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Abstract

Purpose – This paper aims to clarify the impact of the entrepreneurial training on a Tunisian trainee's entrepreneurial cognitions and intention. An interactive cognitive perspective was adopted to test the interaction effect between the entrepreneurial cognitions: the perceived entrepreneurial self-efficacy, the perceived entrepreneurial feasibility and entrepreneurial desirability. A research model was built showing several relationships between entrepreneurial training, cognitions and intention.

Design/methodology/approach – A survey was conducted on a convenience sample of 240 participants in four business incubators. The maximum-likelihood test was used as a structural equation modeling method to test the model.

Findings – The results show the importance of the entrepreneurial training in the development of entrepreneurial cognitions. Further, the findings, to some extent, validate the interaction between the entrepreneurial cognitive patterns. However, entrepreneurial intention was only predicted through the entrepreneurial desirability. Several implications are discussed at the end of this paper.

Practical implications – The findings seem interesting insofar, as they show the importance of entrepreneurial trainings in the entrepreneurial intention development through the enhancement of desirability. This process can be triggered by a training program that contains case studies, success stories and conferences to make the youth enthusiastic about self-employment.

Originality/value – The significant impact of the entrepreneurial training on trainees' cognitions should encourage governments and incubators to promote entrepreneurial training programs to enhance the youths' willingness to create their own businesses. The findings in this paper seem interesting insofar as they show the importance of entrepreneurial trainings in the entrepreneurial intention development through the enhancement of desirability. This process can be triggered by a training program that contains case studies, success stories and conferences to make the youth enthusiastic about self-employment.

Keywords Training, Cognition, Entrepreneurship, Self-efficacy, Intention, Structural equations

Paper type Research paper

Introduction

Entrepreneurship has received a great deal of scholarly attention over the past decade. The main reason for this concern is the growing need for entrepreneurs to accelerate economic growth (Turker and Selcuk, 2009). Business creation has been, therefore, conceived as a source of value creation (Fini *et al.*, 2012), wealth and employment (Aliouat and Ben Cheikh, 2009) and a promising option of labor market insertion and professional development for university graduates (Vazquez *et al.*, 2009). It stimulates the economy and drives new industry of the country (Nian *et al.*, 2014). Entrepreneurship, in this perspective, is defined by Krueger *et al.* (2000) as a way of

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thinking and a mindset that emphasizes opportunities over threats in the context of a business. It is "The capacity and willingness to undertake conception, organization, and management of a productive venture with all attendant risks, while seeking profit as a reward" (Fatoki, 2010, p. 88). Rae and Carswell (2001, p. 150) admit, in this sense, that entrepreneurship is "a process of identifying opportunities for creating or releasing value and of forming ventures which bring together resources to exploit those opportunities". To be able to identify entrepreneurial opportunities, Harrison and Leitch (2005) suggest that individuals should develop a "competence bloc" which is defined as the infrastructure required to create, recognize, diffuse and successfully exploit new ideas. In this sense, several researchers suggest that to develop perceived business opportunities and entrepreneurial intention, relevant organizations should promote entrepreneurship (Turker and Selcuk, 2009, Wu and Wu, 2008). Furthermore, entrepreneurship is conceived as a learning process that is based on entrepreneurial training programs (Linan, 2004; Fayolle, 1999). In Tunisia, entrepreneurial training programs for youth have been recently introduced to promote business creation and self-employment. Among these programs, the CEFE training (in French: *Creation des Entreprises et Formation des Entrepreneurs*; in English: *Business Creation, Entrepreneurs Training*) remains the most known training program in Tunisia. Indeed, little research that has examined the relevance and impact of the CEFE training on participants' intention to create their own businesses so far. Training programs are fundamental to the extent that they enhance individual knowledge and cognitive skills in any business area. Vazquez *et al.* (2009), in this perspective, point out that starting a business is a complex career decision reflecting an important cognitive mechanism. Therefore, it is highly interesting to investigate the role of entrepreneurial training programs on trainees' cognitions to better understand the entrepreneurial intention process. Yet, the connexionism paradigm upholds the interaction between the individual cognitions. In fact, knowledge and cognitions are stored and activated in the human memory through an extensive neural network (Steiner, 2005). To the best of our knowledge, few works have highlighted the interaction between the trainees' entrepreneurial cognitions and their combined effect on entrepreneurial intention so far. This research, therefore, sets out to address this gap.

The main goal of this paper is to investigate the impact of the entrepreneurial training programs undertaken by the Tunisian Government on the trainees' cognitions and entrepreneurial intention development. More particularly, this paper aims to investigate the role of entrepreneurial training on trainees' psychological reactions such as perception of self-efficacy, feasibility and desirability that likely influence their intentions to create new ventures. Another important objective is to explore the interaction between the trainees' cognitions and their combined effect on the entrepreneurial intention.

Entrepreneurial training, skills development and attitude change

Training is one of the most important investments people can make. Through access to training, people can not only develop knowledge and skills, but have more opportunities and ideas as well (Wu and Wu, 2008). Rae and Carswell (2001, p. 150) define learning as a "cognitive process of acquiring and structuring knowledge, of making meaning from experience and of generating new solutions from existing knowledge". Entrepreneurship education, in particular, is one of the programs that is likely to

improve the performance of the youth to launch their own business. It creates positive outcomes for entrepreneurial trainees (Duval-Couetil, 2013).

Entrepreneurship education can be defined as the set of training activities within or outside the educational system, trying to enhance participant motivation and intention to perform entrepreneurial actions, or some cognitive patterns that may affect intention such as perception of entrepreneurial desirability and feasibility (Linan, 2004). Rae and Carswell (2001) point out that entrepreneurial learning is the manner by which individuals build new meaning in the process of identifying new ideas and acting on opportunities and managing ventures. It is, therefore, "to prepare graduates to be successful in their career when they set up a new business venture" (Nian *et al.*, 2014). Entrepreneurship education is important to the extent that it offers courses in new business development which may promote a propensity for risk-taking (Bae *et al.*, 2014).

This research focuses on a specific entrepreneurial training which is often conducted by the Tunisian Government in the premises of its different incubators: the CEFE training. It is a set of workshops that is led by different coaches in business creation, marketing strategies, financial management and technical and legislative aspects. The CEFE training is organized over the period of 20 days and primarily intended for graduates who do not have sufficient knowledge and skills in entrepreneurship. It is mainly based on learning by doing (Harrison and Leitch, 2005) through which participants evaluate their own personalities, abilities and resources, and choose a particular project to undertake and determine if their personal assets correspond to the project requirements. In this sense, Cope and Watts (2000, p. 106) argue that learning through experience "is a continuous process which every individual lives through and, as such, learning is an extremely complex, dynamic phenomenon".

Entrepreneurial education is important to the extent that it may dramatically influence trainees' cognitions and enhance their willingness to launch their own business. It facilitates the creation of start-ups by changing students' mindsets and developing their entrepreneurial orientation (Fayolle, 2004). In this framework, entrepreneurial learning is the ability to act differently comprising the three attitudinal dimensions of knowing, doing and understanding (Rae and Carswell, 2001). Moreover, entrepreneurial education and training enable individuals to develop their knowledge and skills, and it is very likely to bring about change in their attitude toward venture creation. Knowledge is defined as the amount of information available at the moment of the attitude formation (Bressoud, 2008). Moreover, knowledge is conceived as an internal individual structure composed of distinct cognitive units stored in memory in various formats such as concepts, proposals, schemes, rules and images (Désilets, 1997).

From another perspective, entrepreneurial training programs aim to change the trainee's attitude towards new ventures' creation. Indeed, entrepreneurial learning admits an adaptive role through which the trainees can adjusts to his/her environment, to his/her learning experience and, as a result, changes behavior (Deakins and Freel, 1998). Accordingly, entrepreneurship education causes greater awareness for trainees about market opportunities and threats and how to deal with it (Bae *et al.*, 2014). The individuals' attitude is, therefore, a key factor in the prediction of their human behavior. An attitude can be defined as a predisposition toward an object resulting from the combination of cognitive, affective and behavioral component of human personality (Freestone and Mc Goldrick 2008). It is a cognitive evaluative integration of information, a set of judgments (Crano and Prislin, 2006), a degree to which a person has a favorable

or unfavorable appraisal of the behavior (Fini *et al.*, 2012) and a mindset that let individuals express their position and conviction toward an object (Moscovici, 1972). Yet, the attitude toward entrepreneurship reflects the stored knowledge and beliefs about the venture creation and the emotional and motivational dimensions with regard to the entrepreneurial behavior (Moscovici, 1972). In this respect, the entrepreneurial attitude is chiefly composed of a set of cognitions that are likely to enhance the entrepreneurial process.

Trainees' entrepreneurial cognitions

The entrepreneurship development process focuses on the effect of training on participants' entrepreneurial cognitions such as perceived self-efficacy, perceived feasibility and desirability.

Cognitions, cognitivism, and connexionism

Festinger (1957) defines cognitions as the individual knowledge, opinion and belief about his environment, his own behavior or the others' behavior. Hence, cognition is the mental mechanism that enables individuals to gather, organize and use information to understand things via their interaction with others and their environment (Mitchell *et al.*, 2002). Cognition includes, thereby, all cognitive elements:

- perceptions;
- propositional attitudes such as beliefs, desires and intentions;
- emotions; and
- social commitments (Pasquier *et al.*, 2006; Pasquier and Chaib-draa, 2005).

Cognitions are distilled from experiential learning (Boyer, 2010; Deakins and Freel, 1998) and determine the direction as well as the magnitude of attitudinal change (Fourquet-Courbet and Courbet, 2004). Thus, cognitions are experienced through perceptual processes, selective attention, learning and memorization (Pelet, 2008). Steiner (2005) also defines cognitions as a knowledge production and a set of mental processes that reflect knowledge acquisition, memorization, reasoning and judgment. In line with this debate, Mitchell *et al.* (2002, p. 10) define entrepreneurial cognitions, in particular, as "the knowledge structures that people use to make assessments, judgment, or decisions involving opportunity evaluation, venture creation and growth". In line with this contention, it can be argued that entrepreneurial cognitions seem to be important in the venture-creation process to the extent that it motivates individuals to act in a particular way and guides their decision-making throughout this process (Lope Pihie *et al.*, 2013).

Based on findings from a wide range of studies, cognitive response seems fundamental to understand the individuals' responses to environmental stimuli (Smith and Swinyard, 1988). Several researchers have highlighted the importance of cognitivism and cognitions in the shaping individuals' attitudes and behaviors (Pasquier *et al.*, 2006; Steiner, 2005; Pasquier and Chaib-draa, 2005; Festinger, 1957). Indeed, cognitivism is a paradigm that is based on knowledge development (Panzoli, 2008), interpretation and cognitive assessment. Steiner (2005, p. 15) states, in this perspective, that we "can not only understand the human behavior from the objective properties of the world; we should also take into account how the world is perceived and

represented in mind". In another perspective, connexionism is another psycho-cognitive approach that emphasizes the importance of individual cognition and how it functions in the human brain. According to Steiner (2005), connexionism is different from cognitivism to the extent that it does not consider the human brain as a computer, but rather an extensive neural network that replaces the notion of symbolic representations. Cognition is no longer a set of symbolic representations and prescriptive rules, but is a set of global states belonging to a network of interrelated information (Tiberghien, 1999). Furthermore, Vion-Dury (2007) points out that connexionism is based on a set of neural networks through which the computational patterns are processed in a holistic, global, interconnected and mutually influenced and parallel manner.

Entrepreneurial intention

According to Bullough *et al.* (2014), intention is a fundamental step in the entrepreneurial plan whenever an individual intent to start a new venture. Several approaches such as the Entrepreneurial Event Model (Shapero, 1982), the Theory of Planned Behavior (Ajzen, 1991), the Theory of Reasoned Action (Fishbein and Ajzen, 1975) and the Entrepreneurial Potential Model (Krueger and Brazeal, 1994) highlighted the importance of entrepreneurial intention in business creation. Entrepreneurial intention is defined as a state of mind and a desire to create a new business or take up an activity (Bae *et al.*, 2014; Wu and Wu, 2008). This mindset directs attention, experience and individual action to business creation (Bird, 1988). Thompson (2009, p. 676) defines entrepreneurial intentions as "self-acknowledged convictions by individuals that they intend to set up new business ventures and consciously plan to do so at some point in the future". Tunes (2003) considers entrepreneurial intention as a cognitive pattern and an individual motivation that requires both entrepreneurial feasibility perception and desirability. Entrepreneurial intention remains, then, a key factor in predicting the effective business creation (Wu and Wu, 2008). In this respect, it seems worthy to investigate the entrepreneurial intention predictors to build a more sophisticated knowledge about this construct (Wang *et al.*, 2011).

Entrepreneurial desirability

Entrepreneurial desirability is defined as the degree of attractiveness that a person feels toward business creation and toward being an owner in an entrepreneurial company (Lucas and Cooper, 2012; Almqvist and Bjornberg, 2010), or the degree to which a business is creating a desired behavior (Emin, 2004). Perceived desirability is an affective attitudinal judgment (Mitchell *et al.*, 2002) and a motivational factor (Fitzsimmons and Douglas, 2005) that is concerned with the individual's beliefs about how likely is to have benefits through the creation of a new venture (Vazquez *et al.*, 2009). Indeed, Lucas and Cooper (2012) emphasize that entrepreneurial desirability is the individual's perception of the net benefit to be gained from successful performance of a behavior. The desirability concept (Krueger *et al.*, 2000; Krueger, 1993; Shapero and Sokol, 1982) is also called "valence" in the expectancy framework (Vroom, 1964), attitude (Ajzen, 1991) and attitude toward the act (Liñán and Chen, 2009). According to the Entrepreneurial Intention Model, the expectancy–value model, entrepreneurial desirability is conceived as *the perceived value of entrepreneurship* (Lucas and Cooper, 2012). Similarly, Aliouat and Ben Cheikh (2009) point out that desirability is shaped by the individual system values, composed of social and cultural patterns. This system

values can, therefore, be established and maintained through the acquisition of new information and skills derived from the entrepreneurial training programs. Yet, the Theory of Planned Behavior (Ajzen, 1991) suggests that training programs help individuals to develop favorable attitudes toward entrepreneurship including entrepreneurial desirability (Fayolle, 2005). In addition, Byabashaija *et al.* (2010) highlight that entrepreneurial training should enhance individual imagination, flexibility, creativity, willingness to think conceptually and to see change as an opportunity. These findings, therefore, allow formulating the following hypothesis:

H1. The CEFE training positively influences the trainees' entrepreneurial desirability.

Shapero and Sokol (1982) suggest that individuals with a high level of desirability may feel enthusiastic about the creation of a new business. The authors add that desirability is connected to personal values and career choices. Self-employed individuals are always seeking economic opportunities, challenges, autonomy, authority and self-realization (Almqvist and Bjornberg, 2010). These findings imply that individuals who experience a high entrepreneurial desirability tend to develop a high entrepreneurial intention. In this sense, Segal *et al.* (2005) argue that there is a positive relationship between the desirability of self-employment and the intention to be an entrepreneur. In this perspective, the Intrinsic Motivation Theories, such as, the Self-determination Theory (Deci and Ryan, 1985), the Flow Theory (Csikszentmihalyi and Csikszentmihalyi, 1988), the Expectancy Theory of Motivation (Vroom, 1964) and the Expectancy–Value Model (Eccles and Wigfield, 2002) suggest that when individuals are intrinsically motivated in terms of the immediate subjective experience that occurs when people are engaged in an activity, they tend to engage in a task and develop intention to accomplish it. Accordingly, it is assumed that a high level of desirability positively influences entrepreneurial intention. Hence, the following hypothesis can be formulated:

H2. A high entrepreneurial desirability positively influences the trainees' entrepreneurial intention.

Perceived entrepreneurial feasibility

Entrepreneurial feasibility refers to the degree to which an individual thinks their business is realistic and workable (Emin, 2004). It is a perceptual measure of the individual ability to create a new activity (Almqvist and Bjornberg, 2010) and the degree to which the entrepreneur considers their own project to be easy to accomplish (Vazquez *et al.*, 2009). Individuals who perceive a high level of entrepreneurial feasibility show higher level of confidence in their own skills and abilities required to establish a new business. Additionally, individuals who perceive a high entrepreneurial feasibility show higher willingness to create a new economic activity. The perceived feasibility reflects the degree of abilities and skills the individual feels that let him to deal with potential challenges (Almqvist and Bjornberg, 2010).

Yet, Aliouat and Ben Cheikh (2009) suppose that feasibility perception can be built on the basis of several perceptual assistance factors. Entrepreneurial training can be one of these factors (Roxas *et al.*, 2008; Boissin and Emin, 2006). Shapero and Sokol (1982) point out, in their Entrepreneurial Event Model, an individual's perception of entrepreneurial feasibility is related to an individual's perception of available resources, such as,

knowledge. In this respect, McStay (2008) states that entrepreneurial knowledge should improve participants' opportunity-identification ability and positively increase their entrepreneurial self-efficacy. If the perceived feasibility to start a business is high, then the intention will be also strong (Wang *et al.*, 2011). This debate allows formulating the following hypothesis:

H3. The CEFE training positively influences the trainees' perceived entrepreneurial feasibility.

From another perspective, perceived entrepreneurial feasibility is argued to be an important predictor of the entrepreneurial intention. Shapero and Sokol (1982) point out that several factors such as the project's feasibility perception can be relied on to predict entrepreneurial intention. Thus, Moreau (2006) assumes that individuals are likely to develop an intention to create their own businesses if they have favorable attitudes toward entrepreneurship. These positive attitudes reflect, according to Moreau (2006), a high perceived feasibility. Krueger (1993) adds further corroboration of these findings by his model of entrepreneurial intention through which he considered feasibility as one of the most important predictors of entrepreneurial intention. These findings can, therefore, be used to formulate the following hypothesis:

H4. A high perceived entrepreneurial feasibility positively influences the trainees' entrepreneurial intention.

Perceived entrepreneurial self-efficacy

Self-efficacy is a construct derived from the Theory of Social Cognition (Bandura, 1989). According to Segal *et al.* (2005), self-efficacy reflects the individual's confidence in his own abilities to perform actions to achieve a set of goals. In the same perspective, Wigfield and Eccles (2000) highlight that self-efficacy is a set of ability beliefs and the individual's perception of his/her skills at a given task. Brice and Spencer (2007) point out that entrepreneurial self-efficacy is the degree to which individuals believe that they have acquired sufficient knowledge, ability and skills to successfully embark on and undertake a new venture. Fitzsimmons and Douglas (2005) emphasize that self-efficacy is the strength of an individual's belief that they can accomplish a specific task or series of related tasks. Bandura (1997, in Hmieleski and Baron, 2008, p. 1) was the pioneer of the definition of self-efficacy and emphasized that:

> Individuals high in self-efficacy tend to set challenging goals; persist toward the achievement of their goals, even under difficult and stressful circumstances and recover quickly from failure, even in the face of adverse conditions.

Gist and Mitchell (1992) suggest that self-efficacy is an important motivational construct that can significantly influence the individuals' goals and efforts. Indeed, with a high self-efficacy level, individuals tend to be more motivated (Simon and Tardif, 2006) and develop a high intention toward the desired behavior (Ajzen, 2001). Smith and Woodworth (2012) emphasize in this respect that individuals with high entrepreneurial self-efficacy will be more likely to engage, persist and perform well their entrepreneurial tasks. Yet, self-efficacy is a dynamic construct that can be enhanced with learning and gradual accumulation of knowledge and experience (McStay, 2008). In this perspective, the entrepreneurial training programs are effective enough to provide the necessary toolbox to launch a business (Boissin and Emin, 2006). One of the latest researches that

highlighted the importance of entrepreneurial education in self-efficacy enhancement among the youth is the Malebana and Swanepoel's (2014) work. The authors suggest that perceived self-efficacy deals with the judgments relating to what individuals can do with the skills they possess and those skills are mainly derived from training programs. Individuals who follow an entrepreneurial training session tend to perceive a higher self-efficacy toward ventures creation (Malebana and Swanepoel, 2014). Accordingly, we supposed that there is a positive relationship between entrepreneurial training programs and the development of self-efficacy of the youth. Thus, it can be hypothesized that:

H5. The CEFE training positively influences the trainees' perceived self-efficacy.

From another perspective, Lee *et al.* (2011) point out that the relationship between entrepreneurial self-efficacy and desirability has not been sufficiently taken into account. For this reason, it is interesting to address this gap. Indeed, it is speculated that a high entrepreneurial self-efficacy is likely to positively influence the individual's desirability toward new venture creation. In this sense, Shapero and Sokol (1982) highlight that perceived self-efficacy and entrepreneurial desirability positively interact. Indeed, individuals who are confident of their skills and abilities to launch their own businesses tend to be highly motivated to create a new venture (Lee *et al.*, 2011). Perceiving a high self-efficacy, the individual becomes highly motivated (Simon and Tardif, 2006) to adopt a given behavior (Ajzen, 2001). Hence, the cognitive–motivational Expectancy-Value Theory (Vroom, 1964) presumes that individuals show a high motivation towards the task accomplishment on the basis of their expectancies to successfully attain this goal (Broeck *et al.*, 2010) and their task-specific beliefs such as perceived skills and task easiness (Eccles and Wigfield, 2002).

Accordingly, the following hypothesis can be formulated:

H6. A high perceived self-efficacy positively influences the trainees' entrepreneurial desirability.

In this same perspective, it is supposed that individuals perceiving a high entrepreneurial self-efficacy believe that they are able to achieve their goals and create their desired venture. Accordingly, entrepreneurial self-efficacy is very closely linked to perceived feasibility (McStay, 2008; Ajzen, 1991; Shapero, 1982). Segal *et al.* (2005) suggest that entrepreneurial self-efficacy is a suitable proxy for perceived feasibility. Indeed, individuals with a high level of self-efficacy tend to highly perceive business opportunity which, in turn, increases the venture feasibility perception (Krueger *et al.*, 2000). That is, according to the Theory of Planned Behavior (Ajzen, 1991), it is hypothesized that perceived behavioral control reflects the perceived entrepreneurial feasibility and is thus related to perceptions of self-efficacy. Moreover, individuals with high self-efficacy level feel able to perform entrepreneurial tasks they undertake well (Hmieleski and Baron, 2008), and thus they believe that the tasks are feasible. In an expectancy framework, ability beliefs, that are focused on an individual's present ability, are positively related to expectancies for success, which are focused on the future (Wigfield and Eccles, 2000). Therefore, it can be hypothesized that:

H7. A high perceived self-efficacy positively influences the trainees' perceived entrepreneurial feasibility.

In line with the aforementioned assumption, it is hypothesized that when perceived entrepreneurial self-efficacy is high, the individuals tend to show a high desirability toward the venture creation and vice versa (Solesvik *et al.*, 2012; Fitzsimmons and Douglas, 2011; McStay, 2008; Shapero and Sokol, 1982). Indeed, according to the expectancy theory (Vroom, 1964) and the Expectancy - Value model (Eccles and Wigfield, 2002), a positive relationship can be observed between perceived desirability, aligns with *valence* and perceived feasibility, which aligns with *expectancy*, in the formation of the entrepreneurial intentions (Fitzsimmons and Douglas, 2011). The expectancy theory emphasizes, in this perspective, that individuals may act according to their expectations in such a way that the act they will perform will be followed by a given outcome or *value* (Fitzsimmons and Douglas, 2011), which will make it either desirable or undesirable. That is, the expectancy of the venture profitability and solvability may motivate individuals to launch their business. Accordingly, evidence from McStay's (2008) work suggests that when the individuals perceive the new venture creation as feasible, they may infer that as a desirable act (McStay, 2008) which may make them intend to launch their own business. This theoretical background allow formulating the following hypothesis:

H8. The perceived entrepreneurial feasibility positively influences the trainees' entrepreneurial desirability.

Yet, literature assumes that when individuals perceive a high entrepreneurial self-efficacy, they systematically develop a high intention to start their own business (Moreau, 2006). In contrast, those who are uncertain about their abilities to create their own businesses are deficient and show a low entrepreneurial intention. Roxas *et al.* (2008) highlight, in this perspective, that self-employment requires a high level of self-confidence and a highly challenging mindset. On the basis of Shapero and Sokol's (1982) Model of the Entrepreneurial Event, Krueger *et al.* (2000) point out that individuals develop their entrepreneurial intentions to the extent to which they feel personally capable of starting a business and have a personal predisposition to make and act on their own decisions. Therefore, it is assumed that a high entrepreneurial self-efficacy significantly and positively influences the trainees' entrepreneurial intention. The Entrepreneurial Intention Model, which belongs to an Expectancy - Value perspective, suggests that actions are predicted by the individual's beliefs about their abilities or expectancies to perform a specific task, including the task of venture creation (Lucas and Cooper, 2012). In addition, Achievement Goal Theory (Nicholls, 1989) argues that individuals engage in several achievement activities that pertain to mastery goals focusing on learning and skills development (Plante *et al.*, 2013). Individuals tend, therefore, to show a high intention toward the specific task on the basis of their abilities and motivation to achieve a particular goal, like the venture creation. According to this debate, a hypothesis can be formulated as follows:

H9. A high perceived self-efficacy positively influences the trainees' entrepreneurial intention.

The theoretical research findings can be used to design a conceptual model (Figure 1).

Methodology

To test the conceptual model, an empirical hypothetico-deductive approach was used. We proceeded as follows:

- measurement specification;
- data collection; and
- analysis.

Measurement specification

A set of one-dimensional measurement five-point Likert scales were selected (1: Strongly disagree; 5: Strongly agree). The scales were selected on the basis of their good psychometric qualities (good reliability and good construct validity), their adequacy within the context of the present study and its operational feasibility (items number, items' clarity and vocabulary sensitivity).

Entrepreneurial intention. Chen *et al.*'s (1998) one-dimensional scale that composed of six items was used. Armitage and Conner (2001) highlight three different intention measurements. The first one is desire (e.g. I want to […]), the second one is self-prediction (e.g. How likely it is […]) and the third one is behavioral intention (e.g. I intend to […]). In this sense, Chen *et al.* (1998) use a mix of self-prediction and pure intention items (Linan and Chen, 2006). An example of the statements is "I intend to become an entrepreneur", "I am likely to become an entrepreneur", etc.

Perceived self-efficacy. The one-dimensional New General Self-efficacy (GSE) Scale (Chen *et al.*, 2001), composed of 8 items, was used. This scale is based on the New GSE Scale developed by Chen *et al.* (2001) and adapted to the study context (e.g. "I can achieve most of my business goals", "I can successfully overcome many challenges related to my business", etc.). Subramaniam and Freudenberg (2007) argue that task-specific is the best individual behavior predictor at work and business. That is, GSE is a situation-independent competence belief (Scherbaum *et al.*, 2006). The scale reliability was acceptable, ranging from 0.85 to 0.9 (Henson, 2001; Nunnally and Bernstein, 1994). The stability coefficients ranged from $r = 0.62$ to $r = 0.65$ (Scherbaum *et al.*, 2006).

The entrepreneurial desirability. The four-items one-dimensional scale (Emin, 2003) was adopted. The scale was used to measure the valence or the attitude of the individual toward a new venture creation. The types of items are, for instance, "I am excited to start my own business", "I want to concretizes my new business idea", etc. The four statements had good internal consistency ($\alpha > 0.8$) and a good level of convergent validity (Rhôρvc > 0.7) in the context of its initial study.

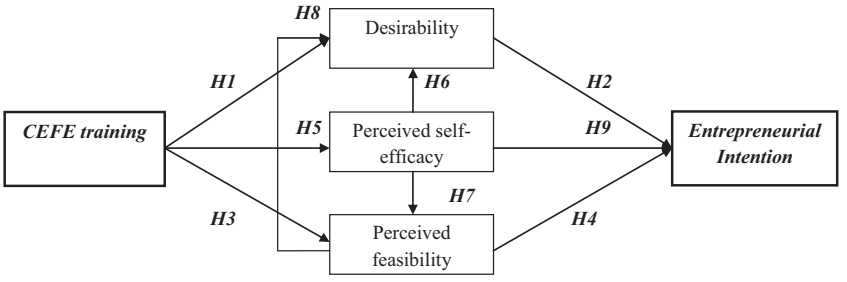

Figure 1.
Research model

The entrepreneurial feasibility. The four-items scale proposed by Emin (2003) was adapted to measure the perceived entrepreneurial feasibility. The statements can be relied on to measure the extent to which the new business creation can be concretized by the entrepreneur. Additionally, by means of the statements, the individual ability to perform the entrepreneurial tasks is measured. An example of the statements is as follows:"Launching a new business seems to be feasible to me", "I am sure of the success of my future business", etc. The scale had good psychometric indicators ($\alpha > 0.8$; Rhô $\rho vc > 0.7$).

Pilot study

Yet, a pilot study was performed to test the scales psychometric properties and its factor structure. A convenience sample of 80 students at a business school was set up in this regard. An exploratory factor analysis was conducted using SPSS 20. Benraiss (2004) point out that the exploratory factor analysis is an empirical method that aims reducing the initial variables (or items) in a reduced number of factors. A principal component analysis (PCA) is performed in this regard. Hence, through a purification stage, only two items were eliminated from the perceived self-efficacy scale. Thus, the analysis provided acceptable levels of Kaiser–Meyer–Olkin (KMO) indicator (> 0.6) and Bartlett's sphericity test (chi-square $> 0, p = 0.000$). All the scales had a one-dimensional structure with a good reliability measurement ($\alpha > 0.75$).

Data collection

To collect data, a convenience sample comprising CEFE trainees was created. The sample was composed of one single group that was requested to answer the questionnaire twice: *before* versus *after* training (after 20 days). A survey was conducted in four business incubators. Participants were asked to read the questionnaire, to think about its content and to answer the questions separately to avoid group influence-related bias. The survey was conducted face to face. After data collection, questionnaires with missing data and extreme responses were eliminated from the analysis to avoid potential problems with data normality as well as deviation.

Sampling and differential effect of entrepreneurial training

The data collection let us build a sample of 240 participants which can be described as follow:

- *gender*: male (63 per cent), women (37 per cent);
- *age*: (85 per cent are between 20-30 years old);
- *education*: university graduates (100 per cent); and
- *occupation*: 100 per cent unemployed.

A paired-sample student *t*-test was performed to compare means between the participants' cognitions before and after the CEFE training; one-way ANOVA was then performed to assess the differential effect of CEFE training on the trainee's entrepreneurial cognitions. The findings (Tables I and II) show that the CEFE training had an obvious differential effect on the trainee's entrepreneurial cognitions through a satisfactory mean difference between the participants' responses before and after the CEFE training, a significant student t (> 1.96) threshold and an acceptable F (> 2) indicator's value.

Analysis

The collected data were analyzed in two steps:

(1) An exploratory factor analysis was performed to test the reliability of the measurement scales and their factor structures.

(2) A confirmatory factor analysis was conducted to assess the measurement model using the structural equation modeling and following Anderson's and Gerbing's (1988) procedure.

The maximum likelihood estimation using the AMOS 18 software was implemented. Then, the hypothesized relationships were explored. To minimize the multicollinearity effects and to ensure more credibility to the statistic indicators, the raw scores of the perceived self-efficacy, the perceived feasibility and desirability statements were centered.

Exploratory factor analysis

According to factor analysis, the KMO indicator and the Bartlett sphericity test were satisfactory. A principal component analysis was undertaken and allowed to keep the same items used in the pilot study. The Kaiser criterion was respected to extract factors (only the factors with an Eigen value greater than 1 should be selected). The findings show the same one-dimensional factor structure as the one in the pilot study for all the scales. Yet, the findings show good levels of the total explained variances and acceptable levels of measurement reliability. The results of the exploratory factor analysis are shown in Table III.

Table I. Means comparison

	M	SD	*n*	Means difference
Before training	2.41	1.05	240	1.82
After training	4.23	1.04	240	

Table II. Student *t* test and ANOVA

	t	df	Significance	*F*	Significance
Entrepreneurial desirability	4.53	239	0.000	15.13	0.000
Perceived self-efficacy	3.15	239	0.012	9.44	0.000
Perceived feasibility	2.93	239	0.023	7.88	0.000

Table III. Principal component analysis and measurement reliability

	KMO	χ^2	df	*p*	Total explained variance (%)	Reliability (α)
Entrepreneurial training	0.694	64.976	3	0.000	55.027	0.781
Entrepreneurial Intention	0.856	739.939	15	0.000	66.907	0.898
Perceived self-efficacy	0.784	392.976	15	0.000	51.868	0.807
Perceived feasibility	0.663	157.759	3	0.000	67.43	0.788
Desirability	0.695	188.983	3	0.000	70.841	0.893

Assessment of normality

Data normality was tested through the "skewness" and "kurtosis" tests of asymmetry and concentration. The Mardia coefficient and the critical ratios (skewness/standard error; kurtosis/standard error) were also calculated. The findings show a problem of normality for some measurement scales. It should be noted at this stage that data normality problems are almost inevitable in the social science research and it is not considered as a serious bias that may prohibit estimation models. To overcome the data deviation, the Bootstrap procedure with 500 iterations was applied. According to Felsenstein (1985), the purpose of the bootstrap method is to infer the variability in data distribution by a resampling procedure to provide an estimate close to the actual data distribution.

Convergent validity

To test the convergent validity, the fit indexes were calculated. The findings (Table IV) show satisfactory thresholds which indicated a good convergent validity for all the measurement models. Indeed, the RMSEA levels were less than 0.1 for all the measurement models. The GFI, NFI and CFI indicators values were greater than 0.9, the NFI and TLI indexes exceeded 0.80. In addition, the RMR was less than 0.1, and the CMIN was significant ($p < 0.001$) and reflected a good explanatory power for all the estimated models. Similarly, the normalized chi-square (CMIN/df) was less than 5 for all the estimated models. Yet, the loadings (Table V) were acceptable for all the factor-related items (> 0.5). In addition, the findings showed good Joreskog Rhô levels for all the measurement models. The convergent validity Rhô (Rhôρvc) values were also satisfactory. Therefore, these findings confirm the good convergent validity for all measurement models.

Discriminant validity

According to the PCA, all scales are one-dimensional. For this reason, assessing the discriminant validity cannot be carried out through a method involving a single dimension.

The structural model evaluation

To assess the structural model, the fit indexes were calculated. The principal indicators derived from the Bootstrap procedure are shown in Table VI. According to the findings, the structural model is retained. Indeed, RMSEA does not exceed the threshold of 0.1. The GFI is greater than 0.9, the AGFI is likewise greater than 0.8. Thus, the RMR value is less than the maximum required threshold (< 0.1). Yet, the NFI and TLI are greater than 0.80 and the CFI value is greater than 0.9, which is acceptable. In addition, the

	RMSEA	GFI	AGFI	RMR	NFI	TLI	CFI	CMIN	df	*p*	CMIN/df
CEFE training	0.069	0.923	0.887	0.066	0.901	0.861	0.944	33.741	8	0.000	4.217
Entrepreneurial Intention	0.075	0.909	0.817	0.054	0.911	0.869	0.921	41.190	9	0.000	4.576
Perceived self-efficacy	0.050	0.947	0.841	0.033	0.918	0.860	0.930	28.750	6	0.000	4.791
Perceived feasibility	0.023	0.998	0.991	0.010	0.996	0.899	0.978	7.730	2	0.000	3.865
Desirability	0.020	0.995	0.975	0.015	0.991	0.998	0.999	2.177	2	0.000	1.088

Table IV.
The measurement models fit indexes

Factor	Items	Loading	Joreskog Rhô	Rhô ρvc
CEFE training	Train1	0.801	0.933	0.830
	Train2	0.645		
	Train3	0.505		
Entrepreneurial Intention	Intent1	0.821	0.986	0.923
	Intent2	0.855		
	Intent3	0.738		
	Intent4	0.820		
	Intent5	0.704		
	Intent6	0.680		
Perceived self-efficacy	Effica1	0.668	0.988	0.931
	Effica2	0.598		
	Effica3	0.687		
	Effica4	0.694		
	Effica5	0.782		
	Effica6	0.668		
Perceived feasibility	Feasib1	0.697	0.965	0.876
	Feasib2	0.626		
	Feasib3	0.813		
	Feasib4	0.548		
Desirability	Desirab1	0.734	0.966	0.878
	Desirab2	0.857		
	Desirab3	0.613		
	Desirab4	0.509		

Table V.
Loading, Joreskog Rhô and Rhô ρvc

RMSEA	GFI	AGFI	RMR	NFI	TLI	CFI	CMIN	ddl	p	CMIN/DF
0.071	0.956	0.869	0.035	0.845	0.817	0.978	1,456.982	302	0.000	4.824

Table VI.
The structural model fit indexes

CMIN is significant ($p = 0.000$) with a positive satisfactory value. Similarly, the normalized chi-square (CMIN/DF) is greater than 2, but it remains less than the maximum accepted threshold (< 5). These findings are satisfactory and allow to retain the research model.

Furthermore, the hypotheses were tested (Table VII). To test the hypotheses *H1*, *H3* and *H5*, the findings extracted from the ANOVA and the student paired sample *t*-test that had been already performed were adopted. These tests were performed to test the effect of CEFE training as a qualitative variable on the three trainees' cognitions (i.e. desirability, self-efficacy and feasibility) which are quantitative variables. Regarding *H1*, the findings show a significant *t* student value ($t = 4.53$, df $= 239$, $p = 0.000$) and significant *F* value [F (1, 238) $= 15.13$, $p = 0.000$]. *H1* is therefore accepted. The CEFE training has, as predicted, a significant and positive effect on the trainees' entrepreneurial desirability. Moreover, the findings derived from the *H3* test show an acceptable level of student *t* test ($t = 2.93$, df $= 239$, significance $= 0.023$) and *F* indicator [F (1, 238) $= 7.88$, $p = 0.000$]. *H3* is also accepted. The CEFE training has, as also predicted, a significant and positive effect on the trainees' perceived entrepreneurial feasibility. In addition, *H5* is also accepted according to the acceptable levels of student

Hypothesis	Estimate	Result
H1. The CEFE training positively influences the trainees' entrepreneurial desirability	$t = 4.53$, df $= 239$, $p = 0.000$; $F(1, 238) = 15.13$, $p = 0.000$	Accepted
H2. A high entrepreneurial desirability positively influences the trainees' entrepreneurial intention	0.772	Accepted
H3. The CEFE training positively influences the trainees' perceived entrepreneurial feasibility	$t = 2.93$, df $= 239$, $p = 0.023$; $F(1, 238) = 7.88$, $p = 0.000$	Accepted
H4. A high perceived entrepreneurial feasibility positively influences the trainees' entrepreneurial intention	0.125	Rejected
H5. The CEFE training positively influences the trainees' perceived self-efficacy	$t = 3.15$, df $= 239$, $p = 0.012$; $F(1, 238) = 9.44$, $p = 0.000$	Accepted
H6. A high perceived self-efficacy positively influences the' entrepreneurial desirability	0.495	Accepted
H7. A high perceived self-efficacy positively influences the trainees' perceived entrepreneurial feasibility	0.623	Accepted
H8. A high perceived feasibility positively influences the trainees' entrepreneurial desirability	0.112	Rejected
H9. A high perceived self-efficacy positively influences the trainees' entrepreneurial intention	0.272	Rejected

Table VII.
The hypothesis test

t ($t = 3.15$, df $= 239$, $p = 0.012$) and F[$F(1, 238) = 9.44$, $p = 0.000$) indicators. Indeed, The CEFE training positively and significantly affects the trainees' perceived entrepreneurial self-efficacy. Yet, the standardized regression coefficient between entrepreneurial desirability and trainees' intention was high ($0.772 > 0.5$). *H2* is therefore accepted. Accordingly, entrepreneurial desirability positively influences the trainees' entrepreneurial intention. In this same perspective, the regression coefficient between the perceived entrepreneurial feasibility and trainees' intention was very low ($0.125 < 0.5$) which do not allow to accept *H4* as predicted. In other words, despite the high level of the perceived entrepreneurial feasibility, some participants in the CEFE training did not have the intention to launch their own businesses. In the same line, the findings show a relatively low level of standardized regression coefficient between the perceived self-efficacy and the trainees' entrepreneurial desirability. Nevertheless, the regression coefficient is very close to the required threshold ($0.495 \approx 0.5$). Therefore, *H6* can be retained. As predicted, a high level of perceived self-efficacy has a significant impact on trainees' entrepreneurial desirability. In addition, *H7* was accepted with a significant regression coefficient ($0.623 > 0.5$) between the perceived self-efficacy and the perceived entrepreneurial feasibility. That is, when the entrepreneurial trainees perceive a high self-efficacy, they tend to perceive their venture creation as feasible. Yet, there was no effect of perceived feasibility on the trainees' entrepreneurial desirability ($0.112 < 0.5$). *H8* is therefore rejected. That is, the desirability toward the new venture

creation seems an intrinsic motivation that is not triggered by the feasibility perception. Finally, it seems that even if self-efficacy is highly perceived, it do not have a significant effect on the trainees' intention to create their own businesses (0.272 < 0.5). *H9* is therefore rejected.

Discussion

As has been already mentioned, this paper tries to understand the effect of the entrepreneurial training programs undertaken by the Tunisian Government on the trainees' cognitions and entrepreneurial intention development. Another important objective is to explore the interaction between the entrepreneurial trainees' cognitions. According to the existing literature, entrepreneurial training appears as a fundamental predictor of entrepreneurial intention when channeled through trainees' entrepreneurial cognitions such as the perceived entrepreneurial self-efficacy, the perceived feasibility and the entrepreneurial desirability.

On the basis of the satisfactory levels of fit indexes, the research model has been retained. The proposed model highlights the importance of CEFE training in triggering the trainee's cognitions which, in turn, enhance their entrepreneurial intention. Indeed, the case-study participants tend to feel more able to launch their own business and they perceive their ideas more feasible and attractive after the training session. This seems consistent with previous research that emphasized the importance of training programs in developing the perceived entrepreneurial self-efficacy as well as the perceived feasibility and desirability (Roxas *et al.*, 2008; Wu and Wu, 2008; Boissin and Emin, 2006; Fayolle, 2005; Linan, 2004). Moreover, whenever the trainee feels he/she has high self-efficacy, he/she tends to perceive a high entrepreneurial feasibility and shows a high willingness and desirability to launch their own business. However, there was no effect of the perceived entrepreneurial feasibility on the trainees' desirability toward new venture creation. In other words, individuals may develop a high motivation to create their own businesses even if they do not perceive a high entrepreneurial feasibility. This result seems in line with Fitzsimmons's and Douglas' (2011) notes, emphasizing that even if perceived entrepreneurial feasibility is low, the individuals may show a high desirability. The finding contradicts, to some extent, the expectancy theory (Fitzsimmons and Douglas, 2011) that highlights the importance of expectation (or perceived feasibility) in the desirability prediction.

The finding seems important to the extent that a very few studies, to the best of our knowledge, have examined the entrepreneurial cognitions' interaction. The finding in the present study is consistent with the connexionist approach which highlights that cognitions function in a neural network and are interconnected (Vion-Dury, 2007; Steiner, 2005; Tiberghien, 1999). Whenever triggered, the entrepreneurial self-efficacy is inculcated in the trainee's mind and positively affects the other related cognitions: perceived feasibility and desirability. This finding is consistent with the connexionist approach that argues for the interrelationship between cognitions through an interconnected neural network (Vion-Dury, 2007; Steiner, 2005; Tiberghien, 1999).

Yet, despite the entrepreneurial cognitions development, only the entrepreneurial desirability triggers the entrepreneurial trainees' intention. Unfortunately, the perceived self-efficacy and the perceived feasibility have no effect on entrepreneurial intention. In other words, despite the self-efficacy development and the high feasibility perception, Tunisian entrepreneurial trainees cannot intend to launch their own businesses if they

are not motivated, enthusiastic and involved in the implementation of their ideas. For this reason, the idea should be attractive and persuasive enough to encourage individuals to build their own businesses. The findings validate, on the one hand, previous works on the importance of desirability in predicting entrepreneurial intention (Almqvist and Bjornberg, 2010; Roxas *et al.*, 2008; Wu and Wu, 2008; Segal *et al.*, 2005; Shapero and Sokol, 1982). Accordingly, this work is broadly in line with Shapero and Sokol's (1982) model of the entrepreneurial event that considers the entrepreneurial intention process is mainly based on the individual's desirability. Further, this research discounts, to a certain extent, the Theory of Planned Behavior's (Ajzen, 1991) contribution that emphasizes that the entrepreneurial intention process is basically related to the feasibility perception.

Conclusion

The main objective of this research was to investigate the effect of the entrepreneurial training on the Tunisian trainees' entrepreneurial intention. Three interactive cognitive patterns come out as key factors that may trigger the entrepreneurial intention process: perceived entrepreneurial self-efficacy, perceived feasibility and entrepreneurial desirability. Empirical evidence shows that entrepreneurial training lets participants develop their entrepreneurial cognitions including self-efficacy, feasibility and desirability. Nevertheless, only the entrepreneurial desirability was shown as the determinant predictor of entrepreneurial intention. More precisely, the entrepreneurial training appears as a powerful predictor of the trainees' desirability, feasibility and self-efficacy. Nevertheless, the only main predictor that can enhance entrepreneurial intention. Unfortunately, perceived self-efficacy and feasibility do not predict entrepreneurial intention as it was expected in the literature overview.

Implications

This paper has a set of theoretical implications. In fact, this research is a part of a hypothetical-deductive positivist approach. The entrepreneurship-related theories are suitable for the Tunisian entrepreneurial context. The Theory of Planned Behavior (Ajzen, 1991), the Theory of Reasoned Action (Fishbein and Ajzen, 1975), the Entrepreneurial Potential Model (Krueger and Brazeal, 1994), the Expectancy-Value Theory (Vroom, 1964), the Theory of Social Cognition (Bandura, 1989) and other intrinsic motivation theories appear as a powerful theoretical framework to explain and predict entrepreneurial phenomena in Tunisia. In addition, this research highlights the interaction between the entrepreneurial cognitions which have not been investigated before. Previous research studied the cognitions' effect on entrepreneurial intention in a separate not a combined manner which seems restrictive in the entrepreneurial intention prediction. Moreover, this research makes an important contribution to the extensive existing literature on entrepreneurial training, cognitions and intention. Yet, this research highlights the importance of desirability in entrepreneurial intention process which confirms the findings of previous studies on this subject.

Finally, this research has managerial implications. Indeed, the significant impact of the entrepreneurial training on trainees' cognitions should encourage governments and incubators to promote entrepreneurial training programs to

enhance the youths' willingness to create their own businesses. The findings in this paper seem interesting insofar as they show the importance of entrepreneurial trainings in the entrepreneurial intention development through the enhancement of desirability.

Recommendations

It is highly recommended that incubators strive to set up consistent entrepreneurial training programs that focus on self-efficacy enhancement through motivational courses, participants' personalities analysis and simulation. It is likewise recommended that incubators undertake training programs that contains case studies, success stories and conferences to make the youth enthusiastic about self-employment and boost their entrepreneurial desirability.

Limitations

Indeed, this research is far from claiming perfections and it has limitations. First, the trainees' memorization of the questionnaire may be the most visible bias in this research. Indeed, participants may recall their previous responses to the questionnaire before starting the training which may affect their responses later. Second, some constructs that seem relevant to the entrepreneurial intention development have not been included in this research; for instance, personality traits, thinking style and information processing. Future research can address and narrow this gap. Third, a relatively small convenience sample was created which might result in some biases. A larger sample and another data collection method may improve the findings in future research. Finally, this research has focused on the effect of entrepreneurial training on intention before the actual venture creation. It will be worth to investigate the effect of the same training programs on the venture management process and how entrepreneurs can deal with difficult situations which may occur.

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Appendix: Measurement scales

(1) Perceived self-efficacy Scale (Chen *et al.*, 2001) after adaptation:
- I can achieve most of my business goals.
- Faced to difficult tasks, I am certain that I will accomplish it.
- I think I can achieve important results of such a project.
- I believe I can succeed in any effort that I put my mind.
- I can successfully overcome many challenges related to my business.
- I am confident that I can perform many tasks effectively in my business.
- Compared to other people, I can better do my business.
- Even when things are tough, I can deal with it in a good manner.

(2) Entrepreneurial desirability scale (Emin, 2003) after adaptation:
- I think I have the soul of a business man (woman).
- I am excited to start my own business.

- I think starting a business will be appreciated by my surroundings.
- I want to concretize my new business idea.

(3) Perceived entrepreneurial feasibility scale (Emin, 2003) after adaptation:

- Launching a new business seems to be feasible to me.
- I am sure of the success of my future business.
- I have confidence in my ability to achieve my business creation and ensure its completion.
- I think my business success depends on my willingness.

(4) Entrepreneurial intention scale (Chen *et al.*, 1998):

- I am interested in becoming an entrepreneur.
- I intend to become an entrepreneur.
- I am ready to start my own business.
- I am likely to become an entrepreneur.
- I am likely to work very hard to become an entrepreneur.
- I will be an entrepreneur soon.

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