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Personal relationships and university entrepreneurship centre (UEC): complementarity or substitution in shaping student entrepreneurs' social capital?

Pauline Brunner  and Véronique Schaeffer 

CNRS Bureau d'Économie Théorique et Appliquée (BETA), Université de Strasbourg, Université de Lorraine, Strasbourg, France

ABSTRACT

This article investigates whether resources obtained from personal relationships, such as family and friends, support or inhibit the role of university entrepreneurship centres (UECs) in shaping the social capital of student entrepreneurs. Drawing on social capital theory and entrepreneurial ecosystem (EE) frameworks, we examine how resources obtained from strong links, namely family and friends, influence student entrepreneurs' connections with a diverse range of actors beyond their usual relationships, particularly within EEs external to the university setting. We administered a questionnaire survey yielding 210 responses from student entrepreneurs enrolled in the French national extracurricular entrepreneurship programme Pépité, implemented by UECs. The study reveals three principal findings. First, personal relationships do not inhibit the role of UECs in shaping the social capital of student entrepreneurs. Second, UECs serve as a substitute when personal relationships do not provide resources for the project. Third, the results highlight the importance of project maturity in enabling students to establish connections with a broader range of actors external to the university within the EE.

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Introduction

The rise of the entrepreneurial university model has profoundly reshaped higher education institutions worldwide, driving the adoption of knowledge transfer strategies and the implementation of support mechanisms, first for academic entrepreneurship (Grimaldi et al. 2011) and more recently for student entrepreneurship (Siegel and Wright 2015). This evolution has unfolded alongside a broader development of the entrepreneurial ecosystem (EE) perspective, widely adopted in entrepreneurship education research, which frames universities as central actors in local ecosystems (Wright, Siegel, and Mustar 2017) and positions social capital as an essential dimension of entrepreneurial activity (Gedajlovic et al. 2013; Loi and Fayolle 2022). Defined as the actual and potential value embedded in the social relations of individuals and social entities (Nahapiet and Ghoshal 1998), social capital is understood to provide access to resources that entrepreneurs cannot mobilize through individual effort alone (Alvedalen and Boschma 2017). It is against this backdrop that scholars in entrepreneurship education have turned growing attention to the social capital of student entrepreneurs (Brunner and Messeghem 2025; Passavanti et al. 2023; Seet et al. 2018).

Student entrepreneurs present a diversity of profile, but most of them are young, with little professional or entrepreneurial experience outside the university setting (Clarysse, Mustar, and

Dedeyne 2022; Longva 2021; Passavanti et al. 2023). They explore venture creation activities alongside their studies (Bergmann, Hundt, and Sternberg 2016; Nielsen and Gartner 2017) or as an extension of it (Clarysse, Mustar, and Dedeyne 2022). Some of them have had professional and/or entrepreneurial experience and are back at university to pursue their academic education. However, they often have lower human, social and financial capital than other entrepreneurs, and rely more on their personal relationships, which consist mainly of family and friends (Kaandorp, Van Burg, and Karlsson 2020; Longva 2021). Some authors show the positive influence of personal relationships (family and friends) support on the development of the entrepreneurial project (Edelman et al. 2016; Pugalia, Prakash Sai, and Kozanoglu Cetindamar 2020). However, the links with family and friends present the characteristics of strong links that rely on high levels of trust and emotional intensity (Granovetter 1973). If strong links give access to reliable resources at low cost, they also expose entrepreneurs to the risk of social enclosure, whereby they repeatedly draw on similar, non-diversified resources from the same actors.

To shape the connections of students with the EE external to university, develop their entrepreneurial competencies, and more broadly diffuse entrepreneurial spirit among students (Brenet, Schieb-Bienfait, and Authier 2017), universities have established university entrepreneurship centres (UECs). These structures contribute to the university's third mission, which emphasizes the promotion of knowledge transfer and the development of stronger linkages between academia and society, notably through the support of student entrepreneurship initiatives (Matt and Schaeffer 2018; Wright, Siegel, and Mustar 2017). The activities of UECs include educational programmes based on action-oriented pedagogy and pre-incubation or incubation facilities (Bohlayer and Gielnik 2023; Nabi et al. 2017). UECs are part of the university entrepreneurial ecosystem (UEE), conceptualized as a subsystem of the broader EE (Guerrero, Urbano, and Gajón 2020; Prokop and Thompson 2023). The logic of action within UEE encompasses activities ranging from the creation of academic spin-offs to awareness-raising initiatives, training programmes, and support mechanisms for student entrepreneurs. UECs play a central role to connect student entrepreneurs with actors of the UEE, and more broadly, with those of the wider EE (Brunner and Messeghem 2025; Passavanti et al. 2023; Seet et al. 2018). Research has largely focused on the content and impact of entrepreneurship programme organized by UECs (Bertrand, Meunier, and Lesage 2022; Karimi et al. 2016; Ripollés and Blesa 2023), but few authors, among which Pugalia, Prakash Sai, and Kozanoglu Cetindamar (2020); Longva (2021), and Brunner and Messeghem (2025), have explored how such programmes shape students' social capital (Loi and Fayolle 2022; Passavanti et al. 2023). To contribute to fill this gap, this research explores the influence of the links of student entrepreneurs with their personal relationships on the role of UECs in shaping the social capital of student entrepreneurs. The research question we address is: do personal relationships promote or, on the contrary, inhibit the role of UEC in shaping the social capital of student entrepreneurs?

We draw on social capital theory, widely applied in the context of EEs (Ancona et al. 2023; Theodoraki, Messeghem, and Rice 2018). We consider the structural, cognitive, and relational dimensions of social capital (Granovetter 1985; Nahapiet and Ghoshal 1998) that allow for a better understanding of the interactions between actors within EE (Spigel and Harrison 2018; Wurth, Stam, and Spigel 2022), and of the influence of the personal relationships on the role of the UEC in supporting the social capital of student entrepreneurs. We use a survey gathering the answers of 210 student entrepreneurs involved in the French national Pépite programme (Student Centres for Innovation, Transfer and Entrepreneurship) open to students of all French higher education institutions to explore the influence of strong links with personal relationships (family and friends) on the role of UEC in shaping the social capital of student entrepreneurs. The results indicate that personal relationships do not inhibit the role of the UEC in shaping the student entrepreneurs' social capital. Rather, UECs complement the positive influence of resources provided through personal relationships in connecting students with actors within the EE, and act as a substitute in the absence of resources provided by personal relationships. The supportive role of UECs in shaping students' social capital appears to be more pronounced in the context of more mature entrepreneurial projects. This study contributes to the literature on UEEs and social capital in EEs (Ancona et al. 2023; Theodoraki, Messeghem, and Rice 2018).

The structure of the paper is as follows : after a literature review on the influence of personal relationships and UECs on the shaping of student entrepreneurs' social capital, the methodological framework, the results and the discussion of the theoretical and managerial contributions are presented. The paper ends with the limitations and future research avenues.

Literature review: how personal relationships and UECs shape student entrepreneurs' social capital

The literature review outlines the importance of the personal relationships of student entrepreneurs and the role of UECs to shape their social capital outside their personal relationships and within the EE external to university.

Strong links of student entrepreneurs with personal relationships

In the early stages of the entrepreneurial process, entrepreneurs focus primarily on acquiring resources to develop their project (Larson and Starr 1993). To obtain resources, they typically turn to their existing relationships, namely friends, family members, or previous professional relations (Hite and Hesterly 2001; Larson and Starr 1993). These personal relationships are even more important for student entrepreneurs who are still learning, generally lack resources, prior professional experience and network (Gabay-Mariani and Boissin 2021; Longva 2021). Student entrepreneurs, like other entrepreneurial profiles, face difficulties related to novelty (Beghain 2019; Stinchcombe 1965), exacerbated by their relative lack of social capital. Given that most of them are young and possess limited professional or entrepreneurial experience beyond the university setting (Clarysse, Mustar, and Dedeyne 2022; Longva 2021; Passavanti et al. 2023), their social capital is confined to personal relationships (family and friends) and relations developed within the university context (Clarysse, Mustar, and Dedeyne 2022; Kaandorp, Van Burg, and Karlsson 2020).

The links between entrepreneurs and their personal relationships present the features of strong links, as defined by Granovetter (1973). They rely on high levels of trust and emotional intensity between actors and provide access to reliable resources at lower cost. These links are highly important for student entrepreneurs in the early stages of a venture (Beghain 2019; Pugalia, Prakash Sai, and Kozanoglu Cetindamar 2020). However, they may expose entrepreneurs to the risk of social enclosure, whereby they repeatedly draw on similar, non-diversified resources from the same actors (Granovetter 1973), potentially hindering the long-term development of the project (Elfring and Hulsink 2003; Newbert, Tornikoski, and Quigley 2013; Renzulli, Aldrich, and Moody 2000). This risk is particularly salient for student entrepreneurs. Edelman et al. (2016) show that family social capital positively influences the scope of student entrepreneurial activities, as parents share their networks, but family financial capital is negatively associated with the scope of start-up activities, as greater financial resources reduce the need to seek external funding.

To limit the risk of social enclosure, it is essential for students to develop links that extend beyond their habitual networks. These links have the features of weak links (Granovetter 1973). They tend to provide less reliable resources at a higher cost, but give access to new resources and information. As entrepreneurial projects progress towards greater maturity, the entrepreneurs' networks evolve accordingly. Increasing project maturity is accompanied by more complex resource requirements, leading entrepreneurs to mobilize and expand their networks to access resources that aligned with stages of project development (Elfring and Hulsink 2007; Larson and Starr 1993). Hite and Hesterly (2001) argue that an entrepreneur's personal relationships gradually evolve from a network dominated by strong ties towards an intentionally managed one rich in weak ties. They propose that, in the early stages of the project, entrepreneurs rely primarily on strong ties because those ties ensure reliable and cost-efficient access to resources. Later, in the early growth stage,

entrepreneurs will expand their network to include weak ties because those ties provide novel resources, diverse perspectives, and opportunities that foster venture growth and innovation. The development of weak links is particularly challenging for student entrepreneurs, who have limited resources and social capital (Longva 2021). They must professionalize their networks and engage with actors beyond their personal and university circles in order to access new resources that support the long-term development of their entrepreneurial projects (Brunner and Messeghem 2025). As their projects mature, this dynamic may further intensify, as project maturity may drive the establishment of relationships with external actors within the EE to address increasingly complex and expanding resource requirements.

The role of UECs in shaping the social capital of student entrepreneurs

Student entrepreneurs often struggle to reach beyond personal and academic spheres (Spigel and Harrison 2018). Their youth and perceived lack of legitimacy among potential stakeholders further hinder the establishment of professional connections, making students' engagement with external actors within the EE both complex and challenging.

A key role of UEC is to strengthen connections between student entrepreneurs and actors external to the university within the EE (Brunner 2025; Brunner and Messeghem 2025). As an intermediary, it seeks to facilitate students' integration into local professional networks and, more broadly, into local EEs, thereby shaping their social capital beyond their personal relationships (Lans, Blok, and Gulikers 2015; Wright, Siegel, and Mustar 2017). To this end, UECs develop a set of activities, i.e. extracurricular programmes, seminars focused on entrepreneurship, business simulations, business plan competitions and incubation services (Bergmann, Hundt, and Sternberg 2016; Morris, Shirokova, and Tsukanova 2017; Samašonok, Išoraitė, and Žirnelė 2020; Wright, Siegel, and Mustar 2017) that aim to shape the three (structural, cognitive, and relational) dimensions of the social capital (Granovetter 1985) of student entrepreneurs.

The structural dimension refers to the links established between members of a network, namely who you reach and how you reach them (Burt 1992). This dimension is commonly represented by the configuration of a network, its morphology in terms of density, connectivity, and stability (Inkpen and Tsang 2005; Tötterman and Sten 2005). UECs organize events to connect students with various networks (Bergmann, Hundt, and Sternberg 2016; Loi and Fayolle 2022; Passavanti et al. 2023; Seet et al. 2018), such as business networks (financiers, executive recruiters, experts) or the local network of entrepreneurship support structures. Participation in joint events is not sufficient to foster collaboration and resource sharing. Social capital presents a cognitive dimension based on common goals, culture, language, and codes (Inkpen and Tsang 2005; Tötterman and Sten 2005) shared by individuals and making their collaboration possible. Through extra-curricular, action-oriented entrepreneurship training, UECs contribute to the development of student entrepreneurs' entrepreneurial and managerial mindset, skills and knowledge (Beyhan and Findik 2018; Loi and Fayolle 2022; Middleton et al. 2020). The '*know-who*' constitutes a key form of knowledge transmitted by UECs. The '*know-who*' is defined as the knowledge that enables student entrepreneurs to identify relevant actors within the EE, what they do, what they know, and which resources they can provide (Lundvall and Johnson 1994). The acquisition of '*know-who*' contributes to shape the cognitive dimension of the social capital of student entrepreneurs. Largely tacit, this knowledge is primarily acquired through personal interactions and experiences. The transmission of this knowledge is fostered by the trusting relationships developed between students and UEC actors (e.g. facilitators, coaches, and peers). The family and friends that share their network with student entrepreneurs (Edelman et al. 2016) also contribute to the development of this knowledge. The relational dimension of the social

capital of student entrepreneurs is also impacted by the activities offered by UECs (Morland, Matthew Scott, and Thompson 2021; Neck, Greene, and Brush 2014) that encourage interactions with the actors of the EE. The history of the relationship, individuals' needs and objectives, trust and reliability, norms, as well as obligations and expectations (Burt 1992; Coleman 1990) shape individual behaviour and, consequently, the specific relationships that student entrepreneurs build over time with actors of the EE. Network activities organized by intermediaries play a particularly important role when entrepreneurial projects are more mature, that is, once entrepreneurs have launched their ventures and need to rely on networks to support their newly established businesses (Cunningham, Lehmann, and Menter 2022).

Prior research has established that UECs function as key intermediaries, enabling student entrepreneurs to shape their social capital and gain access to actors within the EE beyond the university (Brunner 2025; Brunner and Messegheem 2025; Longva 2021; Seet et al. 2018). In parallel, a distinct body of entrepreneurship scholarship has documented the positive influence of personal relationships, particularly family and friends, on the development of entrepreneurial projects (Beghain 2019; Hite and Hesterly 2001; Kaandorp, Van Burg, and Karlsson 2020; Larson and Starr 1993; Mason 2006; Pugalia, Prakash Sai, and Kozanoglu Cetindamar 2020). However, these two streams of research have evolved in isolation. Whether and how personal relationships support interact with institutional intermediaries such as UECs in shaping student entrepreneurs' social capital within the EE remains, to date, an open question. In particular, it is unclear whether resources mobilized through family and friends support or, conversely, inhibit the role of UECs in connecting student entrepreneurs with a diversity of actors external to the university. Addressing this gap is critical to develop a more nuanced understanding of the conditions under which UECs fulfil their intermediary function within the EE.

Methods

Research context

We collected data from student entrepreneurs involved in the French P  p  te programme (University Centres for Innovation, Transfer and Entrepreneurship). P  p  te is a national initiative, active since 2014, that aims to support the development of entrepreneurship in higher education for all students in all fields of study. The enrolment in a P  p  te centre is not mandatory for students. It is optional alongside the courses they take in the faculties that organize their chosen curriculum in specific fields. A selection committee verifies that students are involved in an entrepreneurial project before admitting them to the P  p  te programme and granting them student-entrepreneur status. This status enables them to obtain course equivalencies and access the full range of entrepreneurial activities offered by a UEC in the national network.

Research design

The empirical analysis is based on an original database built from an online survey sent to student entrepreneurs involved in a P  p  te centre at some point between 2014 and 2021. Some of them were still in the centre when they answered the questionnaire, while others were already out. In our definition, they are also considered student entrepreneurs as they leave the centre for less than 5 years (Colombo and Piva 2020). The managers of 10 regional P  p  te centres relayed our online survey by email to student entrepreneurs. All the students who responded have student-entrepreneur status and are part of a UEC. We collected 210 responses from December 2019 to March 2020, and from March to April 2021. At the national level, 35% of the population of student entrepreneurs enrolled in the P  p  te programme in 2019 are female, and the average age is 24 years (Gabay-Mariani 2020).¹ As

in the whole population of student entrepreneurs, most of our respondents are studying business and management (34%) or engineering sciences and technologies (36%). Based on the criteria of gender, age, and field of study, the sample is representative of the population studied. We collected data about three main themes:

- the profile of student entrepreneurs: age, gender, field and level of education, duration of the involvement in the UEC, perceived utility of UEC to develop the knowledge of business world, existence of a previous professional experience, ongoing or past involvement in the UEC at the time of responding to the questionnaire
- the entrepreneurial projects: intended output of the entrepreneurial project (service, artefact, web application, purchase/resale project), the size of the entrepreneurial team, the resources needed among 9 categories (Table 1), the current stage of project development (ideation, feasibility study, development, industrialization, or commercialization), whether or not the business had already been established at the time of responding to the questionnaire, whether or not the project has already generated revenue
- the actors that provided resources to the entrepreneurial project: family and friends, the UEC and the categories of actors in the EE external to the university among 8 categories described in Table 2. Respondents were asked only about the resources they perceived as useful for developing their entrepreneurial project.

Table 1. Categories of resources provided by the actor categories.

Categories of resources	References in literature
Monetary resources: grants, subsidies, own funds	Donaldson, Villagrasa, and Neck (2023); Edelman et al. (2016); Longva (2021); Morris, Shirokova, and Tsukanova (2017); Schimperna, Nappo, and Marsigalia (2022); Wright, Siegel, and Mustar (2017)
Working space: Coworking, fab-space, living-space, living-lab	Breznitz and Zhang (2019); Donaldson, Villagrasa, and Neck (2023); Wright, Siegel, and Mustar (2017); Pittaway et al. (2020); Longva (2021)
Emotional support	Beghain (2019); Edelman et al. (2016); Pugalia, Prakash Sai, and Kozanoglu Cetindamar (2020)
Technical competencies	Beghain (2019); Breznitz and Zhang (2019); Radko, Belitski, and Kalyuzhnova (2023)
Market competencies: marketing, communication, business	Beghain (2019); Pugalia, Prakash Sai, and Kozanoglu Cetindamar (2020); Wright, Siegel, and Mustar (2017); Cunningham, Lehmann, and Menter (2022)
Entrepreneurial competencies: opportunities identification, business plan, business model, pitch	Clarysse, Mustar, and Dedeyne (2022); Wright, Siegel, and Mustar (2017); Loi and Fayolle (2022); Middleton et al. (2020); Beyhan and Findik (2018); Cunningham, Lehmann, and Menter (2022)
Financial competencies: finance, accounting	Donaldson, Villagrasa, and Neck (2023); Edelman et al. (2016); Pugalia, Prakash Sai, and Kozanoglu Cetindamar (2020); Wright, Siegel, and Mustar (2017)
Intellectual property competencies	Cunningham, Lehmann, and Menter (2022); Radko, Belitski, and Kalyuzhnova (2023)
Legal competencies (excluding IP)	Beghain (2019)

We employed a logistic regression model to examine how support from personal relationships (family and friends) and UECs, as sources of resources, influence student entrepreneurs' connections with a diversity of external actors within the EE. These connections are used as an indicator of the shaping of the three dimensions of student entrepreneurs' social capital.

Dependent variables

The dependent variables measure the connection of student entrepreneurs with a diversity of categories of external actors to university within the EE. The 8 categories of external actors to the UEE refer to actors that belong to different spheres within the EE: public institutions that support

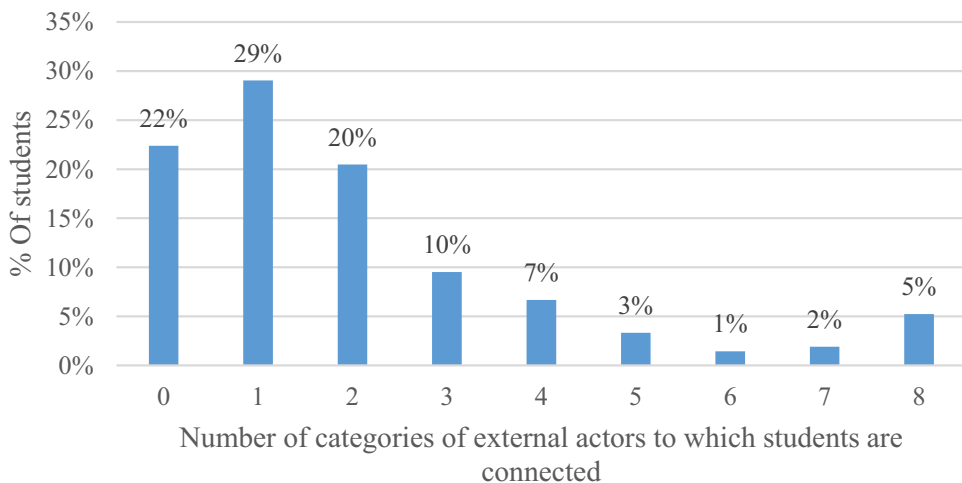
Table 2. Categories of actors in the EE external to the university.

Categories of external actors	References in literature
Incubators/accelerators	Breznitz and Zhang (2019); Cunningham, Lehmann, and Menter (2022); Kaandorp, Van Burg, and Karlsson (2020); Longva (2021); Wright, Siegel, and Mustar (2017); Radko, Belitski, and Kalyuzhnova (2023); Brunner and Messegghem (2025); Brunner and Schaeffer (2025b)
Entrepreneurs	Wright, Siegel, and Mustar (2017); Radko, Belitski, and Kalyuzhnova (2023); Clarysse, Mustar, and Dedeyne (2022)
Suppliers	Wright, Siegel, and Mustar (2017); Longva (2021); Radko, Belitski, and Kalyuzhnova (2023); Guerrero, Urbano, and Gajón (2020); Beyhan and Findik (2018); Bergmann, Hundt, and Sternberg (2016); Kaandorp, Van Burg, and Karlsson (2020); Brunner and Messegghem (2025); Brunner and Schaeffer (2025b)
Customers	Wright, Siegel, and Mustar (2017); Radko, Belitski, and Kalyuzhnova (2023); Brunner and Schaeffer (2025b)
Investors	Donaldson, Villagrasa, and Neck (2023); Longva (2021); Wright, Siegel, and Mustar (2017); Radko, Belitski, and Kalyuzhnova (2023); Brunner and Schaeffer (2025b)
Public funders	Wright, Siegel, and Mustar (2017); Longva (2021); Radko, Belitski, and Kalyuzhnova (2023); Guerrero, Urbano, and Gajón (2020); Beyhan and Findik (2018); Bergmann, Hundt, and Sternberg (2016); Kaandorp, Van Burg, and Karlsson (2020); Brunner and Messegghem (2025); Brunner and Schaeffer (2025b)
Banks	Donaldson, Villagrasa, and Neck (2023); Wright, Siegel, and Mustar (2017); Radko, Belitski, and Kalyuzhnova (2023); Longva (2021); Brunner and Schaeffer (2025b)
Crowdfunding platforms	Donaldson, Villagrasa, and Neck (2023); Wright, Siegel, and Mustar (2017); Radko, Belitski, and Kalyuzhnova (2023); Longva (2021); Brunner and Schaeffer (2025b)

entrepreneurship, banks, investors, incubators/accelerators, suppliers, customers, other entrepreneurs and crowdfunding platforms (Table 2). We diffused an online survey to collect data. This strategy of data collection allows us to gather more answers but does not allow for the collection of detailed information on the links established with each specific actor within the EE.

We used the diversity of the categories of actors providing resources to student entrepreneurs as an indicator of the shaping of the three dimensions of student entrepreneurs' social capital. The ability to collaborate and to obtain resources from a diversity of actors within the EE (public actors, investors, external incubators, customers, providers) relies on the shaping of the cognitive and relational dimensions of the social capital. Regarding the structural dimension of social capital, the diversity of actors outside the university and the personal relationships reflects a diversity of links and a densification of the network.

We distinguished 8 categories of external actors in the survey (Table 2). The students who participated in the survey can be connected with 0 to 8 categories of external actors (Figure 1):


Figure 1. Distribution of students by number of categories of actors providing resources.

51% are connected to 0 (22%) or 1 (29%) category. The study focuses on the 49% of student entrepreneurs that are connected with 2 or more categories of actors external to the university within EE.

We defined 3 dependent variables measuring the extent to which student entrepreneurs are connected to a diverse range of categories of external actors. Due to the size of the sample, analysing connections with 5 or more categories of external actors would not be significant as only 23 student entrepreneurs belong to this group (11% of the sample). We created a larger category that gathers student entrepreneurs connected to 4 or more external actors (43 students, 20% of the sample). We defined the dependent variable *ActorsOver4* that characterizes student entrepreneurs who benefited from resources provided by at least 4 categories of external actors.

To assess the robustness of the findings, we also defined two alternative dependent variables based on lower thresholds. *ActorsOver3* identifies student entrepreneurs who benefited from resources from at least three categories of external actors (64 students, 31% of the sample), while *ActorsOver2* identifies those who benefited from resources from at least two categories (103 students, 49% of the sample). In addition, we estimated models using two alternative dependent variables, *Actors* = 2 and *Actors* = 3, representing student entrepreneurs connected to exactly two and exactly three categories of external actors, respectively. The results were consistent with those obtained with dependent variables *ActorsOver2* and *ActorsOver3*, although the explanatory variables were less significant. Moreover, the overall model fit was weaker, as indicated by lower Nagelkerke's R^2 values (respectively 0.161 and 0.308) and higher AIC statistics (respectively 224.963 and 133.216) compared to values indicated in [Table 7](#). Finally, we estimated additional models using the dependent variables *Actors* = 0 and *Actors* = 1, representing the lowest levels of connection to external actors (0 and 1, respectively). These models permit us to verify whether the factors associated with the highest levels of external connection operate in the opposite direction for these lowest levels of connectedness. We therefore focus our analysis on the three dependent variables described in [Table 3](#).

Table 3. Characterization of the dependent variables.

Variables	Description	Min	Max	Frequency of modality 1	Mean	SD
<i>ActorsOver2</i>	Connection to 2 external actors or more	0	1	103	0,49	0,5
<i>ActorsOver3</i>	Connection to 3 external actors or more	0	1	64	0,31	0,46
<i>ActorsOver4</i>	Connection to 4 external actors or more	0	1	43	0,2	0,4

Independent variables

We measure the strength of the link between student entrepreneurs and the personal relationships or the UEC by the diversity of resources they provide. We did not quantify these resources, except for financial resources, because some resources, such as information and competences, are difficult to quantify objectively. Moreover, we consider heterogeneous types of resources; therefore, aggregating quantities of skills, workspaces and funding would not be meaningful. We defined 2 independent variables ([Table 4](#)) that measure the diversity of resources provided by family and friends (*Perso_ress*) and the UEC (*UEC_ress*) to student

Table 4. Description of the independent variables.

	Min	Max	Mean	SD
<i>Perso_ress</i>	0	7	1,58	1,59
<i>UEC_ress</i>	0	8	2,23	2,03

entrepreneurs. The minimum value is 0 if the personal relationships or the UEC provide no resource, and the maximum value is 9 if they provide all kinds of resources (Tables 1 and 4). None of them obtain 9 resources from a single category; the maximum is 8 obtained from the UEC.

Control variables

We defined 15 variables that control for the specificities of the profile of student entrepreneurs, the features of their project that can influence their behaviour (Anghel and Alin Anghel 2022; Brunner and Schaeffer 2024, 2025a; Kuckertz and Wagner 2010; Passavanti et al. 2023; Schimperna, Nappo, and Marsigalia 2022; St-Jean and Labelle 2018) (Table 5), and that show significant correlations with the dependent variables (Table 6).

Six variables control for the heterogeneity of the profile of student entrepreneur that can influence its connection with the actors external to the UEE: the age ($\text{Age} \geq 23\text{y}$), the involvement in the UEC for 1 year or more ($\text{UEC} \geq 1\text{y}$), the follow-up of entrepreneurship training programmes other than the Pépite programme studied in this research (OtherEE), the professional experience of student that can influence its connection with professional network (ProfExp), the perceived utility of UEC to improve the knowledge of the market and the business world (UEC&Bus) measured on a scale from 1 to 6, and being or not still within the centre at the time of the survey (Out_UEC). We do not consider gender, field of education (Management, Humanities, Science), and level of education because the correlations with the dependent variables were very weak and not significant.

Seven variables control for the specificities of the projects: the entrepreneurial project leads to the production of an artefact (Artefact) or a service (Service), the project is led by a single student entrepreneur (TeamSize), the development of the project needs a diversity of resources (RessNeed), the project is in the commercialization or industrialization stage (AdvProj), the business is already founded (Founded), and the project has already generated revenue (Revenue).

Two variables control for the regional specificities of the UECs that have their own organization, regional context and EE. The variables UEC1 and UEC2 characterize affiliation with the two UECs, the most represented UEC in the sample.

Table 5. Description of the control variables.

	Description	Min	Max	Mean	SD
Age $\geq 23\text{y}$	Age of student 23 or over	0	1	0,605	0,490
UEC $\geq 1\text{y}$	Student spends 1 year or more in the UEC	0	1	0,457	0,499
OtherEE	Participation to another entrepreneurship training programme	0	1	0,552	0,498
ProfExp	Student has professional experience	0	1	0,514	0,501
UEC&Bus	Perceived utility of the UEC to develop the business world knowledge	0	6	3,862	1,862
Out_UEC	Student is not anymore in the UEC	0	1	0,195	0,397
Service	The intended output of the project is a service	0	1	0,267	0,443
Artefact	The intended output of the project is a material good	0	1	0,214	0,411
TeamSize	The size of the entrepreneurial team	0	5	1,871	1,161
RessNeed	More than 4 resources (among 9) are needed for the project	0	1	0,519	0,501
AdvProj	The project has reached the commercialisation or industrialisation stage	0	1	0,300	0,459
Founded	Student has founded the business	0	1	0,152	0,360
Revenue	The project has already generated revenue	0	1	0,171	0,378
UEC1	Student belongs to UEC 1	0	1	0,333	0,473
UEC2	Student belongs to UEC 2	0	1	0,290	0,455

Table 6. Correlation matrix between independent and control variables.

[illegible]

Result

Descriptive findings

UEC and personal relationships (family and friends) are the actors the most cited by student entrepreneurs as providers of resources, illustrating strong links between them (Figure 2).

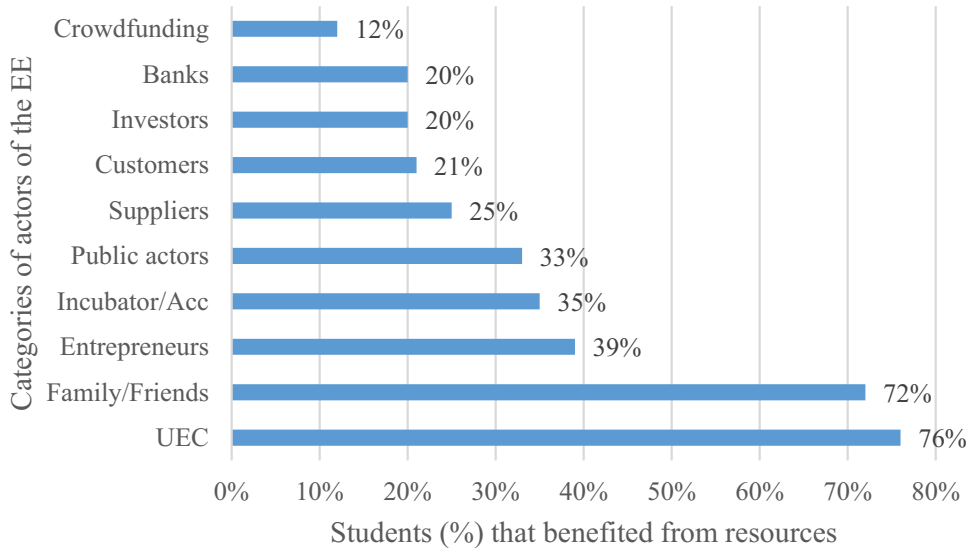


Figure 2. Students having benefited from resources from the categories of actors within the EE.

The roles of personal relationships and UEC are complementary regarding the kind of resources they bring to student entrepreneurs (Figure 3). As expected, personal relationships play the most important role for the emotional and financial support (Beghain 2019; Edelman et al. 2016; Leyronas and Loup 2020; Pugalia, Prakash Sai, and Kozanoglu Cetindamar 2020), while UECs play the most important role for competences and working spaces (Loi and Fayolle 2022; Middleton et al. 2020).

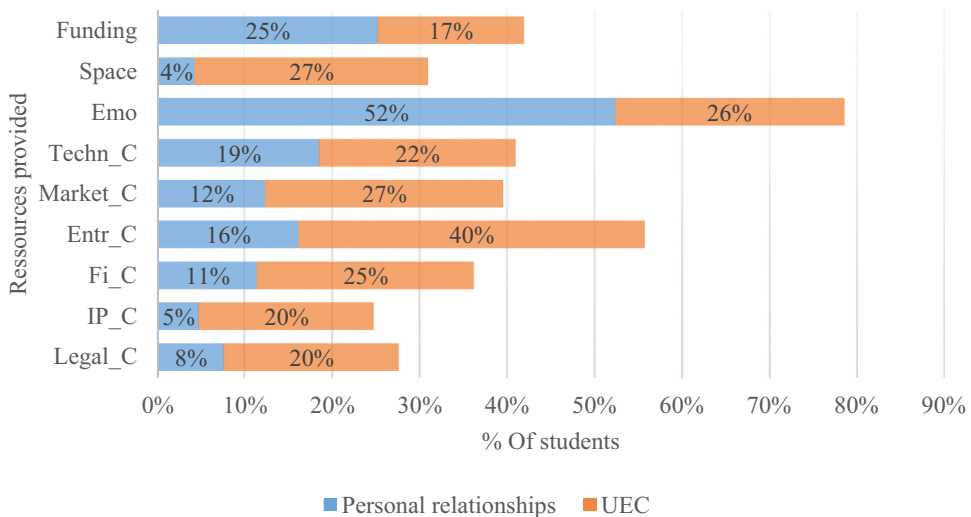


Figure 3. Resources provided by personal relationships and the UEC to student entrepreneurs.

Analytical findings

We used 9 models to study the relationship between support from personal relationships (Perso_ress), support from the UEC (UEC_ress), and student entrepreneurs' connections with actors external to the university within the EE (Table 7). The models examine the interdependence between the three dependent variables and support provided by the personal relationships (Models 1, 4 and 7). Support from the UEC is introduced in Models 2, 5 and 8, while Models 3, 6, and 9 include control variables related to students' profiles and project characteristics.

Table 7. Influence of personal relationships and the UEC on the connection with the external actors to university – logistic regression values.

	Dependent variable: ActorsOver2			Dependent variable: ActorsOver3			Dependent variable: ActorsOver4		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Intercept	−0,562***	−1,182***	−3,079***	−1,081***	−1,664***	−4,288***	−1,634***	−2,188***	−4,931***
Perso_ress	0,340***	0,235**	0,302***	0,156*	0,054	0,067	0,164	0,072	0,068
UEC_ress		0,358***	0,337***		0,307***	0,291***		0,276***	0,209*
Individual profile									
Age ≥ 23y			−0,066			0,605			0,546
UEC ≥ 1y			0,536			0,194			0,701
OtherEE			0,293			−0,304			0,208
ProfExp			0,427			0,104			0,257
UEC&Bus			0,005			0,048			0,163
Out_UEC			0,256			1,193**			1,178**
Project features									
Service			−0,302			−0,707			−0,172
Artefact			0,382			0,231			−0,045
TeamSize			0,336**			0,173			−0,062
RessNeed			0,523			1,271***			0,793
AdvProj			1,146**			1,368***			1,941*
Founded			1,345**			1,125*			0,218
Revenue			−0,861			0,035			−0,024
Regional specificities									
UEC1			−0,095			0,326			0,626
UEC2			−0,171			0,351			0,208
2 Log(Likelihood)	277,872	256,993	220,510	255,379	239,704	185,990	210,362	199,910	167,284
R ² (Nagelkerke)	0,081	0,198	0,366	0,019	0,118	0,394	0,019	0,093	0,292
AIC	281,872	262,993	254,510	259,379	245,704	221,990	214,362	205,910	201,284

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The study shows the complementarity of the support of the personal relationship and the UEC for student entrepreneurs connected to a low diversity of category of external actors (models 1 to 3) (Table 7). However, for the most connected students, the influence of the support of the personal relationships disappears while the influence of the UEC remains significant (models 7 to 9). This result suggests that the UEC can be a substitute to the influence of the personal relationships, able to shape the social capital of all students, whether they were or not supported by their family and friends at the early stage of their project.

The regressions show the significant dependence between the strength of links with the personal relationships (measured by the diversity of resources they provide) and the connection to a diversity of actors external to the UEE within the EE, but only for a low diversity of external actors (model 1 to 3). When the categories of external actors are 3 or more (models 4 to 6), the influence of the strength of the links with the personal relationships is less significant (model 4), and becomes non-significant when the support provided by the UEC is considered (model 5). This suggests that the UEC is able to compensate for a lack of personal relationships

support and thus foster entrepreneurship among students who do not receive significant family and friends' support. When the diversity of actors is 4 or more, the influence of the support of the personal relationships is not anymore significant (model 7), while the influence of the UEC is still strong and significant. The influence of the support of the UEC on the connection to a diversity of actors external to the university is significant for all levels of connection with external actors (models 2, 5 and 8) and remains significant and strong when we introduce the control variables (models 3, 6 and 9).

The introduction of the control variables shows the influence of team size for the connection to a low diversity of external actors (model 3) and the influence of the maturity of the project for all the three dependent variables (models 3, 6 and 9). The maturity of the project is characterized by the industrialization or commercialization stage (AdvProj), students having founded their business (Founded), and students who have already left the UEC (Out_UEC).

The chi-square test reveals a strong and significant association between the number of connections to a diverse range of external actor categories and the project's stage of development (Table 8). Overall, 77% of student entrepreneurs connected to two or more categories of external actors are leading projects in the development or commercialization/industrialization stages. This proportion increases to 84% for those connected to three or more categories of external actors and to 88% for those connected to four or more categories.

Table 8. Distribution of projects by the number of connections with external actors and the project stage of development.

	Ideation	Feasibility	Development	Commercialisation/ Industrialization	χ^2 observed value	χ^2 critical value
ActorsOver2	4%	19%	39%	38%	9,416**	7,672
ActorsOver3	3%	13%	37%	47%	16,746***	7,864
ActorsOver4	5%	7%	37%	51%	16,043***	7,815

** $p < 0.05$, *** $p < 0.01$.

We examined the relationship between the project development stage and support provided by the UEC. The chi-square test indicates no significant association between the project's development stage and UEC support, as the observed chi-square value (20.037) is lower than the critical value (36.415).

Model 6 also shows the influence of the diversity of resources needed by the student entrepreneurs (RessNeed) that leads student entrepreneurs to be connected to a diversity of actors external to university within EE. The influence of the diversity of resources needed is still strong in model 9 but is non-significant.

Discussion

For the purpose of this research, we investigate whether obtaining resources from personal relationships supports or constrains the role of UECs in fostering the social capital of student entrepreneurs. To this end, we examine the influence of student entrepreneurs' strong links, namely family and friends, on their connections with actors beyond their usual relationships, particularly with external actors of the university within EE. The study produced three main findings on the shaping of student entrepreneurs' social capital: (1) students' personal relationships do not inhibit the role of UECs in shaping the three dimensions of social capital; (2) UECs serve as a substitute for personal relationships when the latter provide few or none resources; (3) the project maturity plays an important role to explain the connection with a diverse range of actors within the EE beyond the university context, suggesting a progressive connection to the actors of external EE.

Theoretical implications

This research has three theoretical contributions. The first contribution clarifies how personal relationships and UECs jointly shape the social capital of student entrepreneurs within EE. Prior research has underlined the importance of interactions among actors within EEs (Spigel and Harrison 2018; Wurth, Stam, and Spigel 2022), yet the respective joint roles of students' strong links and university-based support structures remain insufficiently disentangled. Our findings provide a more fine-grained understanding of this relationship by showing that family and friends do not inhibit the contribution of the UEC to students' access to external actors. Instead, the two forms of support operate in a complementary manner at the early stages of the project.

More specifically, our results identify two mechanisms that explain the complementary or substitutive roles of personal relationships and UECs. The first mechanism operates when students begin to establish connections with external actors: the support of personal relationships and UECs play in a complementary way. The support of the personal relationships does not inhibit the support of the UECs. The second operates when students are connected to a greater diversity of external actors. UEC then substitutes for the effect of personal networks on student entrepreneurs' social capital. The personal relationships have a weaker and often non-significant effect once the UEC is considered for a connection to three, four, or more categories of actors. This finding indicates that the UEC enables students to expand their social capital regardless of whether they benefit from strong personal support in the early stages of their project. The UEC acts as a substitute by compensating for the absence or limitations of family and friends' support. The reverse relationship is not observed. Personal relationships do not appear as a substitute capable of compensating for the absence or limitations of UEC support. Our findings also suggest that personal relationships and UECs provide different types of resources to support student entrepreneurial projects. If both sources provide a wide range of resources (financial, emotional, and competences), UECs mainly provide entrepreneurial competencies and access to workspaces, whereas personal relationships predominantly offer emotional support and, to a lesser extent, financial and competences assistance. This differentiation shows that strong links with personal relationships and UEC should not be conceptualized as competing channels of resource acquisition. Rather, they constitute distinct sources of resources that support different dimensions of social capital formation. This specialization highlights the role of UECs in shaping cognitive social capital through the transmission of norms of behaviours, skills, and values that facilitate the expansion and strengthening of external networks, thereby fostering the relational dimension of social capital. This contribution extends research about UECs by showing that the intermediary role of UECs is not limited to intermediation between students and actors of the EE (Brunner 2025; Brunner and Messegheem 2025; Longva 2021; Seet et al. 2018). Our study provides a more precise understanding of how the social capital of student entrepreneurs is constructed within the EE, beyond the university environment and the personal relationships.

The second contribution concerns the contingent role of strong links and UEC support in the professionalization of student entrepreneurs' networks. Although the entrepreneurship literature has long recognized the importance of social capital, research on student entrepreneurship has focused predominantly on human capital, often paying less attention to how students progressively build their networks (Kaandorp, Van Burg, and Karlsson 2020; Loi and Fayolle 2022; Passavanti et al. 2023) beyond their immediate surroundings. Our study contributes to this emerging conversation by showing that the effects of personal relationships and UEC support are not equivalent on the students' connection to actors of the EE: they vary according to both the maturity of the entrepreneurial project and the diversity of actor categories considered.

Existing studies show that student entrepreneurs initially rely heavily on pre-existing personal relationships, especially family and friends, to obtain access to key early-stage resources (Beghain 2019; Kaandorp, Van Burg, and Karlsson 2020; Pugalia, Prakash Sai, and Kozanoglu Cetindamar 2020). Our findings confirm this view, but they also refine it significantly. We show that resources mobilized through strong links can facilitate students' connections to actors beyond their usual circle, thereby

functioning as a springboard towards the broader EE, rather than exposing them to the risk of over-embeddedness or lock-in (Granovetter 1985; Granovetter 1973). However, this positive effect remains limited. It is mainly observable for projects in their early stages and when attention is restricted to a relatively small number of actor categories, i.e. two types of actors in this study.

By contrast, the effect of the UEC is broader and more durable. UEC support is associated with students' ability to connect with a wider diversity of external actors, and this effect becomes particularly salient for more mature projects and when the analysis includes a larger range of actor categories. Strong links may help initiate network extension but seem not sufficient to sustain the diversification and stabilization of entrepreneurial relationships over time. UECs play a central role in supporting the scaling and sustainability of student entrepreneurs' external connections in the EE. UECs do not merely supplement or substitute existing personal links; they provide a distinct infrastructure for network professionalization that becomes increasingly important as ventures move beyond emergence. This contribution helps explain how student entrepreneurs move from relying on pre-existing relationships to building more diverse and professional connections within the broader EE. It thereby enriches the literature on network evolution in entrepreneurship (Hite and Hesterly 2001; Larson and Starr 1993) by showing that, in student entrepreneurship, this transition is not driven by personal links alone but is strongly structured by university-based support mechanisms.

The third contribution of this study lies in the proposal of an original measurement framework for the social capital of student entrepreneurs, based on an empirical operationalization of its three dimensions (structural, relational, and cognitive). It enriches the literature about the development of social capital in EEs by offering an alternative methodology that differs from the network analyses typically employed (Ancona et al. 2023; Theodoraki, Messeghem, and Rice 2018). Unlike approaches that primarily rely on structural indicators derived from social network analysis, the methodology developed here enables a more fine-grained identification of: (i) connections with actors outside students' usual relationships, namely the university environment and personal relationships (structural dimension); (ii) access to external resources (relational dimension); and (iii) connections with diverse types of actors (cognitive dimension). This integrated approach provides a more comprehensive analytical framework for understanding how student entrepreneurs connect with actors of the EE (Brunner 2025; Brunner and Messeghem 2025; Passavanti et al. 2023) and the mechanisms through which they mobilize external resources. By linking the three dimensions of social capital to the types of resources provided by external actors (monetary resources, working space, emotional support, technical, market, entrepreneurial, financial, intellectual property, and legal competencies), this study also offers a renewed perspective on the processes underlying the construction and activation of social capital in an ecosystemic perspective.

Managerial implications

This research leads to managerial recommendations for UECs, universities and public decision-makers. First, while research about entrepreneurship programmes mainly shows the role of action-oriented pedagogy to develop entrepreneurial competences (Middleton et al. 2020; Morland, Matthew Scott, and Thompson 2021), we focus on their role to shape the social capital of student entrepreneurs. Our results show the importance of UECs as providers of workspace to students. The creation of co-working spaces and specific places within universities where student entrepreneurs can develop interactions with the broader EE (Guerrero, Urbano, and Gajón 2020; Prokop and Thompson 2023) supports the role of UECs as a key gateway to entrepreneurship and its ecosystem.

Beyond a structural perspective that positions UECs at the core of networks (Brunner and Messeghem 2025), this research demonstrates that UECs also contribute to the cognitive dimension of social capital among student entrepreneurs by facilitating the transfer of '*know-who*' (Lundvall and Johnson 1994) within the local EE. This, in turn, strengthens the three dimensions (structural, relational and cognitive) of social capital. Such a dynamic is fully consistent with the

university's third mission, which seeks to enhance the transfer of knowledge from university to society through projects led by student entrepreneurs (Matt and Schaeffer 2018). Although the organization of networking events constitutes an essential lever (Bergmann, Hundt, and Sternberg 2016; Loi and Fayolle 2022; Passavanti et al. 2023; Seet et al. 2018), it must be complemented by analytical frameworks that enable students to identify the roles and functions of actors within the EE and facilitate access to the resources they need. The importance of '*know-who*', which is difficult to transfer and is primarily acquired through interpersonal relationships (Lundvall and Johnson 1994), strengthens the idea that an important role of UECs is to develop activities or events that involve the actors of the local EE. By organizing and hosting activities and events, UECs foster the development of interpersonal relationships between students and actors within the EE, enabling students to identify who these actors are, what they do, what they know, and the resources they can provide for the project. The transmission of '*know-who*' thus reinforces the mediating role of UECs between student entrepreneurs and the actors of the local EE. The transmission of this knowledge could also be supported by tools such as mappings, directories, or interactive platforms, designed to make the '*know-who*' more explicit. Such initiatives could foster, within UECs, the development of ecosystemic thinking in terms of resources, interactions, and governance (Cao and Shi 2021; Schaeffer and Matt 2016) thereby contributing to a better integration of the social dimension in entrepreneurship education (Loi and Fayolle 2022).

Second, the connection of student entrepreneurs to actors of the EE external to the university context is important to obtain new resources, to limit the risk of social enclosure (Granovetter 1985; Granovetter 1973), and to support the development of the entrepreneurial project. An important role of general education and entrepreneurship training programmes is to encourage the development of communication and relational capabilities, such as self-promotion, adaptation and expressiveness (Lans, Blok, and Gulikers 2015). The profile of the managers of entrepreneurship training programmes and the action-orientation of these programmes are important to develop the social abilities of students, supporting their social capital.

Finally, highlighting the positive influence of UEC support on connecting mature projects to the EE helps raise awareness among UECs of the need to adapt their activities supporting the three dimensions of social capital to the degree of maturity of student projects.

Conclusion: limits and perspectives

This work has four limitations, which themselves constitute orientations for future research. The first is linked to the temporality of this study. Since social capital is dynamic (Nahapiet and Ghoshal 1998) and evolves alongside the development of the entrepreneurial project (Hite and Hesterly 2001; Larson and Starr 1993), our static approach may constrain a comprehensive understanding of student entrepreneurs' social capital. Our consideration of the project's maturity, the status of business creation, and the generates revenue of the project provides valuable insights on the project development, partly helping to address this limitation. However, a longitudinal perspective would allow for a more nuanced understanding of the dynamics of social capital according to the development of the entrepreneurial project. It would contribute to identifying and understanding the mechanisms that strengthen the sustainability of entrepreneurial projects over time. A second limitation concerns our measurement of resource diversity. Specifically, our variable captures only the number of resources obtained by students and does not account for their intensity, quality, or frequency. However, the study focuses exclusively on resources perceived by students as useful for the development of their entrepreneurial projects, which provides a partial proxy for resource quality and thus partly mitigates this limitation. Taking into account the complexity of resources, particularly in terms of their frequency, quality, and intensity, in future research would enhance our understanding of the resources provided by actors of the EE to student entrepreneurs. A third limitation of this study relates to the use of self-reported measures, which may introduce reporting biases. In

addition, our empirical design does not allow us to distinguish between students based on their level of proactivity or the extent of their social network, both of which may influence access to more diverse resources as well as the intensity of interactions with external actors. To mitigate these potential biases, we included a control variable capturing students' prior professional experience. However, future research would benefit from more explicitly incorporating variables such as students' networking ability and the size of their network, in order to strengthen model robustness and better account for potential endogeneity concerns. The fourth limitation relates to the focus on a specific country, while countries may present some specificities (Prokop and Thompson 2023) that influence the ability of student entrepreneurs to establish links (Bergmann, Hundt, and Sternberg 2016). Continuing this research in other contexts would allow for comparisons to identify the influence of national, regional and organizational contexts on the interactions between student entrepreneurs and the actors of the broader EE.

Note

1. The characteristics of the national population were constructed using data from Pépite France in 2019 (Gabay-Mariani 2020, 332).

Author contributions

CRediT: **Pauline Brunner**: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Visualization, Writing – original draft, Writing – review & editing; **Véronique Schaeffer**: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Validation, Visualization, Writing – original draft, Writing – review & editing.

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ORCID

Pauline Brunner  <http://orcid.org/0000-0001-6885-5636>
Véronique Schaeffer  <http://orcid.org/0000-0001-8575-5784>

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