

INFORMAL LEARNING ENVIRONMENTS IN THE DEVELOPMENT OF ADOLESCENTS' ENTREPRENEURSHIP COMPETENCE

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Abstract

This study examines the role of informal learning environments in the development of entrepreneurship competence among adolescents. Drawing on a large-scale survey of 15-year-old learners in Finland (N = 26,063), it analyses how hobby engagement, discussions with family and peers, and school-based discussions are associated with entrepreneurial knowledge, skills, and perceptions. The findings show that informal learning contexts play a differentiated role: hobby engagement is most strongly related to entrepreneurial skills and personality-related features, whilst home and peer discussions are key predictors of positive entrepreneurial perceptions. In contrast, school-based discussions contribute to knowledge and skills but are not associated with more positive perceptions of entrepreneurship. Overall, the results highlight that entrepreneurship competence develops beyond formal schooling and underscore the importance of better connecting entrepreneurship education with adolescents' everyday learning environments.

Keywords: *Entrepreneurship education, entrepreneurship competence, informal learning environment, survey, adolescent.*

1. Introduction

Entrepreneurship competence is widely recognised as important for navigating uncertain working life (e.g., Bacigalupo, 2021), and entrepreneurship education has therefore become established across school systems, aiming to develop students' entrepreneurial knowledge, thinking, and skills (e.g. Henry & Lewis, 2018; Pepin & St-Jean, 2019). Entrepreneurship education typically relies on pedagogical approaches such as business collaboration, classroom discussions, and experiential learning (e.g., Mwasalwiba, 2010). However, research has largely focused on higher education students (Hameed & Irfan, 2019; Mwasalwiba, 2010), whilst adolescents and informal learning environments remain underexplored (e.g., Jayawarna et al., 2014; Liguori et al., 2019; Virlia et al., 2019).

Addressing this gap, this quantitative study examines the role of informal learning environments in adolescents' entrepreneurship competence development. Entrepreneurship competence is conceptualised as a multidimensional construct comprising personality-related features (Bullough & Renko, 2013), perceptions of entrepreneurship (Peterman & Kennedy, 2003; Shinnar et al., 2012), and business-related skills (Lilleväli & Täks, 2017; Robles & Zárraga-Rodríguez, 2015). Alongside formal education, the study focuses on informal contexts, such as entrepreneurial family background, hobbies, and peer discussions as key learning environments (e.g., Callanan et al., 2011; Chang et al., 2012). The findings demonstrate that entrepreneurship competence develops within a broader learning ecosystem beyond school, highlighting the importance of stronger links between formal education and adolescents' everyday learning environments.

2. Design

This research is based on survey data collected from Finnish 15-year-olds (N = 26,371). The survey instrument consisted of nine background questions and 26 research statements measured on a five-point Likert scale. The Finnish National Agency for Education distributed the survey link to all lower secondary schools in Finland, and data were collected in three rounds (2020, 2021, and 2022) using the same survey instrument and procedures. In each round, the respondents were 15 years old (in the final grade of basic education in Finland) and completed the questionnaire using either a mobile device or a computer.

As this study is based on self-assessment data, common method bias is a potential concern (e.g., Adcock & Collier, 2001). To address this, the survey instrument was tested through a pilot study in which approximately 2,800 pupils participated. Based on the pilot data, the reliability of the survey was evaluated from multiple perspectives, including content validity, data quality, database functionality, and the reliability of the technical solution.

The distribution of respondents follows the profile of Year 10 pupils in Finland (see e.g., Finnish Institute for Health and Welfare, 2023). Slightly over half (53.7%) reported having entrepreneurs in their family, while 46.3% did not. The majority of respondents had a regular hobby (90.1%). The gender distribution was balanced, with 50.5% female and 49.5% male participants.

3. Objectives

The aim of this study is to examine the role of informal learning environments in the development of entrepreneurship competence among adolescents. Previous research has shown that the family constitutes a key informal learning context shaping entrepreneurship competence and children with self-employed parents are more likely to consider entrepreneurship themselves (e.g., Fellnhofer & Puumalainen, 2017). This influence is commonly explained through parental role-modelling as well as the support, encouragement, and everyday exposure to entrepreneurial practices that children experience at home (Scott & Twomey, 1988; Schmitt-Rodermund, 2004).

Early work by Scott and Twomey (1988) suggested that, alongside parental role models, experiences gained through hobbies or work can influence how young people perceive themselves as potential entrepreneurs and how they understand entrepreneurship. Their findings indicated that engagement in technical or craft-based activities was associated with a higher likelihood of developing business ideas. More recent evidence suggests that hands-on and effort-intensive hobbies may support the development of entrepreneurial orientation by strengthening autonomy, innovativeness, and perseverance among adolescents (Virilia et al., 2019).

4. Method

In this study, entrepreneurial competence is measured using 12 items. Table 1 presents the items, examples of references behind them, and the factor loadings used to construct the sum variables. The study includes four independent variables: having a regular hobby (dichotomous, yes / no), discussions about entrepreneurship with friends (Likert scale 1–5), family entrepreneurship background (dichotomous, yes/no), and discussions about entrepreneurship at school (Likert scale 1–5). Factor analysis was conducted to examine the structure of the entrepreneurial competence items, and the factor loadings are reported in Table 1. Based on these loadings, three sum variables were formed to represent distinct dimensions of individual entrepreneurial competence (e.g., Bacigalupo, 2021): Entrepreneurial self (SUM1), Perception of entrepreneurship (SUM2), and Business skills (SUM3).

Table 1. Items, their factor loading and their most important references.

Item	Examples of references	Factor loadings for the items		
I have faith in myself.	Atkinson, 1957; Wigfield, 1994.	,763		
I am persistent.	Bullough & Renko, 2013; van Gelderen, 2012.	,761		
I know what I am good at.	Bandura, 1977; Boyd & Vozikis, 1994.	,737		
I know that I am able to complete difficult projects and/or tasks.	McClelland, 1961; McGee et al., 2009.	,733		
I hold on to my goals, even when I face obstacles.	Markman et al., 2005.	,690		
I can affect my life.	Asante & Affum-Osei, 2019.	,659		
It would be great if I could become an entrepreneur.	Kuratko et al., 2021.		,897	
I want to establish a company in the future.	Hulsink & Koek, 2014; Mitchelmore & Rowley, 2010.		,869	
I think I could work as an entrepreneur.	Bonnett & Furnham, 1991; Kuratko et al., 2021.		,851	
I am able to draw a business plan.	Honig, 2004; Wheadon & Duval-Couetil, 2014			,821
I understand how the economy works in an enterprise.	Almahry et al., 2018; Zokaityte, 2016			,804
I am able to plan a project.	Almahry et al., 2018			,706
Rotation Method: Varimax with Kaiser Normalisation. (.874***)				

5. Results

Three regression models were estimated to examine how hobby engagement, discussion frequency across social contexts, and gender predict students' entrepreneurship competencies. Table 2 presents the results of the regression analysis.

Table 2. Regression model.

	Sum 1 Entrepreneurial self	Sum2 Perception of entrepreneurship	Sum 3 Business awareness
(constant)	2.420***	1.749***	1.493***
Hobby	.236***	.111***	.164***
Discussions at home	.076***	.244***	.198***
Discussions at school	.012***	-.086***	.063***
Discussions with friends	.036***	.231***	.141***
Gender	.126***	.219***	.234***
r	.086	.241	.218
Adjusted r	.086	.241	.219
F-value	491.509***	1655.306***	1455.997***

As Table 2 shows, the predictors were consistently significant across all models, and the F-statistics indicated robust overall model fit. The results highlight the importance of social discussion contexts such as home and peer environments as well as hobby engagement and gender in shaping entrepreneurship competencies among 15-year-old learners.

The first model, explaining personality-related features (Sum 1), indicated that all predictors were statistically significant. Hobby engagement showed the strongest positive association, whilst discussions at home, at school, and with friends contributed to smaller but still significant effects. Gender also showed as a meaningful predictor. However, the model's explanatory power remained rather modest (Adjusted $R^2 = .086$).

The second model focused on the perception of entrepreneurship (Sum 2) and demonstrated a substantially higher explanatory capacity (Adjusted $R^2 = .241$). Discussions at home and with friends were the strongest positive predictors for the development of positive perception of entrepreneurship, whereas discussions at school showed a significant negative association. Hobby engagement (.111***) and gender (.219***) again contributed positively and significantly.

The third model, predicting business related skills (Sum 3), also gained a meaningful level of explained variance (Adjusted $R^2 = .219$). All independent variables were positively associated with the outcome, with discussions at home (.198***) and gender (.234***) showing the strongest effects. Hobby engagement (.164***) and discussions with friends (.141***) also had notable positive impacts, whilst discussions at school played a smaller but significant role (.063***). Although the focus of this study is not on examining gender differences in the development of entrepreneurial competence, the regression analysis provides an interesting perspective on this phenomenon as well. It seems that entrepreneurship is still a gendered phenomenon, as has been noted in several previous studies (e.g. Batchelder et al., 2025; Marlow & Patton, 2005).

6. Discussion

This study contributes to the entrepreneurship education literature by showing that entrepreneurship competence among 15-year-old learners is shaped through a combination of social discussion contexts, extracurricular engagement, and gender. The consistent significance of the predictors across all models indicates that entrepreneurship-related learning extends beyond formal schooling and is embedded in adolescents' everyday social environments. The findings thus extend existing theories of entrepreneurship competence development by empirically demonstrating the role of informal social contexts across multiple competence dimensions.

The present results underline the importance of learning processes occurring outside formal education. Strong effects of home and peer discussions on perceptions of entrepreneurship and business-related skills suggest that entrepreneurial meaning-making is co-constructed in close social relationships during adolescence. The differentiated effects across competence dimensions further highlight the multidimensional nature of entrepreneurial competence: personality-related features appear less responsive to social contexts, whereas perceptions and skills are more sensitive to social interaction. The negative association between school discussions and entrepreneurial perceptions challenges assumptions about uniformly positive effects of entrepreneurship education, and points to the importance of how entrepreneurship is framed in formal education settings.

From a practical perspective, the findings suggest that effective entrepreneurship education should extend beyond the classroom. Families, peer groups, and hobby contexts should be recognised as key learning arenas and more deliberately connected with formal education. The persistent role of gender across all models also reinforces the need for early entrepreneurship education that addresses stereotypes and provide diverse entrepreneurial role models. Future research should examine the qualitative nature of entrepreneurship-related discussions across contexts, explore interaction effects between social environments, and employ longitudinal and cross-cultural designs to better understand how entrepreneurial competence develops over time.

7. Conclusions

The results of this study demonstrate that social discussion contexts, hobby engagement, and gender are related to development of the dimensions of entrepreneurship competence, including personality-related features, perceptions of entrepreneurship, and business-related skills. Although not the primary focus of the study, gender showed a strong association with all dimensions of entrepreneurship competence, reinforcing previous research highlighting entrepreneurship as a gendered phenomenon already in adolescence. This suggests that gendered norms and expectations may influence entrepreneurial learning well before students make explicit educational or career choices. Taken together, the findings emphasise the need to broaden the understanding of entrepreneurship education beyond formal curricula. Supporting constructive entrepreneurship-related discussions across families, peer networks, and leisure contexts, alongside more reflective school-based approaches, may be critical for fostering entrepreneurship competence in an inclusive manner. Hence, future research should examine the qualitative characteristics of entrepreneurship-related discussions and employ longitudinal designs to better understand how early socialisation processes shape entrepreneurship competence over time.

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