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**On the role of team passion in inventing, founding, and
developing:
What happens in the early stages of entrepreneurship?**

Journal:	<i>Journal of Small Business and Enterprise Development</i>
Manuscript ID	JSBED-07-2022-0302.R2
Manuscript Type:	Research Paper
Keywords:	Team entrepreneurial passion, Entrepreneurial team, Opportunity Recognition, Team performance, Opportunity exploitation, Team cooperation



On the role of team passion in inventing, founding, and developing:

What happens in the early stages of entrepreneurship?

Abstract

Purpose –Drawing on the Broaden-and-Build Theory, the study investigates the impact of Team Entrepreneurial Passion (TEP) on team performance. This study further examines the mediating role of team cooperation between TEP and team performance. Thus, by expanding the conceptual model of TEP, we examine how three domains of TEP, namely inventing, founding, and developing affect the entrepreneurial outcomes in the early stages of entrepreneurship.

Design/methodology/approach – Survey data were collected from 29 entrepreneurial teams, and the proposed relationships were assessed through Smart-PLS 3.2.8 structural equation modeling tool.

Findings – Regarding the domains of TEP, our findings show that the TEP for inventing is positively related to team performance. As for the influences of TEP for inventing and TEP for developing, both are the most beneficial for entrepreneurial outputs, such as team members' abilities to recognize and exploit opportunities.

Originality/value – Although there is an increased scholars' interest in entrepreneurial passion, there is a lack of research that examines the enabling factors and outcomes of entrepreneurial passion at the team level. This study is among the earliest research studies that not only empirically explores the relationships between TEP and team performance but furthermore illustrates how each domain of TEP uniquely influences entrepreneurial outcomes by extending existing studies on entrepreneurial passion.

Keywords Team entrepreneurial passion - Entrepreneurial team - Opportunity recognition - Opportunity exploitation - Team performance - Team cooperation

Article classification Research Paper

Introduction

In entrepreneurship, the new venture creation is an outcome of efficient interactions of social and internal actors (Klotz et al., 2014) that will not proceed with the solo individual in an isolated environment. Indisputably, most of the practices of the enterprise are executed through the collaboration of groups of entrepreneurs who have the same share of interest in achieving entrepreneurial goals (Lazar et al., 2020). For this reason, scholars are interested in learning why and how some entrepreneurial teams perform better than others. By developing the concept of teams in entrepreneurship, researchers have sought to explore the inherent emotional capabilities that impact team performance and firm outcomes (Chiang et al., 2021). Accordingly, the concept of "Team Entrepreneurial Passion" (TEP) (Cardon et al., 2017) emerges as an emotional predictor within entrepreneurial teams that may impact entrepreneurial behavior (Qian et al, 2022) and team performance (Santos and Cardon, 2019; Boone et al., 2020). While the current findings demonstrate the importance of TEP in moving forward with their entrepreneurial endeavors (Zhu et al., 2022), comparatively few empirical studies were conducted to explain better the influential role of TEP on team outputs, such as team performance (Su et al., 2022; Boone et al., 2020). Rather, this study sought to investigate the relationship between TEP and the performance of entrepreneurial teams in the early stage of new venture creation. More specifically, by extending the theoretical model of Cardon et al. (2017), we illustrate whether any specific domains of TEP (i.e., Inventing, founding, and developing) are related to team performance. Furthermore, to understand how and under what conditions TEP promotes entrepreneurial team performance, we focus on the role of team cooperation (Shin et al., 2016). We explore how team cooperation plays a mediating role in the relationship between TEP and team performance.

It is incontrovertible that TEP is significant in both entrepreneurial and team contexts (Cardon et al., 2013), and most recent empirical research increasingly recognizes it as inherent in team-level behavior (Boone et al., 2020). However, what is unclear is whether, how, and why TEP influences entrepreneurial actions and consequences. Consequently, in this present study, the research gap is addressed through this research question: How does TEP influence team performance and facilitate opportunity exploitation and recognition? Considering the remarkable role of entrepreneurial teams on enterprise achievements at the early stage of the entrepreneurial process (Patzelt et al., 2021), in this study, we sought to understand how TEP can foster entrepreneurial outcomes, especially at the early stage of entrepreneurship, such as the recognition and exploitation of new opportunities. This is noteworthy since our results elucidate that the diversity in the domains of the TEP may have different effects on entrepreneurial outcomes.

Theoretically, the Broaden-and-Build Theory (Fredrickson, 2001) was adopted in our study as a lens toward a better comprehension of TEP, team performance, and opportunity recognition and exploitation. The theory suggests that people who experience positive emotional states broaden their attention and may utilize the available resources more extensively during the engagement in activities that they are passionate about (Fredrickson, 2001). Therefore, passion enhances the thought-action process among the team members by increasing the connection between team identity and team performance through its impact on team processes (Boone et al., 2020).

This article provides three contributions to the literature. First, we deepen existing empirical understandings of how passion operates in entrepreneurship by focusing on passion at the level of team analysis. We argue and propose how the different domains of TEP are drivers of team performance. More specifically, the findings of our investigation into the impact of the three TEP domains on team performance at the earliest stages of both team formation and the emerging new venture expand on existing knowledge about TEP and team performance. Second, drawing on Broaden-and-Build Theory, we enhanced the insights on the relationship between TEP and team performance, thereby comprehending the impact of TEP on entrepreneurial outcomes at the early stage of entrepreneurship. Third, this study was performed in response to the call for new investigations on different TEP outcomes (Cardon et al., 2017; Drnovsek et al., 2009). We enriched the current literature by providing new theoretical and empirical insights into the functioning of TEP by introducing opportunity recognition and exploitation as team outputs. Therefore, this study ranks among the first empirical works on TEP that create new insights into the relationship between domains of TEP and entrepreneurial outcomes in the early stage of business creation.

Theoretical background and hypotheses development

Team entrepreneurial passion

In entrepreneurship, the most common definition of entrepreneurial passion has been proposed by Cardon et al. (2009), as "consciously accessible intense positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur" (p. 517). This definition encompasses two principal components—intense positive feeling and identity centrality—that are essential to the conceptualization of entrepreneurial passion (Lex et al., 2022). The entrepreneurial passion proposed by Cardon et al. (2013) encompasses three dimensions of entrepreneur identity characteristics:

inventing, founding, and developing a venture. The entrepreneurial passion for inventing is related to scanning the environment for new market opportunities, developing new products or services, and proposing innovative methods in the market (Fesharaki, 2019). The entrepreneurial passion for founding is associated with assembling the necessary resources and creating a new enterprise (Cardon et al., 2009). Finally, entrepreneurial passion for developing includes approaches for growing and developing the venture to coincide with the market and customers' interests (Drnovsek et al., 2016). For instance, throughout the diverse phases of the entrepreneurial process, each component of passion may be manifested to diverse degrees (Cardon et al., 2009). **Overall, entrepreneurial passion can lead to a more innovative and creative approach to venture development (Casprini et al., 2020)**

To direct the researchers' attention to team-level passion, Cardon et al. (2017) first proposed the concept of TEP, which they addressed as “the level of shared intense positive feelings for a collective team identity **that is high** in identity-centrality for the new venture team” (Cardon et al., 2017, p. 286). TEP has been recognized as a shared passion that is collectively experienced by a group of entrepreneurs who likely share a team passion for a joint identity (Cardon et al., 2017). Thus, entrepreneurial teams can benefit from TEP, which is composed of the shared identity of team members (Santos and Cardon, 2019) and can improve the overall performance of team members because they collectively experience passion (Pietersen and Botha, 2021). Following Cardon et al.'s (2009) suggestion of entrepreneurial passion to determine the three identities of entrepreneurial passion roles at the individual level, Cardon et al. (2017) then extended the same approach to the team level. **The authors further noted that the relationship between entrepreneurial passion, whether at an individual or team level, and outcomes is complex and contingent on various factors, such as the type of passion, the stage of the entrepreneurial process, and the context in which the entrepreneurship takes place (Lee and Herrmann, 2021; Laskovaia et al., 2022).**

Team entrepreneurial passion and team performance

Research on TEP is still in its infancy as one of the first empirical attempts to investigate the topic was conducted recently by Cardon et al. (2013). What we know about TEP is largely based on pieces of evidence that substantiate the influential role of TEP on team outcomes, such as the performance of new venture teams (Su et al., 2022; Santos and Cardon, 2019; Boone et al., 2020). However, recent empirical investigations have highlighted contradictory results on the influence of TEP on team processes and outcomes. For example, Santos and Cardon (2019), as an early empirical study, and later Boone et al. (2020) reported that TEP for inventing has a positive

effect on subjective team performance while this influence does not hold for TEP's effect on founding activities. De Mol et al.'s (2020) results illustrated the negative impact of TEP inventing on objective team performance. As a result, all these distinct developments concerning the role of entrepreneurial passion, particularly in the context of a team in entrepreneurship, necessitate the development of the concept of TEP to comprehend how a shared sense of passion can motivate all team members to perform better as a team.

In this study, we aim to enhance our understanding of the three types of TEP and team performance in the early stages of the process. Using Fredrickson's (1998) Broaden-and-Build Theory as a basis, we argue that positive emotions have the power to extend people's momentary thought-action and build their physical and intellectual resources to social and psychological resources (Fredrickson et al., 2013). We posit that experiencing pleasant affective states in a team (i.e., TEP) enhances the thought-action process among the entrepreneurs, leading to intense positive feelings and increasing the connection between team identity and team performance through its impact on team processes (Boone et al., 2020; Uy et al., 2021). When team members collectively experience passion, the impact of TEP broadens the scope of thinking (Fredrickson, 2001), which allows them to broaden their thoughts and interact with a wider range of perspectives (Fredrickson and Joiner, 2002). Such positive emotion may also lead to idea-sharing to improve creativity within a group (Rhee, 2006), thus providing information about the performance of the team (Fredrickson, 1998). We consider team performance as "the extent to which the productive output of a team meets or exceeds the performance standards of those who review and/or receive the output" (De Jong and Elfring, 2010, p. 536). This concept of team performance gives us the possibility to determine the quality, the quantity, and the overall assessment of team performance.

More specifically, TEP may have a diversity of entrepreneurial roles—inventing, founding, and developing—that can be beneficial while team members experience the same team identity for a particular entrepreneurial role. Team members who experience passion **for** the specific role-identity in the team would promote team performance in a positive direction because the team members feel that all their efforts are directed to the identical purpose in a team (Barsade et al., 2000). Taking everything into account, a positive TEP motivates team members to accomplish activities that benefit the entire team (Breugst et al., 2012) and to pursue a team's endeavors to reach entrepreneurial objectives, we predict that all three types of TEP will improve the performance of the entrepreneurial teams:

H1a: TEP for inventing has a significant impact on team performance.

H1b: TEP for founding has a significant impact on team performance.

H1c: TEP for developing a significant impact on team performance.

The mediating effect of team cooperation

Based on the entrepreneurial team literature, it can be argued that the performance of a team is influenced by a range of factors pertaining to team composition, such as individual attributes, team interactions, and external circumstances (Lyndon and Pandey, 2021; Zhou et al., 2017; Jin et al., 2027). By focusing on TEP, several questions are raised, such as whether team mechanisms (e.g., team conflict) can influence the relationship between TEP and team outcomes. Although few researchers have addressed team conflict in this relationship, the current literature is underdeveloped in explaining how other team mechanisms (e.g., team cohesion) influence the link between TEP and team performance. Of the mechanisms that influence team performance, team cooperation has been identified as the intentional contribution of personal efforts to task completion (Li et al., 2019). By increasing members' responsibility for decision-making through delegation of authority, team cooperation enhances team members' sense of ownership and belonging (Liang et al., 2015). For instance, team members cooperatively working with each other improves their willingness to share information (Shin et al., 2016) and their supportive behavior, thereby contributing to team performance (Puck and Pregermig, 2014).

The literature has demonstrated that positive team emotion increases cooperation as team dynamics translate team inputs into outcomes while exhibiting higher levels of cooperation toward achieving collective objectives (Santos and Cardon, 2019). Sharing positive emotions, such as team passion motivates the team to work collectively toward joint goals, and thus enhances the team's cooperation in pursuit of the entrepreneurial goal (Drnovsek et al., 2009). Consequently, TEP broadens team members' cooperative behavior and actions toward their goals (Barsade et al., 2000). In this case, team cooperation is thought to be a mechanism that can mediate the relationship between TEP and team performance. Following the literature, we proposed that:

H2a: Team cooperation mediates the relationship between TEP for inventing and team performance.

H2b: Team cooperation mediates the relationship between TEP for founding and team performance.

H2c: Team cooperation mediates the relationship between TEP for developing and team performance.

Team entrepreneurial passion, opportunity recognition, and opportunity exploitation

In entrepreneurship, the processes of identifying, recognizing, and developing business opportunities are considered the initial steps in the entrepreneurial process (Singh and Gibbs, 2013). Opportunity recognition refers to being alert to potential business opportunities, actively searching for and gathering information about them, communicating on the subject, addressing customer needs, and evaluating the viability of such potential entrepreneurial activities (Baron, 2006). After recognizing the new opportunities, it is time to effectively exploit them. In this regard, opportunity exploitation is described as developing a product or service based on a perceived entrepreneurial opportunity (Kuckertz et al., 2017). The process of exploiting an opportunity involves developing a product or service, acquiring human resources, planning the business, understanding customers and the market, and gathering resources (Hmieleski and Baron, 2008).

Several studies have examined the influence of entrepreneurial passion on entrepreneurial intention (Anjum et al., 2021) and entrepreneurial behavior (Cardon et al., 2009). Through the emotional lens of entrepreneurship, entrepreneurial passion is embedded in entrepreneurial activities, including recognizing and exploring new opportunities and founding and developing new businesses (Cardon et al., 2009). Entrepreneurs' emotions are important in the early stages of new business creation (Feng and Chen, 2020). Specifically, entrepreneurial passion stimulates alertness (i.e., scanning and searching, informing, connecting, evaluating, and judging), making it possible for entrepreneurs to identify and recognize opportunities to establish a new business (Campos, 2017; Li et al., 2020). Nevertheless, regarding the well-explored impact of entrepreneurial passion on entrepreneurial outcomes (Bao et al., 2017; Cardon et al., 2009), this area of study has remained silent at the team level. Therefore, that aspect also needs to be empirically explored to determine whether TEP may improve team members' ability to identify business-related opportunities by making other members aware of possibilities they had not previously perceived (Baron, 2008). Especially experiencing and sharing the specific role-identity of the passion among team members could better capture the unique effects of positive emotions and demonstrate how positive emotions for specific goals broaden people's momentary thought-action patterns (Fredrickson, 2001). As previous studies developed the research by identifying the individual entrepreneurial passion as an indicator that

may have an impact on opportunity recognition and exploitation. Hence, we claim that TEP also can facilitate this process (Figure 1).

When teams have already established their business, we believe that it is fundamental to pay attention mainly to the two domains of inventor and developer of entrepreneurial passion, since the entrepreneurial passion for founding is more related to establishing new firms. Based on the nature of the inventing domain of entrepreneurial passion, entrepreneurs who are passionate about inventing seek new business opportunities and create new products and/or services (Cardon et al., 2009). Therefore, individuals with a higher entrepreneurial passion for inventing devote more time to exploring new market opportunities and managing new opportunities to develop their entrepreneurial goals (Rahman et al., 2020).

Following the Broaden-and-Build Theory (Fredrickson, 1998), the shared positive emotions within the team broaden their attention to new information associated with the market (Rhee, 2007). Through this process, team members are encouraged to engage in thoughtful deliberation and exploratory action to pursue entrepreneurial opportunities (Harper, 2008). Accordingly, passionate entrepreneurs on a team with a higher level of TEP toward inventing are more capable of being **aware of new** entrepreneurial opportunities (Baron, 2008; Cardon et al., 2017). In addition, working on a team that includes passionate teammates for inventing gives new possibilities to the members to connect disparate pieces of information to obtain resources and, consequently, manage them to recognize new opportunities (Costa et al., 2018). A team with a passion for inventing may also increase the entrepreneurs' attention towards the new markets or technological opportunities (Li et al., 2020), as well as enable them to creative problem solving (Cardon et al., 2009). In the meanwhile, the passion for opportunity discovery (Kiani et al., 2021) is likely to motivate them to recognize opportunities (Mahto and McDowell, 2018) and create new ventures (Li et al., 2020). Therefore, teams benefit from this passion for opportunity recognition to obtain financial, human, and social resources (Costa et al., 2018).

H3: TEP for inventing has a significant positive and direct effect on opportunity recognition.

Regarding the developer role-identity of passion, we believe that it brings outcomes such as exploiting the opportunities that entrepreneurs recognized earlier (Cardon et al., 2017). Entrepreneurs who have a passion for developing are more engaging and alert in activities like finding new customers, developing new markets, and optimizing organizational processes (Cardon et al., 2009). Being in a team with a specific role-identity for developing conducts the team's actions in developing new opportunities toward commercializing their existing resources. Teams with TEP for developing are more alert to exploit the social and human capital resources and

actively search for an opportunity and gather resources for developing the market (Costa et al., 2018; Xiao et al., 2020). Thus, this study proposes the following:

H4: TEP for developing has a significant positive and direct effect on opportunity exploitation.

Insert Figure 1 here

Data and methodology

Our research approach was deductive and quantitative, utilizing a cross-sectional survey design to investigate young entrepreneurial teams involved in early-stage venture entry with a strong focus on identifying and capitalizing on opportunities and their outcomes related to team entrepreneurial passion. As team entrepreneurial passion's impact on team and venture performance is a subject that has received little attention as discussed earlier. In this study, the proposed model and the relationship between variables have been established theoretically established in earlier studies, different from them we applied the quantitative methodology to investigate these relationships. Applying the quantitative study of entrepreneurial teams is vital for advancing our understanding of the factors that contribute to successful entrepreneurship and team performance, and for developing evidence-based strategies to support entrepreneurial teams in achieving their objectives (Kollmann et al., 2017). Our study emphasizes the importance of employing reliable and generalizable quantitative methods such as surveys and statistical analyses to generate knowledge about entrepreneurial teams.

In the context of entrepreneurship, cross-sectional designs allow the researchers to examine a wide range of variables that influence venture performance and entrepreneurial outcomes (Das et al., 2021; Zhou et al., 2017). As a result, in the context of a team in entrepreneurship, applying the cross-sectional approach as a common technique enable the researchers to examine a wide range of variables, compare and analyze data from multiple teams, and identify patterns that help elucidate the complex interplay between individual and team aspects that impact team performance and entrepreneurial outcomes (Saud Khan et al., 2014). Moreover, this study employed random selection techniques to ensure a representative sample of the population of innovative entrepreneurial teams (Olken and Rotem, 1995). This approach enables us

to reach a more extensive range of entrepreneurial teams, including those with varying domains of entrepreneurial passion (Zhu et al., 2022).

Sampling and data collection

For this quantitative study, a structured questionnaire was used for data collection. We sampled entrepreneurial teams across the early phases of the entrepreneurial process. The final sample comprised 29 entrepreneurial teams from Europe, selected using the following criteria: being active in the business during the five years of our study and entrepreneurial teams composed of at least two members (Omri and Boujelbene, 2015). These teams were from various industries in the economy and their entrepreneurial achievements were related to the early stages of their activity. Additionally, we recruited participants through lists provided by a university of the University of Campania Luigi Vanvitelli, the university of Cagliari in Italy, and entrepreneurship hubs. This approach resulted in 404 potential participants who were contacted via email. In total, 80 entrepreneurs were eligible for participation and agreed to take part in the study (19.8% response rate). Out of the 80 participants, 10 incomplete responses were discarded, resulting in a final sample of 70 participants. For testing the hypotheses, the survey was designed to include questions on the independent, dependent, mediator, and control variables, as well as some other basic information about the venture and team.

Variable measurement

The questionnaire includes five Likert-type scales that teams rated based on their level of agreement with each item on a scale of 1–5 (where 1=strongly disagree and 5=strongly agree for team performance, opportunity recognition, opportunity exploitation, and TEP). For team cooperation, the five Likert-type scales were ranked from 1=not affected by our ideas to 5= significantly enhanced by team members' ideas.

Team performance was measured by three items adapted by De Jong and Elfring (2010). By using these items, we evaluated the subjective team performance based on team members' perceptions of how they were doing and the value they bring to the business (Santos and Cardon, 2019). A sample item is "The overall assessment of our team's effectiveness is very good."

Opportunity recognition was measured by using the three-item scale developed by Ozgen and Baron (2007). These items asked respondents' opinions about the potential new venture opportunities that the team recognized based on the ideas they had in the last 12 months. A sample item is "My team can recognize new venture opportunities in industries where I have no personal experience."

Opportunity exploitation was tested with four items developed by Kuckertz et al. (2017). These items measure how they developed a product or service based on a perceived entrepreneurial opportunity, acquiring appropriate human resources, understanding customers and the market, raising financial resources, and establishing an organization (De Massis et al., 2021). An example of one item is "We have put together an entrepreneurial team to pursue a business opportunity we perceived."

Team entrepreneurial passion (TEP) was measured using the 13 items from Cardon et al. (2013). We followed Santos and Cardon's (2019) team-level approach and changed the first person "I" items to the plural form "we" to gather what the team was passionate about. Consistent with Cardon et al. (2013), TEP was assessed for each domain of passion—inventing, founding, and developing—maintained as separate constructs, rather than lumping all the measures into an overall average measure of entrepreneurial passion. Therefore, in line with previous studies (e.g., Cardon et al., 2013; Santos and Cardon, 2019), we calculated the TEP for each domain as a product of team intense positive feelings (IPF) and team identity centrality (IC). Example items for the intensity of positive feelings for inventing, founding, and developing were "Scanning the environment for new opportunities excites my team"; "Establishing a new company excites us"; and "Assembling the right people to work for my business is exciting." The sample items for identity centrality for inventing, founding, and developing were "Inventing new solutions to problems is an important part of who I am"; "Being the founder of a business is an important part of who I am"; and "Nurturing and growing companies is an important part of who I am."

Team cooperation was assessed with five items developed by Chatman and Flynn (2001). A sample item is "There is a high level of cooperation between team members."

Control variables. Initially, we included variables estimating team diversity (age, gender, level of education) and team size. We thought such controls belonged in our data analysis because judging from previous studies these covariates may have an impact on team performance, opportunity exploitation, and opportunity recognition (Zhou et al., 2015). However, our findings indicated that team size and gender were not significant predictors of dependent variables in this study. Therefore, we heeded a suggestion to consider only the control variables that correlated with dependent variables (De Mol et al., 2020). Accordingly, they were removed from our analyses, though we did maintain the control variables of age and education for further analysis. Education was assessed by asking participants for their highest finished level (1=less than high school, 2=high school diploma or the equivalent; some college credit, 3=technical/vocational training, 4=master's degree, 5=professional degree, 6=bachelor's degree, 7=doctoral degree). Also, age was recorded as the respondent's age (in years) at the time of taking the survey.

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3 **Data analysis procedure**
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6 In this study, we followed a two-step analysis. First, we used SPSS to screen the data and identify common method
7 bias. Second, we applied structural equation modeling (SEM) using SmartPLS 3.2.8 software (Ringle et al., 2020).
8 Specifically, the quantitative metrics were analyzed through partial least squares structural equation modeling
9 (PLS-SEM) (Hair et al., 2020; Hair et al., 2019). The PLS approach was used for its capability to analyze complex
10 interactions between latent variables and their dimensions (Sarstedt et al., 2017). Moreover, this method is very
11 convenient when the aim is an exploration of new relationships between variables and limited theoretical and
12 empirical knowledge is available to guide hypothesis generation (Hair et al., 2020). Some recent studies that
13 focused on passion at the individual level have utilized this method (Sriyakul and Jermstittiparsert, 2019); however,
14 the present study will be the first to apply this method to analyze passion at the team level.
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24 *Common method bias*
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26 Harman's (1976) single-factor test was evaluated to test for common method bias. Harman's single-factor test was
27 conducted by including all principal structures in a principal component factor analysis (Bagheri et al., 2020). The
28 results indicated that the first factor explained 27.04% of the variance, which is less than 50%, as per the
29 recommendation of Podsakoff et al. (2003). Then, a correlation matrix test was operated as suggested by Pavlou
30 et al. (2007) to determine whether the variables were highly correlated or not. As shown in **Table 1**, a high
31 correlation was not shown among the variables. Thus, the common method bias is not a concern in this research.
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Insert Table 1 here

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44 **Results**
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47 *Measurement model assessment*
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49 The SmartPLS proceeded through two analysis steps: the specification of the measurement model and the
50 assessment of the structural model evaluation (Hair et al., 2020). The factor loadings of all model items were
51 evaluated. Three items were removed based on the results because their factor loadings were below the suggested
52 value of 0.70 (Hair et al., 2019). Therefore, the two items for team cooperation (Coop1 and Coop2) that showed
53 loadings of -0.03 and -0.466, respectively, and the item of opportunity exploitation (OE4) showing loading of
54 0.622 were removed from the item list. The other items showed desirable factor loadings greater than 0.7 (Hair et
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al., 2019). To test the reliability of the constructs, this study adopted Cronbach's alpha and Composite Reliability (CR). Cronbach's alpha of each construct exceeded the 0.70 thresholds (Hair et al., 2019), and all the CRs were higher than the recommended value of 0.70 (Hair et al., 2019). Convergent validity was acceptable because the average variance extracted (AVE) was over 0.50 (Hair et al., 2020). Hence, the discriminant validity was evaluated by applying the Fornell–Larcker criterion (Fornell and Larcker, 1981) which compares the square root of the AVE with the correlation of latent constructs (Ringle et al., 2012). Therefore, the square root of each construct's AVE should have a greater value than the correlations with other latent constructs (Henseler et al., 2015). Table II presents the factor loadings, alpha coefficient, CR, and AVE. As shown in Table III, the results confirm the discriminant validity.

Insert Table II here

Insert Table III here

Structural model assessment

The results of the coefficient of determination (R^2) for opportunity exploitation (0.318), opportunity recognition (0.108), and team performance (0.277) support the model's in-sample predictive power since they are above the required level of .10 (Hair et al., 2019). In addition, the predictive accuracies of the model were measured by determining the value of Q^2 (Hair et al., 2019). Based on the blindfolding procedure, Q^2 above zero shows that the predictive relevancy of the endogenous constructs was established (Sarstedt et al., 2017). In addition, the model fit in PLS-SEM was assessed by determining the standardized root mean square residual (SRMR) (Hair et al., 2017). In this study, the SRMR yields a value of .078. This value is lower than the cutoff value of .80 (Hu and Bentler, 1999) which confirms that the data implicit in the model and the observed correlations fit reasonably well (Hair et al., 2014). With the evaluation of the measurement model and the structural model completed, the next step was to assess the hypothesized associations. For assessing the significance of the hypothesis, the bootstrapping procedure with 5,000 samples was performed (Sarstedt et al., 2014). As displayed in Table IV, there is a significant positive effect of TEP for inventing on team performance ($\beta = 0.340$, $p < 0.05$). Therefore, H1a is supported. However, the results revealed an insignificant effect of TEP for

founding ($\beta = -0.023$, $p = 0.857$) and TEP for developing ($\beta = 0.006$, $p = 0.950$) and team performance. Therefore, H1a was supported, whereas H1b and H1c were rejected.

Mediation analysis

Mediation analysis was performed to assess the mediating role of team cooperation on the relationship between three domains of TEP and team performance (H2a, H2b, and H2c). The results reveal that all three indirect relationships were proven to be non-significant. The outcomes show that with the introduction of the mediator into the model, the direct effect was still found positive and significant ($\beta = 0.340$, $p < 0.001$). While the indirect effect with the inclusion of the mediator into the analysis was observed insignificant ($\beta = 0.099$, $p = 0.115$). Therefore, the results could not support H2a. In addition, the mediating effect of team cooperation was evaluated by the relationship between TEP for founding, TEP for developing, and team performance. With the inclusion of the mediator into the model, the direct effect of TEP for founding (H2b: $\beta = -0.023$, $p = 0.857$) and TEP for developing ($\beta = 0.006$, $p = 0.950$) were discovered to be insignificant. Similarly, the indirect effect of the TEP for founding ($\beta = 0.006$, $p = 0.912$) and TEP for developing ($\beta = 0.002$, $p = 0.952$) with the inclusion of the mediator into the analysis were insignificant. Thus, H2b and H2c were rejected. Accordingly, the results demonstrate that the relationship between all three domains of TEP and team performance is not mediated by team cooperation. The results of the mediation analysis are presented in Table V.

Also, H3 assesses whether TEP for inventing has a significant effect on opportunity recognition. The results revealed a statistically significant impact of TEP for inventing on opportunity recognition ($\beta = 0.328$, $p < 0.01$). Therefore, H3 was supported. The results also acknowledge a significant direct and positive effect of TEP for developing on opportunity exploitation. The results confirmed that TEP for developing played a significant role in shaping opportunity exploitation ($\beta = 0.501$, $p < 0.05$). Consequently, H4 was supported.

On the possible function of the control variables, the results indicate that the level of education has a positive significant direct effect on the team members' abilities to take advantage of new opportunities ($\beta = 0.237$, $p < 0.01$). Meanwhile, the team members' age has a significant and positive influence on team performance ($\beta = 0.175$, $p < 0.05$).

Insert Table IV here

Insert Table V here

Discussion

Our focus on TEP enabled us to derive new insights into the role played by entrepreneurial passion at the team level on both team performance and entrepreneurial outcomes at the early phase of team formation. In this study, drawing on the Broaden-and-Build Theory (Frederickson, 2001), the authors investigated the role of TEP on opportunity recognition, opportunity exploitation, and team performance with the mediating role of team cooperation. In emphasizing the importance of TEP, our study offers a new perspective of entrepreneurial passion by looking at the team level of analysis. This approach extends the literature on the relevance of entrepreneurial passion not only at the individual level but also at the team level. This is relevant because, following the nascent body of research (Santos and Cardon, 2018; De Mol et al., 2019), our study is among the first empirical studies that investigate entrepreneurial passion at the team level and its influence on team performance. Additionally, in response to Boone et al.'s (2020) earlier call to explore the substantial impact of TEP on team processes of new ventures, we provide insights into the consequences of TEP for team performance and their skills in recognizing and exploiting opportunities.

Theoretical implications

Overall, our study has several implications at the theoretical level. First, the first hypothesis sought to determine the relationship between TEP (inventing, founding, developing) and team performance. The results concerning the impact of the three domains of TEP, and team performance were somewhat different from our initial predictions. Our results revealed that only TEP for inventing **effects** team performance, whereas the results could not support a significant effect of TEP for founding or TEP for developing team performance. Thus, entrepreneurial passion at the team level broadens the scope of thoughts that can yield insights into the team procedures and their impact on team performance. TEP literature emphasizes that TEP can help entrepreneurial team performance (e.g., Boone et al., 2020; Santos and Cardon, 2019, De Mol et al., 2019). More specifically, our findings show that the three domains of TEP play distinct roles in entrepreneurial team performance. We can explain this result by suggesting that the performance of the entrepreneurial team is considerably dependent on the function of the TEP identity that is experienced during the entrepreneurship process. Regarding the non-

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significant influence of TEP for developing and TEP for founding on the performance of the team, we can speculate that the effect of the three domains of TEP on team performance depends on the entrepreneurial stage in which the teams were operating when the research was conducted. This means that TEP is affected by both the team's formation phases and the life cycle of entrepreneurial activities. However, an entrepreneurial team with extreme enthusiasm for entrepreneurship could not guarantee that a team will be productive, because the perception of team performance ties to the understanding of the team's identities around those activities. An important implication of these findings is how TEP with role-specific identities would lead the team's effort and passion to achieve desired entrepreneurial outcomes. Altogether, our results introduced new insights to discriminating the function of the three domains of TEP proposed by Cardon et al. (2017) to determine whether the focus on team role identity might impact team performance in the early stage of entrepreneurship. Future research would be expected to provide evidence for this assumption.

Second, in addition to the first hypothesis, for the first time in the TEP literature, we explore the mediation role of team cooperation on the relationship between three domains of TEP and team performance to highlight the team-related mechanisms which link TEP to team performance. We found an insignificant mediation effect of team cooperation on the relationship between team performance and the three types of TEP. The results could not support the suggested hypothesis. We account for and explain this finding by considering the association between team cooperation and the stages of team formation. For the teams who participated in the present study, the majority were in the exploratory relations stage, which manifested itself in team members cooperating and harmonizing their activities to complete their tasks in the group. When the teams are in the infancy stage of forming, team members are more involved with finding and stabilizing their team roles, so team responsibilities may not be well-defined, and the communication levels are not fully fleshed out. Consequently, all these factors will affect the team cooperation degree.

Third, we introduced TEP as a significant team antecedent and its impact on the entrepreneurial outcomes, namely recognition, and exploitation of opportunities. In the entrepreneurship literature, emotions and passion are recognized as significant sources of motivation and fuel for the entrepreneurial behavior of entrepreneurs (Neneh, 2022). Also, it is incontrovertible that TEP is important in entrepreneurship research (Newman et al., 2021), but its role as a predictor of entrepreneurial outcomes in the early stage of entrepreneurship has not been previously considered. Earlier studies did not consider the role of the particular stage of entrepreneurship in forming and operating an entrepreneurial team in examining the level of TEP. Therefore, in this study, the recognition and exploitation of opportunities were suggested as the entrepreneurial outcomes of entrepreneurial teams that are

engaged in the early phase of entrepreneurship. More specifically, we concentrated on the distinguishable domains of TEP's role identity composition, namely inventing and developing. We found that TEP for inventing has the greatest influence on the ability of the team to recognize new opportunities in terms of finding financial, human, and social resources as well as in introducing a new product or service to the market. In this regard, higher-level TEP with the shared role-identity of inventing among entrepreneurial teams encourages team members for being alert toward new opportunities. This finding is valuable because it stresses the importance of experiencing a specific domain of TEP (i.e., inventing) and its impact on entrepreneurial outcomes at the early stage of entrepreneurship. Most of the teams (62%) participating in this study started the process of commercializing their products; thus, it makes sense that teams with a higher TEP for inventing are more passionate about recognizing new market opportunities and new ways to use resources. Additionally, such findings are consistent with previous studies that have shown individual entrepreneurs with inventor-role identities are more passionate about seeking new opportunities and new ideas (Li et al., 2020; Costa et al., 2018). However, we extend these findings to the team and TEP literature to examine how the experience of passion at the team level for inventing has the potential to develop the entrepreneurial team's ability to recognize potential and relevant opportunities in markets to leverage new resources to organize new ventures.

Fourth, in our study, TEP is shown to be a key emotional resource that not only explains the formation of positive emotions at the team level but also broadens team members' awareness of new opportunities. Specifically, this study was intended to determine whether it is beneficial for the team to enhance the level of TEP for developing to enhance the growth of the ventures and related opportunities. We found that teams with a higher level of TEP for developing are more motivated to find the right people to extend their market and products and consider new opportunities that help them to nurture and grow their ventures. Hence, experiencing positive emotions in entrepreneurial teams may reach favorable outcomes if the whole team shares the same identity for a specific goal. Altogether, these findings point out that TEP is an important leading emotional resource to expand the focus of entrepreneurial passion to team-based perspectives by directing the positive passion of team members to obtain a wider range of resources.

To summarize, these results allowed us to provide a model by focusing on different TEP role-identity compositions that better explain the causal relationships between entrepreneurial passion and entrepreneurial outcomes at the team level. This result is relevant because, despite the earlier attempt to clarify the influential role of domains of entrepreneurial passion at the individual level on entrepreneurial desires such as firm performance (Cardon, 2008), creativity (Biraglia and Kadile, 2017), and entrepreneurial self-efficacy (Cardon and Kirk, 2015),

we have no existing knowledge to show how specific domains of entrepreneurial passion at the team level will impact entrepreneurial outcomes in the early phase of the team formation process. Such results are valuable as they indicate how TEP of specific role identities would lead the team's effort and passion to drive the expected business outcomes at different stages of entrepreneurship. This is important because previous studies on entrepreneurial passion have either reported average levels of entrepreneurial passion at the individual and team level (Rahman et al., 2020; Zhu et al., 2022) or considered only one or two domains of team-level passion in their work (Collewaert et al., 2016; Boone et al., 2020). By assessing all three domains of TEP, our results show that the domains of TEP behaved distinctly. The findings of this study highlight that the role identities of inventing, founding, and developing are not equal, so experiencing the shared passion in a team might not always have a positive effect on team performance. This is a valuable result because it suggests that we should avoid applying an average entrepreneurial passion among team members.

Practical implications

The results of the study are highly beneficial to the entrepreneurship education (EE) field of research. At most of the institutions that offer EE programs, the primary focus of the courses is on strengthening individual entrepreneurial skills and mindsets. Apart from contributing to the limited research on TEP, this study provides support to the need for establishing an environment that nurtures TEP in EE. That would not only result in an improved level of satisfaction within the entrepreneurial teams (Hytti et al., 2010) but also could promote team performance. The current study highlights the role of sharing entrepreneurial passion in the team and its function as a critical variable that might assist entrepreneurial teams in obtaining entrepreneurial results. The combination of knowledge on team building and selection processes, as well as considering the emotional and psychological dimensions of teamwork would further help focus the administration on the right direction and invest in factors that can eventually help EE programs to attain the expected results in this challenging area. In particular, the functioning EE must be tailored to determine, direct, and promote the individuals' emotional capacities, expanding them through the entrepreneurial teams and consequently assisting them in developing their entrepreneurial idea.

Conclusion

This study presents one of the earliest attempts to develop and test an integrated model that links TEP to team performance at the team level. Hence, the findings of the study would complement the team and entrepreneurship literature by exemplifying how TEP may meaningfully impact team performance, opportunity recognition, and opportunity exploitation. Overall, by boosting the implication of the Broaden-and-Build Theory of positive emotions (Fredrickson, 1998) among entrepreneurial teams, we demonstrate that experiencing collective positive emotions such as team passion, broadens a team's behaviors and performance. Accordingly, based on this theory, a higher level of team passion for inventing that is experienced by teammates enhances the thought-action process among the entrepreneurs, thus increasing the connection between team identity and team performance through its impact on team processes. Particularly, being in a team with a specific role-identity of passion toward inventing or developing guides the team's actions toward recognizing new opportunities for establishing a business and developing them toward commercializing their existing resources.

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Table I Correlation matrix of measures

	Age	Gender	level of education	Team size	TEP for inventing	TEP for Founding	TEP for Developing	Opportunity recognition	Team performance	Opportunity exploitation	Team cooperation
Age	1										
Gender	0.153	1									
level of education	0.065	0.149	1								
Team size	0.227	0.205	0.243*	1							
TEP for inventing	0.201	-0.097	0.313**	-0.024	1						
TEP for Founding	-0.102	0.006	0.066	-0.346**	0.547**	1					
TEP for Developing	-0.023	0.006	0.118	-0.045	0.234	0.402**	1				
Opportunity recognition	0.047	0.025	0.11	-0.182	0.310**	0.319**	0.103	1			
Team performance	0.260*	0.099	0.101	0.114	0.459**	0.21	0.111	0.221	1		
Opportunity exploitation	-0.103	-0.044	-0.291*	-0.187	0.214	0.370**	0.412**	0.363**	0.281*	1	
Team cooperation	0.093	0.102	0.295*	0.109	0.414**	0.249*	0.11	0.505**	0.375**	0.17	1

Table II Items loadings, reliability and validity

Items	Abbreviations	Factor loadings	Cronbach's Alpha	Composite Reliability	Average variance extracted
Team Cooperation			0.75	0.856	0.664
There is a high level of cooperation between team members.	Coop3	0.792			
People are willing to sacrifice their self-interest for the benefit of the team.	Coop4	0.864			
There is a high level of sharing between team members.	Coop5	0.778			
Opportunity Exploitation			0.749	0.844	0.645
My team have set up an organization to pursue a business opportunity we perceived.	OE1	0.751			

Based on a business opportunity we perceived, we have developed a new market.	OE2	0.745		
We have put together an entrepreneurial team to pursue a business opportunity we perceived.	OE3	0.900		
Opportunity recognition		0.794	0.878	0.705
My team can recognize new venture opportunities in industries where I have no personal experience.	OR1	0.841		
My team is good at recognizing potential new ideas on new products/services, new markets, new ways of utilizing resources, and new ways of organizing firms	OR2	0.796		
My team has special alertness or sensitivity toward new opportunities (e.g., new products/services, new markets, new ways of utilizing resources, and new ways of organizing the firm).	OR3	0.871		
TEP for inventing		1.00	1.00	1.00
We really like finding the right people to market our product/service to.	TEP_IPF_dev1	0.757		
Assembling the right people to work for our business is exciting.	TEP_IPF_dev2	0.834		
Pushing our employees and our team to make our company better motivates us.	TEP_IPF_dev3	0.759		
Nurturing and growing companies is an important part of who we are as a team.	TEP_IC_dev1	1.00		
TEP for founding		1.00	1.00	1.00
Establishing a new company excites us.	TEP_IPF_fnd1	0.880		
Owning my own company energizes my team.	TEP_IPF_fnd2	0.836		
Nurturing a new business through its emerging success is enjoyable.	TEP_IPF_fnd3	0.831		
Being the founder of a business is an important part of who we are.	TEP_IC_fnd1	1.00		
TEP for inventing		1.00	1.00	1.00

For us, It is exciting to figure out new ways to solve unmet market needs that can be commercialized.

TEP_IPF_inv1 0.698

Searching for new ideas for products/services to offer is enjoyable to our team.

TEP_IPF_inv2 0.860

We, as a team, motivated to figure out how to make existing products/services better.

TEP_IPF_inv3 0.819

Scanning the environment for new opportunities really excites my team.

TEP_IPF_inv4 0.789

Inventing new solutions to problems is an important part of who we are as a team.

TEP_IC_inv1 1.00

Team performance

0.843

0.905

0.760

We perceive the amount of work that our team produces as really good.

Team_Perform1 0.885

The quality of work our team produces is highly satisfying.

Team_Perform2 0.875

The overall evaluation of our team's effectiveness is very good.

Team_Perform3 0.856

Table III Discriminant validity (Fornell and Larcker criterion)

	Opportunity exploitation	Opportunity recognition	TEP for developing	TEP for founding	TEP for inventing	Team cooperation	Team performance
Opportunity exploitation	0.802						
Opportunity recognition	0.330	0.837					
TEP for developing	0.485	0.113	1.000				
TEP for founding	0.363	0.330	0.402	1.000			
TEP for inventing	0.199	0.328	0.234	0.547	1.000		
Team cooperation	0.146	0.519	0.110	0.246	0.416	0.812	
Team performance	0.235	0.249	0.112	0.214	0.461	0.388	0.872

Note: The Data on the diagonal (in bold) is the square root of AVE of the construct while the other values are the correlations with other constructs

Table IV Results of path coefficient

Hypotheses	Relationship	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Decision
H1a	TEP for inventing -> Team performance	0.34	0.327	0.152	2.242	0.025	Supported
H1b	TEP for founding -> Team performance	-0.023	-0.021	0.126	0.181	0.857	Rejected
H1c	TEP for developing -> Team performance	0.006	0.006	0.103	0.062	0.95	Rejected
H3	TEP for inventing -> Opportunity recognition	0.328	0.356	0.109	3.017	0.003	Supported
H4	TEP for developing -> Opportunity exploitation	0.501	0.516	0.08	6.242	0	Supported

Table V Mediation results

	Total effect		Direct effects			Indirect effects	
	Coefficient	P value	Coefficient	P value		Coefficient	P value
TEP for inventing->team performance	0.439	0.001	0.340	0.025	TEP for inventing->team cooperation ->team performance	0.099	0.115
TEP for founding->team performance	-0.017	0.901	-0.023	0.857	TEP for founding->team cooperation ->team performance	0.006	0.912
TEP for developing->team performance	0.008	0.941	0.006	0.950	TEP for developing->team cooperation ->team performance	0.002	0.952

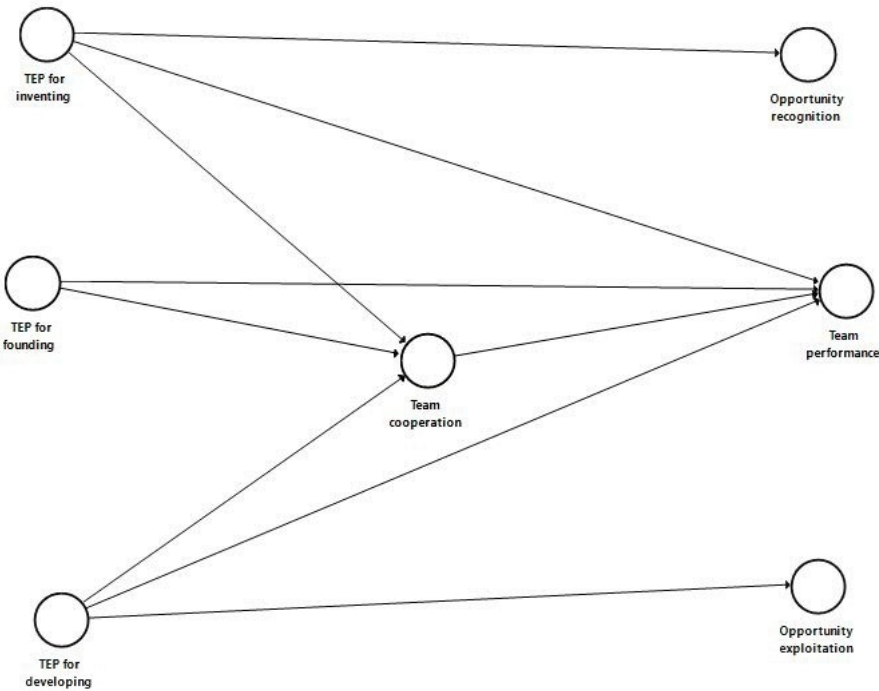


Figure 1 Conceptual framework
197x141mm (96 x 96 DPI)