subsequently explain our analytical approach, consisting of a linear multi-group mediation model, and a polynomial multi-group mediation model with response surface analysis. Afterwards, we report the findings per development stage, and conclude the results section with several additional tests and robustness checks.

## Measurement model

Table 1 presents the descriptive statistics and correlations of the variables included in further analyses. Given that our data contain observations of individual entrepreneurs within teams, we first examined the intraclass correlation coefficient (ICC) of each survey item to test whether the clustered nature of the data (entrepreneurs in teams) required us to apply multilevel techniques (Preacher, Zyphur, & Zhang, 2010). ICCs ranged from 4.43% to 44.73%, meaning that a considerable proportion of the variance in the items is caused by differences across teams. Given that the ICC value of 11 out of 12 variables exceeded the threshold of 5%, we decided to test the discriminant validity of the multi-item constructs by performing a confirmatory factor analysis with cluster-robust standard errors (Preacher et al., 2010). That way, both the individual-level and team-level variances are taken into account (McNeish, Stapleton, & Silverman, 2017). Similar as in prior empirical research on entrepreneurial passion, the items related to identity centrality were not included in the analysis (Cardon & Kirk, 2015). As emphasized by Hair, Black, Babin, and Anderson (2013), good practice dictates a minimum of three items per factor. Hence, we conducted a cluster-robust CFA with the items reflecting collective positive feelings towards inventor activities (factor 1), collective positive feelings for founder activities (factor 2) and relationship conflict (factor 3). The three-factor model resulting from the CFA, displayed in Table 2, provided highly significant factor loadings (p<0.001), and showed an adequate fit to the data (χ2(31)=41.092; p=0.106; CFI=0.987; TLI=0.981; RMSEA=0.039; SRMR=0.034) (Hair et al., 2013). This three-factor model fitted the data significantly better than did all possible two-factor models (∆χ2(2)≥42.7; p<0.001) and the one-factor model (∆χ2(3)=125.0; p<0.001), supporting the discriminant validity of the theoretical constructs.

– [INSERT TABLE 1 AND 2 ABOUT HERE] –

## Hypothesis testing

### Analytical approach

In order to test our hypotheses, we used the lavaan package in R (Rosseel, 2012) to specify two different structural equation models with parceled team-level variables (Yang, Nay, & Hoyle, 2010). Hypotheses 1a, 1b, 2a, and 2b were tested by means of a linear multi-group mediation model (Edwards & Lambert, 2007). In other words, we specified one model that estimates the effects of TEP for inventing and TEP for founding on team performance through relationship conflict in both venture development stages separately. For the ease of interpretation and to avoid multicollinearity, we mean-centered the continuous independent variables before inserting them into the model (Kraemer & Blasey, 2004). As the endogenous variable relationship conflict is not normally distributed and right-skewed (Shapiro-Wilk normality test = 0.8718, p<0.001; kurtosis = 3.883, skewness = 1.197), we estimated the model with robust (Huber-White) standard errors to account for multivariate non-normality in the data (Finney & DiStefano, 2013). The fit indices of the linear multi-group mediation model demonstrate that the model fits the data very well (χ2(12)=12.939; p=0.374; CFI=0.982; TLI=0.949; RMSEA=0.043; SRMR=0.036) (Hair et al., 2013; West, Taylor, & Wu, 2012). Table 3 reports the standardized coefficients, standard errors and p-values of the hypothesized structural relationships in both development stages. Furthermore, we assessed the presence of indirect effects through the bias-corrected bootstrap method (5,000 iterations). This approach allowed us to test the significance of the indirect effects without the need to make assumptions about the central tendency of the estimates of these effects (MacKinnon, Lockwood, & Williams, 2004; Preacher, Rucker, & Hayes, 2007). The results of the bootstrap analyses are displayed in Table 4.

In order to test hypotheses 1c and 2c, and thus to get a better understanding of how relationship conflict and team performance are affected by monofocal versus polyfocal TEP, we conducted a polynomial multi-group mediation analysis, and analyzed response surface plots for both development stages (Edwards & Parry, 1993; Shanock, Baran, Gentry, Pattison, & Heggestad, 2010). As Shanock et al. (2010) explain, this approach is especially informative when one wants to “examine the extent to which combinations of two predictor variables relate to an outcome variable, particularly in the case when the discrepancy (difference) between the two predictor variables is a central consideration” (we refer to Shanock et al., 2010 and Edwards & Parry, 1993, for more details about the technique).

Following the procedure of Shanock et al. (2010), we first verified and confirmed that the subsamples (teams in the conception stage, and teams in the commercialization stage) comprise a sufficient proportion of teams for which TEP for inventing and TEP for founding are aligned and a sufficient proportion of teams for which the variables diverge (see Appendix B for details), as this is a requirement for conducting polynomial analysis. In line with Shanock et al. (2010) and Edwards (2007), we then centered TEP for inventing and TEP for founding around the midpoint of their scales. Given that both TEP variables were computed by multiplying team identity and collective positive feelings, their scales ranged from 1 to 49. As the midpoints of these scales are debatable[[4]](#footnote-4), we first transformed[[5]](#footnote-5) them to scales ranging from 1 to 7, and afterwards centered them around their midpoint or 4. We modelled a multi-group mediated path analysis with polynomials (i.e. the two midpoint-centered TEP variables, their squared values, and their cross-product) in the equation estimating relationship conflict, and the same control variables as in our linear multi-group mediation model[[6]](#footnote-6). The model, reported in Table 5, returned excellent model fit (χ2(22)=15.338; p=0.847; CFI=1.000; TLI=1.187; RMSEA=0.000; SRMR=0.034) (Hair et al., 2013; West et al., 2012).

In order to interpret the output of the polynomial mediation in function of our hypotheses, we plotted the results in three-dimensional graphs (Fig. 1 and 2), and analyzed different test statistics (Table 5 to 7). First, in order to compare the effects of monofocal TEP for inventing on relationship conflict and team performance with those of monofocal TEP for founding, we relied on surface values that reflect the slope and curvature of the line of incongruence (i.e. the diagonal between monofocal TEP for inventing and monofocal TEP for founding) (Shanock et al., 2010). The curvature surface value examines whether the outcome (relationship conflict or team performance) increases (positive value) or decreases (negative value) more sharply as the degree of discrepancy between both predictors increases. The slope surface value is significant if the outcome is higher when the discrepancy is such that TEP for inventing exceeds TEP for founding (positive slope), or vice versa (negative slope). Second, we examined the slopes of the relevant conditional direct and indirect effects to investigate whether the impact of polyfocal TEP differs from the impact of monofocal TEP (for inventing or founding) (Preacher et al., 2007). For instance, whereas both polyfocal TEP and monofocal TEP for inventing are characterized by high TEP for inventing, the former type of passion also comprises TEP for founding while the latter type of passion implies the absence of TEP for founding. To compare both types of TEP, we thus need to evaluate the change in outcome variable for an increase in TEP for founding, conditional on a high level of TEP for inventing. We hereafter outline the results per development stage.

– [INSERT TABLE 3 AND 4 ABOUT HERE] –

### Conception stage

Our linear multi-group mediation model (Table 3) shows that, in the conception stage, TEP for inventing has a significantly negative effect on relationship conflict (β=-0.712; p=0.000), while TEP for founding significantly increases relationship conflict (β=0.339; p=0.007). At the same time, there are no significant direct effects of TEP for inventing or TEP for founding on team performance   
(β=-0.144; p=0.558 and β=-0.031; p=0.831, respectively). The results also surprisingly reveal that there is no significant link between relationship conflict and team performance in this development stage (β=-0.105; p=0.625). Given this insignificant effect of relationship conflict on team performance, the bootstrap analysis (Table 4) reports insignificant indirect effects of both TEP for inventing and TEP for founding on team performance via relationship conflict (β=0.075; se=0.415; 95% C.I. [-0.481, 1.222] and β=-0.036; se=0.155; 95% C.I. [-0.439, 0.213], respectively). Hypotheses 1a and 1b are therefore not fully supported, even though the findings related to the links between the TEP variables and relationship conflict confirm our theorizing.

The polynomial multi-group mediation model (Table 5 and 6) and accompanying response surface analysis (Fig. 1 and Table 7) provide more insights into whether the effects of monofocal TEP for inventing, monofocal TEP for founding and polyfocal TEP differ. First, the line of incongruence on Fig.1-A shows that relationship conflict increases more sharply when the degree of discrepancy between TEP for inventing and TEP for founding increases (a4=1.064; p=0.004), and that relationship conflict is higher when the discrepancy is such that TEP for founding exceeds TEP for inventing (a3=-2.936, p=0.000). Fig.1-B, however, shows that team performance is not (indirectly) influenced by the discrepancy between TEP for inventing and TEP for founding (a4=-0.233, p=0.953; a3=0.643, p=0.904). In other words, while monofocal TEP for inventing is better for reducing relationship conflict than monofocal TEP for founding, the distinction does not hold when looking at their indirect effects on team performance. Second, the conditional effects of the polynomial model (Table 5 and 6) show that polyfocal TEP reduces relationship conflict significantly more than does monofocal TEP for founding (b=-2.948, p=0.000), whereas the difference is again not significant when team performance is the outcome (b=0.646; se=7.289; 95% C.I. [-13.755, 15.976]). At the same time, there is no significant difference between the effect of polyfocal TEP versus monofocal TEP for inventing on relationship conflict (b=-0.137, p=0.569), nor indirectly on team performance (b=0.030; se=0.992; 95% C.I. [-1.676, 2.311]).

In sum, whereas monofocal TEP for inventing and polyfocal TEP are better for reducing relationship conflict than monofocal TEP for founding, there are no significant differences between the three types of TEP for the indirect effects on team performance. Hypothesis 1c is therefore only partly confirmed.

– [INSERT TABLE 5 AND 6 ABOUT HERE] –

– [INSERT FIG. 1 ABOUT HERE] –

### Commercialization stage

For teams in the commercialization stage, the linear multi-group mediation model (Table 3) reveals no significant direct effects of TEP for inventing or TEP for founding on team performance (β=0.044; p=0.794 and β=-0.195; p=0.178, respectively). Furthermore, in line with prior research (de Wit et al., 2012; Ensley & Hmieleski, 2005; Ensley & Pearce, 2001), team performance is significantly hampered by relationship conflict for teams in this stage (β=-0.343; p=0.004). But although both TEP for inventing and TEP for founding are negatively related to relationship conflict, these linear effects are not significant (β=-0.141; p=0.440 and β=-0.227; p=0.223, respectively). Hence, the bootstrap analysis (Table 4) also returns insignificant indirect effects of TEP for inventing or TEP for founding on team performance via relationship conflict (β=0.048; se=0.229; 95% C.I. [-0.234, 0.719] and β=0.095; se=0.272; 95% C.I. [-0.178, 0.889], respectively), and hypotheses 2a and 2b cannot be fully confirmed.

However, the polynomial multi-group mediation model (Table 5 and 6) and response surface analysis, illustrated in Fig.2-A and 2-B, reveal that the effects of TEP for inventing and TEP for founding on relationship conflict and team performance are non-linear. First, although the curvature along the incongruence line on Fig.2-A is significantly positive (a4=1.560; p=0.016), the slope is insignificant (a3=0.081, p=0.897). This provides evidence that an increase in discrepancy between TEP for inventing and TEP for founding leads to a sharper increase in relationship conflict, yet the level of relationship conflict does not differ significantly depending on whether TEP for inventing exceeds TEP for founding or vice versa. Similarly, the incongruence line on Fig.2-B shows a concave surface, meaning that team performance reduces with higher discrepancy between both predictor variables (a4=-10.250; p=0.006). Also team performance does not differ significantly depending on whether TEP for inventing is higher than TEP for founding or vice versa (a3=-0.531, p=0.939). In other words, there is no significant difference between monofocal TEP for inventing and monofocal TEP for founding when it comes to reducing relationship conflict or enhancing performance. Second, the conditional effects of the polynomial model (Table 5 and 6) show that relationship conflict is significantly more reduced by polyfocal TEP than by monofocal TEP for inventing (b=-2.271, p=0.004) or monofocal TEP for founding (b=-2.013, p=0.018). At the same time, polyfocal TEP has a more positive indirect effect on team performance than monofocal TEP for inventing (b=14.917; se=10.486; 95% C.I. [0.454, 45.079]) and monofocal TEP for founding (b=13.222; se=10.919; 95% C.I. [-0.137, 46.080]), with the latter difference being only marginally significant however.

Overall, these results support hypothesis 2c that, for teams in the commercialization stage, polyfocal TEP is better for reducing relationship conflict and increasing team performance than monofocal TEP for either inventing or founding, while there is no significant difference between the effects of the latter two types of TEP.

– [INSERT FIG. 2 ABOUT HERE] –

– [INSERT TABLE 7 ABOUT HERE] –

## Additional analyses and robustness checks

### Common method bias

First, we avoided common method bias in estimating our dependent variable by measuring team performance based on jury assessments (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Furthermore, to ensure that the relationships between our independent variables and our mediator were not subject to common method bias, we on the one hand guaranteed confidentiality to the participants and on the other hand assessed the presence of common method variance through partial correlation analysis using a marker variable, as outlined by Lindell and Whitney (2001). Respondents reported to which extent they envisioned their company as a means to advance a societal cause on five different 7-point Likert scale items (Sieger, Gruber, Fauchart, & Zellweger, 2016). We used the team-level average of this construct as the marker variable, as we do not expect it to be related to the variables in our study (Lindell & Whitney, 2001). All previously significant zero-order correlations remained significant when adjusting for partial correlation, indicating that our analyses are not affected by a common method bias (Lindell & Whitney, 2001).

### Multicollineartiy

Second, to evaluate the presence of multicollinearity in our models, we calculated variance inflation factors (VIFs) (Kline, 2015). For the linear multi-group mediation model, all VIFs (≤2.876) were well below the critical threshold of 10 mentioned in the literature (Hoyle, 2014; Kline, 2015). For the polynomial multi-group mediation model, all VIFs for the independent variables in the model without the quadratic and interaction terms are 1.198 or below, which suggests that collinearity is unlikely to be a problem for our estimates[[7]](#footnote-7).

### Endogeneity

Third, we carefully paid attention to potential endogeneity in our model that may be caused by reverse causality (Kline, 2015). Although performance was measured at a later point in time, and through a different source than the TEP variables and relationship conflict, one could question whether TEP influences relationship conflict and performance, or whether a reverse causal relationship could equally hold. We follow the theorizing of Cardon et al. (2017), who argue that TEP influences the quality of team processes and team performance. Yet, as also explained in that same article, it can indeed be expected that the process of emergence and consequences of TEP is subject to feedback loops. This means that team processes and performance may, *over time*, influence individuals’ experience of passion via top-down affective and identity processes, and the diversity of these individual-level passions may in turn influence TEP via bottom-up affective and identity processes. As such, we believe that we should not rule out the theoretical possibility of feedback loops, but instead carefully test whether the results of our models are biased by potential endogeneity. In order to alleviate these concerns, we applied the Model Implied Instrumental Variable, Two Stage Least Squares (MIIV-2SLS) estimator, using the recently developed MIIVsem package in R (Fisher, Bollen, Gates, & Rönkkö, 2017). The technique tests whether a model is subject to misspecifications, allowing us to apply a two-stage model on multiple equations simultaneously (Bollen, 2018). Furthermore, the MIIV-2SLS approach finds the instruments among the observed variables that are already part of the model (Bollen, 1996). An observed variable can serve as a MIIV if it is uncorrelated with the error term of the equation concerned (we refer to Bollen, 2018 for an overview of the technique). Similar to other 2SLS approaches, the Sargan (1958) test statistic is calculated, in this case for each equation in the model. This test verifies the null hypothesis that all MIIVs are uncorrelated with the equation’s composite error. One would find proof of structural misspecifications in case the null hypothesis would be rejected. In our analyses, the tests did not provide any evidence of misspecification, neither in the linear model (conception stage: Ts\_RC(2)=1.187, p=0.552; Ts\_Perf(4)=1.351, p=0.853; commercialization stage: Ts\_RC(2)=2.854, p=; Ts\_Perf(4)=5.465, p=0.243), nor in the polynomial model (conception stage: Ts\_RC(2)=1.517, p=0.468; Ts\_Perf(9)=2.847, p=0.970; commercialization stage: Ts\_RC(2)=2.193, p=0.334; Ts\_Perf(9)=6.861, p=0.652). This strengthens our argument that our models are not subject to endogeneity-related biases.

### Robustness checks

We computed several models with different specifications as robustness checks for the linear as well as for the polynomial multi-group mediation model. First, given that the linear model revealed insignificant direct effects of both TEP for inventing and TEP for founding on team performance, we also computed a fully mediated model removing the direct effects from the model. This model returned equally good fit measures, and provided the same conclusions. Similarly, we ran a robustness test adding direct effects of TEP for inventing and TEP for founding on team performance to the polynomial model. The results of this model are in line with the reported polynomial model, with comparable fit measures. Second, for both the linear and the polynomial model, we estimated alternative specifications including all control variables (team size, functional diversity, demographic diversity, cohort, and industry) in the equation estimating team performance, resulting in the same conclusions and equally good fit measures as the reported models. Third, we performed robustness checks using only the scores of the first evaluation round (excluding those of the second evaluation round) as a measure for team performance. Both for the linear and the polynomial mediation, the alternative model returned the same results as the reported model, with similarly good fit measures. Fourth, we controlled whether the level of relationship conflict or team performance differed between teams with or without prior start-up experience, which turned out not to be the case. And finally, we verified whether TEP is the adequate measure when analyzing the level of relationship conflict and performance of a new venture team, or whether there may be alternative explanations. During our data collection, we also gathered information about the individual-level entrepreneurial passions. We therefore investigated whether relationship conflict and team performance could be explained by diversity in individual entrepreneurial passions, but both the linear and the polynomial multi-group mediation models showed poor fit (e.g. CFIlinear=0.855, and CFIpolynomial=0.592).

# Discussion and conclusion

This study had the aim to disentangle the effects of TEP on team performance by investigating the mediating effect of relationship conflict, and the moderating effect of venture development stage. Overall, our findings indicate that TEP towards different entrepreneurial activities has a different impact on relationship conflict and team performance depending on whether approached stakeholders see a fit between the specific activities the team is passionate about and the venture’s development stage. For ventures in the conception stage, our results show that teams engage in less relationship conflict when they experience monofocal TEP for inventing or polyfocal TEP for both inventing and founding, but show increased relationship conflict when they display monofocal TEP for founding. For teams in the commercialization stage, TEP for inventing and TEP for founding reduce relationship conflict and enhance performance in a non-linear way. In this stage, teams engage in considerably less relationship conflict, and therefore perform better, when they experience polyfocal TEP, compared to when they experience monofocal TEP for inventing or monofocal TEP for founding. Our findings have several important theoretical and practical implications.

## Theoretical implications

First and foremost, this study contributes to the literature on entrepreneurial passion by examining the impact of team-level passion on team processes and performance. This is important because prior research has extensively shown that entrepreneurial passion impacts how an individual entrepreneur acts (Cardon & Kirk, 2015; Murnieks et al., 2014; Stenholm & Renko, 2016), but has accumulated surprisingly little knowledge about how a teams’ functioning depends on the experience of passion, even though we know that a vast majority of new ventures is actually managed by a team of entrepreneurs (Kamm, Shuman, Seeger, & Nurick, 1990; Klotz et al., 2014). Recently, Santos and Cardon (2018) have set the stage for empirically investigating entrepreneurial passion in a team context, by examining the consequences of TEP for team performance. However, their findings have left us with many questions about how and when a team is influenced by team passion for specific entrepreneurial activities. They for instance report a positive effect of TEP for inventing on team performance, but an insignificantly negative effect for TEP for founding. We substantiate this line of research, on the one hand by advancing relationship conflict as an important mediator linking TEP with team performance, and on the other hand by distinguishing between the conception stage and the commercialization stage of a venture. In line with Santos and Cardon (2018), we for instance find that TEP for inventing brings about positive consequences in both development stages, embodied in the form of reduced relationship conflict, which leads to enhanced performance in the commercialization stage. But contrary to teams in the conception stage, teams in the commercialization stage benefit more from TEP for inventing – in terms of reduced relationship conflict and enhanced performance – if they complement this passion for inventing with a passion for founding activities. This is because the goals and expectations in the conception stage require engagement in inventing activities, while those in the commercialization stage additionally ask for a focus on founding activities. At the same time, this study also clarifies the insignificantly negative finding of TEP for founding on team performance reported by Santos and Cardon (2018). We find that teams who operate in the conception stage suffer from increased relationship conflict when they are (only) passionate about founding activities, and argue that this is due to the mismatch between the team’s passion focus and the goals and stakeholder expectations in that specific development stage. Interestingly, TEP for founding only leads to more relationship conflict when TEP for inventing is absent. We believe this result may suggest that teams who are also passionate about inventing are better able to deal with stakeholders questioning their focus on founding activities in this stage, because their passion for inventing enables them to easily switch back to the activities that are deemed appropriate in this stage. Overall, the findings of this study provide more fine-grained insights into the consequences of TEP. We thereby push the entrepreneurial passion field to consider the underlying mechanisms and contingencies when addressing phenomena as complex as the experience of team passion, and as such iterate other scholars who have previously raised the same call in the individual-level passion literature (Baum & Locke, 2004; Baum et al., 2001).

Our study also contributes to the team literature by introducing the psychological construct of entrepreneurial passion in empirical research on new venture team dynamics. In so doing, we answer the call of Klotz et al. (2014) to investigate affective emergent states in new venture teams. The field expects to benefit from this type of research, because extant work has failed to uncover the actual psychological properties that influence team outcomes, due to the overly reliance on secondary data, and on surface-level variables such as demographics and functional experience (Klotz et al., 2014; Priem et al., 1999). Our results show that relationship conflict is significantly related to TEP for inventing and TEP for founding after having controlled for demographic and functional diversity, which confirms the need to directly investigate affective constructs such as TEP to get a more precise understanding of the factors that influence team outcomes. Furthermore, this study challenges the dominant perspective that relationship conflict is detrimental to performance at all times (de Wit et al., 2012; Ensley & Pearce, 2001). Our findings indicate that while this effect takes place for ventures in the commercialization stage, it does not hold for those in the conception stage. A potential explanation could be that the consequences of relationship conflict do not materialize in the conception stage yet, given the nascent nature of the teams. This suggests that research on relationship conflict needs to take the development stage of a venture into account. As such, we fully support the concern of Thiel, Harvey, Courtright, and Bradley (2017), who recently expressed the need for research that examines how relationship conflict at different stages influences subsequent team processes and performance.

## Practical implications

From a practical point of view, we first of all show new venture teams that they can benefit from enhanced team functioning when they are passionate about activities that are in line with the goals and stakeholder expectations peculiar to their specific development stage. Teams in the conception stage can best try to nurture positive group affect towards inventing activities, because a joint passion for these activities will reduce relationship conflict in the team. They can for instance foster this group affect by making sure that not one member but the whole team takes part in fun brainstorm sessions or in energizing inventing activities like hackathons. If a team in this stage, however, is passionate about launching the product, stakeholders will question this focus because the team is not ready to start commercializing the offer. If the team only has this passion for founding, but not for inventing, these interactions will engender frustration and annoyance in the team, leading to relationship conflict in the team. For ventures in the commercialization stage, we advise teams to stimulate group affect towards inventing as well as towards founding activities, because both types of activities are deemed appropriate in this stage. The collective feelings related to inventing and founding will enable the team to avoid relationship conflict, and to perform better.

In addition, we provide useful insights for grant suppliers, start-up support initiatives, and investors. Our findings help these stakeholders to foster constructive dynamics and enhance performance in their portfolio companies by stimulating the appropriate kind of team passion for the stage the venture is operating in. It is important for them to know that their feedback impacts team dynamics. When a team’s passion focus is in line with the activities that are deemed appropriate, it is worthwhile to explicitly confirm this because it stimulates favorable team processes. On the other hand, if external stakeholders tell teams that they should focus on other activities than the ones they are passionate about, our findings suggest that it may be important to constructively guide the teams towards the right focus, as to avoid adverse team dynamics.

## Limitations and directions for future research

Our study has a number of limitations that open up avenues for future research. First, although we collected our data at different points in time, and used different sources, the cross-sectional design of this study requires us to interpret causal claims with care. Our analyses with an MIIV-2SLS estimator reassure us that the specifications of our models are not biased by endogeneity, indicating that we can safely interpret the results of our study. However, given that, over time, feedback loops between the core variables in our model may emerge, we are very supportive of future research endeavors with a longitudinal design that include these feedback loops and that investigate how all constructs in the theoretical model influence each other over time. Second, from a statistical point of view, we see value in future research that draws on random samples of new venture teams. In this study, we relied on data drawn from teams that participated in a start-up competition, and thus operated in a highly dynamic environment. Although additional analyses suggest that the start-ups in our sample are comparable to those in a comprehensive dataset of hi-tech start-ups in Switzerland, it would be good if future research could replicate our results using a random sample.

Besides the need for future research endeavors that overcome these limitations, we are convinced that there is still a lot of work to be done to enhance our academic understanding of what it means for new venture teams to collectively experience entrepreneurial passion. First, this study focuses on early-stage new venture teams, because of the high impact of adverse team dynamics in young and small new venture teams. Co-founder exits are known to be particularly detrimental when new venture teams are still small (Guenther, Oertel, & Walgenbach, 2016). However, future research could shed light on whether and how exactly the consequences of TEP differ between early-stage start-ups and those that have advanced into the growth stage. We advise to then also include TEP for developing in this future work. Second, most extant research on entrepreneurial passion, including this study, adheres to the domains of entrepreneurial passion identified in prior research, namely entrepreneurial roles related to different kinds of entrepreneurial activities. Recently, however, scholars have suggested that entrepreneurs may be passionate about aspects other than these entrepreneurial roles (e.g. a social cause, or the product/service itself) (Cardon et al., 2017). We therefore encourage research that examines a broader set of potential passion foci, as team passion towards these other common denominators may also have an impact on team functioning and performance. Third, this study advances relationship conflict as a mediating variable because of its emotional nature, and its importance in the team literature (Amason & Sapienza, 1997; Klotz et al., 2014). However, apart from the insights of this study, there is very little academic understanding about the consequences of TEP for new venture team processes. We therefore encourage researchers to also investigate the impact of TEP on other team outcomes, such as cohesion, social integration, or “group think”. Fourth, this study shows the usefulness of statistical techniques such as response surface analysis for research on entrepreneurial passion in team contexts (Edwards & Parry, 1993). While we focus on the combination of two passion foci at the team level, future research could for instance apply the technique to investigate alignment or discrepancy between individual passions of two co-founders in dyadic teams. Lastly, given the complexity of the phenomena we are investigating, and the sparse empirical knowledge about TEP, we decided to limit the focus this study to the team level. This enabled us to describe the mechanisms at play with the necessary detail and nuance. However, we see a great need for multilevel studies that empirically investigate how the interplay between identities, emotions and passions of new venture team members relates to the emergence and experience of TEP.

## Conclusion

In summary, this study shows that new venture teams can benefit but also suffer from TEP, depending on whether their passion focus is aligned with the venture’s development stage. We hope that our findings inspire scholars to further investigate the role of passion in new venture teams.

# Tables and figures

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table  Descriptive statistics and correlationsa. | | | | | | | | | | | | | |
|  | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1. Team performance | 71.14 | 17.44 | 1.00 |  |  |  |  |  |  |  |  |  |  |
| 2. Relationship conflict | 1.98 | 0.94 | -0.18† | 1.00 |  |  |  |  |  |  |  |  |  |
| 3. TEP inventing | 38.28 | 7.27 | 0.01 | -0.46\*\* | 1.00 |  |  |  |  |  |  |  |  |
| 4. TEP founding | 35.03 | 8.10 | -0.04 | -0.21† | 0.55\*\* | 1.00 |  |  |  |  |  |  |  |
| 5. Venture stageb | 0.48 | 0.50 | 0.13 | 0.07 | -0.01 | 0.02 | 1.00 |  |  |  |  |  |  |
| 6. Industry: life sciencesb | 0.23 | 0.43 | 0.34\*\* | -0.09 | 0.14 | -0.01 | 0.03 | 1.00 |  |  |  |  |  |
| 7. Industry: soft- & hardwareb | 0.40 | 0.49 | -0.31\*\* | 0.05 | -0.04 | -0.17 | -0.06 | -0.45\*\* | 1.00 |  |  |  |  |
| 8. Team size | 2.55 | 0.78 | 0.11 | 0.09 | -0.05 | -0.05 | 0.14 | 0.00 | 0.01 | 1.00 |  |  |  |
| 9. Functional diversity | 0.02 | 0.63 | -0.03 | 0.00 | 0.13 | 0.07 | 0.25\* | -0.08 | 0.12 | 0.39\*\* | 1.00 |  |  |
| 10. Demographic diversity | 0.00 | 0.73 | 0.11 | -0.21† | 0.08 | 0.03 | 0.10 | 0.11 | 0.06 | 0.16 | 0.52\*\* | 1.00 |  |
| 11. Cohortb | 0.54 | 0.50 | -0.11 | -0.17 | 0.11 | 0.18 | -0.23\* | 0.02 | -0.10 | 0.06 | -0.07 | -0.11 | 1.00 |
| *Notes*: a Pearson correlation coefficients (2-tailed); n = 86 teams; † p ≤ 0.10; \* p ≤ 0.05; \*\* p ≤ 0.01  b Correlations with binary variables should be interpreted with care. | | | | | | | | | | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Table 2 Standardized factor loadings obtained by confirmatory factor analysis with cluster-robust standard errors. | | | |
|  | Factor 1 | Factor 2 | Factor 3 |
| Collective positive feelings – inventing 1 | 0.658 |  |  |
| Collective positive feelings – inventing 2 | 0.741 |  |  |
| Collective positive feelings – inventing 3 | 0.819 |  |  |
| Collective positive feelings – inventing 4 | 0.805 |  |  |
| Collective positive feelings – founding 1 |  | 0.855 |  |
| Collective positive feelings – founding 2 |  | 0.920 |  |
| Collective positive feelings – founding 3 |  | 0.853 |  |
| Relationship conflict 1 |  |  | 0.729 |
| Relationship conflict 2 |  |  | 0.920 |
| Relationship conflict 3 |  |  | 0.883 |
| *Notes*: n = 219 entrepreneurs in 86 teams; χ2(31)=41.092; p=0.106; CFI=0.987; TLI=0.981; RMSEA=0.039; SRMR=0.034. | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table  Structural relations of linear multi-group mediation model. | | | | | | | | |
| Path between variables | | Conception stage | | |  | Commercialization stage | | |
| From | To | β | se | p-value |  | β | se | p-value |
| Industry (life sciences) | → Perf | 0.244 | 6.791 | 0.195 |  | 0.254 | 6.218 | 0.071 |
| Industry (soft- & hardware) | → Perf | -0.142 | 5.170 | 0.406 |  | -0.186 | 6.332 | 0.248 |
| Relationship conflict | → Perf | -0.105 | 3.345 | 0.625 |  | -0.343 | 2.498 | 0.004 |
| TEP inventing | → Perf | -0.144 | 0.515 | 0.558 |  | 0.044 | 0.437 | 0.794 |
| TEP founding | → Perf | -0.031 | 0.242 | 0.831 |  | -0.195 | 0.390 | 0.178 |
|  |  |  |  |  |  |  |  |  |
| Team size | → RC | 0.216 | 0.194 | 0.117 |  | -0.007 | 0.160 | 0.965 |
| Functional diversity | → RC | -0.181 | 0.180 | 0.085 |  | 0.366 | 0.246 | 0.042 |
| Demographic diversity | → RC | -0.038 | 0.156 | 0.733 |  | -0.503 | 0.178 | 0.001 |
| Cohort | → RC | -0.222 | 0.233 | 0.055 |  | -0.169 | 0.288 | 0.285 |
| TEP inventinga | → RC | -0.712 | 0.020 | 0.000 |  | -0.141 | 0.022 | 0.440 |
| TEP foundingb | → RC | 0.339 | 0.014 | 0.007 |  | -0.277 | 0.029 | 0.223 |
| *Notes*: β = standardized coefficient; se = standard error; n(conception) = 45 teams; n(commercialization) =  41 teams;  TEP = team entrepreneurial passion; Perf = team performance; RC = relationship conflict;  Robust fit measures: χ2(12)=12.939; p=0.374; CFI=0.982; TLI=0.949; RMSEA=0.043; SRMR=0.036; AIC=954.128; BIC=933.106;  Slope comparison (commercialization stage – conception stage): a Δβ=0.571, se=0.030, p=0.008; b Δβ=-0.616, se=0.032, p=0.024. | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table  Bootstrap analyses for indirect effects of linear multi-group mediation model. | | | | | | | | | |
|  | Conception stage | | | |  | Commercialization stage | | | |
| Indirect relationship | β | se | 95% C.I. | |  | β | se | 95% C.I. | |
| TEP inventing → RC → Team performance | 0.075 | 0.415 | -0.481 | 1.222 |  | 0.048 | 0.229 | -0.234 | 0.719 |
| TEP founding → RC → Team performance | -0.036 | 0.155 | -0.439 | 0.213 |  | 0.095 | 0.272 | -0.178 | 0.889 |
| *Notes*: method: bias-corrected bootstrapping (5,000 iterations); n(conception) = 45 teams; n(commercialization) =  41 teams;  β = standardized coefficient; se = standard error; C.I. = confidence interval;  TEP = team entrepreneurial passion; RC = relationship conflict. | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table  Results of polynomial multi-group mediation model. | | | | | | | | |
| Path between variables | | Conception stage | | |  | Commercialization stage | | |
| From | To | b | se | p-value |  | b | se | p-value |
| **Structural relations** |  |  |  |  |  |  |  |  |
| Industry (life sciences) | → Perf | 7.476 | 6.291 | 0.235 |  | 13.304 | 6.221 | 0.032 |
| Industry (soft- & hardware) | → Perf | -5.107 | 4.728 | 0.280 |  | -4.596 | 5.781 | 0.427 |
| Relationship conflict | → Perf | -0.219 | 2.124 | 0.918 |  | -6.568 | 2.523 | 0.009 |
|  |  |  |  |  |  |  |  |  |
| Team size | → RC | 0.238 | 0.157 | 0.129 |  | 0.152 | 0.087 | 0.079 |
| Functional diversity | → RC | -0.244 | 0.173 | 0.159 |  | 0.560 | 0.177 | 0.002 |
| Demographic diversity | → RC | 0.158 | 0.151 | 0.296 |  | -0.462 | 0.180 | 0.010 |
| Cohort | → RC | -0.548 | 0.182 | 0.003 |  | -0.198 | 0.235 | 0.401 |
| TEP inventing (b1) | → RC | -1.574 | 0.517 | 0.002 |  | -1.083 | 0.316 | 0.001 |
| TEP founding (b2) | → RC | 1.362 | 0.352 | 0.000 |  | -1.164 | 0.331 | 0.000 |
| TEP inventing squared (b3) | → RC | 0.438 | 0.171 | 0.010 |  | 0.469 | 0.209 | 0.025 |
| TEP inventing x TEP founding (b4) | → RC | -0.584 | 0.151 | 0.000 |  | -0.429 | 0.335 | 0.201 |
| TEP founding squared (b5) | → RC | 0.041 | 0.071 | 0.559 |  | 0.662 | 0.175 | 0.000 |
|  |  |  |  |  |  |  |  |  |
| **Slopes of conditional direct effects** | |  |  |  |  |  |  |  |
| TEP founding (TEP inventing lowa) | → RC | 0.917 | 0.270 | 0.001 |  | -1.476 | 0.323 | 0.000 |
| TEP founding (TEP inventing highb) | → RC | -0.137 | 0.241 | 0.569 |  | -2.271 | 0.793 | 0.004 |
| TEP inventing (TEP founding lowa) | → RC | -1.639 | 0.522 | 0.002 |  | -1.249 | 0.366 | 0.001 |
| TEP inventing (TEP founding highb) | → RC | -2.948 | 0.693 | 0.000 |  | -2.013 | 0.852 | 0.018 |
| *Notes*: b = unstandardized coefficient; se = standard error; n(conception) = 45 teams; n(commercialization) =  41 teams;  TEP = team entrepreneurial passion; Perf = team performance; RC = relationship conflict;  a low = mean – 1x standard deviation; b high = mean + 1x standard deviation;  Robust fit measures: χ2(22)=15.338; p=0.847; CFI=1.000; TLI=1.187; RMSEA=0.000; SRMR=0.034; AIC=927.211; BIC=904.788. | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table  Bootstrap analyses for indirect effects of polynomial multi-group mediation model. | | | | | | | | | |
|  | Conception stage | | | |  | Commercialization stage | | | |
| Indirect relationship (slopes) | b | se | 95% C.I. | |  | b | se | 95% C.I. | |
| TEP founding → RC → Perf (TEPinv lowa) | -0.201 | 2.433 | -5.286 | 4.946 |  | 9.694 | 5.311 | -0.343 | 20.468 |
| TEP founding → RC → Perf (TEPinv highb) | 0.030 | 0.992 | -1.676 | 2.311 |  | 14.917 | 10.486 | 0.454 | 45.079 |
| TEP inventing → RC → Perf (TEPfnd lowa) | 0.359 | 4.109 | -7.801 | 9.060 |  | 8.202 | 5.687 | -0.496 | 21.995 |
| TEP inventing → RC → Perf (TEPfnd highb) | 0.646 | 7.289 | -13.755 | 15.976 |  | 13.222 | 10.919 | -0.137 | 46.080 |
| *Notes*: method: bias-corrected bootstrapping (5,000 iterations); n(conception) = 45 teams; n(commercialization) =  41 teams;  b = unstandardized coefficient; se = standard error; C.I. = confidence interval; TEP = team entrepreneurial passion;  Perf = team performance; RC = relationship conflict; TEPinv = TEP for inventing; TEPfnd = TEP for founding; a low = mean – 1x standard deviation; b high = mean + 1x standard deviation. | | | | | | | | | |

|  |  |
| --- | --- |
| **(a) Relationship conflict as predicted by  TEP inventing – TEP founding discrepancy** | **(b) Indirect effects on team performance** |
|  |  |

Fig. 1. Response surface plots for teams in the conception stage.   
*Notes*: M-I = monofocal TEP for inventing; M-F = monofocal TEP for founding; P = polyfocal TEP. The axes of the predictors range from -1 to 3 rather than -3 to 3, because of the left-skewed nature of both variables. Colors: green (red) reflects beneficial (bad) levels of outcome.

|  |  |
| --- | --- |
| **(a) Relationship conflict as predicted by  TEP inventing – TEP founding discrepancy** | **(b) Indirect effects on team performance** |
|  |  |

Fig. 2. Response surface plots for teams in the commercialization stage.   
*Notes*: M-I = monofocal TEP for inventing; M-F = monofocal TEP for founding; P = polyfocal TEP. The axes of the predictors range from -1 to 3 rather than -3 to 3, because of the left-skewed nature of both variables. Colors: green (red) reflects beneficial (bad) levels of outcome.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Table  Surface values based on polynomial multi-group mediation model. | | | | | | | |
| Surface value | Conception stage | | |  | Commercialization stage | | |
|  | Coefficient | se | p-value |  | Coefficient | se | p-value |
| **Relationship conflict** |  |  |  |  |  |  |  |
| Slope LOC (a1) | -0.211 | 0.467 | 0.654 |  | -2.247 | 0.533 | 0.000 |
| Curvature LOC (a2) | -0.104 | 0.147 | 0.482 |  | 0.702 | 0.183 | 0.000 |
| Slope LOIC (a3) | -2.936 | 0.691 | 0.000 |  | 0.081 | 0.624 | 0.897 |
| Curvature LOIC (a4) | 1.064 | 0.350 | 0.004 |  | 1.560 | 0.619 | 0.016 |
|  |  |  |  |  |  |  |  |
| **Performance (indirect effects)** |  |  |  |  |  |  |  |
| Slope LOC (a1) | 0.047 | 5.503 | 0.993 |  | 14.757 | 7.070 | 0.043 |
| Curvature LOC (a2) | 0.023 | 6.686 | 0.997 |  | -4.610 | 7.416 | 0.538 |
| Slope LOIC (a3) | 0.643 | 5.322 | 0.904 |  | -0.531 | 6.921 | 0.939 |
| Curvature LOIC (a4) | -0.233 | 3.918 | 0.953 |  | -10.250 | 3.506 | 0.006 |
| *Notes*: se = standard error; n(conception) = 45 teams; n(commercialization) =  41 teams;  LOC = line of congruence (TEP inventing = TEP founding); LOIC = line of incongruence (TEP inventing = - TEP founding);  Calculation surface values based on coefficients in Table 5:  a1=b1+b2; a2=b3+b4+b5;  a3=b1−b2; a4=b3−b4+b5. | | | | | | | |

# Appendix A. Measuring team entrepreneurial passion

|  |  |
| --- | --- |
| Table A.1 Team entrepreneurial passion scalea (adapted from Cardon et al., 2013). | |
| Instructions | Having in mind how your **team** has been working, please indicate the extent to which you agree or disagree with each statement.    Note: the questions refer to the entire **team** of people involved in the ongoing operations and in taking strategic decisions for the start-up, not to you as an individual. |
| Scale anchors | 1 = ‘strongly disagree’; 2 = ‘disagree’; 3 = ‘somewhat disagree’; 4 = ‘neither agree nor disagree’; 5 = ‘somewhat agree’; 6 = ‘agree’; 7 = ‘strongly agree’ |
| Item code | Item |
| TEP-inv-CPF1 | For us as a team, it is exciting to figure out new ways to solve unmet market needs that can be commercialized. |
| TEP-inv-CPF2 | Searching for new ideas for products/services to offer is enjoyable to our team. |
| TEP-inv-CPF3 | We, as a team, are motivated to figure out how to make existing products/services better. |
| TEP-inv-CPF4 | Scanning the environment for new opportunities really excites our team. |
| TEP-inv-TI1 | Inventing new solutions to problems is an important part of who we are as a team. |
| TEP-fnd-CPF1 | Establishing a new company excites us as a team. |
| TEP-fnd-CPF2 | Owning our own company energizes our team. |
| TEP-fnd-CPF3 | For our team, nurturing a new business through its emerging success is enjoyable. |
| TEP-fnd-TI1 | Being the founder of a business is an important part of who we are. |
| *Notes*: TEP = team entrepreneurial passion; CPF = collective positive feelings; TI = team identity; inv = inventing; fnd = founding.  a Scholars that would like to investigate team entrepreneurial passion for developing in future research could rely on Chan (1998) to shift the corresponding individual-level items developed by Cardon et al. (2013) to the team level. | |

# Appendix B. Prerequisites for polynomial regression with response surface analysis

Following the procedure of Shanock et al. (2010), we first evaluated whether there is a balance between teams that are aligned and teams that diverge with respect to TEP for inventing and TEP for founding. The subsamples (teams in the conception stage, and teams in the commercialization stage) need to comprise both aligned and divergent teams, because there is no point of investigating discrepancies when no or only few observations show divergent values for both predictors. In each subsample, teams were considered to display discrepancy between both variables when the standardized score for TEP for inventing was at least half a standard deviation above or below the standardized score for TEP for founding. 55.56% of the teams in the conception stage, and 43.90% of the teams in the commercialization stage, showed divergence between both predictors in either direction (cfr. Table B.1), implying practical value in pursuing our analysis.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Table B. Frequencies of TEP for inventing levels over, under, and in-agreement with TEP for founding levelsa. | | | | | | | |
|  | Conception stage | | |  | Commercialization stage | | |
| Agreement groups | Percentage | Mean TEP  inventing | Mean TEP  founding |  | Percentage | Mean TEP  inventing | Mean TEP  founding |
| TEP inventing > TEP founding | 24.44% | 42.897  (0.633) | 27.550  (-0.816) |  | 19.51% | 41.620  (0.458) | 29.750  (-0.767) |
| In agreement | 44.44% | 39.469  (0.158) | 36.965  (0.234) |  | 56.10% | 38.819  (0.080) | 35.419  (0.029) |
| TEP founding > TEP inventing | 31.11% | 33.103  (-0.724) | 37.618  (0.307) |  | 24.39% | 34.147  (-0.550) | 39.109  (0.547) |
| *Notes*: n(conception) = 45 teams; n(commercialization) =  41 teams; TEP = team entrepreneurial passion;  a means of standardized variables between brackets. | | | | | | | |

# References

Aguinis, H., Edwards, J. R., & Bradley, K. J. 2017. Improving our understanding of moderation and mediation in strategic management research. *Organizational Research Methods, 20*(4), 665-685.

Aiken, L. R. 1987. Formulas for equating ratings on different scales. *Educational and Psychological Measurement, 47*(1), 51-54.

Allen, B., Chandrasekaran, D., & Basuroy, S. 2018. Design crowdsourcing: The impact on new product performance of sourcing design solutions from the “crowd”. *Journal of Marketing, 82*(2), 106-123.

Allison, P. 2012. When can you safely ignore multicollinearity. *Statistical Horizons, 5*(1).

Amason, A. C., & Sapienza, H. J. 1997. The effects of top management team size and interaction norms on cognitive and affective conflict. *Journal of Management, 23*(4), 495-516.

Ashforth, B. E., & Mael, F. A. 1996. Oranizational identity and strategy as a context for the individual. *Advances in Strategic Management, 13*, 19-64.

Ashforth, B. E., Rogers, K. M., & Corley, K. G. 2011. Identity in organizations: Exploring cross-level dynamics. *Organization science, 22*(5), 1144-1156.

Ashforth, B. E., & Schinoff, B. S. 2016. Identity under construction: How individuals come to define themselves in organizations. *Annual Review of Organizational Psychology and Organizational Behavior, 3*, 111-137.

Barsade, S. G. 2002. The ripple effect: Emotional contagion and its influence on group behavior. *Administrative Science Quarterly, 47*(4), 644-675.

Barsade, S. G., & Knight, A. P. 2015. Group affect. *Annual Review of Organizational Psychology and Organizational Behavior, 2*(1), 21-46.

Barsade, S. G., Ward, A. J., Turner, J. D. F., & Sonnenfeld, J. A. 2000. To your heart's content: A model of affective diversity in top management teams. *Administrative Science Quarterly, 45*(4), 802-836.

Baum, J. R., & Locke, E. A. 2004. The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of applied psychology, 89*(4), 587.

Baum, J. R., Locke, E. A., & Smith, K. G. 2001. A multidimensional model of venture growth. *Academy of management journal, 44*(2), 292-303.

Beckman, C. M., Burton, M. D., & O'Reilly, C. 2007. Early teams: The impact of team demography on vc financing and going public. *Journal of Business Venturing, 22*(2), 147-173.

Blau, P. M. 1977. *Inequality and heterogeneity: A primitive theory of social structure* (Vol. 7): Free Press New York.

Boeker, W., & Wiltbank, R. 2005. New venture evolution and managerial capabilities. *Organization Science, 16*(2), 123-133.

Bollen, K. A. 1996. An alternative two stage least squares (2sls) estimator for latent variable equations. *Psychometrika, 61*(1), 109-121.

Bollen, K. A. 2018. Model implied instrumental variables (miivs): An alternative orientation to structural equation modeling. *Multivariate Behavioral Research*, 1-16.

Brannon, D. L., Wiklund, J., & Haynie, J. M. 2013. The varying effects of family relationships in entrepreneurial teams. *Entrepreneurship Theory and Practice, 37*(1), 107-132.

Burke, P. J., & Reitzes, D. C. 1981. The link between identity and role performance. *Social Psychology Quarterly, 44*(2), 83-92.

Cardon, M. S., Gregoire, D. A., Stevens, C. E., & Patel, P. C. 2013. Measuring entrepreneurial passion: Conceptual foundations and scale validation. *Journal of Business Venturing, 28*(3), 373-396.

Cardon, M. S., & Kirk, C. P. 2015. Entrepreneurial passion as mediator of the self-efficacy to persistence relationship. *Entrepreneurship Theory and Practice, 39*(5), 1027-1050.

Cardon, M. S., Post, C., & Forster, W. R. 2017. Team entrepreneurial passion: Its emergence and influence in new venture teams. *Academy of Management Review, 42*(2), 283-305.

Cardon, M. S., Wincent, J., Singh, J., & Drnovsek, M. 2009. The nature and experience of entrepreneurial passion. *Academy of Management Review, 34*(3), 511-532.

Carter, S. M., & Deephouse, D. L. 1999. ‘Tough talk’and ‘soothing speech’: Managing reputations for being tough and for being good. *Corporate Reputation Review, 2*(4), 308-332.

Chan, D. 1998. Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology, 83*(2), 234-246.

Chandler, G. N., Honig, B., & Wiklund, J. 2005. Antecedents, moderators, and performance consequences of membership change in new venture teams. *Journal of Business Venturing, 20*(5), 705-725.

Chen, X.-P., Liu, D., & He, W. 2015. Does passion fuel entrepreneurship and job creativity? A review and preview of passion research. *The Oxford handbook of creativity, innovation and entrepreneurship*, 159-175.

Choi, J. N., & Sy, T. 2010. Group-level organizational citizenship behavior: Effects of demographic faultlines and conflict in small work groups. *Journal of Organizational Behavior, 31*(7), 1032-1054.

Chowdhury, S. 2005. Demographic diversity for building an effective entrepreneurial team: Is it important? *Journal of Business Venturing, 20*(6), 727-746.

Collewaert, V., Anseel, F., Crommelinck, M., De Beuckelaer, A., & Vermeire, J. 2016. When passion fades: Disentangling the temporal dynamics of entrepreneurial passion for founding. *Journal of Management Studies, 53*(6), 966-995.

Corley, K. G., & Gioia, D. A. 2004. Identity ambiguity and change in the wake of a corporate spin-off. *Administrative Science Quarterly, 49*(2), 173-208.

Coviello, N. E., & Joseph, R. M. 2012. Creating major innovations with customers: Insights from small and young technology firms. *Journal of Marketing, 76*(6), 87-104.

De Dreu, C. K. W., & Weingart, L. R. 2003. Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. *Journal of Applied Psychology, 88*(4), 741-749.

de Jong, A., Song, M., & Song, L. Z. 2013. How lead founder personality affects new venture performance: The mediating role of team conflict. *Journal of Management, 39*(7), 1825-1854.

de Wit, F. R. C., Greer, L. L., & Jehn, K. A. 2012. The paradox of intragroup conflict: A meta-analysis. *Journal of Applied Psychology, 97*(2), 360-390.

Drnovsek, M., Cardon, M. S., & Patel, P. C. 2016. Direct and indirect effects of passion on growing technology ventures. *Strategic Entrepreneurship Journal, 10*(2), 194-213.

Edwards, J. R. 2007. Polynomial regression and response surface methodology *Perspectives on organizational fit* (pp. 361-372).

Edwards, J. R., & Lambert, L. S. 2007. Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods, 12*(1), 1-22.

Edwards, J. R., & Parry, M. E. 1993. On the use of polynomial regression equations as an alternative to difference scores in organizational research. *Academy of Management journal, 36*(6), 1577-1613.

Ensley, M. D., & Hmieleski, K. M. 2005. A comparative study of new venture top management team composition, dynamics and performance between university-based and independent start-ups. *Research Policy, 34*(7), 1091-1105.

Ensley, M. D., & Pearce, C. L. 2001. Shared cognition in top management teams: Implications for new venture performance. *Journal of Organizational Behavior, 22*(2), 145-160.

Farmer, S. M., Yao, X., & Kung–Mcintyre, K. 2011. The behavioral impact of entrepreneur identity aspiration and prior entrepreneurial experience. *Entrepreneurship Theory and Practice, 35*(2), 245-273.

Finney, S. J., & DiStefano, C. 2013. Non-normal and categorical data in structural equation modeling. In G. R. Hancock & R. D. Mueller (Eds.), *Structural equation modeling: A second course* (2nd edition ed., pp. 439-492): Information Age Publishing.

Fisher, C. D., & Gitelson, R. 1983. A meta-analysis of the correlates of role conflict and ambiguity. *Journal of Applied Psychology, 68*(2), 320.

Fisher, G., Kotha, S., & Lahiri, A. 2016. Changing with the times: An integrated view of identity, legitimacy, and new venture life cycles. *Academy of Management Review, 41*(3), 383-409.

Fisher, G., Kuratko, D. F., Bloodgood, J. M., & Hornsby, J. S. 2017. Legitimate to whom? The challenge of audience diversity and new venture legitimacy. *Journal of Business Venturing, 32*(1), 52-71.

Fisher, Z., Bollen, K., Gates, K., & Rönkkö, M. 2017. Miivsem: Model implied instrumental variable (miiv) estimation of structural equation models. R package version 0.5. 2.

Foo, M.-D., Sin, H.-P., & Yiong, L.-P. 2006. Effects of team inputs and intrateam processes on perceptions of team viability and member satisfaction in nascent ventures. *Strategic Management Journal, 27*(4), 389-399.

George, J. M. 1990. Personality, affect, and behavior in groups. *Journal of Applied Psychology, 75*(2), 107-116.

Gielnik, M. M., Spitzmuller, M., Schmitt, A., Klemann, D. K., & Frese, M. 2015. “I put in effort, therefore i am passionate”: Investigating the path from effort to passion in entrepreneurship. *Academy of Management Journal, 58*(4), 1012-1031.

Gioia, D. A., Price, K. N., Hamilton, A. L., & Thomas, J. B. 2010. Forging an identity: An insider-outsider study of processes involved in the formation of organizational identity. *Administrative Science Quarterly, 55*(1), 1-46.

Gioia, D. A., Schultz, M., & Corley, K. G. 2000. Organizational identity, image, and adaptive instability. *Academy of Management Review, 25*(1), 63-81.

Greenhaus, J. H., & Powell, G. N. 2006. When work and family are allies: A theory of work-family enrichment. *Academy of Management Review, 31*(1), 72-92.

Grichnik, D., Vogel, P., & Burkhard, B. 2016. *The swiss startup ecosystem report*. Retrieved from <https://www.startupticker.ch/uploads/File/Attachments/SSM_Report%202015-2016_Final.pdf>

Guenther, C., Oertel, S., & Walgenbach, P. 2016. It's all about timing: Age-dependent consequences of founder exits and new member additions. *Entrepreneurship Theory and Practice, 40*(4), 843-865.

Gundlach, M., Zivnuska, S., & Stoner, J. 2006. Understanding the relationship between individualism–collectivism and team performance through an integration of social identity theory and the social relations model. *Human Relations, 59*(12), 1603-1632.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. 2013. *Multivariate data analysis: Pearson new international edition*: Pearson Education Limited.

Hambrick, D. C. 2007. Upper echelons theory: An update. *Academy of Management Review, 32*(2), 334-343.

Hambrick, D. C., & Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review, 9*(2), 193-206.

Han, G., & Harms, P. D. 2010. Team identification, trust and conflict: A mediation model. *International Journal of Conflict Management, 21*(1), 20-43.

Harrison, D. A., & Klein, K. J. 2007. What's the difference? Diversity constructs as separation, variety, or disparity in organizations. *Academy of Management Review, 32*(4), 1199-1228.

Hinds, P. J., & Mortensen, M. 2005. Understanding conflict in geographically distributed teams: The moderating effects of shared identity, shared context, and spontaneous communication. *Organization Science, 16*(3), 290-307.

Hitt, M. A., Beamish, P. W., Jackson, S. E., & Mathieu, J. E. 2007. Building theoretical and empirical bridges across levels: Multilevel research in management. *Academy of Management Journal, 50*(6), 1385-1399.

Hmieleski, K. M., & Baron, R. A. 2008. Regulatory focus and new venture performance: A study of entrepreneurial opportunity exploitation under conditions of risk versus uncertainty. *Strategic Entrepreneurship Journal, 2*(4), 285-299.

Hmieleski, K. M., & Ensley, M. D. 2007. A contextual examination of new venture performance: Entrepreneur leadership behavior, top management team heterogeneity, and environmental dynamism. *Journal of Organizational Behavior, 28*(7), 865-889.

Hogg, M. A., Terry, D. J., & White, K. M. 1995. A tale of two theories: A critical comparison of identity theory with social identity theory. *Social Psychology Quarterly, 58*(4), 255-269.

Horwitz, S. K., & Horwitz, I. B. 2007. The effects of team diversity on team outcomes: A meta-analytic review of team demography. *Journal of Management, 33*(6), 987-1015.

Hoyle, R. H. 2014. *Handbook of structural equation modeling*: Guilford Publications.

Huyghe, A., Knockaert, M., & Obschonka, M. 2016. Unraveling the “passion orchestra” in academia. *Journal of Business Venturing, 31*(3), 344-364.

James, L. R., Demaree, R. G., & Wolf, G. 1984. Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology, 69*(1), 85-98.

Jawahar, I., & McLaughlin, G. L. 2001. Toward a descriptive stakeholder theory: An organizational life cycle approach. *Academy of Management Review, 26*(3), 397-414.

Jehn, K. A., & Mannix, E. A. 2001. The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance. *Academy of Management Journal, 44*(2), 238-251.

Jehn, K. A., Northcraft, G. B., & Neale, M. A. 1999. Why differences make a difference: A field study of diversity, conflict and performance in workgroups. *Administrative Science Quarterly, 44*(4), 741-763.

Jin, L., Madison, K., Kraiczy, N. D., Kellermanns, F. W., Crook, T. R., & Xi, J. 2017. Entrepreneurial team composition characteristics and new venture performance: A meta‐analysis. *Entrepreneurship Theory and Practice, 41*(5), 743-771.

Kamm, J. B., Shuman, J. C., Seeger, J. A., & Nurick, A. J. 1990. Entrepreneurial teams in new venture creation: A research agenda. *Entrepreneurship Theory and Practice, 14*(4), 7-17.

Kazanjian, R. K. 1988. Relation of dominant problems to stages of growth in technology-based new ventures. *Academy of Management Journal, 31*(2), 257-279.

Kazanjian, R. K., & Drazin, R. 1990. A stage-contingent model of design and growth for technology based new ventures. *Journal of Business Venturing, 5*(3), 137-150.

Kline, R. B. 2015. *Principles and practice of structural equation modeling, fourth edition*: Guilford Publications.

Klotz, A. C., Hmieleski, K. M., Bradley, B. H., & Busenitz, L. W. 2014. New venture teams: A review of the literature and roadmap for future research. *Journal of Management, 40*(1), 226-255.

Knight, A. P., & Eisenkraft, N. 2015. Positive is usually good, negative is not always bad: The effects of group affect on social integration and task performance. *Journal of Applied Psychology, 100*(4), 1214-1227.

Koberg, C. S., Uhlenbruck, N., & Sarason, Y. 1996. Facilitators of organizational innovation: The role of life-cycle stage. *Journal of Business Venturing, 11*(2), 133-149.

Kraemer, H. C., & Blasey, C. M. 2004. Centring in regression analyses: A strategy to prevent errors in statistical inference. *International Journal of Methods in Psychiatric Research, 13*(3), 141-151.

LeBreton, J. M., & Senter, J. L. 2008. Answers to 20 questions about interrater reliability and interrater agreement. *Organizational Research Methods, 11*(4), 815-852.

Li, J., & Hambrick, D. C. 2005. Factional groups: A new vantage on demographic faultlines, conflict, and disintegration in work teams. *Academy of Management Journal, 48*(5), 794-813.

Lindell, M. K., & Whitney, D. J. 2001. Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology, 86*(1), 114-121.

MacKinnon, D. P., Lockwood, C. M., & Williams, J. 2004. Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39*(1), 99-128.

McKnight, D. H., Cummings, L. L., & Chervany, N. L. 1998. Initial trust formation in new organizational relationships. *Academy of Management Review, 23*(3), 473-490.

McNeish, D., Stapleton, L. M., & Silverman, R. D. 2017. On the unnecessary ubiquity of hierarchical linear modeling. *Psychological Methods, 22*(1), 114.

Mooney, A. C., Holahan, P. J., & Amason, A. C. 2007. Don't take it personally: Exploring cognitive conflict as a mediator of affective conflict. *Journal of Management Studies, 44*(5), 733-758.

Mueller, B. A., Wolfe, M. T., & Syed, I. 2017. Passion and grit: An exploration of the pathways leading to venture success. *Journal of Business Venturing, 32*(3), 260-279.

Murnieks, C. Y., Mosakowski, E., & Cardon, M. S. 2014. Pathways of passion: Identity centrality, passion, and behavior among entrepreneurs. *Journal of Management, 40*(6), 1583-1606.

Pahnke, E. C., Katila, R., & Eisenhardt, K. M. 2015. Who takes you to the dance? How partners’ institutional logics influence innovation in young firms. *Administrative Science Quarterly, 60*(4), 596-633.

Parkinson, B., Fischer, A. H., & Manstead, A. S. 2005. *Emotion in social relations: Cultural, group, and interpersonal processes*: Psychology Press.

Pearce, C. L., & Ensley, M. D. 2004. A reciprocal and longitudinal investigation of the innovation process: The central role of shared vision in product and process innovation teams (ppits). *Journal of Organizational Behavior, 25*(2), 259-278.

Pelled, L. H., Eisenhardt, K. M., & Xin, K. R. 1999. Exploring the black box: An analysis of work group diversity, conflict and performance. *Administrative Science Quarterly, 44*(1), 1-28.

Peterson, R. S., & Behfar, K. J. 2003. The dynamic relationship between performance feedback, trust, and conflict in groups: A longitudinal study. *Organizational Behavior and Human Decision Processes, 92*(1-2), 102-112.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. 2007. Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research, 42*(1), 185-227.

Preacher, K. J., Zyphur, M. J., & Zhang, Z. 2010. A general multilevel sem framework for assessing multilevel mediation. *Psychological Methods, 15*(3), 209.

Priem, R. L., Lyon, D. W., & Dess, G. G. 1999. Inherent limitations of demographic proxies in top management team heterogeneity research. *Journal of Management, 25*(6), 935-953.

Ramarajan, L. 2009. Opening up or shutting down? The effects of multiple identities on problem solving. *The Effects of Multiple Identities on Problem Solving (November 19, 2009). Harvard Business School Organizational Behavior Unit Working Paper*(10-041).

Ramarajan, L., Rothbard, N. P., & Wilk, S. L. 2017. Discordant vs. Harmonious selves: The effects of identity conflict and enhancement on sales performance in employee–customer interactions. *Academy of Management Journal, 60*(6), 2208-2238.

Rink, F., & Ellemers, N. 2007. Diversity as a basis for shared organizational identity: The norm congruity principle. *British Journal of Management, 18*(s1), S17-S27.

Rosseel, Y. 2012. Lavaan: An r package for structural equation modeling and more. Version 0.5–12 (beta). *Journal of Statistical Software, 48*(2), 1-36.

Rothbard, N. P., & Ramarajan, L. 2009. Checking your identities at the door? Positive relationships between nonwork and work identities. In L. M. Roberts & J. E. Dutton (Eds.), *Exploring positive identities and organizations: Building a theoretical and research foundation* (pp. 125-148): Psychology Press.

Santos, S. C., & Cardon, M. S. 2018. What’s love got to do with it? Team entrepreneurial passion and performance in new venture teams. *Entrepreneurship Theory and Practice*, 1042258718812185.

Sargan, J. D. 1958. The estimation of economic relationships using instrumental variables. *Econometrica: Journal of the Econometric Society*, 393-415.

Schjoedt, L., Monsen, E., Pearson, A., Barnett, T., & Chrisman, J. J. 2013. New venture and family business teams: Understanding team formation, composition, behaviors, and performance. *Entrepreneurship Theory and Practice, 37*(1), 1-15.

Scott, W. R. 2003. *Organizations: Rational, natural, and open systems*: Prentice Hall.

Shanock, L. R., Baran, B. E., Gentry, W. A., Pattison, S. C., & Heggestad, E. D. 2010. Polynomial regression with response surface analysis: A powerful approach for examining moderation and overcoming limitations of difference scores. *Journal of Business and Psychology, 25*(4), 543-554.

Shepherd, D. A., & Zacharakis, A. 2003. A new venture's cognitive legitimacy: An assessment by customers. *Journal of Small Business Management, 41*(2), 148-167.

Sieger, P., Gruber, M., Fauchart, E., & Zellweger, T. 2016. Measuring the social identity of entrepreneurs: Scale development and international validation. *Journal of Business Venturing, 31*(5), 542-572.

Simon, B., Pantaleo, G., & Mummendey, A. 1995. Unique individual or interchangeable group member? The accentuation of intragroup differences versus similarities as an indicator of the individual self versus the collective self. *Journal of Personality and Social Psychology, 69*(1), 106-119.

Staw, B. M., Sandelands, L. E., & Dutton, J. E. 1981. Threat rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly*, 501-524.

Steffens, P., Terjesen, S., & Davidsson, P. 2012. Birds of a feather get lost together: New venture team composition and performance. *Small Business Economics, 39*(3), 727-743.

Stenholm, P., & Renko, M. 2016. Passionate bricoleurs and new venture survival. *Journal of Business Venturing, 31*(5), 595-611.

Stryker, S., & Burke, P. J. 2000. The past, present, and future of an identity theory. *Social Psychology Quarterly, 63*(4), 284-297.

Swann, W. B. J., Johnson, R. E., & Bosson, J. K. 2009. Identity negotiation at work. *Research in Organizational Behavior, 29*, 81-109.

Thiel, C. E., Harvey, J., Courtright, S., & Bradley, B. 2017. What doesn’t kill you makes you stronger: How teams rebound from early-stage relationship conflict. *Journal of Management*, 1-37.

Vanaelst, I., Clarysse, B., Wright, M., Lockett, A., Moray, N., & S'Jegers, R. 2006. Entrepreneurial team development in academic spinouts: An examination of team heterogeneity. *Entrepreneurship Theory and Practice, 30*(2), 249-271.

Vohora, A., Wright, M., & Lockett, A. 2004. Critical junctures in the development of university high-tech spinout companies. *Research Policy, 33*(1), 147-175.

Walter, F., & Bruch, H. 2008. The positive group affect spiral: A dynamic model of the emergence of positive affective similarity in work groups. *Journal of Organizational Behavior, 29*(2), 239-261.

West, S. G., Taylor, A. B., & Wu, W. 2012. Model fit and model selection in structural equation modeling. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 209-231). New York, NY: Guilford Press.

Whetten, D. A. 2006. Albert and whetten revisited: Strengthening the concept of organizational identity. *Journal of management inquiry, 15*(3), 219-234.

Williams, M. 2001. In whom we trust: Group membership as an affective context for trust development. *Academy of Management Review, 26*(3), 377-396.

Yang, C., Nay, S., & Hoyle, R. H. 2010. Three approaches to using lengthy ordinal scales in structural equation models: Parceling, latent scoring, and shortening scales. *Applied Psychological Measurement, 34*(2), 122-142.

Zhao, E. Y., Fisher, G., Lounsbury, M., & Miller, D. 2017. Optimal distinctiveness: Broadening the interface between institutional theory and strategic management. *Strategic Management Journal, 38*(1), 93-113.

1. Although this study develops insights at the level of early-stage new venture teams, the theoretical mechanism outlined in this section draws on prior research that assimilates insights from investigating identities at the organizational as well as the individual level (e.g. Corley & Gioia, 2004). In that respect, prior research states that an identity at a collective level can be treated “as an analogue of individual identity, drawing attention to the parallel functions identity plays for both individual and collective social actors” (Whetten, 2006, p. 219), and that collectives should be viewed “as actors in their own right, as *collective social actors*. They can take actions, utilize resources, enter into contracts, and own property” (Scott, 2003, p.7, italics added). [↑](#footnote-ref-1)
2. In 2017 and 2018, the value of 1 CHF ranged between 0.985 and 1.084 USD. [↑](#footnote-ref-2)
3. The detailed analyses are available from the authors upon request. [↑](#footnote-ref-3)
4. The metric midpoint of the scale equals 25, while the product of the sub dimensions’ midpoints is 4x4=16. [↑](#footnote-ref-4)
5. The transformation was computed as xnew = (maxnew - minnew)\*(xold - minold)/(maxold - minold) + minnew, with x = observation, max = scale maximum, min = scale minimum (Aiken, 1987). [↑](#footnote-ref-5)
6. Based on the results of the multi-group mediation model, that reports insignificant direct effects from both TEP variables on team performance in both development stages, we opted to specify a fully mediated polynomial model. That way, we were able to limit the number of independent variables in the model. [↑](#footnote-ref-6)
7. For the polynomial model, we followed the advice of Edwards (2007) and Shanock et al. (2010) to midpoint-center the predictors of interest rather than to mean-center them. Given that both TEP variables are left skewed, the mid-point centered variables show primarily positive observations, and the lower-order effects are consequently highly correlated with the quadratic and interaction effects. As a result, the model including these higher-order terms displays several high VIFs. As discussed by Allison (2012), and iterated by other scholars (Aguinis, Edwards, & Bradley, 2017; Allen, Chandrasekaran, & Basuroy, 2018), inflated VIFs due to adding higher-order terms do not introduce a threat to valid estimation and interpretation, but are artifacts of the rationale behind VIFs. As the correlation between the two predictors is as such that the VIFs in the model without the quadratic and interaction terms are substantially below the threshold of 10, we can safely argue that multicollinearity is not an issue. [↑](#footnote-ref-7)