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Entrepreneurial learning as experienced by agricultural graduate entrepreneurs

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Abstract Developing entrepreneurial graduates is essential to the future of higher education and supply of quality human resources in developing countries. To address this issue in the agriculture sector, which is dominant in economic terms in most developing countries, an exploratory combined qualitative and quantitative research was conducted to understand entrepreneurial learning of agricultural graduate entrepreneurs. For the phenomenological study, 14 agricultural graduate entrepreneurs were purposely selected, and for the quantitative study, 92 entrepreneurs were selected through simple random sampling method. The phenomenological study revealed 12 themes on how graduates experienced entrepreneurial learning. Our study finds support for "experiential learning," "learning by doing," and "social learning" theories. Nine themes including previous business experience, risk-taking propensity, entrepreneurial persistence, use of various information sources, tendency to be self-employed, concerns about job or career, interest in practical courses and activities, passion for agriculture, and thinking outside the box are internal to the entrepreneur and could be seen as learner identity. The theme of "support from family and friends" could be seen as a significant external influence. The survey showed that entrepreneurial learning themes were generalizable to the studied population. Although different students can take different learning paths to become the best they can be, our findings suggest that the overall student learning experience can be designed to ensure that graduates are more likely to become entrepreneurs.

Keywords Entrepreneurial learning · Agricultural entrepreneurship · Graduate entrepreneur · Entrepreneurship education · Agricultural education

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The problem and research questions

The number of studies on entrepreneurial learning has increased in the past 15 years, mainly because of the following reasons. Firstly, entrepreneurship is being seen as a process of learning. Learning is a dynamic process that enables entrepreneurial behavior to be shaped (Rae and Carswell 2001) and empowers entrepreneurs to grow (Cope 2005). Minniti and Bygrave (2001) argue that any theory about entrepreneurship needs a theory of learning. Second, there is increasing evidence on the need for creating effective entrepreneurial learning environments in educational institutes. As a matter of fact, the graduates' success in finding or creating jobs or the ability of educational institutes to produce graduate entrepreneurs are getting much more attention in quality assessment of colleges and universities (Van Niglen and d'Hombres 2008). However, our knowledge is still limited about entrepreneurial learning throughout individuals' entrepreneurship journeys (Hietanen 2014), and as Blackburn and Kovalainen (2009) argue, the role of learning in entrepreneurship deserves more research. For the purpose of the current research, a graduate entrepreneur was defined as a university graduate who sees an opportunity and turns it into a business and is currently running the business. Learning refers to the process of change that occurs as a result of experiences and interactions with the environment (Mazur 2013). In this study, we adopted Cope's definition for entrepreneurial learning: "learning experienced by entrepreneurs during the creation and development of a small enterprise" (Cope 2005; p 375). The literature shows fragmented nature of the field, with a wide range of definitions and theoretical insights into entrepreneurial learning (Rae and Wang 2015). Lack of empirical studies, especially qualitative ones has been also reported by several authors (Ravasi and Turati 2005; Erdelyi 2010). There is also a significant gap in the literature on the graduate entrepreneur area (Holden et al. 2007). This gap in the literature is important to fill because characterizing the entrepreneurial learning process may provide important clues to how some university graduates become entrepreneurs. Furthermore, university entrepreneurship education programs could benefit from a clearer understanding of which specific competencies and entrepreneurial traits they seek to improve, along with a more comprehensive knowledge of how characteristics of the entrepreneurial learning process influence outcomes (Premand et al. 2016).

Higher education faces the challenge of training students with the competencies required to meet the demands of the market and to successfully integrate into the workforce. The countries in the Middle East and North Africa are among the countries with the highest youth unemployment rates among university graduates (Premand et al. 2016). Iran's higher agricultural education is being criticized for oversupplying of agricultural graduates, most of whom are not successful in the marketplace. Many of agricultural graduates are unemployed, looking for a job, or working out of the agricultural sector (Abbasi and Zamani-Miandashti 2013). Furthermore, the agriculture sector is suffering from poor image among youth. Poor image of agriculture has been also reported from other countries including Australia, the USA, Portugal, etc. (Ebrahimi 2014). Therefore, it is critical to improve entrepreneurship in this sector and particularly among those who have studied agriculture in university. This is particularly important in developing countries, where agriculture is the main source of livelihood (da Silva et al. 2009). Gaining in-depth knowledge about entrepreneurial learning among university graduates helps higher education decisionmakers to create effective teaching and learning environments. It also helps

agricultural students to get most out of their studies and make a significant contribution to the agriculture sector. This study aims to explore entrepreneurial learning among agricultural graduate entrepreneurs, and therefore, it tries to answer the following questions:

- How did graduate entrepreneurs learn to be entrepreneurs?
- Could we generalize our findings to a larger population of agricultural graduate entrepreneurs?

Methods

Research design, population, and sample

An exploratory combined qualitative and quantitative research was carried out to answer the research questions. The dominant (qualitative)-less dominant (quantitative) design (Cresswell 1994) was adopted in this study. Individuals were units of analysis. A phenomenological study was used to understand entrepreneurial learning. Fourteen agricultural graduate entrepreneurs were purposively selected. Saturation determined the qualitative sample size. These people were selected from a total of 28 entrepreneurs who were awarded in Iran's First National Gathering of Agricultural Student and Graduate Entrepreneurs. This gathering was organized by Shiraz University, which is one of the oldest and main Iranian universities, with the support of Iran's Ministry of Agriculture, Ministry of Science, Research and Technology, Ministry of Cooperatives, and Labor and Social Welfare and was sponsored by a couple of other public institutes and private businesses. A nationwide call for nominations was distributed via the Internet, the media, social networks, national and local organizations, and direct requests to find graduate entrepreneurs. Self-nominations and nomination by another person, organization, or university were accepted. To be eligible to complete the nomination form, nominees needed to be an agricultural graduate with at least 3 years of agribusiness ownership and management. Nominations were assessed against the following criteria: setting up and currently running an agribusiness, innovativeness, profitability, professional ethics, and environmentally friendly. Eight research participants were men, and six participants were women. Participants' age ranged from 26 to 40 years old. As to their education, two participants had an associate degree, six had a bachelor's degree, five had a master's degree, and one of them had a doctoral degree. Geographically, they were working in different provinces. The main activity of their enterprises was as follows: on-farm production (five individuals), agro-food processing (two individuals), farming input supply (four individuals), and agricultural and environmental advisory services (three individuals). A survey was also carried out to investigate the generalizability of the results. Ninety-two appropriate change (out of 120 agricultural graduate entrepreneurs who participated in the gathering) agricultural graduate entrepreneurs were selected through simple random sampling method as the survey participants. The sample size was specified based on Krejcie and Morgan's (1970) table. The average age of the respondents was 33 years. Seventy-nine percent of them were men and the rest were women. Their average work experience in the current activity was about 9 years. As

to their education, half of them had a bachelor's degree, about 40% had a master's degree, about 7% had a doctoral degree, and about 3% had an associate degree.

Data collection and analysis

A number of qualitative data collection techniques were used to gather qualitative data. First of all, participants were asked to write their entrepreneurship journey stories. Seven entrepreneurs wrote their stories. Entrepreneurs were also invited to share their stories in professional virtual learning communities. Six participants accepted the invitation and shared their stories of how they learned to be entrepreneurs. Both face-to-face and telephone in-depth interviews were also conducted to collect data. Interviews ranged from 30 min to 1 hour and a half duration. Sample semi-structured interview questions were: "How do you think of your entrepreneurial learning?," "What characterizes your learning during university studies?," and "When you think of your entrepreneurship story, what people, experiences, and events were critical to your career path?." Colaizzi's (1978) seven steps of phenomenological analysis was employed to analyze qualitative data. To attain trustworthiness, the following criteria suggested by Lincoln and Guba (1985) were used: credibility, transferability, dependability, and confirmability. To establish credibility, data were turned to five research participants for their feedbacks (member check technique). Research team meetings were held, in which data collection and analysis were discussed and findings were collaboratively discussed and interpreted. To ensure transferability, diverse perspectives and experiences of a variety of participants were sought, and a detailed description was provided to help the readers make decisions about the fit of the data. To address the dependability issue, four other researchers followed the decision trial. To achieve confirmability, a residue of raw data, personal feelings and reflections, data analysis products, and existing literature were kept. These records contributed to keep us aware of any bias that might occur.

Raw data, researchers' reflections, and existing literature were used to operationalize the themes emerged from the qualitative component of the study and to develop a questionnaire for collecting quantitative data. Fifty-seven items were developed and measured using five-point Likert scale. Face validity of the questionnaire was confirmed by three researchers, and its reliability was obtained through a pilot test among 30 agricultural graduate entrepreneurs out of the research population. Cronbach's alphas ranged from 0.60 to 0.89. Data were analyzed using SPSS. Mean scores and standard deviations were used to investigate the generalizability of the qualitative results.

Results and discussion

Phenomenological study findings

From the analysis of the qualitative data, the following themes emerged: previous work experience, learning from errors and failures, risk-taking propensity, tendency to be self-employed, persistence, use of various information sources, support from family and friends, job-related concerns, interest in practical courses and activities, passion for agriculture, and seeking or offering an alternative kind of thinking. These themes are further explained below.

Previous work experience

Entrepreneurs shared their stories of when, how, and why they gained work experience during their entrepreneurship journey. Four participants worked in their father's business to make a contribution to the family's income generation in their childhood and adolescence. Two in 14 said they were in the business to make money and to gain experience for entering the job market during their university studies. The rest of the participants gained work experience after graduation. One entrepreneur explained: "in our family business, I gained experience of farming and the routines of small business management." Evans and Leighton (1989) discuss that previous work experience, usually in the same industry, is necessary for entrepreneurship. Similarly, Ghazali et al. (1995) and Othman et al. (2006) found that university students with prior working experience are more likely to become entrepreneurs. Learning through work experience was also found by Marques et al. (2014) to be one of the most widely used forms of entrepreneurial learning among Portuguese graduates. The importance of playing several prior roles to become an entrepreneur has been argued by numerous researchers (e.g., Baumol 1990; Lazear 2002). Prior experience contributes into an individual's entrepreneurship journey through helping them enhance their knowledge, find financial capital, build legitimacy, and have access to business networks (Shane and Khurana 2003).

Learning from failures and errors

Almost all of the participants confirmed the importance of errors and failures as major sources of entrepreneurial learning. The entrepreneurs shared multiple invaluable lessons they learned from their past business failures and mistakes. One respondent reflected on the lesson he gained from choosing a wrong person to trust: "my business partner cheated me. I learned not to overtrust anyone or you'll be deceived." The importance of direct learning from failures to enact entrepreneurial behavior was also reported in previous research (e.g., Rae and Carswell 2001). Petkova (2009) showed that errors are major sources of learning for entrepreneurs and developed a model that articulates how entrepreneurs can learn from a given error. Cope (2010) found that entrepreneurs learn from failures not only about themselves and their ventures, but also about the nature of their relationships and venture management. He, however, points out that failure does not automatically lead to a worthwhile learning experience and discuss that some entrepreneurs fail to learn due to an inability to effectively confront what happened, and some may also learn the wrong lessons or only those that fit in with their existing thoughts.

Learning from role models

Almost all of the participants claimed that they had various role models, ranging from family members to famous businessmen, at different stages of their entrepreneurial journey. They also confirmed that role models matter for pursuing an entrepreneurial career. The most commonly mentioned role models were entrepreneurs' fathers and successful business owners. Learning from others (e.g., parents and business owners), particularly early in their careers, was also found by Rae and Carswell (2001). Bosma et al. (2012) discuss that the positive correlation between having entrepreneur parents and the decision to become and entrepreneur has been interpreted as the effect of parental role models; however, the role of genetic heritage, the possibilities for learning on the job within a family business, and financial support should be

taken into account in this association. They argue that the main function of a role model is "learning by example," but other functions of role models including "learning by support," "increasing entrepreneurial self-efficacy," and "inspiration/motivation" are also of critical importance. Karimi et al. (2014) found that knowing entrepreneurial role models can enhance university students' entrepreneurial intentions. Numerous researches have revealed that parent entrepreneurs act as role models and influence their children's self-employment and entrepreneurial propensity (Hout and Rosen 2000; Dunn and Holtz-Eakin 2000). Tanzanian graduate entrepreneurs reported learning from foreign role models (entrepreneurs of Asian origin) as one of the enabling factors in their entrepreneurial journey (Mwasalwiba et al. 2012).

Risk-taking propensity

All of the research participants expressed through their stories and interview descriptions of how they usually take calculated risks. In the following quote, one graduate entrepreneur explained the importance of this issue: "the machine I designed was new to Iran's agriculture and I risked my money on it. I wasn't sure if anyone would buy it but I knew they needed it and I wanted to try selling my product." Risk-taking has been found by numerous researchers (e.g., Sarwoko et al. 2013; Das and Teng 1997) as one of the main entrepreneurial characteristics. The results of Koh's (1996) research showed that people with entrepreneurial inclination had a higher tendency to take risk than non-entrepreneurs. Our finding is consistent with previous studies (e.g., Praag and Cramer 2001; Fafaliou 2012), suggesting that students' risk-taking propensity is one of the most significant psychological constructs among all the motivational factors assumed as pulling students' propensity to entrepreneurship. However, the literature shows mixed results about the role of risk-taking in becoming a successful entrepreneur. Entrepreneurship needs taking calculated risks. West and Worthington (2014) discuss that education has a strong positive association with higher levels of financial literacy and therefore calculated risk-taking.

Self-employment propensity

The data obtained from all the participants showed that they had high propensities towards self-employment. The participants felt that self-employment propensity was one of the main factors that influenced their decision to start their own business. The participants described many reasons why they were interested in becoming self-employed: to put into practice my own ideas, to avoid being a government employee and a desk job, and to have my own business and be my own boss. One respondent noted: "at the time I graduated from university it was easy to find a job in the government. But I got new ideas and I wanted to make a change in Iran's agriculture." However, this high self-employment propensity does not mean that the studied entrepreneurs never searched for a safe employment. Four entrepreneurs reported that they searched and applied for job opportunities in the government throughout their entrepreneurial journey. According to Burns (2001), entrepreneurial propensity is reflected in four features including: the personal character traits, antecedent influences, situational factors, and the culture of society. Self-employment propensity could be explained by an individual's desire for appropriateautonomy and independence (to be one's own boss), need for appropriate change achievement, goal orientation, or even fear of unemployment.

Persistence

All the graduate entrepreneurs cited examples of how their persistence and hardworking got them where they are. The following quote illustrates this quality in one of the participants: "the authorities told me that it takes at least two years to process everything and register beef farm business, but with persistence I was able to do the job in about six months...the only difference between me and non-entrepreneur graduates is my persistence". Persistence is generally seen as one of the most important attributes of successful entrepreneurs (Kuratko and Hodgetts 2007). Ajhan (2014) found that perseverance is one of the key attributes of student entrepreneurs who participated in entrepreneurship Supervised Agricultural Experiences (SAEs). Entrepreneurs make the decision to start a business a single time but they must make the decision to persist with the venture many times. Entrepreneurial persistence is related to tolerance for ambiguity (uncertainty) in the learning processes. Tolerance for ambiguity refers to the extent to which an individual can tolerate unpredictable situations. Entrepreneurs usually face a high degree of ambiguity. Someone who has a high tolerance for ambiguity is more tolerant of the learning curve to get over. More future research efforts are needed to reveal the true relationships among persistence, tolerance for ambiguity, and entrepreneurial learning. However, the role of persistence in the entrepreneurial learning process should be interpreted with caution. Although entrepreneurs require persistence to overcome the obstacles, they also need to understand when a business plan is not working. In other words, persistence is great to have during entrepreneurship journey, but only when it is in a sensible way that suits the conditions and is balanced by pragmatism fed by a constant flow of knowledge and information. It is therefore critical for entrepreneurs to admit when "enough is enough."

Use of various information sources

The participants reported learning from different types of information sources. The most used information sources among entrepreneurs were experienced individuals (100%), exhibitions (about 86%), and university professors (about 64%). Other sources reported by respondents included formal course, specialized workshops, and the Internet. The following quote shows how one of the participants used various information sources to respond to different challenges: "I visited many greenhouses to get advice from experienced farmers and make a change in my business…I took a management course offered jointly by an Iranian university and a Canadian institute." This entrepreneur explains how he keeps himself up-to-date in the business: "when I face new technical problems, particularly about flowers' diseases, I consult with my university professors. I share experiences with my colleagues from other cities and companies, and participate in most of the relevant workshops. I have a library in which you would find the latest books on flowers." Learning from diverse sources of information such as books and social networking was also reported in the research of Rae and Carswell (2001) on entrepreneurial learning of thirteen England entrepreneurs. Although the participants used different formal and informal types of information sources throughout their entrepreneurial learning process, the most used information sources by them were informal ones, e.g., experienced individuals and exhibitions. This finding echoes the results of Zamudio (2015) on entrepreneurial learning among American farmers, that entrepreneurs participate in formal, non-formal, and informal learning settings, but they prefer informal information to learn, because of its convenience and familiarity in terms of environment (e.g., learning on the job) and interpersonal relationships (e.g., learning from family members and/or business

partners). The same result was also found by Lans et al. (2004) where Dutch agri-food entrepreneurs preferred non-formal (e.g., business visits) and informal (e.g., colleagues) information resources over formal ones. One possible explanation for this result outlined in their research was that non-formal and informal information resources are often much quicker, more specific, and give faster results than formal resources.

Support from family and friends

About 86% of participants reported having support from their family and/or friends. Six in 14 entrepreneurs said that they had support from one of their parents, and two participants explained how both parents and spouses provided support to their businesses. Different types of support which were reported by the entrepreneurs were: emotional (provision of empathy and trust), collaboration when required, and financial support. One entrepreneur describes how her father and her spouse supported her throughout the entrepreneurship journey: "my father always shared his experiences with me…there's no way I would be able to do all that I'm doing without the support of my spouse." Blau (1987) found that the probability of becoming an entrepreneur is higher among workers whose families are entrepreneurs. The importance of economic assistance and emotional support of the immediate family and parents in entrepreneurial networks and business success has been pointed out in the literature (e.g., Anderson et al. 2005). Brindley (2005) found that family and friends were the main sources of support and assistance for female entrepreneurs during the start-up phase. As argued by Edelman et al. (2016), since university students reside in their parents' homes, lack social capital and do not have access to enough financial capital, support from family members is more critical among young entrepreneurs, compared to more experienced ones. The Tanzanian graduate entrepreneurs who participated in Mwasalwiba et al.'s (2012) study reported support from strong ties (family, friends, and relatives) as one of the key enabling factors for graduates to become entrepreneurs.

Career concerns and aspirations

Almost all of the participants shared stories on how they spent time thinking about their future career during their studies. They gave two main reasons for being concerned about their future career: fear of unemployment and family expectations. The following quote shows how one participant was fearful of being jobless and how her family expectations encouraged her to start her own business:

> After four years working in a government's project, I was made redundant due to the government's cost cutting and downsizing policies. It's really horrible being jobless. I knew I couldn't tolerate being unemployed, and I did everything to get back to the job market. My family had expectations from me. They spent money on my education and I felt I should give something back to them.

This is consistent with the findings of Sternberg et al. (as cited in Birxy et al. 2008) suggesting that fear of unemployment is an important motivation for going into entrepreneurial learning processes. Santarelli and Vivarelli (2007) argue that although

unemployment is rarely the main drive of entrepreneurship, it appropriate change often plays a role which could be very significant in some countries and during certain economic conditions. As the end of university studies approaches, almost all of the students think about their future careers. However, some students feel concerned about their careers at the start of their studies, and they spend more time thinking about it than some other students.

Some entrepreneurs described their career dreams and aspirations. One respondent said it as follows: "I was fully aware of the significant potential for agriculture sector, and I was determined to do something new and big in this sector." This result is related to the concept of self-achievement motivation or need for achievement (McClelland, 1961), which is one of the psychological traits in explaining entrepreneurial propensity.

Interest in practical courses and activates

The data revealed that all respondents were more interested in practical activities than theoretical ones during their university studies. When they were asked to illustrate this issue, they provided these examples: more interested in practical rather than theoretical courses, participation in professors' empirical research projects, and actively taking part in industry visits. Six participants explained that their interest in practical activities was due to their family business in agriculture or agriculture-related industries. They said that they were there to pick up practical lessons and use them in their current or future businesses. Several scholars argue that entrepreneurial learning is an experiential process where entrepreneurs enhance their knowledge both by using their skills and knowledge in new projects, as well as developing new knowledge in the venture they are involved in (Rae and Carswell 2001; Minniti and Bygrave 2001).

Passion for agriculture

All entrepreneurs shared a passion for agriculture both as a field of study and a career. Fifty percent of the respondents felt a strong desire to study agriculture before entering the university, and this desire to study agriculture was developed in the rest of them during their time at the university. In the following quotation, one entrepreneur explains how her passion for agriculture developed during her studies and particularly through one particular visit to the industry: "as an agricultural student, I was not interested in my major. But when I visited an ornamental fish farm, I was really fascinated by it and wanted and decided to pursue this business." Seven in 14 entrepreneurs possessed a passion to work in agriculture before entering the university, four respondents developed it during university studies, and three participants gained the passion for agriculture as a career when they graduated from university. Among seven participants who had a passion for agriculture as a career before entering the university, six entrepreneurs said that this passion was a result of their family business in agriculture which they were part of, and one of them related the passion to his love of nature. Kolb and Kolb (2009) discuss that it is extremely difficult to learn something that one is not interested in. The notion of passion has frequently appeared in the entrepreneurship literature (e.g., Laaksonen et al. 2011; Kuratko 2012), as a significant non-economic motivator to embark on the entrepreneurial learning journey.

Consistent with our finding, Sugand (2014) argues that the literature is full of studies in which entrepreneurs in the wine industry indicate their passion for food and wine.

Thinking outside the box

In the qualitative data, there were numerous indications that entrepreneurs were thinking differently, unconventionally, or from a new perspective in everyday situations. Quotations like this one were frequently used by respondents: "I suppose I look at things differently. I always have this question on my mind, what if people no longer buy my products? This question stimulates me to think about new products and projects." Entrepreneurs tend to transform conventional ways of thinking into new horizons, and empirical evidence indicates a positive association between entrepreneurship and creative thinking (Tsai 2014). Creativity was found to be one of the important attributes of the students who want to be successful in entrepreneurship SAEs (Ajhan 2014). Therefore, some scholars (e.g., Leach 2009; Turnbull and Eickhoff 2011) suggest the use of creativity-enhancing programs to facilitate learning of nascent entrepreneurs.

Survey results

The survey results are presented in Table 1. When looking at the mean scores in the table, the mean scores of all variables are above the average of the scale. This finding indicates that the entrepreneurs agreed that the themes we found in the qualitative part of the research were appropriate and important to explain entrepreneurial learning. The high mean scores indicate the importance of the inclusion of these variables within the entrepreneurial learning of graduate entrepreneurs. Persistence was ranked as the most common and the most important feature of the entrepreneurial learning among graduate entrepreneurs. The mean score and standard deviation for this component were 4.54 and 1.58, respectively. However, the variable of support from family and friends had the lowest mean score of all (3.03) and a standard deviation of 4.17, indicating larger internal differences.

Table 1 Summary of survey results (n = 92)

Variable	Items	Mean	SD	Rank
Persistence	4	4.54	1.85	1
Learning from errors and failures	5	4.31	2.43	2
Use of various information sources	6	4.25	3.78	3.5
Self-employment prosperity	3	4.25	1.93	3.5
Thinking outside the box	5	4.20	2.71	5
Risk-taking prosperity	3	4.19	1.93	6
Learning from role models	5	4.15	1.49	7
Job-related concerns	3	3.94	2.10	8
Interest in practical courses and activities	5	3.90	3.60	9
Passion for agriculture	9	3.52	3.78	10
Previous work experience	4	3.04	4.22	11
Support from family and friends	5	3.03	4.17	12

Scale—almost never true = 1, usually not true = 2, occasionally true = 3, usually true = 4, and almost always true = 5

Concluding remarks

Implications for theory and practice

From a static and trait-based approach, entrepreneurship is currently considered as a dynamic learning path that the individuals choose to follow. The path of learning makes a difference in university-to-work transition. In the qualitative part of this study, we found 12 themes which describe how entrepreneurial learning happened among studied agricultural graduate entrepreneurs. The survey results also confirmed the findings from qualitative data. A number of the themes emerged from the data fit with some dominant learning theories. The three themes of previous work experience, learning from errors and failures, and interest in practical courses and activities fit with "experiential learning" ("the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb 1984, P. 41)) and "learning by doing" theories. Based on these theories, experiential or "doing" opportunities facilitate entrepreneurial learning. Experiential learning has been a valued turning point in agricultural education (Knobloch 2003), and as argued by Phipps and Osborne (1988), it is apparent in the attention given to field trips, laboratory activity, real-life problems solving, and SAEs, that experiential learning in agricultural education emphasizes on learning by doing. The engagement of graduate and non-graduate entrepreneurs in curriculum development and the involvement of students in real-world projects and internships could provide valuable experiential learning. Much more attention, we suggest, needs be given to entrepreneurship SAEs where students can start, own, and operate an agriculture-related business; take financial risks; make management decisions to profit from their own work and/or investment; and see real consequences of their actions. Considerable evidence of the educational value of SAEs exists in the literature (Hanagriff et al. 2010), suggesting that SAEs, if appropriately conducted and adequately supported and supervised by educators and other related actors, are valuable learning experiences that allow students to apply what learned in the classroom and improve their personal and occupational development (Newcomb et al. 2004). Donnellon et al. (2014) conclude in their research that the development of entrepreneurial identity could be facilitated using a "learning through approach," where entrepreneurial identity is created as part of the engagement in developing a new venture. It is very important to address not only the experience itself but the complete cycle of experiential learning (experiencing, reflecting, thinking, and acting). That said, some other themes found in this study, like risk-taking, thinking outside the box, and learning from role models, have been explained in the literature (Knobloch 2003) as the integral parts of experiential learning.

Learning from role models fits most with social learning theory. According to this theory, people learn in a social context and they are attracted to role models who can help them to further develop their skills and knowledge (Gibson 2004). They also use role models to develop their entrepreneurial identity (Donnellon et al. 2014). The use of social media and virtual communities in learning environments could facilitate social learning and promote entrepreneurship knowledge sharing among students and entrepreneur role models. Entrepreneurs could be invited to serve as guest speakers, mentors, and role models in learning processes. Agricultural entrepreneurs could be encouraged to participate in co-teaching courses to bridge theory and practice and help institutes to provide quality work placements and offer entrepreneurship SAEs. These types of activities, if appropriately conducted and combined with strong government's support for the agriculture sector, improve the image of agriculture

and, consequently, ignite or rekindle a passion for agriculture among students and graduates (Ajhan 2014).

Some of the themes identified in the current study could be also seen as the factors that trigger or hinder entrepreneurial learning processes. Most of the themes found in the current research including persistence and hardworking, risk-taking propensity, passion for one's own field of study/industry sector, self-employment propensity, use of various information sources, career concerns and aspirations, and thinking outside the box are internal to the entrepreneur and could be considered as learner identity. Learner identity includes the construction of meanings about oneself as a learner, and it is constantly constructed throughout life and through experiences of learning. Entrepreneurial learning forms learner identity, and learner identity shapes entrepreneurial learning (Coll and Falsafi 2010). Therefore, we should not consider learner identity just as an array of explanatory individual factors or personality traits, but a process of developing and adopting the identity of an entrepreneur. Donnellon et al. (2014) conclude in their research that for entrepreneurial learning to happen, identity construction needs to be considered as important a goal as the improvement of knowledge and skills. They argue that entrepreneurial learning is the process of discovering "who I want to be" and creating an identity that would help them achieve this aspiration. Based on this argument, a significant part of entrepreneurial learning is about learning how to develop a new identity and create a balance between old identity and new entrepreneurial identity. It is worthwhile to note that our qualitative research participants shared their life stories with us when they were asked to tell us about their entrepreneurship stories. That is to say, entrepreneurial learning is a lifelong learning process that takes place throughout life and as Schuller and Watson (2009) point out, it happens in a variety of contexts. This result is also in line with the findings of Chasserio et al. (2014) who stress the importance of adopting a holistic view of life to better understand all the complexities of entrepreneurship. Donnellon et al.'s (2014) review of the literature demonstrated that the first and perhaps the most obvious observation in the literature is that entrepreneurial identity construction happens over time. Therefore, higher education institutes are suggested to provide a sufficient basis for the lifelong learning of students, if their students are expected to pursue an entrepreneurial path upon graduation. Educators are suggested to emphasize experiential learning and provide assessment tasks that develop both generic competencies (e.g., lifelong learning and creative thinking) and hands-on work related experiences. Herrmann (2008) argues that a shift from a narrow focus on business start-up towards a more broad-based entrepreneurship education that equips students with the attributes and behaviors that focus on creativity, initiative, and hands-on experiences is crucial for developing more entrepreneurial graduates.

Support from family and friends could be seen as external to the entrepreneur. Parents and families of students need to become informed of the importance of entrepreneurial learning among students and should be encouraged to take on a suitable role in their children's career development through providing support and guidance. However, this theme is also related to learner identity in some way. Because the ability of an entrepreneur to develop social capital and attract support is critical if they want to receive their family and friends' support. As found by Donnellon et al. (2014), entrepreneurial identity is created through dialog and interaction with critical others (e.g., friends and family members) who can confirm or deny legitimacy claims.

It is noteworthy to mention here that one of the study participants was employed by the government about 6 months following the completion of this research. At first sight, it may seem that she moved from self-employment or being an entrepreneur to paid employment or

being a non-entrepreneur. However, our observations following this study showed that the abovementioned participant continued to demonstrate entrepreneurial behaviors. For instance, she co-founded the first national agricultural start-up weekend program. One plausible explanation is that she is continuing her entrepreneurial learning as an intrapreneur rather than an independent entrepreneur. To put it another way, entrepreneurs wear many hats and take different roles throughout their entrepreneurship journey. However, we know little about how and why entrepreneurial identity changes over time (Mathias 2014), and how these changes in their identity influence entrepreneurial learning or vice versa.

Limitations and future research

This study developed our understanding of how agricultural graduate entrepreneurs experienced the process of entrepreneurial learning. While the number of participants interviewed was in line with the recommendations given by qualitative researchers and the data collected permitted an in-depth analysis of entrepreneurial learning, it still provides only a small glimpse into the experience of thousands of university graduates who become entrepreneurs each year. Therefore, it is difficult to reach broad conclusions. More research is needed to further explore and test our findings in more detail and different contexts. For example, future research could compare the learning activities of university graduate entrepreneurs throughout their school and university studies and those of graduate non-entrepreneurs. We studied entrepreneurial learning at the individual level, but as Wang and Chugh (2014) suggest, researchers are encouraged to advance entrepreneurial learning research at the team and organizational levels and beyond. Franco and Haase (2009) define entrepreneurial learning as the learning that informs the entrepreneur's search for new opportunities. We thus suggest that future works on entrepreneurial learning should consider the findings and trends in the research on entrepreneurial opportunity recognition. For example, the theme "thinking outside the box" found in the current study is related to the concept of "creativity" which is very important for opportunity identification (Schumpeter 1961; Nicolaou et al. 2009). As we mentioned in the previous section, our knowledge about the changes in entrepreneurial identity (e.g., from an entrepreneur to an intrapreneur) and its effects on entrepreneurial learning is very limited, and therefore, it is worthy of further investigation.

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References

Abbasi, E., & Zamani-Miandashti, N. (2013). The role of transformational leadership, organizational culture and organizational learning in improving the performance of Iranian agricultural faculties. *Higher Education, 66*(4), 505–519.

Ajhan, M. (2014). A multi-case study of entrepreneurship supervised agricultural experiences in agricultural colleges. Master's Thesis, Department of Agricultural Extension and Education, Shiraz University.

Anderson, A. R., Jack, S. L., & Dodd, S. D. (2005). The role of family members in entrepreneurial networks: beyond the boundaries of the family firm. *Family Business Review, 18*, 135–154.
Andersson, L., & Hammarstedt, M. (2010). Intergenerational transmissions in immigrant self-employment: evidence from three generations. *Small Business Economics, 34*, 261–276.
Baumol, W. J. (1990). Entrepreneurship: productive, unproductive and destructive. *Journal of Political Economy, 98*, 893–921.
Blackburn, R., & Kovalainen, A. (2009). Research small firms and entrepreneurship: past, present and future. *International Journal of Management Reviews, 11*(2), 127–148.
Blau, D. M. (1987). A time-series analysis of self-employment in the United States. *Journal of Political Economy, 95*, 445–467.
Bosma, N., Hessels, J., Schutjens, V., & Van Praag, I. (2012). Entrepreneurship and role models. *Journal of Economic Psychology, 3*(2), 410–424.
Brixy, U., Sternberg, R., & Stuber, H. (2008). From potential to real entrepreneurship. Institute for Employment Research (IAB)-Discussion Paper 32. Retrieved from http://doku.iab.de/discussionpapers/2008/dp3208.pdf
Coll, C., & Falsafi, L. (2010). Learner identity: an educational and analytical tool. *Revista de Educacion, 353*, 211–233.
Cope, J. (2005). Toward a dynamic learning perspective of entrepreneurship. *Entrepreneurship Theory and Practice, 29*(4), 373–397.
Cope, J. (2010). Entrepreneurial learning from failure: an interpretative phenomenological analysis. *Journal of Business Venturing, 26*(6), 604–623.
Cresswell, J. W. (1994). *Research design: qualitative and quantitative approaches*. Thousand Oaks: Sage.
da Silva, C., Baker, D., Shepherd, A. W., Jenane, G., & Miranda-da-Cruz, S. (Eds.). (2009). *Agro-industries for development*. Rome: FAO and UNIDO.
Das, T. K., & Teng, B. (1997). Time and entrepreneurial risk behavior. *Entrepreneurship Theory and Practice, 22*(2), 69–88.
Donnellon, A., Ollila, S., & Middleton, K. W. (2014). Constructing entrepreneurial identity in entrepreneurship education. *The International Journal of Management Education, 12*(3), 490–499.
Dunn, T. A., & Holtz-Eakin, D. J. (2000). Financial capital, human capital and the transition to self-employment: evidence from intergenerational links. *Journal of Labor Economics, 18*(2), 282–305.
Ebrahimi, S. (2014). Image of agriculture as perceived by Shiraz University students and faculty members. Master's Thesis, Department of Agricultural Extension and Education, Shiraz University.
Edelman, L. F., Manolova, T., Shirokova, G., & Tsukanova, T. (2016). The impact of family support on young entrepreneurs' start-up activates. *Journal of Business Venturing, 31*, 428–448.
Erdelyi, P. (2010) The matter of entrepreneurial learning: *a literature review*. Boston: Northeastern University.
Fafaliou, I. (2012). Students' propensity to entrepreneurship: an exploratory study from Greece. *International Journal of Innovation and Regional Development, 4*(3/4), 293–313.
Ghazali, A., Ghosh, B. C., & Tay, R. S. T. (1995). The determinants of self-employment choice among university graduates in Singapore. *International Journal of Management, 12*, 26–35.
Gibson, D. E. (2004). Role models in career development: new directions for theory and research. *Journal of Vocational Behavior, 65*, 134–156.
Hanagriff, R. D., Murphy, T. H., Roberts, T. G., Briers, G. E., & Lindner, J. R. (2010). Economic impact of supervised agricultural experiences: returns from SAE investment costs in Texas, 2007–2008. *Journal of Agricultural Education, 51*(4), 71–81.
Herrmann, K. (2008). Developing entrepreneurial graduates: putting entrepreneurship at the centre of higher education. UK'S National Council for Graduate Entrepreneurship. Retrieved from http://ncee.org.uk/wp-content/uploads/2014/06/developing_entrepreneurial_graduates.1.pdf.
Hietanen, L. (2014). Entrepreneurial learning environments: supporting or hindering diverse learners? *Education + Training, 57*(5), 512–531.
Holden, R., Jameson, S., & Walmsley, A. (2007). New graduate employment within SMEs: still in the dark? *Journal of Small Business and Enterprise Development, 14*(2), 211–227.
Hout, M., & Rosen, H. S. (2000). Self-employment, family background and race. *Journal of Human Resources, 35*(4), 670–692.
Karimi, S., Biemans, H., Lans, T., Chizari, M., & Mulder, M. (2014). Effects of role models and gender on students' entrepreneurial intentions. *European Journal of Training and Development, 38*(8), 694–727.
Knobloch, N. A. (2003). Is experiential learning authentic? *Journal of Agricultural Education, 44*, 22–34.
Koh, H. C. (1996). Testing hypotheses of entrepreneurial characteristics. *Journal of Managerial Psychology, 11*(3), 12–25.
Kolb, D. A. (1984). *Experiential learning: experience as the source of learning and development*. Upper Saddle River: Prentice-Hall.

Kolb, A. Y., & Kolb, D. A. (2009). Experiential learning theory: a dynamic, holistic approach to management learning, education, and development. In S. J. Armstrong & C. V. Fukami (Eds.), *The SAGE handbook of management education, learning, and development* (pp. 42–68). Thousand Oaks: Sage.

Krejcie, R., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*, 607–610.

Kuratko, D. F. (2012). *Entrepreneurship: theory, process, and practice*. Sydney: Thomson/South-Western.

Kuratko, D. F., & Hodgetts, R. M. (2007). *Entrepreneurship: theory, process, practice*. Mason: Thomson South-western.

Laaksonen, L., Ainamo, A., & Karjalainen, T. (2011). Entrepreneurial passion: an explorative case study of four metal music ventures. *Journal of Research in Marketing and Entrepreneurship, 13*(1), 18–36.

Lans, T., Wesselink, R., Biemans, H. J. A., & Mulder, M. (2004). Work-related lifelong learning for entrepreneurs in the agri-food sector. *International Journal of Training and Development, 8*(1), 73–89.

Lazear, E.P. (2002). Entrepreneurship. WP 9109, NBER, Cambridge, Mass.

Leach, C.E. (2009). An investigation of training in creative problem solving and its relationship to affective and effective idea generation of entrepreneurial learners. PhD Dissertation, Nova Southeastern University.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park: Sage.

Lourenço, F., & Jayawarna, D. (2011). Enterprise education: the effect of creativity on training outcomes. *International Journal of Entrepreneurial Behaviour and Research, 17*(3), 224–244.

Marques, A.P., Moreira, R., Cairns, D., & Veloso, L. (2014). *Learning by practice*? Entrepreneurial dynamics among Portuguese graduates? In: Young people, entrepreneurship and non-formal learning: A work in progress. Brussels: IPM Printing forthcoming.

Mazur, J. E. (2013). *Learning and behavior* (7th ed.). Boston: Pearson.

McClelland, D. C. (1961). *The achieving society*. New York: Van Nostrand.

Minniti, M., & Bygrave, W. (2001). A dynamic model of entrepreneurial learning. *Entrepreneurship Theory and Practice, 25*(3), 5–16.

Mwasalwiba, E., Dahles, H., & Wakkee, I. (2012). Graduate entrepreneurship in Tanzania: contextual enablers and hindrances. *European Journal of Scientific Research, 76*(3), 386–402.

Newcomb, L. H., McCracken, J.D., Warmbrod, J.R., Whittington, M.S. (2004). Methods of teaching agriculture (3rd ed.). Upper Saddle River: Pearson Education.

Nicolaou, N., Shane, S., Cherkas, L., & Spector, T. D. (2009). Opportunity recognition and the tendency to be an entrepreneur: a bivariate genetics perspective. *Organizational Behavior and Human Decision Processes, 110*, 108–117.

Othman, M. N., Ghazali, E., & Sung, Y. S. (2006). Graduate versus non-graduate entrepreneurs in urban Malaysia: some insights into entrepreneurial personality, company and family background differences. *Journal for International Business and Entrepreneurship Development, 3*(1), 57–76.

Petkova, A. P. (2009). A theory of entrepreneurial learning from performance errors. *International Entrepreneurship and Management Journal, 5*(4), 345–367.

Phipps, L. J., Osborne, E. W., Dyer, J. E., & Ball, A. (2008). *Theoretical foundations of effective teaching: handbook on agricultural education in public schools* (6th ed.). Clifton Park: Thomson Delmar Learning.

Praag, C. M., & Cramer, J. S. (2001). The roots of entrepreneurship and labor demand: individual ability and low risk. *Economica, 68*(269), 45–62.

Premand, P., Brodmann, S., Almeida, R., Grun, R., & Barouni, M. (2016). Entrepreneurship education and entry into self-employment among university graduates. *World Development, 77*, 311–327.

Rae, D., & Carswell, M. (2001). Towards a conceptual understanding of entrepreneurial learning. *Journal of Small Business and Enterprise Development, 8*(2), 150–158.

Rae, D., & Wang, C.L. (eds) (2015). Entrepreneurial learning: new perspectives in research, *education and practice*. Abingdon: Routledge.

Ravasi, D., & Turati, C. (2005). Exploring entrepreneurial learning: a comparative study of technology development projects. *Journal of Business Venturing*, 20(1), 137-164.

Sarwoko, E., Surachman, A., & Hadiwidjojo, D. (2013). Entrepreneurial characteristics and competency as determinants of business performance in SMEs. *Journal of Business and Management, 7*(3), 31–38.

Schuller, T., & Watson, D. (2009). *Learning through life: inquiry into the future for lifelong learning*. Leicester: NIACE.

Schumpeter, J.A. (1961). The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle, New York.

Shane, S., & Khurana, R. (2003). Bringing individuals back in: the effects of career experience on new firm founding. *Industrial and Corporate Change, 12*(3), 519–543.

Sugand, J.N. (2014). Generating profits out of passion: a study of New Zealand wineries. Master's Thesis, Victoria University of Wellington. Retrieved from http://researcharchive.vuw.ac.nz/xmlui/bitstream/handle/10063/3214/thesis.pdf?sequence=2.

Tsai, K.C. (2014). A review of creativity in entrepreneurship literature. In F. K. Reisman (Ed.), Creativity in Business (pp.68–78). London.

Turnbull, A., & Eickhoff, M. (2011). Business creativity-innovating European entrepreneurship education. *Journal of Small Business and Entrepreneurship, 24*(1), 139–149.

Van Niglen, D., d'Hombres, B. (2008). University and labour market outcomes: what matters? The case of Italy? Joint Research Centre Scientific and Technical Reports, European Commission. Retrieved from: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC40877/reqno_jrc40877.pdf.

Wang, C. L., & Chugh, H. (2014). Entrepreneurial learning: past research and future challenges. *International Journal of Management Reviews, 16*, 24–61.

West, T., & Worthington, A. C. (2014). Personal attributes and financial risk-taking in Australia. *The Finsia Journal of Applied Finance, 1*, 25–31.

Zamudio, J. (2015). A qualitative exploration of entrepreneurial learning among local farmers in Cochise County, Arizona. Master's Thesis, The University of Arizona. Retrieved from https://pdfs.semanticscholar.org/400e/f464e1b339236a6c3d2bcb71692a57cf9bc7.pdf.