

## **Fostering Entrepreneurial Learning On-the-Job: evidence from innovative small and medium-sized companies in Europe**

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### **Introduction**

The interest of EU policymakers in ways to promote entrepreneurial learning has been growing in the last few decades. This interest has grown, on the one hand, because of the large number of independent entrepreneurs: the Global Entrepreneurship Monitor (GEM) indicates that almost one out of ten European citizens is thinking about starting or is taking initial steps to start their own business (Amorós & Bosma, 2014). On the other hand, there is an increasing group of employees that is taking the lead in Entrepreneurial Employee Activities (EEA) in existing firms: 'Employees developing new activities for their main employer, such as developing or launching new goods or services, or setting up a new business unit, a new establishment or subsidiary' (Bosma *et al.*, 2013, p. 7). Figures from the GEM in 2011 suggest that the group of entrepreneurial employees concerns almost 5% of the European adults (Bosma *et al.*, 2013) and this number is increasing as economies become more innovation-driven. As such, it is no coincidence that one of the key competencies as identified in the European Reference Framework on Lifelong Learning is a sense of initiative and entrepreneurship (European Parliament and the Council of the European Union, 2006), emphasising that entrepreneurship is more than venture creation.

Despite the growing interest in entrepreneurial learning, research on this topic is still in its infancy, starting as from the 1990s. Although significant advancement has been made, there are still many research issues in this field that warrant attention. Firstly, research on entrepreneurial learning is rather fragmented. Secondly, studies on entrepreneurial learning have been criticised for focusing solely on the entrepreneurial individual, neglecting that entrepreneurial learning is very often socially-mediated and situated learning (Dimov, 2007a). Thirdly, the field has mostly benefitted from conceptual work. Empirical work is scarcer, especially with regard to a focus on (promoting) entrepreneurial learning within the context of existing organisations, such as entrepreneurial learning of employees (De Jong, 2013).

Recently, the EU stated in its 'Europe 2020'-strategy that adult learning was an important way to promote entrepreneurship amongst employees. Hereby, (social) innovation and creativity are stimulated, and it is an important answer to (youth) unemployment and social exclusion (Council of the European Union, 2011). Furthermore, most firms are small and medium-sized (SMEs) (Muller *et al.*, 2014), with often no or hardly any human resource structures in place to systematically stimulate entrepreneurial learning amongst their employees. As most research focuses on large companies, it remains unclear which factors stimulate entrepreneurial learning in SMEs (Politis, 2005). Therefore, more insight into these factors

is needed and will help policymakers in addressing (some of) the overarching European challenges with regard to stimulating entrepreneurial learning in an SME context.

This article begins by unfolding the conceptual boundaries of entrepreneurial learning, by elaborating upon what and how entrepreneurs learn. Then, relevant antecedents and outcomes of entrepreneurial learning in the workplace are described and discussed. Next, the antecedents of entrepreneurial learning are further illustrated by an empirical study among more than 200 employees in 12 SMEs, covering individual aspects, as well as aspects related to the level of the organisation and work environment.

### **The Role of Education and Learning in the Entrepreneurial Process**

With growing attention given to promoting entrepreneurship in the policy realm, research on entrepreneurship education and entrepreneurial learning is becoming more and more relevant. As Minniti and Bygrave (2001, p. 7) state: ‘entrepreneurship is a process of learning, and a theory of entrepreneurship requires a theory of learning’. Therefore, in order to understand the entrepreneurial process, it is important to grasp *what* and *how* entrepreneurs learn (Wang & Chugh, 2014).

In defining what entrepreneurs should learn, research has shown that a great variety of competencies plays a role in the entrepreneurial process, such as strategic, relational, organisational and analytical competencies (Lans, Versteegen, & Mulder, 2011; Man, Lau, & Chan, 2002). In the context of entrepreneurial learning, authors particularly refer to the ability to identify entrepreneurial opportunities (Politis, 2005). The concept of entrepreneurial opportunities was popularised by the article of Shane and Venkataraman in 2000 to provide the research field of entrepreneurship its own intellectual identity (Venkataraman *et al.*, 2012). Despite its importance, scholars tend to disagree on what entrepreneurial opportunities comprise. Some argue that opportunities are objective entities, waiting to be discovered in the economic environment. From this point of view, entrepreneurs are *sensing learners*: practical thinkers who search for opportunities, set goals, scan the environment, analyse competition, and make strategic plans (DeTienne & Chandler, 2004; Wang & Chugh, 2014). Others argue that opportunities are socially constructed entities, created by entrepreneurs in interaction with their environment (Companys & McMullen, 2007). From this more subjective point of view, entrepreneurs are *intuitive learners*: abstract thinkers who act upon their environment, create market conditions, collaborate, and negotiate with others (DeTienne & Chandler, 2004; Wang & Chugh, 2014; Wood & McKinley, 2010).

Recently, scholars have tended to reconcile these two perspectives and acknowledged that opportunities could both be discovered and constructed: ‘(…) opportunities may be of several different kinds – some obvious and easily recognized, others more subtle and not so easily discovered, and yet others non-existent until people set out to make them from unexpected ingredients’ (Venkataraman *et al.*, 2012, p. 24). Hence, both sensing and intuitive learning play a role in the entrepreneurial process. The attention given to entrepreneurial opportunities in the literature and the debate on this topic show the desire to understand how entrepreneurial opportunities are identified and acted upon, as well as the complexity of the learning process behind it (Politis, 2005).

Concerning the question of *how* entrepreneurs learn, Wang and Chugh (2014) summarise in their study that entrepreneurs learn by doing, experience, trial-and-error, participation, and the experience of others. Learning and working are difficult to separate in entrepreneurial learning, since learning is often unstructured, unintentional and not always recognised as such, being a concurrent process to working (Eraut, 2004). What seems to be clear from recent entrepreneurial learning literature is that learning-related activities associated with the ongoing entrepreneurial process are neither exclusively individual, nor exclusively social, but a combination of both (Cope, 2005; Dimov, 2007a, 2007b; Dutta & Crossan, 2005). Also, critical incidents or episodes seem to be important triggers for entrepreneurial learning (Cope, 2005; Cope & Watts, 2000; Lans *et al.*, 2008). Examples include financial problems, exit of key staff, acquiring new customers or innovating new products.

The fact that entrepreneurial learning is often unstructured, informal and unintentional does not mean that there is nothing to 'organize' in terms of entrepreneurial learning. Literature on entrepreneurship education, which centres around the effectiveness of entrepreneurship education programmes, is helpful here. Although the field is rather young and it is still difficult to tell whether entrepreneurship education is effective, the first, general impression is that it does work (Rideout & Gray, 2013). In a recent exercise carried out by the European Commission, in which 91 studies on entrepreneurship education in 23 countries were analysed, it was concluded that there was a positive impact of entrepreneurship education on all sorts of outcomes, such as the development of specific motivations (e.g. future engagement in entrepreneurship), knowledge, skills and attitudes, and employability and career ambitions (European Commission, 2015). Scientific studies on entrepreneurship education mainly focus on factors that influence the development of entrepreneurial intentions as predictors for entrepreneurial behaviour (Krueger, Reilly, & Carsrud, 2000). Recent meta-analyses in this field show overall small but positive effects of entrepreneurship education on entrepreneurial intentions (Bae *et al.*, 2014; Martin, McNally, & Kay, 2013). Also, entrepreneurial competencies, such as opportunity identification, can be improved by offering educational activities. For instance, DeTienne and Chandler (2004) showed that training could enhance the number and innovativeness of ideas identified by students. Comparable effects of entrepreneurship education on students' opportunity identification competence were reported by Karimi *et al.* (2014).

### *3-P model: factors influencing entrepreneurial learning of employees*

The need for employees with an entrepreneurial orientation within existing organisations has been stressed in the work on corporate entrepreneurship or intrapreneurship (Guth & Ginsberg, 1990; Lumpkin & Lichtenstein, 2005). Sharma and Chrisman (1999, p. 21) define corporate entrepreneurship as 'the process whereby an individual or a group of individuals, in association with an existing organization, create a new organization or instigate renewal or innovation within that organization'. They state that it does not exclusively focus on innovation, but also includes (1) the birth of new firms within or adjacent to the existing organisation and (2) strategic renewal, for example, changing the key ideas on which the organisation is built (Sharma & Chrisman, 1999).

As stated in the introduction, a large group of entrepreneurial learners hardly profits from organised learning activities. Specifically, for employees working in SMEs it is often difficult to organise such learning activities, given the size of the

company. However, their work environment is an important and powerful site for learning, and also for developing entrepreneurial competence. Several scholars tried to explain how an entrepreneurial work environment could be created and fostered, and what employees in all kinds of functions and roles needed in order to become entrepreneurial employees (Bosma *et al.*, 2013; Holman *et al.*, 2012; Wang, Ellinger, & Wu, 2013). In this regard, a helpful model to structure learning factors is the 3-P (presage-process-product) model, originally introduced by Biggs (1993). Although it was originally developed to map the complexity of learning in a school context, Tynjälä (2013) slightly adjusted and used it in the context of workplace learning. Following Tynjälä (2013), presage factors are seen as learner and work environment factors, process factors as work activities that foster learning, and product factors as learning outcomes.

To start with *product*, opportunity identification is a crucial outcome of entrepreneurial learning and is at the heart of the entrepreneurship literature (Shane & Venkataraman, 2000). Therefore, the ability of employees to identify entrepreneurial opportunities, referred to as opportunity identification competence (OIC), is the learning outcome of interest in this article. OIC is defined as 'the ability of individuals to identify ideas for new products, processes, practices or services in response to a particular pain, problem, or new market need' (Baggen *et al.*, 2015, p. 417). In this definition, opportunities are seen as ideas, which Davidsson (2015) referred to as *new venture ideas* (i.e. 'imagined future ventures', p. 7). OIC refers to being able to generate new business ideas or, in other words, to think of *potential* opportunities whose exploitation could lead to value creation.

From a *presage* point of view, prior experience in entrepreneurship is considered important, as scholars seem to agree that entrepreneurs mainly learn from experience (Harrison & Leitch, 2005; Politis, 2005). Studies from entrepreneurship education show that several learner factors, such as self-efficacy, influence the development of entrepreneurial intentions as predictors for entrepreneurial behaviour (Krueger *et al.*, 2000; Rideout & Gray, 2013). In a business context, employees' creative self-efficacy is considered crucial to realise innovations (Tierney & Farmer, 2011). Also, the study by Wang *et al.* (2013) showed that self-efficacy was one of the most important predictors of entrepreneurial opportunity recognition in the work context. Furthermore, they confirmed that social networks influenced (research and development) employees' opportunity recognition. Interpersonal, social networks help to receive diverse and accurate information on opportunities, thus contributing to the successful identification of opportunities (Wang *et al.*, 2013).

At the work environment (company) level, several studies focus on the importance of job design and openness to interaction with the external environment (Hornsby, Kuratko, & Zahra, 2002; Jones & Macpherson, 2006; Lans *et al.*, 2008). With regard to job design, Holman *et al.* (2012) studied the influence of job control and problem demand on employees' innovativeness in manufacturing firms. Job control was analysed as the extent to which employees had discretion over how they would prefer to do their job. It contributes to employees' intrinsic motivation and enables them to independently select the most appropriate solution for a given problem situation (Holman *et al.*, 2012; Hornsby *et al.*, 2009). Problem demand was seen as the frequency and difficulty of task problems. It prevents employees from solely focusing on effective task performance and challenges them to solve problems in new ways. Holman *et al.* (2012) found that both factors had an indirect

association with idea generation through work-based learning strategies. Concerning the importance of the external environment, Wang *et al.* (2013) found that the employees' perception of environmental opportunities was the most important predictor of opportunity identification, compared to four other antecedents related to the individual (such as self-efficacy). How employees perceive the companies' industrial environment, recognise threats and opportunities, and experience change and uncertainty in their environment seems to be relevant for exploiting the learning potential of the work environment (Hornsby *et al.*, 2009; Wang *et al.*, 2013).

For the *process* part of the model, Tynjälä (2013) refers to the work activities that foster learning processes, such as learning by doing. Several studies in the field of workplace learning emphasise the importance of work activities as vehicles for all sorts of work-related learning outcomes, including task performance, role performance, team work, awareness, understanding, decision making and problem solving (Eraut, 2004). Similarly, studies on entrepreneurial learning stress the importance of learning by doing (Cope, 2005). In 2011, the GEM investigated Entrepreneurial Employee Activity (EEA) worldwide to get a better grip on corporate entrepreneurship (Bosma *et al.*, 2013). As the GEM results show, employees actively involved in innovation-related activities are far more likely to identify potential opportunities.

According to Eraut (2004), important work-related activities can be grouped as 1) team work and working alongside others, 2) working with significant external stakeholders (e.g. clients), and 3) dealing with challenging tasks. In order to explore new ideas, to construct language and meaning in the organisation of potential new business ideas, new ideas must be shared with others. In the jargon: the potential business opportunity needs to be 'objectified' (Dutta & Crossan, 2005; Wood & McKinley, 2010). Although the entrepreneurship literature has long emphasized the 'heroic individual', there is an increasing amount of empirical evidence that supports the notion of significant peers, especially in the early stages of entrepreneurship. For instance, it is estimated that over 84% of the innovative projects use multifunctional teams (Griffin, 1997). Moreover, there is a direct link between team work and entrepreneurial performance (e.g. innovation), be it independent start-ups or corporate entrepreneurship projects (Vyakarnam & Handelberg, 2005). Besides learning internally about the new idea, business opportunities often grow and need to be validated in interaction with the external environment (Wood & McKinley, 2010). Work activities that include engagement in networks of external relationships, immersion within the industry (e.g. attending conferences, business visits) are all recorded as powerful learning-related work activities in small firms (Billett, 2011; Fenwick, 2003; Mulder *et al.*, 2007; Rae, 2006). In the continuing process of opportunity enactment, the support of external stakeholders becomes even more prominent. It requires activities such as setting up small experiments, prototyping and observation. This will inevitably lead to the challenging of earlier assumptions around the idea and to solving existing and emerging problems in the trajectory to realising the business idea.

To sum up, earlier work carried out in the field of entrepreneurial learning and education provides clear evidence of the importance of entrepreneurial learning in an SME context for different learning outcomes, such as entrepreneurial intentions and competencies. To further illustrate this, we explored how entrepreneurial employees learned and what specific factors contributed to an exemplary learning outcome of entrepreneurial learning, namely OIC. In short, we aimed to answer the following question: *What are antecedents of individual opportunity identification competence (as outcome of entrepreneurial learning) in a small and medium-sized business context?*

## Methods

### *Participants*

In total, 234 employees from 12 SMEs participated in this study. The companies were mainly active in the agricultural, food, and fibre industry and all the companies had an affinity with innovation, as the only requirement was that they had introduced at least one new product or service in the last three years. One company was from a different manufacturing industry, the metal industry. Although this is a different sector, it was included because it was comparable with the other organisations in terms of organization and innovation structure, size, and educational level. The same holds for the German company (the other 11 companies were Dutch). To gain insight into the innovative and learning capacity of each organisation as a whole, employees in all kinds of functions and roles were invited to participate in the study: members of the management team, employees from marketing, human resources, support, and employees working in the factory or at the shop floor level. It was recommended to invite a mix of employees in terms of age, gender, educational level, and function. Only participants with at least three years' working experience were included in the analysis to ensure that they were able to participate adequately. Of the total of 234 participants, 218 had at least three years' working experience. Their mean age was 42 (SD=9) and 76.1% were male. Their educational level ranged from primary or lower vocational education to PhD. Table I shows an overview of the companies that participated.

TABLE I. Overview of the participating companies in terms of main product, country, number of employees, and number of participants (with at least three years' working experience)

Company number	Main product	Country	Number of employees	Number of participants
1	Paper	The Netherlands	185	16
2	Paper	The Netherlands	40	8
3	Seeds	The Netherlands	220	25
4	Chrysanthemum	The Netherlands	100	28
5	Union seeds	The Netherlands	62	28
6	Trade & distribution vegetables and fruits	The Netherlands	38	15
7	Orchids	The Netherlands	70	26
8	Substrates	Germany	370	21
9	Trade & distribution vegetables and fruits	The Netherlands	43	11
10	Champignons	The Netherlands	100	15
11	Trade & distribution vegetables and fruits	The Netherlands	450	13
12	Metal	The Netherlands	70	12

### *Procedure*

The data were collected at the participating companies by the first author. At the time of the data collection, the participants first received information on the procedure. Secondly, they signed a declaration of consent, stating (1) that all data would be processed confidentially and (2) they gave permission for the use of their results for scientific purposes. They then worked on the questionnaire. After completing

all the questions, the data were analysed and the first author returned to the company two weeks later in order to evaluate the data collection and discuss the results.

### *Measures*

All the variables were measured using a questionnaire as the data collection tool. Most items were answered on a five-point ordinal scale. Items corresponding to a given concept (e.g. 'self-perceived creative self-efficacy') were combined in a summated rating scale which was used as an index in subsequent analyses. Noted advantages of summated rating scales include good reliability and validity (i.e. psychometric properties), ease in development, and ease to complete (Spector, 1992). Strictly speaking, parametric statistics may not be applied for such scales (Kampen & Swyngedouw, 2000), unless (as we do) we invoke the 'pragmatic sanction' that 'in numerous instances it leads to fruitful results' (Knapp, 1990, p.123).

#### Opportunity identification competence

To obtain insight into the outcome variable OIC, as valued in the business context, respondents were asked 'How many new ideas from you (or your team) have been adopted by the management (resulting in a concrete project) either in whole or in part, during the last three years?' Only the responses of the participants who had at least three years' working experience were included in the analysis. If they were ambiguous in their answers (e.g. indicating multiple numbers), the result was coded as a missing value. This way, wrong interpretation of answers was avoided.

#### Learner factors

Four learner-related factors were included in the questionnaire, namely self-perceived social networks, self-perceived creative self-efficacy, entrepreneurial intentions and entrepreneurial experience. To measure self-perceived social networks, a scale of three items was adopted from Wang *et al.* (2013). The questions focused on social networks considered important in a business context, such as contact or discussion with customers, suppliers, distributors, social, and professional contacts. Self-perceived creative self-efficacy was measured according to a three-item scale of Tierney and Farmer (2011) and included 'I have confidence in my ability to solve problems creatively'. The participants' entrepreneurial intentions were measured according to four items adopted from DeTienne and Chandler (2004), asking if participants would be involved in a new venture in the next 12 months, five years, ten years, or sometime in their lifetime. Finally, to investigate prior experience in entrepreneurship, they were asked whether they had a company at the moment of testing, and whether they had had an entrepreneurial venture in the past. These two questions were combined, so that 0 = no prior experience in entrepreneurship, and 1 = running an entrepreneurial venture now or in the past.

#### Work environment

Three work environment factors were measured in the questionnaire, namely problem demand, job control and self-perceived industrial environment. To measure problem demand, the participants were asked 'How often do you

usually face relatively more complex problems that take at least 30 minutes to find a good solution?’ The answers were formulated as ‘never’, ‘less than once a month’, ‘less than once a week’, ‘at least once a week’, and ‘every day’. Job control was measured with the question ‘Considering the majority of your daily tasks at work, how precise are the instructions that you get from your supervisor regarding the process according to which they should be performed?’ and could be answered with ‘the instructions I receive determine every step of how I should perform my tasks, with no freedom at all’, ‘I receive relatively precise instructions and have limited freedom’, ‘I receive clear instructions but I can still be flexible’, ‘I receive general instructions and mostly have to decide the details on my own’, or ‘I have to decide on my own how to perform my tasks’. The three questions on the self-perceived industrial environment were adopted from Wang *et al.* (2013) and asked the participants whether they perceived many opportunities for new product innovation, technological innovation, and whether there were opportunities for growth in the industry.

#### Process: Entrepreneurial Employee Activity

EEA was measured according to six items concerning how often the participants were involved in innovation-related activities which included task-related, internal as well as external work-related learning activities, such as acquiring new groups of customers, optimising the organisation of work, or producing ideas to improve work practices (De Jong & Den Hartog, 2010).

#### *Analysis*

The internal consistency of the scales was determined by principal components analysis. Measurement properties of all used summated rating scales showed sufficient psychometric properties, except for EEA. Here, three items showed relatively low factor loadings and were removed. All other loadings ranged between .69 and .92, which provided no evidence that items measured more than a single dimension. An indication of the scale’s reliability was given by Cronbach’s alpha, which ranged between .69 and .89. To gain detailed insight into the relationships between the learner factors, work environment, EEA, and OIC, the analyses consisted of two steps. First, the relationships between OIC and each block of antecedents were investigated separately in three multiple regression analyses (i.e. learner factors, work environment, and EEA), in order to reach a specific understanding of the influence of each block of antecedents on OIC. Second, in order to find the strongest predictors of OIC, a backward regression analysis was conducted in which all learner factors, work environment factors and EEA were entered. Possible dependencies of responses due to the fact that respondents clustered in organisations were checked by including organisation as a fixed factor in an ANCOVA of OIC and its antecedents. The results showed that organisation did not have a significant effect and it was therefore not needed to control for organisation in further analyses. Significance level for all tests were set at a relatively conservative alpha level of .01 in order to control for capitalisation on chance.



## Results

The participants had little entrepreneurial experience ( $M=.21$ ) and entrepreneurial intentions ( $M=2.41$ ). Job control scored very high ( $M=4.17$ ), indicating that the participants experienced relatively high degrees of freedom in how they performed their tasks. Problem demand scored average ( $M=2.93$ ), suggesting that the participants faced complex problems (that take at least 30 minutes to find a good solution) less than once a week, but at least once a month. The participants' scores were comparable for the questions on the frequency with which they engaged in entrepreneurial work-related activities ( $M=3.20$ ). Furthermore, on average, they had had 3.83 business ideas adopted by the management over the last three years. The standard deviation was relatively high ( $SD=4.20$ ), suggesting that some participants were more successful here than others. Moderately high correlations were found between self-perceived self-efficacy and self-perceived social networks ( $r=.40$ ), EEA and problem demand ( $r=.41$ ), and EEA and the number of ideas adopted by the management ( $r=.44$ ). Entrepreneurial experience did not correlate to any of the other variables. An overview of the descriptive statistics and correlations of the different variables from the model are given in Table II.

TABLE II. Means, standard deviations, and correlations for all the variables

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Self-perceived social networks	3.84	.61	–								
2. Self-perceived creative self-efficacy	3.79	.61	.40**	–							
3. Entrepreneurial experience	.21	.40	–.06	.13	–						
4. Entrepreneurial intentions	2.41	.94	.26**	.27**	.13	–					
5. Problem demand	2.93	.98	.21**	.18**	–.00	.27**	–				
6. Job control	4.17	.78	.12	.09	.04	.10	.30**	–			
7. Self-perceived industrial environment	3.82	.69	.30**	.17**	.03	.10	.04	–.00	–		
8. Entrepreneurial Employee Activity	3.20	.82	.28**	.39**	.17	.18**	.41**	.28**	.19**	–	
9. Number of ideas adopted by the management	3.83	4.20	.22**	.28**	.10	.27**	.26**	.23**	.17	.44**	–

The three separate multiple regression analyses successively including the learner factors, work environment factors, and EEA suggested that EEA played the most important role in explaining OIC (i.e. the number of ideas adopted by the management). The F-values in the footnote denote the usual omnibus test for significance of the variables included in the analysis. The significant F-values suggest that all models significantly explained variance of the number of ideas adopted by the management as a whole. In the backward regression model, only two predictors remained: self-perceived creative self-efficacy and EEA. This model explained 24% variance of the number of adopted ideas by the management. The results of the multiple regression analysis per block and the backward regression analysis are shown in Table III.

TABLE III. Three separate multiple regression analyses per block predicting the number of ideas adopted by the management, and a backward regression analysis, including all blocks

	Analysis per block (enter)			All blocks (backward) <sup>d</sup>		
	<i>B</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>t</i>	<i>p</i>
<b>Block 1: Learner factors and OIC<sup>a</sup></b>						
Constant	-6.19	-2.58	.011	-6.68	-3.34	.001
<i>Learner factors</i>						
Self-perceived social networks	.77	1.37	.174			
Self-perceived creative self-efficacy	1.57	2.48	.014	1.00	1.80	.074
Entrepreneurial experience	.66	.82	.416			
Entrepreneurial intentions	.39	1.01	.317			
<b>Block 2: Work environment and OIC<sup>b</sup></b>						
Constant	-6.43	-2.59	.010			
<i>Work environment factors</i>						
Problem demand	.82	2.39	.018			
Job control	.95	2.14	.034			
Self-perceived industrial environment	1.02	2.39	.018			
<b>Block 3: EEA and OIC<sup>c</sup></b>						
Constant	-3.89	-3.05	.003			
Entrepreneurial Employee Activity	2.39	6.23	<.001	2.07	5.12	<.001

Note. <sup>a</sup>R<sup>2</sup> = .13, N = 144, F = 4.99, df = 4, 139, *p* < .01

<sup>b</sup>R<sup>2</sup> = .12, N = 158, F = 7.06, df = 3, 154, *p* < .01

<sup>c</sup>R<sup>2</sup> = .20, N = 160, F = 38.75, df = 1, 158, *p* < .01

<sup>d</sup>R<sup>2</sup> = .24, N = 143, F = 22.39, df = 2, 140, *p* < .01

## Discussion

Because of the increasing interest in entrepreneurship education and entrepreneurial learning in general, and the shortage of studies on entrepreneurial learning of employees in existing businesses (Council of the European Union, 2011), this study focused on the factors that influence entrepreneurial learning in an SME context. More specifically, the influence of learner factors, work environment factors, and EEA on individual OIC was investigated. The number of ideas of a participant adopted by the management in the last three years was used as a business-specific measure of his or her OIC. Employees from all levels of the organisations were included to obtain insight into entrepreneurship in companies in its broadest sense.

A first result of this study was that in the multiple regression analysis, in terms of learner factors, the largest contribution came from self-perceived creative self-efficacy. This is similar to earlier work that had been carried out in the field of independent entrepreneurship. For instance, meta-analysis showed that entrepreneurial self-efficacy was one of the strongest individual characteristics that explained entrepreneurial success in terms of growth and financial performance (Rauch & Frese, 2007). Stimulating and developing entrepreneurial self-efficacy has become of major interest in entrepreneurship education programmes, starting already in initial education. Intervention studies suggest positive effects of organised learning activities on entrepreneurial self-efficacy (Fayolle, Gailly, & Lassas-Clerc, 2006), although

experiments are scarce and need further validation (Martin *et al.*, 2013; Rideout & Gray, 2013). In sum, the results of this study suggest that specific forms of entrepreneurial self-efficacy are important, not only for independent entrepreneurship, but also in the early stages of the entrepreneurial process in existing companies.

A second result was that work environment factors (job control, problem demand, and the perceived industrial environment) had a positive association with OIC. These effects disappeared in the backward regression analysis including learner factors and EEA. This is in accordance with the study by Holman *et al.* (2012) who found an indirect relation between job control, problem demand, and idea generation. The results provide mild evidence that work environment factors such as work design, organisation of work, and decision power not only yield more effective learning systems (Brandi & Ionnane, 2015), but may also indirectly foster the (necessary) flow of new business ideas from employees to the management.

A third important finding was that in the backward regression analysis, EEA had the largest impact on OIC. This confirms the results of the GEM, in which Bosma *et al.* (2013) found that employees involved in EEA were more likely to identify business opportunities of good quality. Furthermore, it underlines the complex and dynamic nature of entrepreneurial learning, as learning and work are difficult to separate in an entrepreneurial context (Eraut, 2004; Wang & Chugh, 2014). Learning by doing is not only crucial for independent entrepreneurs, but also for employees in a business context, especially in SMEs.

#### *Limitations and the future research agenda*

In this study, we attempted to measure the number of ideas adopted by the management as an indicator for OIC in a business context. Our results suggest that mainly EEA explains how many ideas of an employee are adopted by the management. Future research should reveal how and to what extent EEA serves as a moderator or mediator between the other independent variables (i.e. learner factors and work environment) and OIC, for which a larger sample is needed. Such research could include additional work environment factors where previous research showed that it played a significant role in corporate entrepreneurship, for instance innovation culture (De Castro *et al.*, 2013). We recommend asking about the type of ideas adopted by the management. By scoring the ideas in terms of their innovativeness, it could be investigated more specifically whether and how work environment factors relate to OIC. For example, DeTienne and Chandler (2004) scored generated business ideas on innovativeness based on a 6-point Likert scale.

In this study, employees fulfilling all kind of functions were invited to participate. The data did not allow us to make a distinction in entrepreneurial learning over functions. For future research, we therefore recommend collecting data among a larger sample in order to compare employees in different functions. Some studies already focused on a single group of employees (Wang *et al.*, 2013, who focused on research and development employees). A comparison between several functions in one dataset would be interesting to investigate more specifically how entrepreneurial learning in businesses emerged and who was involved in it.

Entrepreneurial learning is very often a social or group activity (Dutta & Crossan, 2005). Therefore, it would be interesting to investigate the collaborative entrepreneurial learning of groups of employees. Next to the individual competence

to identify opportunities, group competence to evaluate and exploit opportunities into a concrete plan for a new product, service, or process, could be tested.

### **Conclusion and Policy Implications**

In sum, our results suggest that self-perceived creative self-efficacy, work environment factors and being actively engaged in entrepreneurial activities foster employees' success in having business ideas adopted by the management of the organisation. Although entrepreneurial learning is often informal in SMEs, and, as such, a by-product of work, the results also point to important areas to further strengthen entrepreneurial learning.

Firstly, the results emphasise the importance of soft skills, and more specifically belief in one's ability to execute entrepreneurial tasks, such as generating business ideas. As Brandi and Ionnane (2015) conclude, soft-skills are highly valued by employers and employees. Nevertheless, investment should mainly come from the individual employee, as in most SMEs there is a limited budget for developing such skills through training programmes. Companies invest primarily in harder skills that directly contribute to new business development and financial performance. As such, soft-skill development, like creative self-efficacy, depends on more informal learning mechanisms, such as mastery and vicarious learning. For early career professionals, this highlights the importance of fostering entrepreneurial self-efficacy in tertiary education. For more senior colleagues, this could be stimulated as a by-product in business-related programmes. Small companies could invest in combinations of business-related training programmes which simultaneously stimulate the development of softer entrepreneurial skills such as divergent thinking to enhance entrepreneurial self-efficacy.

Secondly, based on our results, we suggest that job control, problem demand, and the perceived opportunities in the environment indirectly contribute to entrepreneurial learning. Policy makers could play a role in designing jobs in which job complexity and autonomy are fostered at the shop floor level, and could facilitate collaboration between companies. As our results point towards a more complex interplay between the work environment and OIC, more research in this area is desirable.

The most important predictor of OIC was involvement in entrepreneurial activities, which confirms the importance of learning by doing. Learning by doing could be stimulated by involving employees in entrepreneurial work-related activities, investing in learning programmes with a focus on the shop floor level, and creating cooperation across boundaries within the organisation.

However, not all entrepreneurial learning is simply a matter of learning by doing. It would be a mistake to believe that entrepreneurial learning in the workplace often approaches its potential. As already indicated, individual (e.g. belief in one's skill) and work environment factors (e.g. room to manoeuvre) need to be in place to afford these type of entrepreneurial, work-related activities. Moreover, evidence from the literature suggests that small-firm owner-managers value and exploit the learning potential of the work environment very differently (Lans *et al.*, 2008). Hence, as owner-managers of SMEs have so much decision power, they must be educated and supported for this role. Nonetheless - as experienced in the data collection process among the various enterprises - the competence of managers in the field of entrepreneurial learning does not seem to be a priority in management development programmes. As the small-firm owner-managers play a crucial

role in recognising, affording and reflecting on this type of behaviour, policy programmes should target this group and make the recognising, fostering and capitalising of entrepreneurial learning an integral part of management development programmes. In sum, close collaboration between policy makers, employers and entrepreneurial learning professionals is called for in efforts to effectively combine and realise entrepreneurial learning, human capital, EEA, and eventually innovation in the SME context.

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### REFERENCES

- AMORÓS, J. E. & BOSMA, N. (2014) *Global Entrepreneurship Monitor 2013 Global Report* [PDF]. <http://www.gemconsortium.org/docs/3106/gem-2013-global-report>
- BAE, T. J., QIAN, S., MIAO, C., & FIET, J. O. (2014) The relationship between entrepreneurship education and entrepreneurial intentions: a meta-analytic review, *Entrepreneurship Theory and Practice*, 38, pp. 217–254. doi:10.1111/etap.12095
- BAGGEN, Y., MAINERT, J., LANS, T., BIEMANS, H. J. A., GREIFF, S. & MULDER, M. (2015) Linking complex problem solving to opportunity identification competence within the context of innovation, *International Journal of Lifelong Education*, 34, pp. 412–429. doi:10.1080/02601370.2015.1060029
- BIGGS, J. B. (1993) From theory to practice: a cognitive systems approach, *Higher Education Research & Development*, 12, pp. 73–85. doi:10.1080/0729436930120107
- BILLET, S. (2011) Learning vocational practice in relative social isolation: the epistemological and pedagogic practices of small-business operators, in: M.

- Woerkom & R. Poell (Eds) *Supporting Workplace Learning* (The Netherlands, Springer).
- BOSMA, N., WENNEKERS, S., GUERRERO, M., AMORÓS, J. E., MARTIARENA, A. & SINGER, S. (2013) *Global Entrepreneurship Monitor: special report on Entrepreneurial Employee Activity 2011* [PDF]. <http://www.babson.edu/executive-education/thought-leadership/premium/Documents/90246%20EEA%20Report%202011.pdf>
- BRANDI, U., & IANNONE, R. L. (2015) *Effective Lifelong Learning Strategies and Value Creation at the Enterprise Level*. <http://www.lighthouseurope.com>
- COMPANYS, Y. E. & MCMULLEN, J. S. (2007) Strategic entrepreneurs at work: the nature, discovery, and exploitation of entrepreneurial opportunities, *Small Business Economics*, 28, pp. 301–322. doi:10.1007/s11187-006-9034-x
- COPE, J. (2005) Toward a dynamic learning perspective of entrepreneurship. *Entrepreneurship Theory and Practice*, 29, 373–397. doi:10.1111/j.1540-6520.2005.00090.x
- COPE, J. & WATTS, G. (2000) Learning by doing - an exploration of experience, critical incidents and reflection in entrepreneurial learning, *International Journal of Entrepreneurial Behaviour and Research*, 6, pp. 104–124. doi:10.1108/13552550010346208
- COUNCIL OF THE EUROPEAN UNION (2011) Council resolution on a renewed European agenda for adult learning, *Official Journal of the European Union*. [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011G1220\(01\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011G1220(01)&from=EN)
- DAVIDSSON, P. (2015) Entrepreneurial opportunities and the entrepreneurship nexus: a re- conceptualization, *Journal of Business Venturing*, 30, pp. 674–695. doi:10.1016/j.jbusvent.2015.01.002
- DE CASTRO, G. M., DELGADO-VERDE, M., NAVAS-LÓPEZ, J. E. & CRUZ-GONZÁLEZ, J. (2013) The moderating role of innovation culture in the relationship between knowledge assets and product innovation, *Technological Forecasting and Social Change*, 80, pp. 351–363. doi:10.1016/j.techfore.2012.08.012
- DE JONG, P. J. (2013) The decision to exploit opportunities for innovation: a study of high- tech small-business owners, *Entrepreneurship Theory and Practice*, 37, pp. 281–301. doi:10.1111/j.1540-6520.2011.00459.x
- DE JONG, J. & DEN HARTOG D. (2010) Measuring innovative work behaviour, *Creativity and Innovation Management*, 19, pp. 23–36. doi:10.1111/j.1467-8691.2010.00547.x
- DETIENNE, D. R. & CHANDLER, G. N. (2004) Opportunity identification and its role in the entrepreneurial classroom: a pedagogical approach and empirical test, *Academy of Management Learning and Education*, 3, pp. 242–257. doi:10.5465/AMLE.2004.14242103
- DIMOV, D. (2007a) Beyond the single-person, single-insight attribution in understanding entrepreneurial opportunities, *Entrepreneurship Theory and Practice*, 31, pp. 713–731. doi:10.1111/j.1540-6520.2007.00196.x
- DIMOV, D. (2007b) From opportunity insight to opportunity intention: the importance of person-situation learning match, *Entrepreneurship Theory and Practice*, 31, pp. 561–583. doi:10.1111/j.1540-6520.2007.00188.x
- DUTTA, D. K. & CROSSAN, M. M. (2005) The nature of entrepreneurial opportunities: understanding the process using the 4I organizational learning

- framework, *Entrepreneurship Theory and Practice*, 29, pp. 425–449. doi:10.1111/j.1540-6520.2005.00092.x
- ERAUT, M. (2004) Informal learning in the workplace, *Studies in Continuing Education*, 26, pp. 247–273. doi:10.1080/158037042000225245
- EUROPEAN COMMISSION (2015) *Entrepreneurship Education: a road to success. A Compilation of Evidence on the Impact of Entrepreneurship Education Strategies and Measures* (Luxembourg, Publications Office of the European Union). <http://www.europa.eu>
- EUROPEAN PARLIAMENT & THE COUNCIL OF THE EUROPEAN UNION (2006) Key competences for lifelong learning (Report no. L394), *Official Journal of the European Union*. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006H0962&from=EN>
- FAYOLLE, A., GAILLY, B. & LASSAS-CLERC, N. (2006) Assessing the impact of entrepreneurship education programmes: a new methodology, *Journal of European Industrial Training*, 30, pp. 701–720. doi:10.1108/03090590610715022
- FENWICK, T. (2003) Innovation: examining workplace learning in new enterprises, *The Journal of Workplace Learning*, 15, pp. 123–132. doi:10.1108/13665620310468469
- GRIFFIN, A. (1997) PDMA research on new product development practices: updating trends and benchmarking best practices, *Journal of Product Innovation Management*, 14, pp. 429–458. doi:10.1111/1540-5885.1460429.
- GUTH, W. D. & GINSBERG, A. (1990) Guest editors' introduction: corporate entrepreneurship, *Strategic Management Journal*, 11, pp. 5–15. <http://www.jstor.org/stable/2486666>
- HARRISON, R. T. & LEITCH, C. M. (2005) Entrepreneurial learning: researching the interface between learning and the entrepreneurial context, *Entrepreneurship Theory & Practice*, 29, pp. 351–371. doi:10.1111/j.1540-6520.2005.00089.x
- HOLMAN, D., TOTTERDELL, P., AXTELL, C., STRIDE, C., PORT, R., SVENSSON, R. & ZIBARRAS, L. (2012) Job design and the employee innovation process: the mediating role of learning strategies, *Journal of Business and Psychology*, 27, p. 177. doi:10.1007/s10869-011-9242-5
- HORNSBY, J. S., KURATKO, D. F. & ZAHRA, S. A. (2002) Middle managers' perception of the internal environment for corporate entrepreneurship: assessing a measurement scale, *Journal of Business Venturing*, 17, pp. 253–273. doi:10.1016/S0883-9026(00)00059-8
- HORNSBY, J. S., KURATKO, D. F., SHEPHERD, D. A. & BOTT, J. P. (2009) Managers' corporate entrepreneurial actions: examining perception and position, *Journal of Business Venturing*, 24, pp. 236–247. doi:10.1016/j.jbusvent.2008.03.002
- JONES, O. & MACPHERSON, A. (2006) Inter-organizational learning and strategic renewal in SMEs: extending the 4I framework, *Long Range Planning*, 39, pp. 155–175. doi:10.1016/j.lrp.2005.02.012
- KAMPEN, J. K. & SWYNGEDOUW, M. (2000) The ordinal controversy revisited, *Quality & Quantity*, 34, pp. 87–102. doi:10.1023/A:1004785723554
- KARIMI, S., BIEMANS, H. J. A., LANS, T., CHIZARI, M. & MULDER, M. (2014) Fostering students' competence in identifying business opportunities in

- entrepreneurship education, *Innovations in Education and Teaching International*. doi:10.1080/14703297.2014.993419.
- KNAPP, T.R. (1990) Treating ordinal scales as interval scales: an attempt to resolve the controversy, *Nursing Research*, 39, pp. 121–123.
- KRUEGER, N. F., REILLY, M. D. & CARSRUD, A. L. (2000) Competing models of entrepreneurial intentions, *Journal of Business Venturing*, 15, pp. 411–432. doi:10.1016/S0883-9026(98)00033-0
- LANS, T., BIEMANS, H., VERSTEGEN, J. & MULDER, M. (2008) The influence of the work environment on entrepreneurial learning of small-business owners, *Management Learning*, 39, pp. 597–613. doi:10.1177/1350507608098117
- LANS, T., VERSTEGEN, J. & MULDER, M. (2011) Analysing, pursuing and networking: towards a validated three-factor framework for entrepreneurial competence from a small firm perspective, *International Small Business Journal*, 29, pp. 695–713. doi:10.1177/0266242610369737
- LUMPKIN, G. T. & LICHTENSTEIN, B.B. (2005) The role of organizational learning in the opportunity recognition process, *Entrepreneurship Theory and Practice*, 29, pp. 451–472. doi:10.1111/j.1540-6520.2005.00093.x
- MAN, T.W.Y., LAU, T. & CHAN, K.F. (2002) The competitiveness of small and medium enterprises: A conceptualization with focus on entrepreneurial competencies, *Journal of Business Venturing*, 17, pp. 123–142. doi:10.1016/S0883-9026(00)00058-6
- MARTIN, B. C., MCNALLY, J. J. & KAY, M. J. (2013) Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes, *Journal of Business Venturing*, 28, pp. 211–224. doi:10.1016/j.jbusvent.2012.03.002
- MINNITI, M. & BYGRAVE, W. (2001) A dynamic model of entrepreneurial learning, *Entrepreneurship Theory & Practice*, 25, pp. 5–16.
- MULDER, M., LANS, T., VERSTEGEN, J., BIEMANS, H. & MEIJER, Y. (2007) Competence development of entrepreneurs in innovative horticulture, *The Journal of Workplace Learning*, 19, pp. 32–44. doi:10.1108/13665620710719330
- MULLER, P., GAGLIARDI, D., CALIANDRO, C., BOHN, N. U. & KLITOU, D. (2014) *Annual Report on European SMEs 2013/2014 - A Partial and Fragile Recovery* [PDF]. [http://ec.europa.eu/growth/smes/business-friendly-environment/performance-review/files/supporting-documents/2014/annual-report-smes-2014\\_en.pdf](http://ec.europa.eu/growth/smes/business-friendly-environment/performance-review/files/supporting-documents/2014/annual-report-smes-2014_en.pdf)
- POLITIS, D. (2005) The process of entrepreneurial learning: a conceptual framework, *Entrepreneurship Theory & Practice*, 29, pp. 399–424. doi:10.1111/j.1540-6520.2005.00091.x
- RAE, D. (2006) Entrepreneurial learning: a conceptual framework for technology-based enterprise, *Technology Analysis & Strategic Management*, 18, pp. 39–56. doi:10.1080/09537320500520494
- RAUCH, A. & FRESE, M. (2007) Born to be an entrepreneur? Revisiting the personality approach to entrepreneurship, in: J. R. Baum, M. Frese, & R. A. Baron (Eds) *The Psychology of Entrepreneurship* (pp. 41–65) (New Jersey, Lawrence Erlbaum).
- RIDEOUT, E. C. & GRAY, D. O. (2013) Does entrepreneurship education really work? A review and methodological critique of the empirical literature on



- the effects of university-based entrepreneurship education, *Journal of Small Business Management*, 51, pp. 329–351. doi:10.1111/jsbm.12021
- SHANE, S. & VENKATARAMAN, S. (2000) The promise of entrepreneurship as a field of research., *The Academy of Management Review*, 25, pp. 217–226. doi: 10.5465/AMR.2000.2791611
- SHARMA, P. & CHRISMAN, J. J. (1999) Reconciling the definitional issues in the field of corporate entrepreneurship, *Entrepreneurship Theory & Practice*, 23, pp. 11–27. doi:10.1007/978-3-540-48543-8\_4
- SPECTOR, P. E. (1992) Summated Rating Scale Construction: An Introduction. *Sage University Papers Series. Quantitative Applications in the Social Sciences* No. 07-082
- TIERNEY, P. & FARMER, S. M. (2011) Creative self-efficacy development and creative performance over time, *Journal of Applied Psychology*, 96, pp. 277–293. doi:10.1037/a0020952
- TYNJÄLÄ, P. (2013) Toward a 3-P model of workplace learning: a literature review, *Vocations and Learning*, 6, 11–36. doi:10.1007/s12186-012-9091-z
- VENKATARAMAN, S., SARASVATHY, S. D., DEW, N. & FOSTER, W. R. (2012) Reflections on the 2010 AMR decade award: whither the promise? Moving forward with entrepreneurship as a science of the artificial, *Academy of Management Review*, 37, pp. 21–33. doi:10.5465/amr.2011.0079
- VYAKARNAM, S. & HANDELBERG, J. (2005) Four themes of the impact of management teams on organizational performance. Implications for future research of entrepreneurial teams, *International Small Business Journal*, 23, pp. 236–256. doi:10.1177/0266242605052072
- WANG, L. W. & CHUGH, H. (2014) Entrepreneurial learning: past research and future challenges, *The International Journal of Management Reviews*, 16, pp. 24–61. doi:10.1111/ijmr.12007
- WANG, Y. L., ELLINGER, A. D. & WU, Y. C. J. (2013) Entrepreneurial opportunity recognition: an empirical study of R&D personnel, *Management Decision*, 51, pp. 248–266. doi:10.1108/00251741311301803
- WOOD, M. S. & MCKINLEY, W. (2010) The production of entrepreneurial opportunity: a constructivist perspective, *Strategic Entrepreneurship Journal*, 4, pp. 66–84. doi: 10.1002/sej.83