ENTREPRENEURSHIP TRAINING IN DEVELOPING COUNTRIES:

ACTION-ORIENTED ENTREPRENEURSHIP TRAINING AND ITS ROLE FOR CAPITAL REQUIREMENTS IN BUSINESS CREATION

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CHAPTER 1

General introduction

Entrepreneurship is defined as the identification and exploitation of business opportunities to create new products and services (Shane & Venkatamaran, 2000). Research shows that entrepreneurship contributes to economic growth and employment creation and is also a driving force for innovation (Carree & Thurik, 2003, 2008; Czarnitzki & Kraft, 2004; Mead & Liedholm, 1998; Thurik, Carree, van Stel, & Audretsch, 2008; van Praag & Versloot, 2007). Therefore, entrepreneurship is an important means for economic development and poverty alleviation (Gries & Naudé, 2010; Mead & Liedholm, 1998; Naudé, Gries, Wood, & Meintjies, 2008; Parker & van Praag, 2006; Reynolds, 2012; Thurik et al., 2008; van Stel & Storey, 2004).

Due to the relevance of entrepreneurship, scholars call for research that contributes to the understanding of successful business creation (Bruton, Ketchen Jr., & Ireland, 2013; Bruton, 2010; Busenitz et al., 2003; Gartner, 1985; Hisrich, Langan-Fox, & Grant, 2007; Shane & Venkatamaran, 2000; Shane, 2003). In order to best understand new venture creation, research needs to investigate barriers of entrepreneurship (Wright, Filatotchev, Hoskisson, & Peng, 2005). A barrier that has received wide attention in the literature on new venture creation is financial requirements (Chandler & Hanks, 1998; Ho & Wong, 2007). Financial requirements regarding business creation are defined as the initial amount of capital that is needed to start a business (Chandler & Hanks, 1998). Scholars argue that financial requirements are an entry barrier for new venture creation, as most people who start a businesses have difficulties in acquiring the necessary amount of capital needed for starting the businesses (Beck, Demirguc-Kunt, & Martinez Peria, 2008; Ho & Wong, 2007). People face problems in receiving start-up capital since it is difficult for them to acquire capital from the formal financial sector (Beck et al., 2008). For example, people in the start-up process cannot guarantee that their

businesses will be profitable and they often do not have sufficient collaterals that enable them to receive loans from banks (Beck et al., 2008). Thus, people who start a business often face limited access to capital. These limits in access to capital are also called capital constraints (Banerjee & Newman, 1993; Blanchflower & Oswald, 1998; Evans & Jovanovic, 1989; Ho & Wong, 2007; Holtz-Eakin, Joulfaian, & Rosen, 1994; van Auken, 1999; van Gelderen, Thurik, & Bosma, 2005).

Scholars argue that improving access to capital provides a solution for the problem of financial requirements and capital constraints (De Mel, McKenzie, & Woodruff, 2008; Ho & Wong, 2007; Wiklund & Shepherd, 2003). They reason that improved access to capital enhances business creation (Banerjee & Newman, 2013; Blanchflower & Oswald, 1998; Ho & Wong, 2007; Holtz-Eakin et al., 1994). Particularly in developing countries, scholars and practitioners regard improvements in access to capital as a major solution to support new venture creation (Beck & Demirguc-Kunt, 2008; De Mel et al., 2008; Naudé et al., 2008; Yunus, 1999). However, besides improving access to capital, there are alternative solutions that help to deal with the problems of financial requirements and capital constraints in the process of new venture creation. For example, research shows that experience in starting a business can offset a lack of financial capital (Chandler & Hanks, 1998). Chandler and colleagues (1998) revealed in their study that people with experience in new venture creation were able to start businesses with lower levels of financial capital than people, who had less experience in business creation. This implies that there are additional potential factors, apart from improving access to capital, that allow for other ways to overcome the problem of financial requirements and capital constraints.

In this dissertation, I argue that a possible means to master financial requirements and capital constraints in business creation is action-oriented entrepreneurship training. I draw on action-regulation theory (Frese & Zapf, 1994; Frese, 2009; Hacker, 1998), theories supporting an interactionist approach (Endler & Edwards, 1986; Gielnik & Frese, 2013; Terborg, 1981; Welter & Smallbone, 2011) and on theories about career development (Arthur & Rousseau, 2001; Arthur, 1994; Briscoe, Hall, & Frautschy DeMuth, 2006; Briscoe & Hall, 2006; Hall, 1996; Sullivan & Arthur, 2006) to reason that action-oriented entrepreneurship training allows for handling financial requirements

and capital constraints with regard to business creation. Specifically, I argue that action-oriented entrepreneurship training helps to deal with financial requirements and capital constraints in two ways: First, the training reduces the negative effect of capital constraints on business creation through the development of financial mental models[1]. Second, the training supports finding employment and receiving employment income, which enable businesses creation.

1.1 Contributions to the literature

This dissertation has several contributions to the literature:

First, the present dissertation contributes to the literature that investigates financial aspects in entrepreneurship and adds to the understanding of financial requirements and capital constraints in new venture creation. It provides insights into the underlying mechanisms in business creation that allow for mastering the problem of financial requirements and capital constraints. The present dissertation contributes to research in this field, because it considers moderating factors that allow understanding under which conditions financial aspects have an effect on business creation and under which conditions the negative effect is reduced. Further, this dissertation adds to the understanding of individual characteristics, such as financial mental models, with regard to business creation and capital constraints.

Second, this dissertation adds to the understanding of entrepreneurship education and training. Scholars in the field of entrepreneurship education and training emphasize the need for research investigating the effects of entrepreneurship training on students' entrepreneurial careers (Pittaway & Cope, 2007; Vanevenhoven & Liguori, 2013). The literature on entrepreneurship education and training lacks empirical evidence about the influence of entrepreneurship training on participants' entrepreneurial careers (Pittaway & Cope, 2007). Particularly, research in the field of entrepreneurship training neglect the influence that entrepreneurship training has on employment (Pittaway & Cope, 2007). Additionally, the understanding about effects of entrepreneurship training on

[1] Financial mental models are cognitive representations of financial aspects, such as cash-flow or profit margins that help to interpret information and facilitate carrying out actions (Baron & Ensley, 2006; Frese & Zapf, 1994) . Financial mental models will be described in detail in chapter 3.

students' business creation is still limited (Pittaway & Cope, 2007; Vanevenhoven & Liguori, 2013). This dissertation adds to addressing this gap in the literature by examining the effects of action-oriented entrepreneurship training on students' career development with regard to employment and self-employment.

Third, this dissertation uses a rigorous methodology to study training effects. In the field of entrepreneurship education and training, research is lacking rigorous research designs (Martin, McNally, & Kay, 2013; McKenzie & Woodruff, 2012). Entrepreneurship scholars call for longitudinal research and randomized controlled experiments that examine effects of entrepreneurship education and training (Martin et al., 2013; McKenzie & Woodruff, 2012). In the present dissertation, I follow this call and conduct a randomized controlled field experiment with a longitudinal pre-/posttest design that studies effects of action-oriented entrepreneurship training over a period of 21 months.

1.2 The conception of the dissertation

In this dissertation, I examine effects of action-oriented entrepreneurship training and its role for capital requirements from a psychological point of view. The present dissertation is structured in the following way:

The first chapter provides a general introduction about this dissertation.

The second chapter theoretically examines action-oriented entrepreneurship training and its short and long-term effects on new venture creation and success factors of entrepreneurship (i.e. employment creation, business' revenue and owners' salaries). In this chapter, I explain the effects of entrepreneurship on economic development and poverty alleviation and I reason how entrepreneurship can be best promoted in developing countries. I introduce action-oriented entrepreneurship training as a possible means for promoting entrepreneurship in developing countries. Furthermore, I explain the trainings' methodology, which is based on action-regulation-theory (Frese & Zapf, 1994; Frese, 2009; Hacker, 1998) and provide insights into short- and long-term effects of the training. Additionally, I describe two cases and explain how the training can be

sustainably implemented. I conclude with aspects on future research and the practical implementations of action-oriented entrepreneurship training.

In the third chapter, I empirically examine under which conditions capital constraints have or do not have a negative effect on business creation. By drawing on action-regulation theory and theories comprising an interactionist perspective (Endler & Edwards, 1986; Gielnik & Frese, 2013; Terborg, 1981; Welter & Smallbone, 2011) I develop a theoretical model comprising mediated moderation effects. The theoretical model implies that action-oriented entrepreneurship training reduces the negative effect of capital constraints on business creation through financial mental models. Specifically, I hypothesize that action-oriented entrepreneurship training moderates the relation of capital constraints and business creation. Furthermore, I argue that action-oriented entrepreneurship training leads to the development of financial mental models and that financial mental models mediate the influence of action-oriented entrepreneurship training on the relationship between capital constraints and business creation. To test the theoretical model, I conducted a longitudinal study using a randomized controlled field experiment. The study comprised four measurement waves over a period of 21 months. Results of this study provided empirical support for our hypotheses and showed that action-oriented entrepreneurship training diminished the negative effect of capital constraints on business creation through financial mental models. The findings of this study contribute to the literature, because they provide insights into the conditions that influence whether capital constraints affect or do not affect business creation. Furthermore, this study suggests that action-oriented entrepreneurship training provides an additional solution for helping to deal with capital constraints.

In the fourth chapter, I empirically examine a career path leading from action-oriented entrepreneurship training to business creation via employment and employment income. I take a career development perspective (Briscoe et al., 2006) and develop a theoretical model that assumes an effect of the training on employment and employment income over time. Based on theories about boundaryless or protean careers (Arthur, 1994; Briscoe & Hall, 2006; Hall, 1996; Sullivan & Arthur, 2006), I argue that the effect of the training on employment and employment income is particularly strong for trainees high in control aspiration, meaning high in taking responsibility for their work

(Frese, Garst, & Fay, 2007). Furthermore, I hypothesize that employment and employment income predict business creation over time. To test the hypotheses, I conducted a longitudinal study with four measurement waves over a period of 21 months and carried out a randomized controlled experiment with a training group and a control group. To analyze the data, I calculated growth models with random slopes and hierarchical regression analyses testing combined lagged effects. Results of the statistical analyses provided support for the hypotheses. Action-oriented entrepreneurship training affected employment and employment income over time. Control aspiration moderated the effect of the training on employment and employment income in a way that the effect was particularly strong for trainees high in control aspiration. Furthermore, employment and employment income led to business creation over time. This study adds to the understanding of entrepreneurship training effects on the development of students' careers with regard to employment and self-employment. Additionally, this study sheds light on the question how entrepreneurship training can support acquiring financial means (in terms of employment income) and hence lead to business creation.

In chapter five, I provide a general discussion of the theoretical chapter and the two empirical studies. I conclude with suggestions for future research and practical implications.

CHAPTER 2

Entrepreneurship training in developing countries

2.1 Abstract

Entrepreneurship is an important driver for a country's economic development: It has a positive impact on innovation, employment creation, productivity growth and economic growth. To contribute to economic development it is, therefore, sensible to promote entrepreneurship. In this chapter, we describe an action-oriented entrepreneurship training (Student Training for Entrepreneurial Promotion - STEP) which builds on action regulation theory (Frese & Zapf, 1994; Frese, 2009; Hacker, 1998) and successfully promotes entrepreneurship. To evaluate the training, we conducted rigorous evaluation studies that met highest scientific standards. Our evaluation studies showed that the training successfully changed the mindset of the trainees, increased business creation (Gielnik et al., 2015), and turned job seekers into job creators who created employment for themselves and for others. In addition, the training had positive effects on entrepreneurial action and business opportunity identification which, in turn, mediated the effect on business creation (Gielnik et al., 2015). Furthermore, action-oriented entrepreneurship training successfully promoted serial/portfolio entrepreneurship[2] and led to long-term business success in terms of revenue and owners' salary. We describe two cases from Uganda to illustrate how trainees benefitted from the training and used the skills to successfully start and pursue an entrepreneurial career. The results of our evaluations allow us to conclude that the training is effective in promoting entrepreneurship, in supporting employment creation and can thus contribute to economic development.[3]

[2] Serial/portfolio entrepreneurship means to have several businesses at the same time or to have at least one business prior to the current business (Westhead et al., 2005).

[3] The chapter "Entrepreneurship trainings in developing countries" is published. The reference is:

2.2 Introduction

There are more than a billion people who live in poverty (Collier, 2007; Reynolds, 2012). Twenty-one percent of the population in developing countries (1.22 billion people) can only spend 1.25 US dollars or below a day in the year 2010 (Olinto, Beegle, Sobrado, & Uematsu, 2013). In addition to poverty, a major problem for developing countries is the high rate of unemployment (International Labour Organization, 2013). Two thirds of the young population in developing countries was unemployed or worked in irregular employment in the year 2012 (International Labour Organization, 2013; United Nations Department of Economic and Social Affairs, 2013). What will aggravate the situation is that many more young people will enter the future job market. In least developed countries 40% of the population was younger than 15 years in 2012, and 20% were aged between 15 and 24 years (United Nations Department of Economic and Social Affairs, 2013). Consequently, many governmental and non-governmental bodies argue that solving the problem of unemployment and fostering employment creation in developing countries is of high importance (International Labour Organization, 2013; United Nations Department of Economic and Social Affairs, 2013). A possible approach to address the issue of unemployment is entrepreneurship since research shows that entrepreneurship supports employment creation (Acs, Desai, & Hessels, 2008; Gries & Naudé, 2010; Mead & Liedholm, 1998; Naudé, Gries, Wood, &

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Meintjies, 2008; Naudé, 2010, 2012). This implies that through promoting entrepreneurship it is possible to contribute to employment creation.

Recent research suggests that entrepreneurship can be effectively promoted by entrepreneurship training (Martin et al., 2013; McKenzie & Woodruff, 2012). In this chapter, we seek to present an entrepreneurship training which we developed in order to foster entrepreneurship and employment creation. The training we developed is an action-oriented entrepreneurship training called Student Training for Entrepreneurial Promotion (STEP). STEP is based on action regulation theory (Frese & Zapf, 1994; Frese, 2009; Hacker, 1998). To provide a brief introduction, we first describe how entrepreneurship generally contributes to economic development (including employment creation). We then outline the STEP intervention, describe its effects on entrepreneurship, and report the experiences and professional development of two students who participated in STEP. We conclude by providing an outlook on future implementations and planned evaluation studies of STEP.

2.3 Entrepreneurship and economic development

Entrepreneurship is defined as the identification and exploitation of business opportunities for new products or services (Shane & Venkatamaran, 2000). Entrepreneurship is an important means for poverty alleviation in developing countries because it contributes to economic development (Acs & Armington, 2004; Acs et al., 2008; Audretsch & Keilbach, 2004; Carree & Thurik, 2003, 2008; Gries & Naudé, 2010; Mead & Liedholm, 1998; Naudé et al., 2008; Naudé, 2010, 2012; Thurik, Carree, van Stel, & Audretsch, 2008; van Praag & Versloot, 2007; van Stel & Storey, 2004). Economic development comprises economic growth (e.g. growth in GDP), productivity growth (e.g. higher efficiency in production), and employment creation (number of employment opportunities) (Beck & Demirguc-Kunt, 2008; van Praag & Versloot, 2007). It is important to note that some scholars state that entrepreneurship does not generally drive economic development (Naudé, 2012). The literature distinguishes between opportunity and necessity entrepreneurship. Opportunity entrepreneurs start businesses because they have identified business opportunities and wish to pursue them (Reynolds et al., 2005; Xavier, Kelley, Kew, Herrington, & Vorderwülbecke, 2013).

Necessity entrepreneurs start businesses because they have no better job alternatives (Reynolds et al., 2005; Xavier, et al., 2013). Some scholars argue that whereas opportunity entrepreneurs are a driving force for economic development, necessity entrepreneurs do not contribute to economic development (Gries & Naudé, 2010; van Stel, Carree, & Thurik, 2005; Xavier et al., 2013). This would mean that a large part of entrepreneurs does not contribute to a country's economic development because many entrepreneurs living in developing countries are necessity entrepreneurs (Xavier et al., 2013). Yet, it is important to note that many necessity entrepreneurs manage profitable businesses and because of the profitability these necessity entrepreneurs contribute to economic development (Reynolds, 2012). Given the contradictions in the literature, we cannot draw any definite conclusions and it is still unclear whether only opportunity entrepreneurship contributes to economic development. Therefore, in the following, we do not distinguish between opportunity and necessity entrepreneurship and discuss the effects of entrepreneurship on economic development in general.

The literature argues for a positive impact of entrepreneurship on economic development in terms of productivity growth and employment creation (Carree & Thurik, 2003, 2008; Fritsch, 2008; Mead & Liedholm, 1998; Thurik et al., 2008; van Praag & Versloot, 2007). Research has shown that entrepreneurial ventures contribute to productivity growth and employment creation to a higher extent than larger and established businesses (Thurik et al., 2008). Entrepreneurial ventures that survive in the market grow faster than larger and established businesses in terms of production (van Praag & Versloot, 2007). Their fast growth also leads to an expansion in terms of employment and, hence, contributes to employment creation.

Furthermore, entrepreneurial ventures are considered a "vehicle for innovation and change" (Carree & Thurik, 2003, p. 22). In comparison to large and established firms, entrepreneurial ventures have more innovations per employee, are quicker in implementing innovations, and have a higher share of sales as a result of these innovations (Czarnitzki & Kraft, 2004; Dechenaux, Goldfarb, Shane, & Thursby, 2003; Love & Ashcroft, 1999; van Praag & Versloot, 2007). With the introduction of innovative products and services, entrepreneurial ventures also affect the innovation and productivity of established businesses (Carree & Thurik, 2008; Fritsch, 2008). When

entrepreneurial ventures enter the market, they launch new products and services which leads to enhanced competition (Carree & Thurik, 2008; Fritsch, 2008). Enhanced competition, in turn, affects the productivity of established businesses (Fritsch, 2008). The established businesses have to become more efficient and refine their products and services in order to remain in the market (Baumol, 1986; Fritsch, 2008). These aspects of innovation and enhanced competition also drive economic development (Carree & Thurik, 2008).

In addition to the positive effects of entrepreneurship on economic development, entrepreneurship has also a positive effect on people's personal development. For example, research provides evidence for a positive impact of entrepreneurship on people's life satisfaction (Andersson, 2008; Benz & Frey, 2008; Blanchflower & Oswald, 1998; Blanchflower, 2004). Entrepreneurship is related to life satisfaction because entrepreneurship provides independence, autonomy and a feeling of being in control of one's own life (Andersson, 2008; Benz & Frey, 2004, 2008; Blanchflower, 2004). In the context of developing countries, Stark and her colleagues (2013) show that entrepreneurship had long-term effects on life satisfaction. Those who started a business were more satisfied with their lives and this effect held over several measurement periods (Stark et al., 2013).

2.4 Promoting entrepreneurship in developing countries

Based on the research findings that entrepreneurship contributes to a country's economic development, scholars and practitioners developed different approaches to promote entrepreneurship in developing countries. For example, a common approach used by many governments is to establish an administrative and regulatory framework that facilitates starting and operating private enterprises. According the World Bank, 85% of the world's economies introduced regulatory reforms between 2005 and 2010 aimed at making it easier to do business; in the last year alone, 117 economies implemented 216 regulatory reforms to facilitate entrepreneurship (The World Bank, 2010).

However, only changing the administrative and regulatory framework may not be sufficient to enhance entrepreneurship. People may lack the necessary knowledge and

skills to benefit from the favorable frameworks and engage in entrepreneurship. In fact, research shows that skills and knowledge are particularly important in developing countries for successful entrepreneurship (Unger, Rauch, Frese, & Rosenbusch, 2011). A further approach to promote entrepreneurship focuses on entrepreneurship education and training. The number and diversity of entrepreneurship courses and trainings aiming to produce more entrepreneurs have increased in recent years (Fiet, 2000; Kabongo & Okpara, 2010; Klandt, 2004; Solomon, 2007). In developing countries, there is a high amount of entrepreneurship trainings offered by governments, non-governmental organizations, universities or microfinance organizations in developing countries (Glaub & Frese, 2012; Martin et al., 2013; McKenzie & Woodruff, 2012). These entrepreneurship trainings differ in length, content and target group (Glaub & Frese, 2012; Martin et al., 2013; McKenzie & Woodruff, 2012). The various trainings target, for instance, nascent entrepreneurs, business owners, women, students, adolescents, school drop-outs, rural dwellers, or people living in urban areas (Glaub & Frese, 2012; Martin et al., 2013; McKenzie & Woodruff, 2012). Examples of entrepreneurship trainings are Start and Improve Your Business (SIYB), Women's Entrepreneurship Development (WED) and Know About Business (KAB) of the International Labor Organization (ILO), Competency-Based Economies Through Formation of Enterprise (CEFE) of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ, German Society for International Cooperation), Emprendedores Technologia (EMPRETEC) of the United Nations Conference on Trade and Development (UNCTAD), Entrepreneurship Development Programme (EDP) of the United Nations Industrial Development Organization (UNIDO), SME Toolkit and Business Edge Training of the International Finance Corporation (IFC), the business plan competitions conducted by TechnoServe, the Goldman Sachs 10,000 Women initiative, and the STEP developed by our research team.

There are impressive figures regarding the number of participants in some of the entrepreneurship trainings: For instance, 4.5 million people in over 100 countries participated in ILO's SIYB training between 2003 and 2010 (van Lieshout, Sievers, & Aliyev, 2012) and 300,000 people in 34 developing countries took part in EMPRETEC (United Nations Conference on Trade and Development, 2012). Although a very high

number of people participated in the trainings, the literature and understanding about the trainings' impact is limited. Most of the studies evaluating the entrepreneurship trainings have methodological limitations with the consequence that the studies do not provide meaningful results (Glaub & Frese, 2012; Martin et al., 2013; McKenzie & Woodruff, 2012). A major limitation of many evaluation studies is a lack of a randomized control group. As a consequence, these studies do not control for effects that occur because the trainees have a preexisting inclination towards entrepreneurship (self-selection), the trainees may develop naturally (maturation), the trainees learn how to correctly respond to the assessment (testing), or that economic and regulatory conditions become more favorable for entrepreneurship (history) (Glaub & Frese, 2012; McKenzie & Woodruff, 2012). Furthermore, another major limitation is that only few studies assess long-term training effects (McKenzie & Woodruff, 2012).

A design that follows highest scientific standards is the randomized control group design with pre- and post-testing that examines both short- and long-term effects (Banerjee & Duflo, 2009; Duflo, Glennerster, & Kremer, 2007). Such a design limits potential biases and controls for effects of maturation, history, testing, and self-selection (Cook, Campbell, & Peracchio, 1990). It allows the comparison of training participants with participants of a control group who do not receive the training. A random selection of participants to a training group and a control group is important to ensure that both groups are equivalent before the training. The groups should not differ in any characteristics, such as cognitive ability, age, sex, education, existing entrepreneurial experience, participation in former business courses, or employment experience. Since a random selection ensures that the participants of the training and control group are equivalent before the training and live in the same contextual setting, it is possible to conclude that any differences after the training are due to the training and not caused by other factors (Banerjee & Duflo, 2009; Cook et al., 1990; Duflo et al., 2007). The study design should also imply several post-training measurements to assess short- and long-term training effects (Martin et al., 2013; McKenzie & Woodruff, 2012). Measuring both short- and long-term training effects is necessary because the impact of the training varies over time (McKenzie & Woodruff, 2012): Some effects occur shortly after the training whereas others will take more time to unfold (McKenzie & Woodruff, 2012).

2.5 Student training for entrepreneurial promotion (STEP)

In this section, we present the STEP training as an entrepreneurship training which was evaluated according to the highest scientific standards. STEP is a 12-week action-oriented entrepreneurship training that successfully trains participants in entrepreneurship (Gielnik et al., 2015). STEP aims to provide a solution for the lack of employment opportunities, in particular for the youth, in developing countries. The main idea of STEP is to train entrepreneurial skills and knowledge for successful entrepreneurship and employment creation. In the following, we describe the training's methodological approach and the impact of STEP on entrepreneurship. We conclude with a description of how we implement STEP at our partner institutions in a sustainable manner.

2.5.1 The methodological approach: STEP as an action-orientated entrepreneurship training

Building on action regulation theory (Frese & Zapf, 1994; Frese, 2009; Hacker, 1998), STEP used an action-oriented training approach to promote entrepreneurship (Gielnik et al., 2015). Many scholars suggest that an action-oriented training approach is particularly useful to promote entrepreneurship (Barr, Baker, Markham, & Kingon, 2009; Fiet, 2000; Frese, 2009; Gielnik & Frese, 2013; Gielnik et al., 2015; Johannisson, Landstrom, & Rosenberg, 1998; Pittaway & Cope, 2007; Rasmussen & Sørheim, 2006). An action-oriented training approach promotes entrepreneurship by providing skills and knowledge that facilitate entrepreneurial actions. Entrepreneurial actions are a key factor for entrepreneurship to occur because only through actions business opportunities are identified and successfully implemented (Baron, 2007a; Baum, Frese, Baron, & Katz, 2007; McMullen & Shepherd, 2006; Shane & Venkatamaran, 2000). An action-oriented training approach comprises various components that help training participants develop skills and knowledge. These components are teaching action principles, making use of learning through action, matching training tasks with job tasks, and providing feedback on participants' behavior (Frese, Beimel, & Schoenborn, 2003; Gielnik & Frese, 2013; Gielnik et al., 2015; Glaub, Frese, Fischer, & Hoppe, 2014; Keith & Frese, 2008). In the following, we describe how the components of an action-oriented training

approach support the development of skills and knowledge and how these components were applied to STEP.

Action principles are theory- and research-based principles that teach practical knowledge (Frese et al., 2003; Frese, 2009; Gielnik et al., 2015; Glaub et al., 2014). Action principles are heuristics or "rules of thumb" that facilitate taking action (Frese & Zapf, 1994; Frese, 2009). Action principles help participants to apply the knowledge and skills they learned in the training to real-life situations (Frese et al., 2003; Frese, 2009; Gielnik et al., 2015; Glaub et al., 2014). Instead of abstract theoretical knowledge about entrepreneurship, action principles provide concrete guidelines about how to deal with the tasks of an entrepreneur. For STEP, we drew on scientific knowledge and theories about successful entrepreneurship to develop the action principles. We developed action principles for 12 modules from three different domains important for entrepreneurship: business administration, psychology and entrepreneurship (Baron, 2007b). The 12 modules were: identifying business opportunities, marketing, managing strategically, finding starting capital, managing finances, bookkeeping, planning and implementing plans, conducting leadership, overcoming barriers, networking, persuading, negotiating, writing a business plan and registering the business (legal framework). The following provides some examples for action principles taught in STEP: "Use your strength and talents to identify business opportunities;" "formulate concrete actions to achieve your goal, and write down the time you want to carry out the actions;" "determine signals that point to potential problems before they occur and develop back-up plans;" "set high and specific goals;" "collect all documents (receipts, invoices, etc.) for every transaction;" "divide a page into two and record all money coming into the business on the left side and all money going out of the business on the right side." The action principles helped the participants to understand what they have to do in order to be successful in starting and managing a business.

Learning through action means that training participants actively perform the target behavior during the training (Frese et al., 2003; Frese, 2009; Gielnik et al., 2015). The target behavior is performing entrepreneurial actions to successfully start and manage a business. Performing actions during the training leads to the development of action knowledge and to a smoother implementation of actions after the training (Frese

& Zapf, 1994; Frese, 2009). Thus, performing entrepreneurial actions during STEP enhances the trainees' action knowledge about entrepreneurship and, consequently, facilitates implementing entrepreneurial actions after STEP (Gielnik & Frese, 2013; Gielnik et al., 2015). In STEP, the trainees took entrepreneurial actions in the form of starting and managing a new venture within the timeframe of the training. Directly after the first session, the trainees formed start-up teams of four to seven people and immediately started a business. To be able to immediately start a business every STEP start-up team received about 100 US dollars starting capital. The starting capital had to be refunded at the end of the training. The start-up teams could use the starting capital to acquire the necessary equipment and resources to start their business. It is important for the learning process that the start-up teams started their business within the first week of the training. During the three months of training, the trainees should experience the whole entrepreneurial process including identifying a business opportunity, launching the business, and managing the business. STEP participants in Uganda, for instance, started businesses that sold fresh juices, fruits and vegetables, bakery products, books, or clothes. Other businesses offered laundry services, beauty services, consultancy services for computer programs, designed greeting cards, or produced bags or jewelry. There were also groups with more unique business ideas. For example, trainees in Kenya produced flavored sugar cubes which could be used to sweeten tea or other beverages. The sugar cubes were produced with easily accessible materials, for example sugar as the basic material and ginger, cinnamon or other spices for the flavors. Setting up and managing a business right at the start of the training also increased the trainees' transfer which is the application of the learned skills and knowledge to the working context (Baldwin & Ford, 1988). For the STEP trainees, transfer meant to apply the entrepreneurial skills and knowledge learned in the training to the process of starting and running a business. Transfer can be facilitated if training tasks and job tasks match (Baldwin & Ford, 1988; Thorndike & Woodworth, 1901).

A further essential component of action-oriented training approach is *providing feedback on participants' behavior*. Research shows that providing feedback about the participants' behavior during the training supports the learning process (Frese et al., 2003; Frese, 2009). Providing feedback is important because it helps trainees to modify

their behavior and to correct their actions (Frese et al., 2003; Frese & Zapf, 1994; Friedrich, Glaub, Gramberg, & Frese, 2006; Keith & Frese, 2005, 2008; Martocchio & Dulebohn, 1994). Feedback allows trainees to compare their behavior with the action principles taught in the training and shows whether the behavior is in accordance with the action principles or whether it needs to be modified. Both negative and positive feedback provides trainees with useful information. Negative feedback signals that the trainees' behavior was not effective. It reveals gaps in trainees' skills and knowledge and helps trainees to understand which behavior they need to change and how they can improve their behavior (Frese & Zapf, 1994; Frese, 2009). Positive feedback ensures that the trainees are reinforced for effective behavior (Frese & Zapf, 1994).

In STEP, trainees received positive and negative feedback on their behavior by both the trainer and by the other trainees. Within the weekly sessions the trainees conducted exercises that were geared towards their businesses. These exercises constituted typical entrepreneurial tasks, such as conducting a market analysis, a competitor analysis, or developing an operations plan for the businesses. After each exercise there was time for discussing the exercises. These discussions allowed the trainer and the other trainees to provide feedback on trainees' behavior and how they deal with the exercises. The feedback was based on the action principles taught during the training. The action principles provided participants with concrete guidelines for completing the exercises and solving problems.

In addition, the discussions enabled trainees to share experiences regarding failures and errors. Failure and errors are a form of negative feedback (Frese & Zapf, 1994; Frese, 2009; Heimbeck, Frese, Sonnentag, & Keith, 2003; Keith & Frese, 2005, 2008). Failures and errors are thus an important source for learning (Frese & Zapf, 1994; Frese, 2009; Heimbeck et al., 2003; Keith & Frese, 2005, 2008). Emphasizing that errors are a valuable form of feedback helps trainees to understand that they should be open towards errors and use the feedback they receive to further develop their skills and knowledge. During the training, the STEP trainers emphasized that errors are inevitable and should be seen as a chance to learn. If trainees do not fear errors and failure, but make use of them to improve their entrepreneurial skills, learning to deal with failures contributes to entrepreneurial success.

2.5.2 The impact of STEP on entrepreneurship

The main goal of STEP was to promote successful entrepreneurship among youths in developing countries by providing skills and knowledge about entrepreneurship. To achieve the main goal, STEP targeted three sub goals: First, STEP aimed at changing the mindset of the training participants such that self-employment became an attractive and feasible career option. Second, STEP was geared toward increasing the start-up rate, and, third, STEP intended to turn job seekers into job creators. In order to understand if STEP met these three sub goals and, hence, contributed to successful entrepreneurship among the youth in developing countries, we have continuously conducted rigorous evaluation studies.

To assess the impact of STEP, we used a study design that meets the highest scientific standards (Gielnik et al., 2015). All studies we carried out so far were longitudinal studies with several measurement waves over a period of up to 36 months to test for long-term training effects. The studies were randomized controlled field experiments. We randomly assigned applicants to a training group that received the training and to a control group that did not receive the training. Participants of the studies were randomly assigned to the training or control groups by lottery.

So far, we conducted evaluation studies with students of seven universities and with trainees from a vocational training institute. The university students were mainly undergraduates from different faculties, such as arts, natural science, social science, technology, education, law, and medicine. Up to 400 students participated in each evaluation study with up to 200 students in the training group and up to 200 students in the control group. We conducted the evaluation studies in five countries located in sub-Saharan Africa: Uganda, Kenya, Tanzania, Ruanda and Liberia. The evaluation studies revealed similar results across the countries suggesting that the positive impact of STEP is generalizable to different cohorts and contexts. In the following, we present the most important findings regarding the positive impact of STEP on entrepreneurship.

2.5.2.1 Performance of start-up teams during the training

We evaluated the performance of the start-up teams during the training on two dimensions: Repayment of the starting capital and profits made by the start-up teams with their businesses. The results of our studies showed that STEP trainees were successfully repaying their starting capital. Across all evaluation studies the repayment rate of the starting capital was very high. On average 83 % of the starting capital was refunded. More than half of all start-up teams returned the starting capital completely: The full amount of 100 US dollars was repaid by 63 % of the start-up teams. If the start-up teams incurred a loss, the trainees did not need to add own money to repay the full amount; rather, they gave back what was left of their starting capital. Only 7 % of the start-up teams could not pay back any of the starting capital. Furthermore, the results revealed that most of the start-up teams' businesses were operating successfully. A profit was made by 78% of the start-up teams. The average profit of these businesses was 50.44 US dollars with a range from 1.70 US dollars to 221.00 US dollars.

Scholars and practitioners may be concerned that the starting capital and the profit of the businesses gave STEP trainees an advantage over participants of the control group and that this advantage influenced the training outcomes. Their concern may be that STEP trainees had more money available after the training than participants of the control group, since STEP trainees received starting capital and kept the businesses' profits they made during the training. We argue that the starting capital and the businesses' profits did not affect training outcomes. The STEP trainees had to repay the starting capital at the end of the training and the amount of money that students received from the profits during the training was very small. To evaluate whether there was an advantage for the STEP trainees, we tested if the profit affected the training outcomes. The amount of profits made was not related to starting a business after the training. The profits were usually not very high per person. Of the 78% of start-up teams that made a profit, 95% generated an amount of less than 148 US dollars per team, that is, less than 30 US dollars per person. Half of the start-up teams that made profits obtained an even smaller amount (37 US dollars) per team. This implies that more than half of the trainees that made profits with their start-up teams generated an amount of less than 7.40 US dollars per person.

2.5.2.2 Long-term outcomes of STEP

The first evaluation study that measured long-term effects was done in Uganda. Gielnik et al. (2015) provided empirical evidence that STEP met its goal to increase the start-up rate after the training. Students who took part in the training were significantly more likely to start businesses than students who did not take part in the training. In comparison to the control group, the training led to 50% more business start-ups within one year and 31% more business start-ups within 18 months. One year after the training 51% of the training participants owned a business. The number of business start-ups even increased over time: 18 months after the training 63% of the STEP trainees were business owners. In the control group, 35% were business owners after one year and 48% after 18 months. For each 100 participants, the STEP trainees started 17 more businesses than an equivalent control group within one year and 15 more businesses within 18 months. Examples of the businesses the Ugandan STEP trainees started after the training are hair and beauty salons, copy shops, restaurants, the production and sale of jewelry or African crafts, repair, maintenance of computers, farming businesses such as poultry farms, pig farms or seed planting, and various consultancy services.

Our evaluation study in Uganda also revealed that STEP met its goal to turn job seekers into job creators. Besides creating their own employment, the STEP trainees created employment for others. Compared to the control group, the STEP trainees created 47% more jobs one year after the training and 38% more jobs after 18 months. STEP supported the creation of 88 additional jobs in a year's time for each100 participants trained. Within one year, 100 students of the control group created employment for 60 people. The number of created jobs rose to 134 for STEP participants and to 96 for control participants after 18 months. Thus, 100 STEP trainees created 28 more jobs within one year's time and 38 more jobs within 18 months than an equivalent control group. Hence, the STEP trainees' businesses produced more jobs than the businesses normally started by students in these countries.

Regarding owners' salary, revenue, and growth rate, the long-term evaluation showed that the STEP trainees' businesses were the equivalent to the businesses of the control group. We did not find significant differences between the STEP trainees' businesses and the businesses of the students of the control group in terms of revenue,

growth rate and in the salary the owners paid themselves. This means that the businesses started by STEP trainees were of the same value than the control group's businesses. The average revenue of the STEP participants' businesses was approximately 395 US dollars per month. The business owners of the training group paid themselves an average monthly salary of almost 75 US dollars. The businesses of the students in the control group made monthly sales of about 370 US dollars on average, and they earned an average salary from their own businesses of around 80 US dollars per month. The businesses of the control group grew in profit, sales and investments, on average, by 16% within one year. The average growth rate of the STEP trainees' businesses within one year was 19%. These similarities between the training group and the control group imply that the businesses that emerged from STEP were not of lower quality than businesses students usually started in their countries.

The second evaluation study was done in Liberia and showed that STEP helped students to become portfolio and serial entrepreneurs. Portfolio and serial entrepreneurs are people who own more than one business at the same time, while these businesses are independent from each other or who have owned at least one business before their present business (Westhead, Ucbasaran, & Wright, 2005). Eighteen months after the training, every STEP participants owned on average 13% more businesses at the same time than each student of the control group. When we included the additional businesses in our analyses, the monthly revenue of businesses started by STEP trainees' was 71% higher than the monthly revenue of the businesses started by students of the control group. Whereas the businesses of the control group made monthly sales of 242 US dollars per business, the monthly revenue of the training group was 414 US dollars per business. In conclusion, these findings indicate that STEP led to portfolio and serial entrepreneurship. Students who became portfolio or serial entrepreneurs were more successful in terms of generated revenues. This is in line with the current research literature arguing that portfolio and serial entrepreneurship in developing countries leads to more business success in the long run (Rosa, 2013).

2.5.2.3 Mediators between STEP and long-term outcomes

In this section, we report mediators of the effect of STEP on entrepreneurship. A mediator is the mechanism underlying the relationship between a cause and effect; a mediator thus provides an explanation for why a cause leads to an effect (Baron & Kenny, 1986; Preacher & Hayes, 2004). With regard to the evaluation of STEP this means that these underlying mechanisms account for the relationship between STEP and the long-term outcomes. We have seen that STEP has valuable long-term effects: It successfully increased business start-ups, created employment, and led to business success. An important question is why and how these effects emerged. To answer this question, Gielnik and his colleagues (2015) investigated the underlying mechanisms mediating the effect of the training on business start-ups. They found that STEP had a significant impact on entrepreneurial action and opportunity identification and these factors predicted business start-up (Gielnik et al., 2015).

STEP positively affected opportunity identification (Gielnik et al., 2015), which is the identification, evaluation, and exploitation of opportunities for new products and services (Shane & Venkatamaran, 2000). Opportunity identification is of high importance as it is the starting point for new venture creation (Baron, 2007b; Shane & Venkatamaran, 2000; Shane, 2000). The evaluation study in Uganda showed that the STEP training group significantly improved in opportunity identification (Gielnik et al., 2015). After the training, STEP participants identified 20% more opportunities than the control group. STEP trainees identified on average 1.78 opportunities per person after the training, whereas every student of the control group only identified 1.48 opportunities on average. Assuming 100 students participate in STEP, they identify 30 more opportunities in total than the same number of students who do not take part in the training.

In addition, STEP influenced students in their entrepreneurial actions (Gielnik et al., 2015). Entrepreneurial actions are start-up activities that help the entrepreneur to successfully pursue business opportunities and, hence, contribute to the successful creation of a new venture (Davidsson & Honig, 2003; Dimov, 2007; Frese, 2009; Gartner, 1985; Gielnik & Frese, 2013; Reynolds, 2007). Examples for such start-up activities are (1) discussing a business idea with business men, advisors, potential

investors, family or friends; (2) identifying target customers; (3) saving money for starting a business and (4) gathering resources to purchase or rent equipment, raw materials, or other facilities (Davidsson & Honig, 2003; Dimov, 2007). Within one year, the Ugandan students participating in STEP performed 36% more entrepreneurial actions than the students of the control group. Entrepreneurial actions remained higher in the training group than in the control group even 18 months after the training. It is particularly striking that the effects of STEP on entrepreneurial action hold in the long-run. In one of our studies in Liberia we compared the business owners of the training group with owners of the control group. We found that 18 months after the training, business owners of the training group performed 37% more entrepreneurial actions than business owners of the control group. This means that business owners of the training group remained entrepreneurially active in the long run. They did not only start a business, but continued to be entrepreneurial.

A further reason why and how STEP led to an increase in business start-ups is that the training successfully influenced antecedents of entrepreneurial action (Gielnik et al., 2015). The training improved participants' action knowledge, action planning, entrepreneurial self-efficacy and entrepreneurial goal intentions (Gielnik et al., 2015). In the context of entrepreneurship, action knowledge means knowledge about entrepreneurial actions (Frese, 2009). Action planning means performing mental simulations of entrepreneurial actions that specify how to reach one's goals, for example, to start a business (Frese & Zapf, 1994; Frese, 2009). Entrepreneurial self-efficacy is the belief in one's own abilities regarding successfully starting a business (Bandura, 1986; Boyd & Vozikis, 1994; Chen, Greene, & Crick, 1998; McGee, Peterson, Mueller, & Sequeira, 2009; Zhao, Seibert, & Hills, 2005). Goal intentions imply what people want to achieve (Gollwitzer & Brandstätter, 1997; Gollwitzer, 1999). Action knowledge, action planning, entrepreneurial self-efficacy, and entrepreneurial goal intentions are action-regulatory factors. The action-regulatory factors mediated the effect of the training on entrepreneurial action and were, therefore, relevant for the process of starting a business (Boyd & Vozikis, 1994; Brinckmann, Grichnik, & Kapsa, 2010; Chen et al., 1998; Delmar & Shane, 2003; Frese, 2009; Frese, Krauss, et al., 2007; Gielnik et al., 2015; McGee et al., 2009; Zhao et al., 2005). STEP enhanced

participants' action knowledge (Gielnik et al., 2015). In comparison to the control group, the STEP trainees had 32% more action knowledge directly after they participated in the training. Furthermore, the training increased participants' action planning (Gielnik et al., 2015). The trainees showed 30% more action planning directly after the training than the control group. STEP also had positive effects on participants' entrepreneurial self-efficacy (Gielnik et al., 2015). Directly after the training, STEP participants showed 6% higher entrepreneurial self-efficacy than students of the control group. This means that training participants believed more strongly in their capabilities to start a new venture than the control group did. In addition, STEP successfully affected trainees' entrepreneurial goal intentions (Gielnik et al., 2015). The training group showed 23% stronger goal intentions than the control group directly after the training. This implies that STEP trainees had a stronger intent to start their own businesses than participants of the control group have. These results suggest that STEP is able to enhance important antecedents of entrepreneurial action which, in turn, promotes the establishment of new businesses and creation of new jobs.

2.5.3 Cases

Two cases show the dynamics of the students' entrepreneurial action and illustrate the positive effects of STEP on students' entrepreneurial actions through affecting antecedents of entrepreneurial action. The first student, Jane (name has been changed for reason of anonymizing) was typical of many students in Uganda. Before the training, she had not been involved in any entrepreneurial ventures, and she had not attended any prior entrepreneurship courses. Jane knew that the job market conditions were poor for her even with a university degree, but she did not consider becoming an entrepreneur as an attractive and feasible career option for her. She was afraid of the challenges entrepreneurs face. According to her report, starting and running a business in the training was a "totally new experience". The experience, that it is possible to overcome the challenges of entrepreneurship and to successfully operate a business "opened her eyes", as she said. Jane elaborated that the training was a turning point in her life which changed her belief that entrepreneurship is an insurmountable series of tasks. She also explained that she learned to reflect after failures, learned from errors,

and that she learned to start anew despite unfavorable circumstances. Thus, she developed a “never-give-up” attitude and learned to use errors and failures as a valuable source of feedback for her development. After the training, Jane started a poultry farm and managed to supply retail shops and hotels in Uganda’s capital city Kampala with eggs and chickens. One year after the training, she employed five full-time employees, and she intended to use the profits from the poultry farm to set up a fish farm. She had conducted market research and had found an appropriate location for her business. In addition, Jane generated the idea of growing rice. However, after some time of research, she came to the conclusion that farming fish and growing rice required too much capital; therefore, she rather expanded the poultry farm. The poultry farm was located in a village some hours away from Kampala, where she lived with her husband. Commuting between the village where her farm was located and Kampala was demanding; at the same point she decided to sell the farm and start another business that would allow her to stay in Kampala. To achieve her goal, she came up with the idea of starting an event management business, which she had successfully set up when we talked to her 18 months after the training. The business offered support in planning events such as weddings. It provided decorations and equipment and organized the preparations necessary for successfully hosting an event. She paid herself a monthly salary of about 590 US dollars from that business and employed three persons. At that time, Jane was also employed as assistant sales administrator at a broadband company. Her tasks were bookkeeping, reports on customers, and the coordination of other departments. Her salary from the employment was around 315 US dollars. Thus, Jane made more money with her business than with her employment, excluding the profit from selling the poultry farm.

When we met her again 24 months after the training, her employment situation had changed further. She was still employed at the same company, but now held the position of a network engineer who worked on trouble-shooting networks, installing software, and maintaining software and hardware, with a monthly salary of about 705 US dollars. In addition, she had closed the event management business and, instead, had started an information technology consultancy that developed computer software, designed Web pages for companies and private persons and set up and installed

networks for offices and homes. Similar to the salary from her former business, she paid herself a monthly salary of about 590 US dollars from the information technology consultancy. Comparing the event management business with the information technology consultancy, we found out that the event management business had slightly higher average sales per month (around 1,370 US dollars) but also required a high amount of investments (around 2,745 US dollars). The consultancy's average monthly sales were about 795 US dollars, but required less investment (around 470 US dollars) than the event management business. Jane started the information technology consultancy because she had acquired a good knowledge of the field after studying computer science at the university. Thus, Jane successfully put her skills and knowledge gained in her studies at the university and at work into practice. It is interesting to observe that she had started out with a business of low complexity, and in the course of time she opened up a business in her field of study. When we met Jane again around four years after the training, she informed us that she still owned the information technology consultancy. Furthermore, she had started an additional business by launching an ice cream parlor in the city center of Kampala. According to Ugandan experts, this is a unique business idea, because there are very few places in Kampala where ice cream is made and can be purchased. Most of these places are supermarkets or rather expensive restaurants and coffeehouses with wealthy customers. There was nearly no ice cream parlor for the youth and young adults. Thus, Jane's ice cream parlor was a good business idea with potential market success.

In conclusion, through STEP Jane had formed and pursued different entrepreneurial goals; she had changed from a non-entrepreneurial student to a successful portfolio and serial entrepreneur. This case illustrates how the training facilitated a mastery experience of entrepreneurship which increased the student's entrepreneurial self-efficacy, how the training led to a more persistent and positive attitude toward entrepreneurship, and how the student used her actions as a source of learning to improve their action knowledge after the training. Jane's entrepreneurial progress also demonstrates that students start multiple businesses they successfully pursue after the training. They are also confronted with a lot of barriers and failure. In the training the participants learned that errors and failures are part of the

entrepreneurial process. Jane explained to us that acknowledging errors and failures and learning to deal with them was one of the most important learning experiences in STEP. She mentioned that through the training she understood that some things will not work out the way she wants them to, but that this is not a reason to give up; just the opposite, it is a reason to stay active and change processes in the business or start anew.

The second student, Richard (name has been changed for reasons of anonymity) had been employed before. He had worked for 8 months as a field manager at a telecommunications company and as a sales person at a bank. He was not employed during the training. Richard told us that he had been thinking about becoming an entrepreneur because he could not imagine being employed for his whole life and being satisfied with the goal of becoming "the employee of the month". However, he had never tried to become self-employed before the training, since he lacked the practical skills. He explained that he had some knowledge in entrepreneurship before the training but did not know how to put it into practice and, hence, never started a business. Asked about the most important learning experiences, Richard said that the training taught him how to plan and execute the start-up of a business in general, how to develop financial plans, and how to manage finances. After the training, Richard recognized several opportunities to enter the gastronomy industry. He started a restaurant in a town near Uganda's capital, recognizing a lack of restaurants in the local market. In his restaurant he served lunch up to 4 p.m.; drinks, including freshly squeezed juices, were still available after 4 p.m. Since the restaurant was equipped with a TV, customers came to the restaurant to watch soccer. His target group was students of a university. Richard identified the business idea of a restaurant during STEP, where he sold fresh juice together with his colleagues of the start-up team. He wanted to move on with his idea of starting a restaurant and opened the restaurant about eight months after the training. When we met him 18 months after the training, he managed his restaurant successfully and made about 380 US dollars sales per month. He paid himself a monthly salary of about 195 US dollars, employed five persons, two full-time employees, and three part-time employees, and he invested about 195 US dollars in this business within a period of ten months. Two years after the training, we again talked to him about his restaurant. He explained that his monthly sales had decreased. On average his revenue was around

255 US dollars per month. He paid himself a salary of about 160 US dollars and had invested about 470 US dollars within the last 12 months. Richard still employed five people in the restaurant. He increased the number of full-time employees from two to three and decreased the number of part-time employees from three to two.

The restaurant is not the only business that Richard successfully started after the training. About 15 months after the training, he also started a boutique that sold clothes and shoes for women and children. The business was located in his parents' home village some hours away from Kampala. Richard's boutique made average sales of about 235 US dollars per month 18 months after the training. He paid himself a salary of around 80 US dollars per month and invested 235 US dollars in the business within the last few months. One full-time employee was working in the boutique. When we met him again 24 months after the training, he mentioned that his revenue had decreased and that he sold clothes for about 100 US dollars on average per month. He explained that within the last 12 months, he invested 235 US dollars into the business and that he still employed one full-time employee in the boutique.

Richard also identified the opportunity to start a construction material supply company that sells building materials such as bricks or cement. Whenever we met him, he had this business idea in mind and wanted to pursue it. He had already done some start-up activities; however, he was not able to successfully launch this venture because this kind of business requires a high amount of capital that he had not secured yet. Richard mentioned that despite the high amount of starting capital, he will not give up on that business opportunity but for now will concentrate on businesses that do not require such high amounts.

Twenty-four months after the training, Richard told us that he wanted to start a piggery project in Masaka, a town in Uganda. He had already bought eight pigs, had constructed the shelter, and was currently in the process of identifying the best market. He thought the best market for this business was outside the country, and he intended to export to nearby countries. Richard had already planned his next steps: He planned to buy more pigs, to construct more shelters, and to improve the fertility rate of his pigs, which he could do with special animal feeds and treatment. He had, furthermore, established contacts to a market in southern Sudan.

After some time Richard faced sudden setbacks and difficult challenges. We met Richard again four years after the training, and he mentioned that in the meantime he had also opened up a small hotel. His workload from managing several businesses at the same time had been very high, so he had decided to employ his girlfriend to manage the hotel. However, the hotel incurred losses because she had taken money from the business to use it for her private expenses and had not taken proper care of the customers and their needs. He told us that therefore, he had lost a high amount of money. Because he put all his effort into trying to save the hotel, he did not have much time for his restaurant, and its sales declined. He decided to close down the hotel to be able to put more effort into the restaurant, which became successful again due to his increased efforts.

Despite the fact that he had diligently planned the different steps to start and run the businesses, he stated that he experienced numerous challenges and setbacks in the start-up phase of his businesses. He explained that the training was a crucial factor in deciding to continue with entrepreneurship because STEP gave him the determination and courage to do so. After the training, his most important principle became not to give up. This determination and persistence resulted in new businesses and in employment he created for himself and others. Again, STEP led Richard toward portfolio and serial entrepreneurship. Richard faced severe setbacks; however, these setbacks did not lead to complete bankruptcy. He had to close one business but was able to continue running his other businesses and had not lost his entire income. He wanted to use the profit of this business to invest into the start-up of yet another business. During and after STEP, Richard explained, he had learned to reinvest the profit and had experienced that a business can start small and grow over time.

2.5.4 The sustainable implementation process

In this section, we describe how we implement STEP at a partner institution. The implementation process of STEP is geared toward sustainability. We aim to ensure that STEP will be continued at the institutions where it is implemented. We have already implemented STEP at seven universities plus a vocational-training institute in five African countries. The implementation of STEP at an institution is the starting point for

a regular and sustainable application of the training. We make use of the following strategies to ensure a sustainable implementation of STEP: We cooperate with local lecturers from the respective institutions, we fade out our support in preparing and organizing the training, and we keep the cost of the training low.

We cooperate with the local lecturers at the institutions where STEP is implemented. To best support the trainees' learning process, it is important that the training is conducted by local lecturers. The trainers have to be aware of their trainees' level of knowledge and know the context of their participants. This context knowledge facilitates the learning process and increases the transfer of learned skills to real-life situations. Local lecturers often understand the knowledge level of their trainees better than lecturers who are unfamiliar with the contextual setting of the country. In addition, local lecturers have much greater knowledge of their own cultural context and the real-life situations of entrepreneurs in their countries. In the implementation process of STEP, we make sure that local lecturers deliver the training at each participating institution.

To prepare the local lecturers and to make them familiar with the methodological approach of STEP, we conduct a three-day train-the-trainer workshop with the local lecturers. The train-the-trainer workshops enable the local lecturers to understand and apply STEP. The workshops introduce the action-oriented training approach of STEP, teach how this approach can be applied, provide knowledge about the training content, and teach how to make use of the training material. The process of training local trainers in conducting STEP also allows us to hand over the organization and preparation of STEP to them. In the long run, the lecturers thus become able to implement STEP without any external support. To ensure that the trainers are well prepared in conducting STEP without external support, we fade out our support. During the first implementation, the core team of German project coordinators is very much involved in organizing and preparing STEP at the respective institution. During the second implementation, at least one local STEP trainer of the institution takes over the organization and coordination of the training, and the German project coordinators provide less support than in the first implementation. The subsequent implementations

are fully conducted by the STEP trainers of the local institution, which ensures a sustainable implementation.

2.6 Discussion and outlook

To summarize, entrepreneurial ventures are an important driver for a country's economic development, because they have a positive impact on innovation, employment creation, productivity growth, and economic growth. Thus, entrepreneurship can be seen as an effective means for contributing to economic development and reducing poverty in developing countries.

A useful approach to promote entrepreneurship in developing countries is to provide entrepreneurship training. We developed and evaluated an action-oriented entrepreneurship training (Student Training for Entrepreneurial Promotion - STEP) that builds on theories from the field of industrial and organizational psychology, for example, action regulation theory (Frese & Zapf, 1994; Frese, 2009; Hacker, 1998). In contrast to many other training evaluations, we conducted rigorous studies that meet the highest scientific standards in order to evaluate STEP. Our evaluation studies showed that STEP achieved its objectives in successfully providing trainees with skills and knowledge in entrepreneurship. STEP increased the business start-ups (Gielnik et al., 2015) and it turned job seekers into job creators who successfully created employment for themselves and for others. STEP also had a positive impact on business opportunity identification (Gielnik et al., 2015) and entrepreneurial action. STEP trainees also stayed entrepreneurially active over the long-term. STEP increased entrepreneurial actions by improving trainees' action regulations, specifically influencing goal intentions, action knowledge, action planning and self-efficacy (Gielnik et al., 2015). Finally, STEP successfully promoted portfolio and serial entrepreneurship and led to long-term business success. By promoting portfolio and serial entrepreneurship STEP supports the continuous creation of future businesses. Research shows that portfolio and serial entrepreneurs are more interested in engaging in future ventures than non-portfolio entrepreneurs (Westhead et al., 2005).

The effects of STEP on entrepreneurship is particularly valuable for countries that have an adverse labor market and lack employment opportunities for the youth, as most

developing countries do (Reynolds, 2012). Since STEP successfully promotes business start-ups, it provides the youth with an opportunity to create their own employment instead of looking for jobs and failing to find employment. Furthermore, STEP is valuable for developing countries, because the implementation of STEP requires only minimal costs. If an institution continues to deliver STEP, the costs the institution faces comprise the trainers' fees, starting capital for the start-up teams, and costs for printing training material. The starting capital is 100 US dollars for each start-up team. It is important to note that some of the start-up teams may not be able to repay the starting capital. The institutions have to take this loss into consideration when they plan for a sustainable and ongoing implementation of STEP. In our experience, the costs for the delivery of STEP are manageable for the institutions in developing countries. A fruitful strategy to raise money that covers the costs of STEP is incorporating STEP in the yearly budget of the institutions (e.g. in the yearly university budgets) and integrating STEP into the curricula of the institutions.

In the future, we want to investigate whether STEP has similar effects in different populations, such as secondary school students or school drop-outs, and in other cultural contexts. In addition, we aim to evaluate the sustainable implementation process that enables the institutions to continuously run STEP without external support. An important part of the implementation process is the train-the-trainer workshop for STEP trainers, which aims to provide trainers with the necessary knowledge on how to conduct the training. To investigate whether these workshops are effective, we are conducting evaluation studies on these train-the-trainer workshops. These studies seek to establish a causal chain from the workshop over the trainers to the students in the STEP training. We examine the effects of the workshop's effects on trainers' entrepreneurial and teaching skills and how this translates into the successful training of STEP students. Such an evaluation approach provides comprehensive insights into the process of developing entrepreneurship training and the widespread implementation of the training at many different institutions through local partners.

CHAPTER 3

When capital does not matter: How action-oriented entrepreneurship training buffers the negative effect of capital constraints on business creation

3.1 Abstract

According to the entrepreneurship literature one of the major barriers impeding business creation is capital constraints. Based on action-regulation theory and theoretical frameworks supporting an interactionist approach in entrepreneurship, we develop a theoretical model explaining under which conditions capital constraints do or do not have a negative effect on business creation. We hypothesize that action-oriented entrepreneurship training compensates for the negative effect of capital constraints on entrepreneurship through the development of financial mental models. To test our hypotheses, we conducted a longitudinal randomized field experiment with four measurement waves over a period of 21 months. The total sample consisted of 214 undergraduate students from Uganda. Results provided empirical support for a moderating effect of action-oriented entrepreneurship training on the relationship of capital constraints and business creation. In order to explain why the training moderated the effect of capital constraints on business creation, we tested a mediated moderation model. The findings showed that financial mental models significantly moderated the effect of capital constraints on business creation. Financial mental models also mediated the moderating effect of the training on the relationship between capital constraints and business creation. The results suggest that action-oriented entrepreneurship training are able to enhance individual characteristics, such as financial mental models, which influence whether or not capital constraints impede business creation.[4]

[4] I gratefully received the data of the three measurement waves (T1-T3) from Prof. Dr. Michael M. Gielnik (Leuphana University of Lüneburg) and Prof. Dr. Michael Frese (National University of

3.2 Introduction

Entrepreneurship is defined as the identification and exploitation of new business opportunities (Shane & Venkatamaran, 2000). Entrepreneurship contributes to economic development and poverty alleviation due to its positive impact on innovations, job creation, and economic growth (Acs & Armington, 2004; Audretsch & Keilbach, 2004; Carree & Thurik, 2003, 2008; Mead & Liedholm, 1998; Reynolds, 2012; Thurik, Carree, van Stel, & Audretsch, 2008; van Stel, Carree, & Thurik, 2005; van Stel & Storey, 2004). Given the importance of entrepreneurship, a major task of entrepreneurship research is to identify factors that enhance or hinder entrepreneurship (Wright et al., 2005).

According to the entrepreneurship literature, one of the major barriers impeding entrepreneurship is capital constraints (Banerjee & Newman, 1993; Blanchflower & Oswald, 1998; Evans & Jovanovic, 1989; Ho & Wong, 2007; Holtz-Eakin et al., 1994; Naudé et al., 2008; Naudé, 2010; van Auken, 1999; van Gelderen, Thurik, & Bosma, 2005). Capita constraints are an important barrier because they impede the start of businesses and further processes after business creation (Baum, Schwens, & Kabst, 2011; Evans & Jovanovic, 1989; Holtz-Eakin et al., 1994; van Auken, 1999). Capital constraints imply lacking access to capital and being limited in acquiring financial capital (Blanchflower & Oswald, 1998; Evans & Jovanovic, 1989; Ho & Wong, 2007;

Singapore and Leuphana University of Lüneburg). Prof. Dr. Michael Frese and Prof. Dr. Michael Gielnik set up the study and its design from T1 to T3. In addition, together with lecturers from Makerere University Business School, Makerere University, Uganda Christian University and Kyambogo University, Prof. Dr. Michael Frese and Prof. Dr. Michael M. Gielnik developed the training. Regarding the development of the training, I provided input for the development of the training session "business opportunity identification" and conducted a pre-study that provided insights relevant to this training session.

After T3, I led the study: I conceptualized the study and the paper, composed the measurements, collected the T4-data, led the rating procedures, interpreted the data, and wrote the paper. Prof. Dr. Michael Frese (National University of Singapore and Leuphana University of Lüneburg) and Prof. Dr. Michael Gielnik provided intellectual input, supported conceptualizing the paper, supported setting up the study, and proofread the paper. Prof. Dr. Michael Gielnik analyzed the data of the paper. I supported the statistical analyses.

I would like to thank Prof. Dr. Michael Frese and Prof. Dr. Michael M. Gielnik for their support. Additionally, I would like to thank them and the lecturers from Makerere University Business School, Makerere University, Uganda Christian University, and Kyambogo University for developing the training. I also would like to express my gratitude to Eike Hedder, Andreas Heese, Rebecca Kernert, Marie-Luise Lackhoff, Kay Turski, Thorsten J. Dlugosch, Melanie von der Lahr, Kristina Zyla, Svenja Haskamp, Sue Kitimbo, and Diana Brée for their support with the data collection.

Holtz-Eakin et al., 1994; van Auken, 1999). Scholars argue that capital constraints hinder people in successfully starting businesses because capital constraints impede acquiring the necessary assets for starting a business, such as equipment or raw materials (Blanchflower & Oswald, 1998; Evans & Jovanovic, 1989; Ho & Wong, 2007; Holtz-Eakin et al., 1994; Naudé et al., 2008; van Auken, 1999; Wiklund & Shepherd, 2003). Indeed, several studies have shown the negative impact of capital constraints on business creation (Banerjee & Newman, 1993; Blanchflower & Oswald, 1998; Evans & Jovanovic, 1989; Gries & Naudé, 2010; Ho & Wong, 2007; Holtz-Eakin et al., 1994; Naudé et al., 2008; van Auken, 1999; van Gelderen, Thurik, & Bosma, 2005; van Stel et al., 2005).

However, most of the studies have assumed a simple main effect of capital constraints on business creation without considering moderating factors that explain under which conditions this effect does or does not hold. Investigating such moderating effects helps to develop a more integrated theoretical perspective on drivers and barriers of business creation (Gielnik & Frese, 2013; Welter, 2011). Drawing on interactional psychology (Endler & Edwards, 1986; Terborg, 1981) and on theoretical frameworks supporting an interactionist approach in entrepreneurship (Gielnik & Frese, 2013; Welter, 2011), we develop a theoretical model explaining under which conditions capital constraints have a negative or no effect on business creation. Figure 3.1 illustrates the theoretical model implying that action-oriented entrepreneurship training reduced the negative effect of capital constraints on business creation through financial mental models.

Our first contribution to the literature is to present a more integrated theoretical model that takes into account the interplay of environmental and psychological factors to examine boundary conditions of the effect of financial capital on business creation. Scholars have frequently called for research to adopt a more comprehensive approach towards explaining entrepreneurship (Gielnik & Frese, 2013; Welter & Smallbone, 2011). We followed this call and positioned our study within interactive theories relating person variables such as people's financial mental models and financial variables, such as capital constraints. We built on interactional psychology and the interactionist approach, which suggest that the interaction of individual and

environmental characteristics better explains performance than individual or environmental characteristics alone (Endler & Edwards, 1986; Terborg, 1981). In our theoretical model, we argue that people's financial mental models interact with capital constraints. Mental models are cognitive representations that enable people to interpret information and to guide their actions (Baron & Ensley, 2006; Bradley, Paul, & Seeman, 2006; Frese & Zapf, 1994; Johnson-Laird, 2001). Financial mental models are cognitive representations of financial aspects, such as cash flow or profit margins. In general, well-developed mental models lead to interpreting information appropriately, to problem solving, and to taking correct and efficient actions (Frese & Zapf, 1994; Johnson-Laird, 2001; Kieras & Bovair, 1984; Mumford et al., 2012; Reihlen & Ringberg, 2013; Sonnentag, 1998). Taking efficient actions implies that people need less (financial) resources to successfully accomplish the entrepreneurial process. Consequently, well-developed financial mental models buffer the negative effect of capital constraints on business creation.

Our second contribution to the literature is that we added to the understanding of financial mental models. In their study on pattern recognition and business opportunity prototypes, Baron and Ensley (2006) showed that having financial mental models was linked to entrepreneurial experience. Experienced and novice entrepreneurs differed in their financial mental models insofar as the financial mental models of experienced entrepreneurs were better developed than the financial mental models of novice entrepreneurs (Baron & Ensley, 2006). Additionally, experienced entrepreneurs made more use of financial mental models than novice entrepreneurs when identifying business opportunities (Baron & Ensley, 2006). Building on the work by Baron and Ensley (2006), we seek to demonstrate that people can acquire a well-developed financial mental model not only through entrepreneurial experience, but also through action-oriented entrepreneurship training. We employed an experimental design using action-oriented entrepreneurship training as an intervention to experimentally advance participants' financial mental models.

Our third contribution to the literature is that our theoretical model contradicts a common thinking with respect to capital constraints. It is common to view an improved access to capital as the major solution for the problem of capital constraints

(Blanchflower & Oswald, 1998; De Mel et al., 2008; Evans & Jovanovic, 1989; Ho & Wong, 2007; van Auken, 1999; Wiklund & Shepherd, 2003). This thinking about the importance of access to capital is particularly prevailing in the context of developing countries, where people are experiencing severe capital constraints (Beck & Demirguc-Kunt, 2008; De Mel et al., 2008; McKenzie & Woodruff, 2007; Naudé et al., 2008). In line with this thinking, the Nobel peace laureate Muhammad Yunus asserts that facilitating access to capital in developing countries is far more important than providing training. He explicitly noted that:

> "(…) rather than waste our time teaching them new skills, we try to make maximum use of their existing skills. Giving the poor access to credit allows them to immediately put into practice the skills they already know" (Yunus, 1999, p. 140).

In contrast, our theoretical model emphasized the importance of training. We showed that entrepreneurship training is an effective means to cope with capital constraints. Specifically, our theoretical model holds that action-oriented entrepreneurship training buffers the negative effect of capital constraints on business creation through improving people's financial mental models. Thus, providing capital is not the only answer to capital constraints as entrepreneurship training is equally effective. Accordingly, we suggest adopting a skill-oriented perspective and not only focusing on a capital-oriented perspective when discussing approaches towards reducing the negative effect of capital constraints on business creation.

We noted that entrepreneurship scholars have studied the effect of action-oriented entrepreneurship training on business creation (Gielnik et al., 2015) and revealed that training positively affects business creation. Gielnik and colleagues (2015) investigated the effects of action-oriented entrepreneurship training on participants' action-regulatory factors and showed that these action-regulatory factors mediated the effect of the training on business creation. Our study builds on Gielnik and colleagues' (2015) study and investigates factors relevant for successful business creation. It adds to Gielnik and colleagues' (2015) study by examining how action-oriented entrepreneurship training modifies the negative effects of capital constraints on business creation.

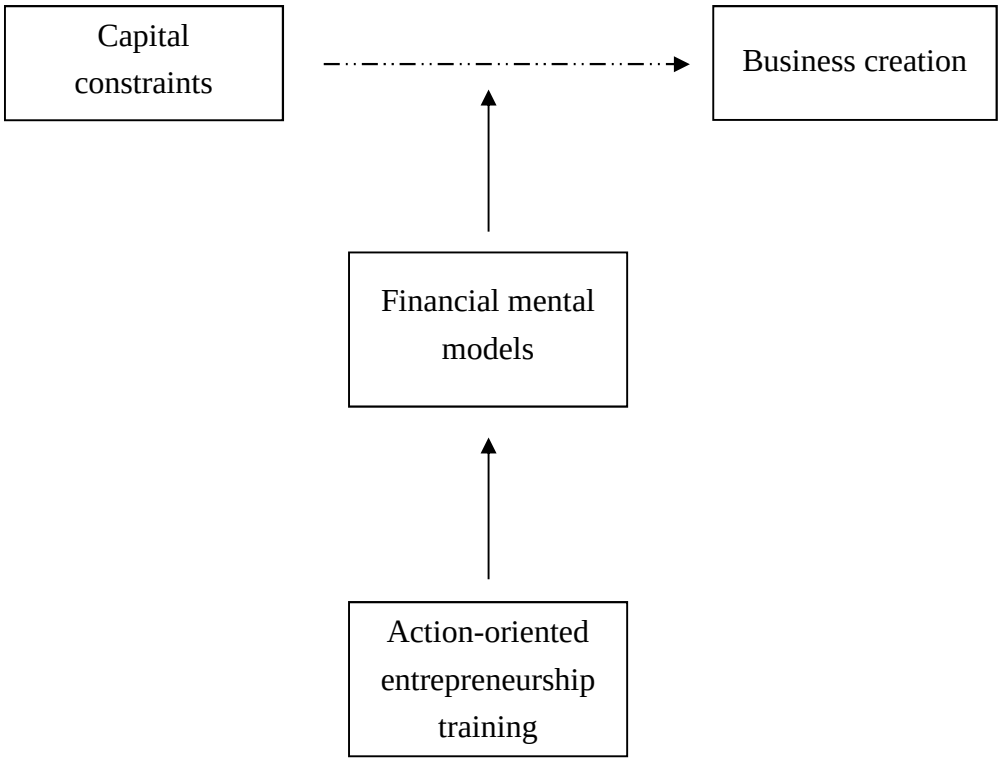

Figure 3.1. The theoretical model of the study[5].

3.3 Theory

It is common for nascent entrepreneurs to give up during the start-up process. In fact, Reynolds and Curtin (2008) report a rate of only 12% to 23% of nascent entrepreneurs who succeed in starting a business. Nascent entrepreneurs are people who engage in the start-up process of new businesses and have already initiated start-up activities (Reynolds et al., 2005). A major reason why nascent entrepreneurs give-up starting businesses is because they face capital constraints (Banerjee & Newman, 1993;

[5] There is a broken path between capital constraints and business creation depicting the interaction effect. Our theoretical model does not argue for a direct effect between capital constraints on business creation.

Blanchflower & Oswald, 1998; Evans & Jovanovic, 1989; Gries & Naudé, 2010; Ho & Wong, 2007; Holtz-Eakin et al., 1994; Naudé et al., 2008; van Auken, 1999; Wiklund & Shepherd, 2003).

Particularly in developing countries, capital constraints are a major barrier impeding new venture creation (Naudé et al., 2008). Capital constraints often occur because the formal financial sector does not provide nascent entrepreneurs with capital (Beck & Demirguc-Kunt, 2008). Nascent entrepreneurs in developing countries commonly lack collaterals, the future of their businesses is uncertain, and their capital demand is too low to allow professional banks to offset the costs of credit provision (Beck & Demirguc-Kunt, 2008; Ho & Wong, 2007; Wiklund & Shepherd, 2003). Other funding sources are also difficult to access. For example, informal moneylenders demand high interest rates in order to deal with loan default and the high interest rates limit the success of the businesses in the long run This implies that it is difficult for nascent entrepreneurs to access capital. Scholars have therefore concluded that capital constraints are the major obstacle hindering the launch of a business (Gries & Naudé, 2010; Ho & Wong, 2007; Klinger, Khwaja, & Del Carpio, 2013; Naudé et al., 2008).

3.3.1 The moderating effect of financial mental models on the relationship of capital constraints and business creation

Drawing on interactional psychology (Endler & Edwards, 1986; Terborg, 1981) and theoretical frameworks supporting an interactionist approach (Gielnik & Frese, 2013; Welter, 2010), we argue that nascent entrepreneurs can be successful in starting a business despite capital constraints. We hypothesize that participants' financial mental models have a moderating effect on the negative relationship between capital constraints and business creation[6]. Nascent entrepreneurs can compensate for a lack of capital by developing financial mental models. Mental models are cognitive representations (or prototypes) of concepts or situations and include knowledge about

[6] It is important to note that we did not assume a direct effect, but rather that the main function of financial mental models is to moderate this relation. We did not hypothesize a direct effect because the start-up process is more complex and other factors besides financial mental models play an important role in it, such as action-regulatory factors as described in Gielnik et al. (2015). This study does not replicate the study of Gielnik and colleagues (2015), but instead investigated moderating effects on the relationship of capital constraints and business creation.

what kind of action is necessary in which situation (Bradley et al., 2006; Frese & Zapf, 1994; Frese, 2009; Glass & Holyoak, 1986; Hacker, 1998; Johnson-Laird, 2001). People can develop mental models for different topics and various situations (Frese, 2009), for instance financial mental models. Financial mental models are cognitive representations about financial aspects, for instance return and investment rates, cash flow or margins (Baron & Ensley, 2006). In their study on pattern recognition, Baron and Ensley (2006) compared experienced entrepreneurs, people who had already started several businesses, with unexperienced entrepreneurs, people who had started only one business. Baron and Ensley (2006) examined how experienced and unexperienced entrepreneurs identified and evaluated business opportunities. They found that experienced entrepreneurs were more likely to use mental models that contained financial aspects and financial success than unexperienced entrepreneurs. As opposed to this, unexperienced entrepreneurs were more likely to use mental models that implied aspects of novelty, newness and personal excitement (Baron & Ensley, 2006). More specifically, experienced entrepreneurs identified and evaluated new products and services according to financial success, manageable risks and/or the capacity to generate positive cash flow, whereas unexperienced entrepreneurs identified and evaluated business opportunities in terms of the opportunity's novelty and whether they were excited about it (Baron & Ensley, 2006). Furthermore, the mental models of experienced entrepreneurs were well developed; their mental models were more clearly defined, richer in content and included more distinct dimensions than the mental models of unexperienced entrepreneurs.

Scholars argue that well-developed mental models help people to interpret information, understand complex patterns, and detect signals in the environment, which leads to an understanding of the environment and finding solutions for problems (Frese & Zapf, 1994; Frese, 2009; Kieras & Bovair, 1984; Mumford et al., 2012; Reihlen & Ringberg, 2013; Sonnentag & Kleine, 2000; Sonnentag, 1998). An understanding of the environment enables people to be ready for action quickly and to act effectively with beneficial impacts on performance (Frese & Zapf, 1994; Frese, 2009; Kieras & Bovair, 1984; Sonnentag & Kleine, 2000; Sonnentag, 1998). We thus argue that well-developed financial mental models enable entrepreneurs to interpret financial information, have a

profound financial understanding, and foresee financial problems. Therefore, entrepreneurs are able to take corrective actions to avoid or deal with problems and mistakes related to their finances during the start-up process. Being able to avoid or deal with such problems implies that actions are more effective and the accomplishment of the start-up process runs smoother (Frese, 2009).

Effective actions and a smoother accomplishment of the start-up process are particularly important when facing capital constraints. In case of capital constraints, nascent entrepreneurs have fewer resources to sustain themselves. This implies that nascent entrepreneurs have to use resources most effectively. A well-developed financial mental model reduces cost-intensive mistakes and wasting of resources, which constitutes a burden to the low budget of nascent entrepreneurs' start-ups. Like this, financial mental models enable an effective use of resources and a successful progression through the start-up process even when capital is limited.

In conclusion, we argue that the interplay of capital constraints and financial mental models explains business creation. Our theoretical model holds that there is only a negative effect of capital constraints on business creation in case of low financial mental models. In case of high financial mental models, the negative effect is weaker or non-existent. In other words, despite facing capital constraints, entrepreneurs who have well-developed financial mental models are still able to accomplish the start-up process. We thus assume that financial mental models reduce the negative effect of capital constraints on business creation and hypothesize:

> **Hypothesis 1:** Financial mental models moderate the effect of capital constraints on business creation in so far that there is a weak relationship between capital constraints and business creation for nascent entrepreneurs with well-developed financial mental models and a strong and negative relationship for nascent entrepreneurs with less developed financial mental models.

3.3.2 The effect of action-oriented entrepreneurship training on financial mental models

We hypothesize that entrepreneurship training helps participants to acquire well-developed financial mental models. In the present study, we focused on action-oriented entrepreneurship training. The training is described in detail in Gielnik and colleagues' (2015) study and in Bischoff et al. (2014). Research has shown that action-oriented entrepreneurship training is effective in improving trainees' mental models (Bell & Kozlowski, 2008, 2009; Chillarege, Nordstrom, & Williams, 2003; Fabiani et al., 1989; Fiore, Cuevas, & Oser, 2003; Frese et al., 1988; Gielnik et al., 2015; Glaub et al., 2014; Kieras & Bovair, 1984; Smith-Jentsch, Campbell, Milanovich, & Reynolds, 2001). We argue that action-oriented entrepreneurship training enables trainees to develop financial mental models through financial action principles, performing start-up actions, and errors (Frese, 2009; Frese et al., 2003). Action-oriented entrepreneurship training teaches action-principles about financial aspects, for instance action principles about managing finances, bookkeeping, accounting, finding starting capital, and financial bootstrapping activities[7]. Action principles are theory- and research-based heuristics or what is colloquially referred to as "rules of thumb" that provide practical knowledge (Frese et al., 2003; Frese & Zapf, 1994; Frese, 2009; Gielnik & Frese, 2013; Gielnik et al., in press). These heuristics improve trainees' mental models because they provide guidelines about how to act in various situations (Frese et al., 2003; Frese & Zapf, 1994; Frese, 2009). Action principles help trainees to develop better search strategies, gain knowledge about different situations, and improve in detecting environmental signals (Frese et al., 2003; Frese & Zapf, 1994; Frese, 2009).

Also, performing actions promotes knowledge about situations and detection of signals. According to action-regulation theory (Frese & Zapf, 1994; Frese, 2009; Hacker, 1998), actions enable people to explore the environment and to acquire knowledge about situational signals that will help with deciding when and how to act (Frese & Zapf, 1994; Frese, 2009). Action-oriented entrepreneurship training requires its trainees to perform actions. During the training, trainees engaged in the start-up of a

[7] Financial bootstrapping activities are strategies that help people to acquire resources without relying on long-term external finance (Winborg & Landström, 2001).

new venture and performed start-up activities in order to successfully start and manage a business. They identified business opportunities, acquired the necessary raw materials, and sold their products or services to real customers. Performing start-up actions and learning through financial action principles enhanced the trainees' financial mental models. The literature provides empirical support that financial action-principles improve trainees' knowledge about financial situations and financial processes, for example about managing finances and keeping account records (Drexler, Fischer, & Schoar, 2011). With the help of financial action principles and through performing actions, trainees of action-oriented entrepreneurship training learned to understand financial situations, detect financial signals, interpret financial information (e.g. working capital, income, expenditures, and revenue), and hence improved their financial mental models.

Furthermore, action-oriented entrepreneurship training supports trainees in developing financial mental models as it enables them to learn through errors (Frese & Zapf, 1994; Frese, 2009; Hacker, 1998; Heimbeck et al., 2003; Keith & Frese, 2008). Learning new actions implies that errors occur during the learning process (Heimbeck et al., 2003; Keith & Frese, 2005, 2008). When actions are not successful and fall short of the standard, people reflect about the causes for why actions were unsuccessful (Frese, 2009). In the training, trainers emphasized that trainees should be open towards errors and make use of the errors to learn about their businesses. They encouraged trainees to reflect on errors, such as running short of working capital or miscalculating profits. Thinking about these errors enabled trainees to enhance their financial mental models further.

In conclusion, action-oriented entrepreneurship training improves trainees' financial mental models because it teaches financial action principles, enables trainees to perform start-up actions, and supports trainees in learning through their errors (Frese & Zapf, 1994; Frese, 2009). We therefore hypothesize that:

> **Hypothesis 2:** Action-oriented entrepreneurship training leads to the development of financial mental models.

3.3.3 The moderating effect of financial mental models on the relationship of capital constraints and business creation

Our theoretical model posits that action-oriented entrepreneurship training has a positive effect on participants' financial mental models and that the training moderates the negative effect of capital constraints on business creation through financial mental models (see Figure 3.1). This corresponds to a mediated moderation model (Grant & Berry, 2011). Accordingly, we first argue for a moderating effect of action-oriented entrepreneurship training in regards to the relationship between capital constraints and business creation. Subsequently, we develop the hypothesis that participants' financial mental models mediate the moderating effect.

We argue for a moderating effect of action-oriented entrepreneurship training on the negative relationship between capital constraints and business creation because the training enabled trainees to effectively perform start-up activities (Gielnik et al., 2015; Glaub et al., 2014)[8]. The training allowed trainees to perform fast, correct, and effective actions regarding the start-up of a new business. Fast, correct, and effective start-up actions allowed trainees to make the best use of their limited resources (Frese, 2009). Consequently, trainees of action-oriented entrepreneurship training waste less (financial) resources during the start-up process than participants, who did not partake in the training. Thus, trainees need less money when starting a business and therefore ware less affected by capital constraints than participants, who do not take part in the training. In conclusion, we argue that action-oriented entrepreneurship training reduces the negative effect of capital constraints on business creation.

> **Hypothesis 3:** Action-oriented entrepreneurship training moderates the effect of capital constraints on business creation in such a way that there is a weak relationship between capital constraints and business creation for training

[8] The present study is different from the study by Gielnik and colleagues (2015) as it does not examine a direct effect of action-oriented entrepreneurship training on business creation, but instead investigates moderating effects of the training on the relationship between capital constraints and business creation (cf. figure 4.1). Capital constraints are seen as a major barrier for business start-ups (Banerjee & Newman, 1993; Blanchflower & Oswald, 1998; Evans & Jovanovic, 1989; Ho & Wong, 2007; Holtz-Eakin et al., 1994; Naudé et al., 2008; Naudé, 2010; van Auken, 1999; van Gelderen, Thurik, & Bosma, 2005). It is thus of great importance to gain insights into factors moderating the negative effect of capital constraints and business creation in order to understand how to facilitate the start-up process for nascent entrepreneurs.

participants and there is a strong and negative relationship between capital constraints and business creation for participants of the control group.

3.3.4 Financial mental model mediates the moderating effect of action-oriented entrepreneurship training on the relationship of capital constraints and business creation

We have argued that participants' financial mental models moderate the negative effect of capital constraints on business creation (Hypothesis 1). Further, we have reasoned that action-oriented entrepreneurship training leads to the development of participants' financial mental models (Hypothesis 2). Finally, we have argued for a moderating effect of action-oriented entrepreneurship training on the relationship between capital constraints and business creation (Hypothesis 3). We have reasoned that capital constraints have less of an effect on trainees than on participants, who do not partake in the training. Combining the previous hypotheses, we argue that participants' financial mental models mediate the moderating effect of action-oriented entrepreneurship training on the relationship between capital constraints and business creation (see Figure 3.1). Research has shown that training exerts long-term effects through cognitive training outcomes (Baldwin & Ford, 1988; Kraiger, Ford, & Salas, 1993). Financial mental models are such cognitive training outcomes that reduce the negative effect of capital constraints on business creation. We therefore hypothesize:

Hypothesis 4: Financial mental models mediate the moderating effect of action-oriented entrepreneurship training on the relationship between capital constraints and business creation.

3.4 Method

3.4.1 Procedure

We conducted a randomized controlled field experiment with a pre-test/post-test design, using a longitudinal design with four measurement waves. Data collection took place in the month before the training (T1), in the month after the training (T2), 12 months after T1 (T3) and 18 month after T1 (T4). For the data collection, we employed

structured, face-to-face interviews and questionnaires at all four measurement waves. We trained interviewers in how to best conduct the interviews: They learned to probe participants' answers, take notes in the interview, use prompts for a better understanding of nonconcrete statements, and prevent interviewer errors, for instance by taking non-verbal signals of the participants into consideration. Two independent raters coded the open questions of the interview according to coding schemes developed by Gielnik and colleagues (2015).

We randomly assigned the participants of the study to a training group and a control group subsequent to T1. The training group received their action-oriented entrepreneurship training directly after the first measurement wave. The control group was a waiting control group and was offered to participate in the training after the fourth measurement wave. The design of the present study enabled us to control for biases due to maturation, history, testing, or self-selection (Cook et al., 1990).

3.4.2 Action-oriented entrepreneurship training

The action-oriented entrepreneurship training is described in detail by Gielnik and colleagues (2015) and Bischoff and colleagues (2014). University lectures of two universities in Kampala (Uganda) delivered the training to four classes of about 50 participants. The training consisted of 12 weekly sessions of three hours. The 12 sessions covered topics from the fields of business administration, psychology and entrepreneurship. Out of the 12 sessions, four sessions explicitly covered finance-related topics: two sessions addressed bookkeeping, one session finding starting capital and one session managing finances. The training taught financial action principles, similar to financial literacy rules of thumb (see also Drexler et al., 2011 for a similar approach). In the session about finding starting capital, trainees learned to identify the amount of starting capital needed for starting their businesses, to identify different sources of capital, to evaluate these sources according to the net present value and return on investment, and to employ financial bootstrapping activities. In the session about managing finances, trainees learned to manage their working capital, debtors, creditors, stock, and cash. Furthermore, they learned how to make forecasts for expected incomes and expenditures, and to conduct a financial analysis to understand why actual results

are different from the forecasts. In the two sessions about bookkeeping, trainees learned to control the finances of their businesses, to keep records of their cash in- and outflows, to prepare an overview of their income and expenditures, to prepare a profit and loss statement, to identify the total costs of their businesses, and to calculate a price for their products or services.

The training was action-oriented and emphasized performing actions. During the training, the trainees engaged in the start-up of a new venture. In the first session of the training, they formed start-up teams of five to seven trainees. During the 12 weeks of the training, trainees started and ran a business with their start-up teams. Their goal was to start and operate a business that would make profit in the 12-weeks of the training period. The trainees performed entrepreneurial actions under real business conditions. They carried out all necessary start-up activities of the entrepreneurial process, from preparing to launch a business to the actual managing of this business. The trainees identified a business opportunity, acquired equipment and raw materials, handled debtors, creditors, produced their products or developed their services, and sold their products or services to real customers. They received feedback from the trainers and their classmates during the weekly sessions. Each start-up team received a starting capital of approximately 100 USD at the end of the first session. The money had to be refunded after the 12 weeks of training. Participation in the training was voluntary and free. Trainees paid a deposit of approximately 10 USD per person to ensure regular attendance in the training sessions. After the 12 weeks of training, the trainees had the deposit refunded to them.

3.4.3 Sample

Participants of the present study were undergraduate, non-business students in their final year from two Universities in Kampala, Uganda[9]. The total number of

[9] Part of the present sample was described in detail by Gielnik et al. (2015). As opposed to Gielnik et al. (2015), the present study included a fourth measurement wave that took place 18 months after T1. The study of Gielnik et al. (2015) collected data at three measurement waves, up to one year after T1. Gielnik et al. (2015) examined the effects of action-oriented entrepreneurship training on action-regulatory factors and business creation. The study showed that the training had effects on opportunity identification and entrepreneurial action and that opportunity identification and entrepreneurial action mediated the relationship of the training on business creation. The results of Gielnik et al. (2015) also revealed that action-regulatory factors mediated the relationship of the training on entrepreneurial action.

students, who applied for the training, was 651: 424 students were from Makerere University and 227 students from Uganda Christian University. Due to limited training capacities, we could only offer training to about 200 students. We randomly assigned 203 students to the training group and 203 students to the control group. At T1, 13 students had to be excluded of the control group because they did not take part in the interviews and questionnaires. We excluded a further nine students of the training group because they participated in less than eight of the 12 training sessions. Accordingly, the initial sample included 384 undergraduate university students, 194 in the training group and 190 in the control group. We used two-tailed t-tests to test for significant differences between the training group and the control group at T1 and did not find any significant differences between both groups on any T1-measures used in this study (all p-values above .09[10]). This suggests that randomization was successful and the training and control group were equivalent before the training.

Directly after the training, 337 students took part in the second measurement wave (T2) (training group: n = 184, control group: n = 153). At T3 (12 month after the first measurement wave), 304 students participated in the interviews and questionnaires (training group: n = 162, control group: n = 142). In the fourth measurement wave (T4), we collected data from 228 students (training group: n= 110, control group: n=118). In

I gratefully received the data of the three measurement waves (T1-T3) from Prof. Dr. Michael Gielnik and Prof. Dr. Michael Frese. I thank Eike Hedder, Andreas Heese, Rebecca Kernert, Marie-Luise Lackhoff, Kay Turski, Thorsten Dlugosch, Melanie von der Lahr, and Kristina Zyla for helping with the data collection.

After T3, I led the study and I collected the T4-data. I thank Svenja Haskamp, Sue Kitimbo and Diana Brée for supporting the T4 data collection.

Due to drop-out over time, the sample size of the present study is smaller than the sample size of Gielnik et al. (2015): The total sample of the present study is 214 students (training group: n= 109, control group: n=105). A similar sample is also used in the study described in the fourth chapter of this dissertation. The sample described in the fourth chapter differs from the sample of this study as it uses a hierarchical structure of the data with 962 observations from 293 participants. In the present study, we only included participants, who took part in both interviews: the T1-interview and the T4-interview. In both studies (chapter three and four), we excluded four participants, since they scored with five standard deviations above the mean as outliers in number of employees of their businesses.

[10] The two-tailed t-test that analyzed differences between the training and control group before the training showed a marginally significant *p*-value for capital constraints (t = -1.72, p = .09). The results showed that the training group had marginal significantly more capital constraints than the control group (Training group: M = 5.15, control group: M = 4.81). This implies an even more rigorous test with regard to our analyses of hypotheses. All other t-tests that analyzed differences in the T1-measures and demographic variables of this study between the control and training group showed *p*-values of above 0.19.

the present study, we only included students, who took part in the T1 and T4 interviews. Additionally, we excluded four students because they scored as outliers, having five standard deviations above the mean in the number of employees they employed in their businesses. Thus, the final sample of the present study consisted of 214 students (training group: n= 109, control group: n=105). To test if the drop-out influenced our sample, we ran statistical analyses at each measurement wave to examine non-response biases. Non-response biases imply that the absence of responses influences the results (Hawkins, 1975; Singer, 2006). First, we used two-tailed t-tests and compared the students of the training group, who dropped out at T4 with the students of the control group that dropped out at T4. We compared the drop-outs of both groups in terms of demographic variables and T1-variables of this study. We did not find any significant differences in the demographic variables and T1-measures between the non-respondents of the training group and the non-respondents of the control group (all p-values above .07[11]). Secondly, we compared the final sample of this study with the initial sample at T1 described in Gielnik et al. (2015). We calculated two-tailed t-tests to analyze if the two samples (the initial sample of 384 students and the sample of this study) differed in any demographic or T1-varibles used in the present study. Results showed no significant differences between the two samples (all p-values above .18). Thus, we deemed non-response to not have an effect on our data.

3.4.4 Measures[12]

Action-oriented entrepreneurship training. Participants of the training group were coded as "1" and participants of the control group as "0". Trainees, who participated in

[11] The two-tailed t-test showed a marginal significant difference in social norms between the T4-drop-outs of the training group and the T4-drop-outs of the control group (t = -1.83, p = .07). The drop-outs of the training group scored slightly higher in social norms (M = 3.90) than the non-respondents of the control group at T4 (M = 3.68). However, two-tailed t-tests showed that the sample of the present study did not significantly differ from the initial sample of 384 students in social norms (t = -0.17, p = 0.87). Also, the final sample of the present study did not show any significant difference in social norms between the training and control group (t = -0.43, p = 0.67). Thus, we conclude that the marginal significant difference in social norms between the non-respondents of the control group and the non-respondents of the training group did not influence our sample in favor of the control or training group. All other two-tailed t-tests analyzing differences in the T1-measures and demographic variables between T4-drop-outs of the control group and of the training group revealed non-significant results (all p-values were above .10). This indicates that the non-response did not influence our sample in favor of the training or control group.

[12] The measures of business creation, action-oriented entrepreneurship training, controls (gender cognitive ability, university and relatives in business) were described in detail by Gielnik et al. (2015).

less than eight training sessions, did not successfully complete the training. Therefore, we excluded trainees, who did not partake in a minimum of eight training sessions.

Business creation. In order to assess business creation we asked the participants before the training (T1) and 18 months after the first measurement wave (T4) in a structured interview if they currently owned a business. We coded the responses as "1" if participants indicated that they owned a business and as "0" if they did not own a business. We validated the answers by asking whether the participants had any employees and whether they made any sales with their businesses. We only coded participants who indicated that they had started a business, had employees and/or made sales with "1".

Capital constraints. We adapted the measure of Wiklund and Shepherd (2003) and used a three item scale to measure capital constraints. We measured capital constraints before the training at T1. The items for the measurement were:

"*If I wanted to start a business, potential sources to get the necessary starting capital would be limited*";

"*If I wanted to start a business, a great impediment for my venture would be a lack of available sources for starting capital*";

"*If I wanted to start a business, getting access to sufficient financial capital would be difficult*".

Participants assessed the three items on a seven point Likert scale ranging from *"strongly disagree"* (1) to *"strongly agree"* (7). The internal consistency of the scale was good (Cronbach's Alpha = .78).

Financial mental models. We used a structured interview at T4 to assess financial mental models. The measurement is based on Baron and Ensley's (2006) study. In the interview, we asked participants to describe an idea for a new product or service, that they had considered but then ultimately rejected and to explain why they eventually rejected this idea. Specifically, we asked, "*please indicate why you rejected this idea*". In case participants had rejected more than one business idea, we repeated the questions for the second and third business idea they had rejected. To code the answers, we

developed a coding scheme based on Baron and Ensley (2006). Baron and Ensley (2006) showed that the mental models of experienced entrepreneurs were richer in content with regard to financial aspects (financial mental model). For instance, experienced entrepreneurs identified and evaluated business opportunities according to aspects of financial success, manageable risks and the capacity to generate positive cash flow. Based on the outcomes of Baron and Ensley (2006), we coded the answers of our participants according to the following four categories: (1) low margins, (2) slow cash flow, (3) long sales cycle, and (4) low return/high investment. We coded participants' answers for each category. Per category, participants received a score of "0" if their answers did not include the respective category, a "1" if their reasons for rejecting the business opportunity were included in the category and a "2" if they gave detailed descriptions about the reasons. Two independent raters had been trained in coding participants' answers. Both raters were blind to the hypotheses and to the experimental condition of the participants (training or control group). Calculations of intraclass correlation coefficients (ICC; Shrout & Fleiss, 1979) showed good inter-rater reliabilities (ICC = .96).

Control variables. At T1, we assessed *gender*, *cognitive ability*, *university*, *relatives in business* and *social norms* as control variables. Research showed that these variables affect business start-ups (Davidsson & Honig, 2003; De Witt & van Winden, 1989; Krueger, Reilly, & Carsrud, 2000; Meek, Pacheco, & York, 2010; Van Praag & Cramer, 2001; Wang & Wong, 2004). The literature provides empirical evidence that gender has an influence on the process of business creation (Wang & Wong, 2004). For this reason, we included gender in our study. We asked participants in the structured interview to indicate their gender (*female* = 0, *male* = 1). Since participants studied at two different universities, we also asked them to indicate at which university they studied (*Makerere University* = 0, *Uganda Christian University* = 1). Furthermore, research revealed that having relatives, who own a business influences participants' business creation (Davidsson & Honig, 2003; Wang & Wong, 2004). Therefore, we assessed whether participants had relatives who owned a business (*yes* = 1, *no* = 0) and used it as a control variable in our study. In addition, we controlled for social norms regarding entrepreneurship as the social context plays a crucial role in business creation

(Krueger et al., 2000; Meek et al., 2010). Based on Krueger and his colleagues (2000), participants of the present study answered six items on a five point Likert scale ranging from *"not at all"* (1) to "*absolutely"* (5). Example items were:

„*Would family and friends want you to start your own business?*";

"*Do most people who are important to you think you should become self-employed?*";

"*The people in my life whose opinion I value are self-employed*".

The mean of the six items formed the score for the measure of social norms. The internal consistency of the scale was good (Cronbach's Alpha = .79). Furthermore, research showed that cognitive ability has an impact on business creation (De Witt & van Winden, 1989; Van Praag & Cramer, 2001). Thus, we controlled for cognitive ability and measured cognitive ability with the digit span test. The digit span test is a subtest of the Wechsler test (Wechsler, 1997) and assesses working memory capacity or general mental ability (Colom, Rebollo, Palacios, Juan-Espinosa, & Kyllonen, 2004). Participants have to remember rows of three to nine numbers and repeat them. The interviewers read rows two times forward and two times backward to the participants. The answers of the participants build four items that comprise their memorizing of the rows of numbers two times forward and two times backward. These four items form the scale of cognitive ability. The internal consistency of the scale was good (Cronbach's Alpha = .81).

3.5 Results

3.5.1 Descriptive statistics and inter-correlations of study variables

Table 3.1 presents the correlations and descriptive statistics of variables relevant for the present study. The correlations indicate that action-oriented entrepreneurship training predicted financial mental models (r = .17, p <.05) and business creation at T4 (r = .15, p <.05).

Table 3.1

Descriptive statistics and inter-correlations of the study variables.

	Variable	Time	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.
1	Gender	T1	0.62	0.49									
2	Cognitive ability	T1	2.92	0.95	0.00								
3	University	T1	0.26	0.44	0.05	-0.18**							
4	Relatives in business	T1	0.56	0.50	-0.07	- 0.01	0.00						
5	Social norms	T1	3.83	0.71	0.17*	-0.05	0.06	0.19*					
6	Business creation at T1	T1	0.20	0.40	0.07	0.03	-0.03	0.20**	0.11				
7	Capital constraints	T1	4.99	1.41	0.03	0.08	-0.16*	-0.09	0.10	-0.12^{+}			
8	Training[1]	T1	0.51	0.50	0.01	-0.02	-0.06	-0.02	0.03	-0.09	0.12^{+}		
9	Financial mental models	T4	0.06	0.09	-0.04	-0.01	-0.12^{+}	-0.18**	-0.03	-0.05	0.13^{+}	0.17*	
10	Business creation at T4	T4	0.56	0.50	0.17*	-0.17*	0.14*	0.11	0.04	0.17*	-0.07	0.15*	0.08

Note. [1] Training means action-oriented entrepreneurship training. $^{+}$ p <.10; $^{*}p$ < .05; $^{**}p$ < .01.

3.5.2 Results of testing the hypotheses

In order to test our theoretical model, we followed a procedure that is commonly used for testing mediated moderation (e.g. see in Grant & Berry, 2011). First, we conducted linear regression analyses to test whether the training was significantly related to financial mental models. We conducted regression analyses with financial mental models as the dependent variable and action-oriented entrepreneurship training as the independent variable controlling for gender, cognitive ability, university, relatives in business, social norms, and business creation at T1. Table 3.2 displays the results of the linear regression analyses showing that action-oriented entrepreneurship training had a positive effect on financial mental models ($\beta = 0.16$, $p < .05$). Training accounted for three percent in the explained variance in financial mental models. Thus, the results provided empirical support for hypothesis (H2) that action-oriented entrepreneurship training leads to the development of financial mental models.

In hypotheses H1, H3, and H4, business creation is the outcome, which is a dichotomous variable. We therefore used logistic regression analyses to test the hypotheses. Results provided support for all three hypotheses. First, we tested whether action-oriented entrepreneurship training moderated the effect of capital constraints on business creation at T4 (H3). Results provided support for the hypothesis (H3). We calculated logistic regression analyses with capital constraints as predictor, training as moderator and business creation at T4 as the dependent variable. We included the following control variables: gender, cognitive ability, university, relatives in business, social norms, and business creation at T1. Table 3.3 (Model 1-3) depicts the results of the logistic regression analyses, showing that the interaction between action-oriented entrepreneurship training and capital constraints significantly predicted business creation at T4 ($B = 0.50$, $SE = 0.25$, $p < .05$). Figure 3.2 illustrates the slopes for the training group and control group. Simple slope analyses revealed a marginal significant negative effect of capital constraints on business creation at T4 for the control group ($B = -0.33$, $SE = 0.19$, $t = -1.74$, $p < .10$). For the training group, the relationship between capital constraints and business creation at T4 was not significant ($B = 0.18$, $SE = 0.17$, $t = 1.09$).

Table 3.2

Regression analyses testing the effect of action-oriented entrepreneurship training on financial mental models.

	Financial mental models	
	Model 1 β	Model 2 β
Step 1: Controls		
Gender	0.01	0.00
Cognitive ability	0.01	0.00
University	-0.10	-0.08
Relatives in business	-0.21**	-0.21**
Social norms	0.02	0.01
Business creation at T1	-0.07	-0.05
Step 2: Main effects		
Training[1]		0.16*
R^2	0.06	0.09
ΔR^2		0.03
F	1.94	2.28

Note. Standardized regression coefficients (βs) are reported. [1]Training means action-oriented entrepreneurship training. + p <.10; * p < .05; ** p < .01.

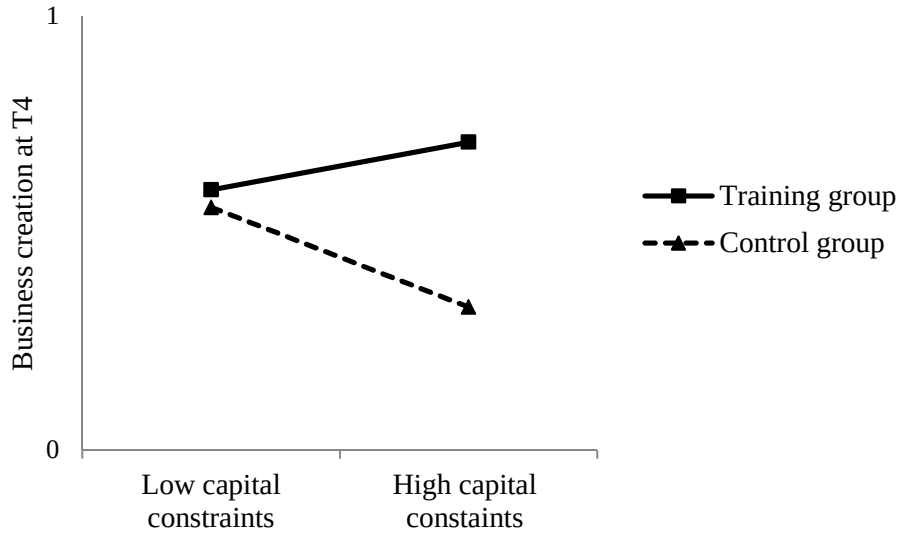

Figure 3.2. The moderating effect of action-oriented entrepreneurship training on the relationship between capital constraints and business creation.

Table 3.3

Logistic regression analyses testing the mediated moderation effect of action-oriented entrepreneurship training and financial mental models on the relationship of capital constraints and business creation.

	Business creation at T4									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	B	SE	B	SE	B	SE	B	SE	B	SE
Step 1										
Gender	0.99**	0.33	0.87*	0.35	0.91**	0.35	0.94**	0.36	0.91*	0.36
Cognitive ability	-0.27	0.17	-0.27	0.18	-0.26	0.18	-0.27	0.18	-0.28	0.19
University	0.36	0.38	0.43	0.40	0.55	0.41	0.59	0.41	0.65	0.42
Relatives in business	0.55·	0.33	0.57	0.35	0.68+	0.36	0.81*	0.38	0.95*	0.39
Social norms	-0.16	0.23	-0.21	0.25	-0.25	0.25	-0.27	0.25	-0.14	0.26
Business creation at T1	0.72+	0.43	0.89*	0.45	0.95*	0.46	0.98*	0.46	0.94*	0.46
Step 2										
Capital constraints			-0.06	0.12	-0.07	0.12	-0.08	0.12	-0.06	0.13
Training[1]			0.85*	0.34	0.86*	0.35	0.80*	0.35	0.67+	0.36
Step 3										
Capital constraints × Training[1]					0.50*	0.25	0.46+	0.25	0.41	0.26
Step 4										
Financial mental models							2.88	2.03	3.43+	2.08
Step 5										
Capital constraints × Financial mental models									3.85*	1.72
Nagelkerke's R^2	0.14		0.18		0.21		0.22		0.26	
Hit rate	65%		72%		69%		60%		65%	
Deviance	224.15		209.46		205.42		203.35		198.07	
Change in Deviance ($\chi 2$)			14.69		4.04*		2.07		5.28*	

Note. Unstandardized regression coefficients (B) and standard errors (SE) are reported. [1]Training means action-oriented entrepreneurship training. + p <.10; * p < .05; ** p < .01.

Secondly, we tested whether financial mental models moderated the effect of capital constraints on business creation at T4 (H1). The findings provided support for the moderating effect of financial mental models. We calculated logistic regression analyses with capital constraints as predictor, financial mental models as moderator, and business creation at T4 as the dependent variable controlling for gender, cognitive ability, university, relatives in business, social norms, and business creation at T1. Table 3.3 (Model 4-5) presents the results. As shown in Table 3.3, the interaction between capital constraints and financial mental models predicted business creation at T4 (B = 3.85, SE = 1.72, $p < .05$). We followed Aiken and West (1991) to plot the interaction and calculated the values of business creation at T4 for one standard deviation above and below the means of capital constraints and financial mental models (cf. Figure 3.3). Simple slope analyses revealed a significant negative effect of capital constraints on business creation at T4 in case of less developed financial mental models (B = -0.40, SE = 0.18, t = -2.26, $p < .05$). In case of well-developed financial mental models, the relationship between capital constraints and business creation at T4 was not significant (B = 0.27, SE = 0.18, t = 1.50).

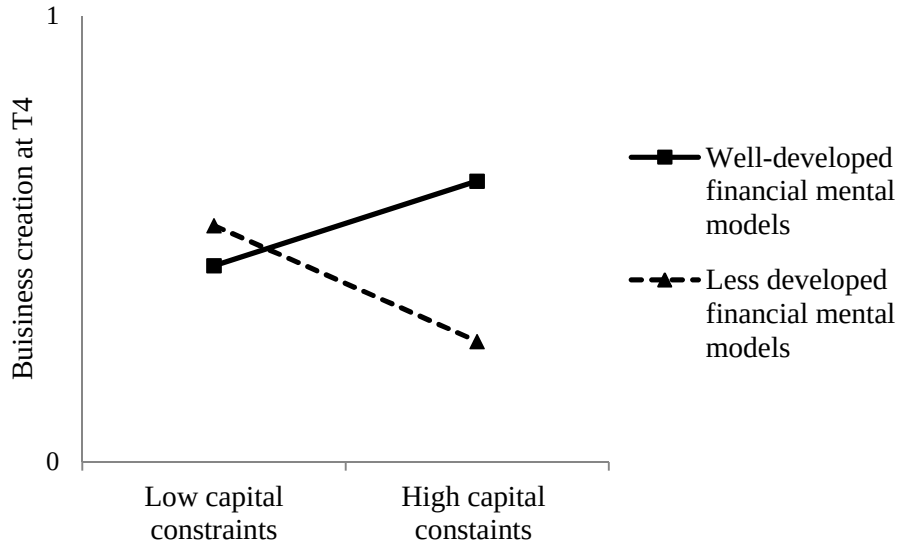

Figure 3.3. The moderating effect of financial mental models on the relationship between capital constraints and business creation

Thirdly, the interaction between financial mental models and capital constraints mediated the moderating effect of training on the relationship between capital constraints and business creation at T4. This is indicated by the fact that the interaction between capital constraints and training became non-significant when the interaction term between capital constraints and financial mental models was entered into the equation (cf. Table 3.3).

Fourthly, in order to analyze the mediation effect of the interaction term of financial mental models and capital constraints further, we used the bootstrapping procedure (Preacher & Hayes, 2004; Preacher & Hayes, 2008). The bootstrapping procedure allows us to test whether the moderating effect of training on the relationship between capital constraints and business creation at T4 was indirect through the effect of financial mental models. If the confidence interval excludes zero, the indirect effect is significant (Preacher & Hayes, 2004; Preacher & Hayes, 2008). Bootstrapping analyses indicated a significant indirect effect (indirect effect = .116, *SE* = .086, lower 95% confidence interval [CI] = .001, upper 95% CI = .373). In conclusion, the results provided support for the hypothesis that financial mental models mediate the moderating effect of action-oriented entrepreneurship training on the relationship between capital constraints and business creation at T4 (H4).

3.6 Discussion

We contribute to the literature by developing a theoretical model that explains under which conditions capital constraints affect or do not affect business creation. There is research that shows that capital constraints are a major barrier impeding successful business creation (Banerjee & Newman, 1993; Blanchflower & Oswald, 1998; Evans & Jovanovic, 1989; Gries & Naudé, 2010; Ho & Wong, 2007; Holtz-Eakin et al., 1994; Naudé et al., 2008; van Auken, 1999; Wiklund & Shepherd, 2003). However, this research does not take into account moderating factors that explain under which conditions capital constraints have or do not have an effect on business creation. The present study investigated moderating effects in order to add to a better understanding of the role of capital constraints in business creation.

We integrated theories from different domains and considered a more comprehensive approach to develop our theoretical model. Our theoretical model considers the interplay of environmental and psychological factors. Drawing on interactional psychology and the interactionist approach (Endler & Edwards, 1986; Gielnik & Frese, 2013; Terborg, 1981; Welter, 2011), the model demonstrates that the interplay of financial mental models and capital constraints better explains business creation than financial mental models or capital constraints alone. Building on the work of Baron and Ensley (2006), we argued that well-developed financial mental models attenuate the negative effect of capital constraints on business creation. Results of our statistical analyses provided support for this hypothesis. Capital constraints negatively affected business creation for participants who had less-developed financial mental models. On the other hand, for participants who had well-developed financial mental models, capital constraints had no effect on business creation. This means that financial mental models buffer the negative effect of capital constraints and facilitate business creation when faced with capital constraints. This finding has at least two important theoretical implications. First, entrepreneurial theories that only rely on an economic perspective are not sufficient to explain business creation. Capital plays a role in the entrepreneurial process but whether or not capital constraints actually impede business creation depends on individual characteristics, such as financial mental models. Secondly, our finding that financial mental models are an important moderator in our theoretical model contributes to the literature on cognitions in entrepreneurship. Scholars have emphasized that a cognitive perspective provides important insights into entrepreneurship (Baron, 2004; Grégoire, Corbett, & McMullen, 2011; Mitchell et al., 2007). For example, Baron and Ensley (2006) have shown that experienced and novice entrepreneurs differ in their mental models. While experienced entrepreneurs focus on financial aspects when identifying and evaluating opportunities, novice entrepreneurs are more likely to rely on aspects of novelty or potential to change the industry. We add to this line of research by showing that financial mental models have predictive value insofar as financial mental models buffer the effect of capital constraints on business creation. Financial mental models are an important cognitive construct that influences whether or not capital constraints have a negative effect on entrepreneurs.

Apart from the buffering effect of financial mental models, our findings also showed that action-oriented entrepreneurship training moderated the negative effect of capital constraints on business creation. Based on action-regulation theory (Frese & Zapf, 1994; Frese, 2009; Hacker, 1998), we argued that action-oriented entrepreneurship training attenuates the negative effect of capital constraints on business creation. The results of our study provided empirical support for this hypothesis. Action-oriented entrepreneurship training had a significant moderator effect on the negative relationship between capital constraints and business creation. Capital constraints had a negative impact on business creation for participants who did not receive the training (control group). The negative effect of capital constraints on business creation disappeared for participants, who partook in action-oriented entrepreneurship training (training group). For the training group, capital constraints did not have a negative impact on business creation. The results imply that action-oriented entrepreneurship training helps to deal with problems that come along with capital constraints. Furthermore, results of our study empirically supported our hypothesis that action-oriented entrepreneurship training buffers the negative effect of capital constraints on business creation through financial mental models. Action-oriented entrepreneurship training led to the development of financial mental models. Participants of the training developed a deeper understanding of financial cues and learned how to interpret financial information, which should translate into efficient actions in the start-up process. Being more efficient in the start-up process means wasting fewer resources; this in turn implies that less financial capital is required. Capital constraints are thus less of a problem because trainees are able to make effective use of the little capital they have to accomplish the start-up process nonetheless.

Our findings in regards to the effects of action-oriented entrepreneurship training have at least two important theoretical implications. First, deviated from current thinking in the literature, which states that an improved access to capital is the major solution for unfavorable capital conditions (Blanchflower & Oswald, 1998; De Mel et al., 2008; Evans & Jovanovic, 1989; Ho & Wong, 2007; van Auken, 1999; Wiklund & Shepherd, 2003), our study reveals that training is an additional factor that helps in dealing with capital constraints. Action-oriented entrepreneurship training led to the

development of financial mental models and this diminished the negative effect of capital constraints on business creation. Our study contributes to the literature because it contradicts common thinking and disagrees with the Nobel peace laureate, Muhammad Yunus, who states that instead of teaching people in developing countries new skills, we should provide them access to capital (Yunus, 1999, p. 140). Our study leads to the conclusion that training people in developing countries supports these people in successfully starting new businesses despite the fact that they face severe capital constraints. Secondly, our findings indicate that action-oriented entrepreneurship training facilitates the development of financial mental models. So far, research has mainly focused on entrepreneurial experience as an antecedent of developing financial mental models (Baron & Ensley, 2006). Our study supports an action-regulation theory approach by showing that learning through action in a training context contributes to the development of cognitive structures that are helpful in the venture creation process (Frese, 2009).

3.6.1 Strengths and limitations

The strength of the present study is its design. To test our theoretical model, we conducted a randomized controlled experiment using a pre-test/post-test design. Entrepreneurship scholars have called for randomized experiments to better understand the process of starting a business (Bruton et al., 2013; Bruton, 2010; Glaub & Frese, 2012; Martin et al., 2013; McKenzie & Woodruff, 2012; Reynolds, 2012). Randomized controlled experiments are a valuable approach because this design overcomes several methodological limitations (Banerjee & Duflo, 2009; Cook et al., 1990; Duflo et al., 2007). For instance, a randomized controlled experiment allows researchers to control for history, maturation, testing and self-selection. This means that effects of economic and regulatory conditions, effects of trainees' natural development, effects of learning through responses during the assessment, and effects of trainees' preexisting inclination towards entrepreneurship do not bias the findings of the study (Cook et al., 1990; McKenzie & Woodruff, 2012).

A potential limitation of the present study is the student sample. University students have high levels of human capital. They receive the highest level of education

and have the most years of school education. Thus, their level of human capital is higher than that of most of the country's population. Furthermore, they are also relatively young and are at the starting point of entering their occupational careers. We argue that our findings are also applicable to different age groups and people with lower human capital for two reasons: Firstly, action-oriented entrepreneurship training teaches action principles and hence improves trainees' financial mental models. Action principles are "rules of thumb" that imply that the training content is taught in a simple and action-related way (Frese & Zapf, 1994). This approach is similar to teaching rules of thumb as described in Drexler and colleagues' (2011) study. It avoids complexity and providing trainees with complex theories which means that a high level of education is not a requirement for its success (Drexler et al., 2011; Frese, 2009). Secondly, we developed the training for non-business students. This implies that the training targets students, who do not have any knowledge in business. We adjusted the training, in such a way that beginners in the field of entrepreneurship can also follow it. Since the training content is presented in a simple manner with the help of action principles and the training is developed for people, who do not have any former business knowledge, we argue that participants with lower human capital or older trainees will also benefit from it. We thus reason that the training is able to increase financial mental models of trainees' with lower human capital or older trainees. However, future research needs to investigate whether results of the present studies also hold true for samples with different levels of human capital and different age groups.

Furthermore, the students of the present study lived in a country (Uganda) that has the second highest total entrepreneurial activity (TEA) according to the Global Entrepreneurship Monitor Report 2014 (Singer, Amorós, & Arreola, 2015). In addition, Uganda has high rates of opportunity entrepreneurship, which is uncommon for developing countries (Namatovu, Balunywa, Kyejjusa, & Dawa, 2011). It is possible to argue that participants of our study are more strongly inclined to engage in entrepreneurship than persons in other contexts. However, research has shown that action-oriented training is effective in changing students' cognitions in different contexts (Barr et al., 2009; Davidsson & Honig, 2003; Rasmussen & Sørheim, 2006).

We therefore argue that our results are generalizable and also hold true in other contexts.

A further potential limitation is that students voluntarily applied for the training. It is possible to argue that students who apply for entrepreneurship training are more interested in entrepreneurship than students, who did not apply. Therefore, it is possible that our results only apply for participants who are generally interested in entrepreneurship. However, we think that particularly people who are generally interested in entrepreneurship might engage in the entrepreneurial process and therefore this bias has little effect on our theoretical model. The theoretical model should hold for nascent entrepreneurs.

Additionally, the measurement of financial mental models potentially limits the interpretation of our results. Financial mental models were only measured 18 months after the training. Unlike any other construct of the present study, we did not measure financial mental models before the training. We argue that this does not affect our interpretation of the effect of the training on financial mental models as we randomly assigned the participants to the training group and the control group. Due to the randomization, we can assume that there was no difference in financial mental models between the groups before the training. We are confident that the groups were equivalent before the training because we did not find a significant difference between the training and control group in the other measures. We measured financial mental models sometime after the students had graduated from university (T4) because the measure of financial mental models depends on the rejection of business opportunities (Baron & Ensley, 2006). We measured financial mental models by rating participants' reasons for having rejected business opportunities within the last year. It is unlikely that university students would have rejected many business opportunities during the time of their studies. It is more likely that they identify and reject business opportunities after they have finished their studies (e.g., at T4). Accordingly, we took the measurement after students had started their occupational careers and engaged in business activities.

3.6.2 Future research

Our study offers several avenues for future research. First, we think it is promising to continue adopting an interactionist perspective in entrepreneurship. We showed that individual and environmental characteristics interacted in predicting business creation. Other research has taken a similar approach. For example, Hmieleski and colleagues have examined how environmental characteristics in terms of environmental dynamism interacted with individual characteristics, such as optimism and leadership, in predicting entrepreneurial performance (Hmieleski & Baron, 2009; Hmieleski & Ensley, 2007). Future research focusing on capital constraints could investigate how other individual factors help entrepreneurs accomplishing the venture creation process even when suffering from capital constraints. Specifically, we think that individual action strategies to deal with resource constraints are particularly promising in this regard. Action strategies, such as bricolage or effectuation, provide approaches to create a business with limited resources. Bricolage means making do by creatively combining the resources at hand (Baker & Nelson, 2005). Effectuation emphasizes using available means in terms of who you are, what you know, and who you know (Sarasvathy, 2001). Research investigating the interaction between environmental and individual characteristics would contribute to developing more integrated theories of entrepreneurship.

Secondly, we think that examining the cognitive structures of entrepreneurs and how these structures are developed is a promising approach to promote entrepreneurship. We found that financial mental models play an important role in the entrepreneurial process and that action-oriented entrepreneurship training promotes the development of such mental models. Other research has examined cognitive biases, decision making, and information processing to explain entrepreneurship (Busenitz & Barney, 1997; Gielnik, Krämer, Kappel, & Frese, 2014; Shepherd, Williams, & Patzelt, 2015). Research on cognitions in entrepreneurship would benefit from investigating not only how these factors predict entrepreneurship but also the antecedents of such cognitive factors and processes. Apart from training, research suggests that other forms of learning, for example deliberate practice, contribute to developing cognitive structures that allow entrepreneurs to excel (Baron & Henry, 2010; Unger, Keith,

Hilling, Gielnik, & Frese, 2009). Thus, although research on cognitions in entrepreneurship has made a leap forward, there are still open questions regarding the origins and development of entrepreneurial cognitions (Grégoire et al., 2011).

Thirdly, future research can build on our study and investigate additional factors through which entrepreneurship training exerts a positive effect. Meta-analytic evidence has shown that entrepreneurship trainings are effective (Martin et al., 2013). However, it is still unclear through which processes entrepreneurship training has a positive short- and long-term effect on entrepreneurship (Martin et al., 2013). Our study showed that well-developed financial mental models are an important outcome of entrepreneurship training as financial mental models attenuate the negative effect of capital constraints on business creation. Previous research has focused on other mechanisms, such as action-regulatory or emotional/inspirational factors (Gielnik et al., 2015; Souitaris, Zerbinati, & Al-Laham, 2007). Research investigating additional mediating and moderating mechanisms through which entrepreneurship training affects business creation would contribute to developing a comprehensive theory of entrepreneurship trainings. Such research could build on theoretical models of training research that has clustered potential training outcomes according to cognitive, skill-based, and affective categories (Kraiger et al., 1993).

Finally, we suggest continuing with studies on entrepreneurship in developing countries. Entrepreneurship is an important factor for economic growth and wealth creation (Audretsch & Keilbach, 2004; Carree & Thurik, 2003, 2008; Mead & Liedholm, 1998; Reynolds, 2012; Thurik et al., 2008; van Stel et al., 2005; van Stel & Storey, 2004). However, little is known about entrepreneurship in emerging economies and developing countries (Bruton et al., 2008; Naudé, et al., 2008). Research that contributes to a better understanding of entrepreneurship in developing countries is helpful for practitioners and politicians who work toward alleviating poverty and enhancing economic development. Furthermore, such research is also helpful to develop theories of entrepreneurship that are applicable across the globe and not only in Western societies, which form less than 5% of the world's population (Arnett, 2008).

3.6.3 Practical implications and conclusions

The present study suggests that action-oriented entrepreneurship training reduces the negative effect of capital constraints on business creation through financial mental models. This implies that action-oriented entrepreneurship training can help trainees to overcome the barrier capital constraints poses on them by supporting them in developing financial mental models. Diverging from the common thinking that improved access to capital is the major solution for overcoming capital constraints (Blanchflower & Oswald, 1998; De Mel et al., 2008; Evans & Jovanovic, 1989; Ho & Wong, 2007; van Auken, 1999; Wiklund & Shepherd, 2003), the findings of our study suggest that action-oriented training is a possible solution for enhancing business creation in environments when capital constraints are an issue. Thus, the findings of our study are relevant for practitioners and policy makers.

Our study suggests that practitioners and policy makers should promote the implementation of action-oriented entrepreneurship training. They should not only focus on facilitating access to capital, but also on improving entrepreneurship education. The implementation of action-oriented entrepreneurship training is less cost-intensive and can easily be integrated into the educational system. Universities, secondary schools and other educational institutions can apply action-oriented entrepreneurship training at minimal costs and integrate it in their curriculum. This way, educational institutions promote the development of learners' financial mental models and thus teach their learners how to start businesses even though they are facing capital constraints. Furthermore, action-oriented entrepreneurship training does not aim at providing complex theoretical knowledge. The method of action-oriented entrepreneurship training implies teaching action-principles (rules of thumb) and promoting learning through action. Similar to Drexler and colleague's (2011) study, the objectives of the training are to provide knowledge in a simple form of teaching. This implies that not only university students are able to take part in the training, but also people, who are educated to a lower level than university students are. Thus, the training can for example also be applied to older people, people living in rural areas and school drop-outs. Therefore, action-oriented entrepreneurship training is a possible means to enhance financial mental models of less educated people. Thus, to promote the

development of financial mental models, policy makers and practitioners should consider implementing action-oriented entrepreneurship training.

CHAPTER 4

Getting there in the long run: A career development perspective on effects of entrepreneurship training on business creation

4.1 Abstract

We build on a career development perspective and develop a theoretical model that examines the effect of action-oriented entrepreneurship training on participants' careers over time. Our theoretical model implies that people follow a multidirectional career path with varying sequences between employment and self-employment. We hypothesize that action-oriented entrepreneurship training leads to business creation over time through employment and employment income. Based on the protean career concept, we argue that the effect of training on employment and employment income is particularly strong for participants who have high control aspiration. We conducted a longitudinal randomized field experiment with four measurement waves over a period of 21 months. Our sample comprised 962 observations from 293 students from Uganda. To test our hypotheses, we conducted growth models and hierarchical linear regressions examining lagged effects. Results showed that action-oriented entrepreneurship training had effects on employment and employment income over time. Furthermore, results provided empirical support for the moderating effect of control aspiration on the relationship between training and employment as well as between training and employment income. Additionally, we calculated hierarchical linear regressions testing combined lagged effects. Results revealed that employment and employment income predicted business creation over time. The findings suggest that action-oriented entrepreneurship training increases participants' employability and enables them to earn employment income, which leads to business creation in the long term. [13]

[13] I gratefully received the data of the three measurement waves (T1-T3) from Prof. Dr. Michael M. Gielnik (Leuphana University of Lüneburg) and Prof. Dr. Michael Frese (National University of

4.2 Introduction

Entrepreneurship education and training is effective in increasing entrepreneurial attitudes, start-up rates, and performance (Martin et al., 2013). In particular, action-oriented training (i.e., programs which put a particular focus on performing start-up activities and starting a business during the intervention) is considered to be highly effective in promoting entrepreneurship (Barr et al., 2009; Gorman, Hanlon, & King, 1997; Oosterbeek, van Praag, & Ijsselstein, 2010; Pittaway, Missing, Hudson, & Maragh, 2009; Rasmussen & Sørheim, 2006). However, our understanding of how and under which conditions action-oriented entrepreneurship training exerts an effect is limited. In their meta-analytic overview, Martin et al. (Martin et al., 2013) concluded that most of the studies evaluating the impact of entrepreneurship education and training do not develop a solid theoretical grounding which means that there is only little theoretical explanation for why there is a positive effect. Furthermore, in their systematic review of the entrepreneurship education literature, Pittaway and Cope (Pittaway & Cope, 2007) found that many evaluation studies focus only on short-term outcomes. They noted that entrepreneurship education has a positive effect on entrepreneurial intention and propensity. However, it remains unclear to what extent these impacts convert into effects on becoming self-employed and starting a new

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Singapore and Leuphana University of Lüneburg). Prof. Dr. Michael Frese and Prof. Dr. Michael Gielnik set up the study and its design from T1 to T3. In addition, together with lecturers from Makerere University Business School, Makerere University, Uganda Christian University and Kyambogo University, Prof. Dr. Michael Frese and Prof. Dr. Michael M. Gielnik developed the training. Regarding the development of the training, I provided input for the development of the training session "business opportunity identification" and conducted a pre-study that provided insights relevant to this training session.

After T3, I led the study: I conceptualized the study and the paper, composed the measurements, collected the T4-data, led the rating procedures, interpreted the data, and wrote the paper. Prof. Dr. Michael Frese (National University of Singapore and Leuphana University of Lüneburg) and Prof. Dr. Michael Gielnik provided intellectual input, supported conceptualizing the paper, supported setting up the study, and proofread the paper. Prof. Dr. Michael Gielnik analyzed the data of the paper. I supported the statistical analyses.

I would like to thank Prof. Dr. Michael Frese and Prof. Dr. Michael M. Gielnik for their support. Additionally, I would like to thank them and the lecturers from Makerere University Business School, Makerere University, Uganda Christian University, and Kyambogo University for developing the training. I also would like to express my gratitude to Eike Hedder, Andreas Heese, Rebecca Kernert, Marie-Luise Lackhoff, Kay Turski, Thorsten J. Dlugosch, Melanie von der Lahr, Kristina Zyla, Svenja Haskamp, Sue Kitimbo, and Diana Brée for their support with the data collection.

business in the long term (Pittaway & Cope, 2007). This is unsatisfactory insofar as scholars have pointed out that entrepreneurial intention and propensity are only weak predictors of entrepreneurial behavior and business creation (Davidsson & Honig, 2003; Gielnik & Frese, 2013; Katz, 1990). In conclusion, the literature has established that entrepreneurship education and training have an effect on entrepreneurship (Martin et al., 2013; Pittaway & Cope, 2007). The pathways, through which the positive effects of entrepreneurship education on business creation manifest, however, are yet to be examined.

Recently, Gielnik et al. (2015) have developed a theoretical model based on action regulation theory (Frese & Zapf, 1994; Frese, 2009; Hacker, 1998) to offer an explanation for why and how action-oriented entrepreneurship training has an effect on entrepreneurship. They showed that action-oriented entrepreneurship training had positive effects on opportunity identification and entrepreneurial action. Entrepreneurial action means carrying out start-up activities. Entrepreneurial action and opportunity identification mediated the relationship between training and business creation. Furthermore, the study revealed that the training had positive effects on action-regulatory factors, which mediated the effect of the training on entrepreneurial action. The study offered new insights insofar as it drew on action-regulation theory (Frese & Zapf, 1994; Hacker, 1998; Unger et al., 2011) to provide a theoretical grounding and to link short- and long-term outcomes in a theoretical model. However, their theoretical model did not fully explain the effects of the training on starting a new business. Gielnik et al. (2015) found only a partial mediation, suggesting that besides through entrepreneurial action and opportunity identification, there are additional paths leading from action-oriented entrepreneurship training to business creation.

In this study, we seek to examine an additional path leading from action-oriented entrepreneurship training to self-employment and business creation. We took a career development perspective (Briscoe & Hall, 2006; Direnzo & Greenhaus, 2011; Fouad, 2007) to contribute to a deeper understanding of the effects of action-oriented entrepreneurship training on entrepreneurship. Career development theories describe people's unfolding sequence of work experience over time, including work experience through employment and self-employment (Arthur, Khapova, & Wilderom, 2005;

Haynie & Shepherd, 2011). In line with Pittaway and Cope (2007), we argue that a career development perspective is helpful because the impact of entrepreneurship training goes beyond entrepreneurship-related factors.

Pittaway and Cope (2007) have argued that entrepreneurship education and training also assist in finding employment and contribute to the general employability of students. This means that there are other effects on students' careers besides the effects on self-employment and business creation. So far, the literature has not yet examined these side effects in detail and as a consequence, there are calls in the literature to study the link between entrepreneurship training and students' career success in terms of employment and employment income (Pittaway & Cope, 2007). In our study, we adopt a career development perspective to investigate the effect of action-oriented entrepreneurship training on both employment and self-employment. Specifically, we hypothesize that action-oriented entrepreneurship training has positive effects on employment and employment income. Furthermore, we hypothesize that these effects are particularly strong for training participants who are more likely to take control for their work. This hypothesis is based on the protean career concept which notes that people who are self-directed and take control are more successful in their careers (Briscoe et al., 2006; Briscoe & Hall, 2006; Hall, 1996). Finally, we draw on an economic perspective on entrepreneurship (Evans & Jovanovic, 1989; Ho & Wong, 2007) to hypothesize that employment and employment income predict starting a new business. Our theoretical model thus regards employment and employment income as a career path that links action-oriented entrepreneurship training and business creation. Figure 4.1 presents our theoretical model illustrating the career path from action-oriented entrepreneurship training to business creation via employment and employment income.

We think that our study contributes to the literature in several ways. First, our study contributes to the literature on entrepreneurial careers. We conducted a randomized controlled field experiment to analyze the effects of action-oriented entrepreneurship training on the study participants' career development over time. Scholars have noted that mapping the career trajectories leading to entrepreneurship is important to develop a deeper understanding of the unfolding of entrepreneurial careers

(Dyer, 1994; Katz, 1994). By investigating career success in terms of employment and self-employment, we show that employment and employment income is an important pathway leading from action-oriented entrepreneurship training to self-employment and business creation. We thus provide an analysis of the career dynamics of entrepreneurs and how their career progresses from employment to self-employment.

Secondly, our study contributes to the literature on the evaluation of entrepreneurship education and training. The majority of studies in this area focuses on short-term outcomes and neglects long-term outcomes and the various available career options (Martin et al., 2013; Pittaway & Cope, 2007). We adopt a career development approach to investigate the impact of entrepreneurship training on different career options over the long haul. Our study provides new insights into the effects of entrepreneurship training by covering a time period of 21 months and different career options in terms of employment and self-employment. We showed that over time action-oriented entrepreneurship training had an effect on starting a new business, which can be explained by employment and employment income. Thus, the entrepreneurship training has an impact on business creation that becomes visible after a longer period. Identifying such 'sleeper effects' is important for developing comprehensive theoretical models about effects of entrepreneurship education and training over time.

4.3 Theory

4.3.1 The effects of action-oriented entrepreneurship training on employment and employment income in the long run

In this study, we adopt a career development perspective to argue for our theoretical model (cf. figure 4.1). A career development perspective suggests that careers unfold over time in a non-linear manner (Arthur et al., 2005; Chan et al., 2012). A non-linear career path means that people's careers can move into different directions with varying work sequences (Arthur & Rousseau, 2001; Briscoe et al., 2006; Sullivan & Arthur, 2006). Varying work sequences imply that people change between different

kinds of employment and between employment and self-employment (Arthur, 1994; Briscoe et al., 2006; Briscoe & Hall, 2006; Sullivan & Arthur, 2006). In recent years,

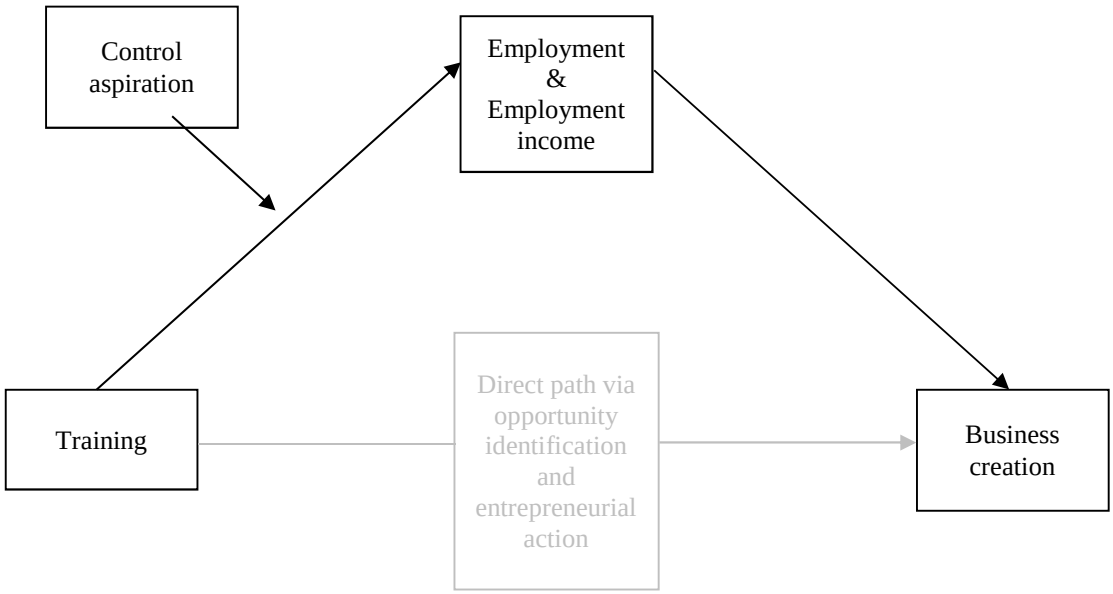

Figure 4.1. The theoretical model of the study[14].

people have become more likely to take this multidirectional approach toward their careers, which means they follow non-linear career paths with different work sequences instead of following a fixed career path (Arthur et al., 2005; Briscoe et al., 2006; Sullivan & Arthur, 2006). A fixed career path means starting a career and following this career, for example starting employment in a company and following a career in the same company (Briscoe & Hall, 2006; Sullivan & Arthur, 2006). Scholars refer to the alternative, multidirectional career paths, as boundaryless, protean, or discontinuous careers (Arthur et al., 2005; Briscoe et al., 2006; Haynie & Shepherd, 2011). Based on this perspective, our theoretical model contains the following main effects: Action-oriented entrepreneurship training leads to employment and employment income. Additionally, employment and employment income predict business creation. We thus argue that action-oriented entrepreneurship training leads to self-employment through a

[14] The direct path via opportunity identification and entrepreneurial action is described by Gielnik et al. (2015).

non-linear career path via employment and employment income. Figure 4.1 illustrates this career path. Our theoretical model thus implies a multidirectional approach in people's careers insofar as people become employed and then add or switch to a sequence of self-employment.

We first hypothesize that our action-oriented entrepreneurship training has positive effects on employment and employment income. Pittaway and Cope (Pittaway & Cope, 2007) have argued that entrepreneurship education and training promote students' employability and help them to find a job faster. There are at least two reasons that explain why action-oriented entrepreneurship training has positive effects on employment and employment income. First, companies look for job candidates that have the same broad skills as they are provided by entrepreneurship training. In recent years, companies have started putting stronger focus on topics such as innovation and corporate entrepreneurship to remain successful in the market (Ireland, Covin, & Kuratko, 2009; Phan, Wright, Ucbasaran, & Tan, 2009). Successful innovation and corporate entrepreneurship requires of managers and employees to show entrepreneurial behavior and to implement entrepreneurial or innovation projects (Kuratko, Ireland, & Covin, 2005; Ling, Simsek, & Lubatkin, 2008). Accordingly, job applicants, who can demonstrate that they have acquired skills in identifying and exploiting business opportunities or in successfully running entrepreneurial projects, are particularly attractive for companies. In fact, there is some preliminary evidence that entrepreneurship education broadens students' career prospects (Duval-Couetil, Reed-Rhoads, & Haghighi, 2012).

Secondly, we argue that our action-oriented entrepreneurship training has positive effects on students' employment and employment income because the training puts particular focus on enhancing students' personal initiative. The training contains a specific module on personal initiative and emphasizes the idea of personal initiative throughout the training. Personal initiative consists of the facets of being self-starting (i.e., initiating action by oneself), persistent (i.e., overcoming barriers), and proactive (i.e., creating something new) (Frese & Fay, 2001). We put particular focus on personal initiative because the concept of personal initiative is conceptually and empirically strongly related to entrepreneurship (Frese, 2009; Gielnik & Frese, 2013; Glaub et al.,

2014). Entrepreneurship is a process in which entrepreneurs identify opportunities and initiate start-up activities, deal with obstacles, and eventually create a new venture to exploit these opportunities (Baron, 2007b; Shane & Venkatamaran, 2000). Key to this process is the entrepreneurs' capability to show high levels of initiative and persistence, that is to take and maintain action to introduce new products or services to the market (Crant, 1996; McMullen & Shepherd, 2006). Research has shown that entrepreneurship training which explicitly covers personal initiative positively influence the trainees' capability to exert personal initiative (Glaub et al., 2014). Similarly, because of the same focus on personal initiative in our action-oriented entrepreneurship training, we argue that the students have higher personal initiative after the training and therefore they are more likely to be successful in finding a job. The general principles of personal initiative can spill over and lead to higher performance in various domains (Frese & Fay, 2001). Students can transfer the general principles of how to show more personal initiative in entrepreneurship to other domains, such as job search and organizational careers. The students should then be more likely to get a job faster and to earn money through employment. Research on people's careers has shown that personal initiative is an important predictor of career success and career advancement (Raabe, Frese, & Beehr, 2007). Brown et al. (2006) have provided evidence that graduate students who are more proactive perform more job search behaviors and are therefore more successful in their job search. They received more follow-up job interviews and more actual job offers (Brown et al., 2006). Furthermore, these students were successful in their jobs and able to move up the career ladder. In fact, there is empirical evidence that proactive employees are more successful in their careers in terms of salary and promotions (Seibert, Crant, & Kraimer, 1999) .

In conclusion, based on our two lines of reasoning, we hypothesize:

Hypothesis 1a: Action-oriented entrepreneurship training has a positive effect on employment.

Hypothesis 1b: Action-oriented entrepreneurship training has a positive effect on employment income.

4.3.2 The moderating effect of control aspiration on the relationship of action-oriented entrepreneurship training and employment/employment income over time

We further hypothesize that the effect of action-oriented entrepreneurship training on employment and employment income is stronger for students who take control and responsibility for their work as opposed to students who do not take control and responsibility for their work. Specifically, we hypothesize that control aspiration moderates the effect of action-oriented entrepreneurship training in so far that the effect is stronger for students with high control aspiration and weaker for students with low control aspiration. Control aspiration is a construct that describes to which extent individuals want to take control or responsibility for their work (Frese, Garst, et al., 2007; Rothbaum, Weisz, & Snyder, 1982). We illustrate the moderating effect of control aspiration on the relationship between action-oriented entrepreneurship training and employment or employment income in figure 4.1. Basically, we hypothesize that the effect of the training on students' employment and employment income is stronger for students who take control or responsibility for their work. This means that these students are more likely to show a better transfer of the training content to their employment career. We build the hypothesis of the moderating effect of control aspiration on a combination of arguments from transfer theory (Baldwin & Ford, 1988) or the boundaryless or protean career perspective (Briscoe & Hall, 2006; Hall, 1996). Transfer theory states that trainees' characteristics influence the transfer of the training; if there is an optimal match between the trainee and the training, successful transfer is more likely to occur (Baldwin & Ford, 1988). Action-oriented entrepreneurship training puts strong focus on taking action. Part of the training methodology is that students actively engage in the entrepreneurial process. They form start-up teams of four to seven students and start a new venture in the course of the 12-week training. In the teams, they identify a business opportunity, gather the necessary resources and equipment to start the business, and manage their business until the end of the training. The students perform all relevant start-up activities, make all necessary decisions, and are thus fully responsible for their new ventures. This means that taking control and responsibility for their work is a central part of the training's methodology. According

to transfer theory (Baldwin & Ford, 1988), students who have high control aspiration match the training methodology and should thus particularly benefit from the training.

Furthermore, students who have high control aspiration should benefit from the training particularly in terms of employment and employment income because they are more likely to adopt a protean or boundaryless career approach (Arthur, 1994; Briscoe & Hall, 2006; Hall, 1996; Sullivan & Arthur, 2006). According to the protean or boundaryless career perspective, people who are in charge of their careers and people who take control of their careers, independent of organizational structures or societal norms, are more successful in their careers (Briscoe et al., 2006; Briscoe & Hall, 2006; Hall, 1996). More specifically, a protean or boundaryless career is characterized by taking responsibility for the career, asserting control over it, and making autonomous career decisions with positive effects on career success (Direnzo & Greenhaus, 2011). Indeed, Raabe et al. (2007) have shown that an active, self-managing approach to one's career has positive effects on career success in terms of faster job transitions and higher pay raises. Accordingly, scholars have argued for people to become more active and self-determined in their careers (Seibert et al., 1999). This argument to become active and self-determined in one's career is important for our theoretical model. Following the theoretical conceptions of a protean or boundaryless career perspective (Arthur, 1994; Briscoe & Hall, 2006; Hall, 1996; Sullivan & Arthur, 2006), we argue that students who have high control aspiration benefit more from the skills learned in the training than students with low control aspiration, because they are more likely to actively manage their careers. Control aspiration, meaning taking control and responsibility for one's work, is a prerequisite of making decisions and taking action and thus facilitates managing the career and making use of the skills acquired in the training (Frese & Fay, 2001; Frese, Garst, et al., 2007).

In conclusion, based on our two lines of reasoning, we hypothesize:

Hypothesis 2a: Control aspiration moderates the effect of action-oriented entrepreneurship training on employment in such a way that the effect is stronger for students who have high control aspiration than for students who have low control aspiration.

Hypothesis 2b: Control aspiration moderates effect of action-oriented entrepreneurship training on employment income in such a way that the effect is stronger for students who have high control aspiration than for students who have low control aspiration.

4.3.3 The effects of employment and employment income on business creation in the long run

Finally, we hypothesize that employment and employment income had positive effects on business creation. A career development perspective argues that people do not follow only one traditional career path but that there are multidirectional transitions between different career paths (Arthur et al., 2005). This means that people commonly switch between employers and also between employment and self-employment as career options. Instead of making one occupational choice, people continually develop and change their career paths. A career development perspective thus provides a general framework for our line of reasoning that employment and employment income have positive effects on business creation. Specifically, we argue that employed participants receive employment income and employment income provides the financial resources that are necessary for pursuing a career as an entrepreneur. Through employment, people can raise the financial resources that are currently beyond their control and are thereby open to new career options in the form of self-employment (Korotov, Khapova, & Arthur, 2011; Winborg & Landström, 2001). According to the entrepreneurship literature, a lack of financial capital is a major factor impeding business creation and venture growth (Evans & Jovanovic, 1989; Ho & Wong, 2007; Patel, Fiet, & Sohl, 2011; van Gelderen, Thurik, Bosma, Thurik, & Bosma, 2005; Wiklund & Shepherd, 2003). Financial capital is necessary for purchasing equipment and raw materials, hiring employees, and evading liquidity problems. Financial capital is thus the vital basis for starting and continuing business operations. Research has shown that providing access to financial capital can be an effective strategy to boost entrepreneurship (Bruton, Khavul, & Chavez, 2011; De Mel et al., 2008). However, getting access to capital is often limited for people who seek to start a business. In fact, these financial constraints are considered to be the most important reason for people to withdraw from

entrepreneurship and to abandon the start-up process (Ho & Wong, 2007). People who seek to start a business often face financial constraints because they lack collaterals and the future of their intended business is too uncertain to receive support from the formal finance sector (e.g., bank loans) (Beck et al., 2008; Ho & Wong, 2007; Wiklund & Shepherd, 2003). This holds true in general and is particularly the case in developing countries where strong barriers to banking services exist (Beck et al., 2008; Khavul, 2010). In order to overcome the barrier of capital constraints, people frequently use bootstrapping strategies to finance their ventures. Bootstrapping strategies mean acquiring financial resources without relying on long-term external debt and equity financing from banks and investors (Winborg & Landström, 2001). Ebben and Johnson (2006) have found that 80-95% of small firms use bootstrapping strategies to finance their operations. Accordingly, scholars have noted that bootstrapping is a key strategy to acquiring resources in the face of financial constraints (Grichnik, Brinckmann, Singh, & Manigart, 2014; Patel et al., 2011). A common bootstrapping strategy is owner financing which includes using income from employment and other assignments to raise the necessary starting capital (Winborg & Landström, 2001). The higher the income that people earn from their employment and assignments, the more likely it is for them to raise sufficient capital to successfully start a new business and enter self-employment (Evans & Jovanovic, 1989). We therefore hypothesize:

Hypothesis 3a: Employment has a positive effect on business creation.

Hypothesis 3b: Employment income has a positive effect on business creation.

4.4 Method

4.4.1 Procedure

In this study, we examined the effects of action-oriented entrepreneurship training (cf., Gielnik et al., 2015). Details about the action-oriented entrepreneurship training can be found in Gielnik et al. (2015) and Bischoff et al. (2014).The training taught trainees knowledge and skills in entrepreneurship. It consisted of 12 weekly sessions, each comprising three hours. The sessions covered topics from three disciplines: psychology, business administration and entrepreneurship. After the first session, trainees built start-

up teams of four to seven people. They started and managed a real business during the course of the training.

To investigate the effects of the training, we conducted a longitudinal study as part of a randomized controlled field experiment. The experimental design with a randomized treatment and control group allowed us to control for maturation, history, testing, and self-selection effects (Cook et al., 1990). The longitudinal design comprised pre-and post-tests with multiple measurement waves after the training. We collected data in the month before the training (T1), in the month directly after the training (T2), 12 months after T1 (T3) and 18 months after T1 (T4). After the first measurement wave, we randomly assigned participants to two groups, a training group and a control group. Participants of the training group took part in the action-oriented entrepreneurship training. They started the training after T1. Participants of the control group were given the opportunity to take part in the training after the completion of T4.

At all four measurement waves, we used structured, face-to-face interviews and questionnaires to collect the data. We conducted training for the interviewers before they carried out the interviews. In the training, we taught them how to avoid errors that occur during interviews. We recommended that interviewers take notes during the interview. We also trained them in techniques that allowed participants to give concrete answers. Interviewers learned to prompt and probe participants' answers, and to pay close attention to non-verbal communication and signals that indicate whether participants' answers were truthful or insincere.

4.4.2 Sample

We conducted our study with non-business students from two universities in Uganda.[15] The participants of the present study were undergraduate students, who were

[15] Part of the present sample was described in detail by Gielnik and colleagues (2015). Differing from Gielnik et al. (2015), the present study includes a fourth measurement wave that took place 18 months after T1. The study of Gielnik et al. (2015) collected data at three measurement waves, up to one year after T1. Gielnik et al. (2015) examined the effects of action-oriented entrepreneurship training on action-regulatory factors and business creation. The study showed that the training had effects on opportunity identification and entrepreneurial action and that opportunity identification and entrepreneurial action mediated the relationship of the training on business creation. Results of Gielnik et al. (2015) also revealed that action-regulatory factors mediated the relationship of the training on entrepreneurial action.

in their final year. 651 students applied for the training. 424 participants studied at Makerere University and 227 students studied at Uganda Christian University. We randomly assigned 203 students to the training group and 203 students to the control group. At T1, thirteen students were excluded, because they refused to take part in the interviews. Additionally, we excluded nine students from the training group because these students took part in less than eight of the 12 training sessions. Therefore, the initial sample comprised 384 participants: 194 of these made up the training group and 190 the control group. In the present study, we only included student, who took part in a minimum of one measurement wave. The number of participants of our study was lower than the initial sample of 384 participants because we used a hierarchical data set with two levels and excluded participants, who had a missing on any level two variable. Our final sample consisted of 962 observations from 293 participants (3.28 observations per participant). Of the 293 participants, 170 were in the training group and 123 in the control group. We conducted statistical analyses to test if the randomization in the this sample was successful in producing two equivalent groups. Two-tailed t-tests revealed that there were no significant differences between the training group and the control group in demographic measures and in the measurements of this study prior to the training (all p-values above .12).

To examine whether the drop-out had an impact on our results (Hawkins, 1975; Singer, 2006), we tested for non-response biases at each measurement wave using two-tailed t-tests. We compared non-respondents of the control group with non-respondents of the training group and did not find any significant differences in the demographic

I gratefully received the data of the three measurement waves (T1-T3) from Prof. Dr. Michael Gielnik and Prof. Dr. Michael Frese. I would like to thank Eike Hedder, Andreas Heese, Rebecca Kernert, Marie-Luise Lackhoff, Kay Turski, Thorsten Dlugosch, Melanie von der Lahr, and Kristina Zyla for supporting the data collection. After T3, I led the study and I collected the T4-data. I thank Svenja Haskamp, Sue Kitimbo and Diana Brée for supporting the T4 data collection.

The total sample of the present study is 293 students (training group: n= 170, control group: n=123). The sample of the present study is smaller than the sample of Gielnik et al. (2015) because we excluded participants, who had a missing on any of the level two variables in the hierarchical data. A similar sample is also used in the study described in the third chapter of this dissertation. The sample of the study described in the third chapter comprised four measurement waves with a total sample of 214 students. The hierarchical structure of the data in the present study differs from the study described in the third chapter and allowed us to have 962 observations from 293 participants. In both studies (chapter three and four), we excluded four participants since they scored with five standard deviations above the mean as outliers in the number of employees of participants' businesses.

background of the participants and in the T1-measures of this study (all p-values above .05[16]). These findings indicate that the drop-out did not influence the sample for the benefit of the training or control group. Additionally, we tested for differences between the sample of the present study and the T1 sample used in Gielnik and colleagues' (2015) study. We used two-tailed t-tests to test for differences between the two samples. The analyses did not reveal any significant differences between the two samples regarding the demographic background or T1-measures of this study (all p-values above .05[17]). Consequently, it can be assumed that the data was not biased due to non-response.

4.4.3 Measures

Action-oriented entrepreneurship training. We coded participants of the training group as "1" and participants of the control group as "0". If participants took part in less than eight sessions of the training, we excluded them from the sample for reason of non-completion.

Business creation. In the structured interview, participants indicated at all four measurement waves whether they currently owned a business. Participants received a "1" if they affirmed and a "0" if they answered that they currently did not own a business. In order to validate participants' answers, we asked them whether they had

[16] T-tests showed that the non-respondents of the control group and the non-respondents of the training group marginal significantly differed in entrepreneurial action before the training (t = -1.98, p < .10) and in employment before the training (t = -1.98, p < .10). However, we argue that these non-respondents do not influence the data in favor of the training or control group, since we did not find any significant differences between the two groups in the present sample in any T1-measure and demographic variable. Further, there were no significant differences between the present sample and the initial sample used in Gielnik et al.'s (2015) study with regard to entrepreneurial action and employment at T1. All further t-tests analyzing differences between the non-respondents of the training group and the non-respondents of the control group in T1-measures or demographic variables did not reveal significant results (all p-values were above .16).

[17] One t-test showed a marginal significant difference between the present sample and the initial sample used in Gielnik et al.'s (2015) study; all other t-tests showed non-significant results (all p-values above .47). We found a marginal significant difference in the variable of the training and control group between the two samples (t = 1.95, p < .10). The sample of this study had a lower means (M = 0.58) than the sample used in Gielnik et al.'s (2015) study (M = 0.51) indicating that the drop-out from T1 to T4 was higher in the control group than in the training group. However, we argue that the higher number of non-respondents in the control group did not bias the data, because the t-tests showed that there were no significant differences between the sample of this study and the sample of Gielnik et al.'s (2015) study in any other T1-measure and demographic variable used in the present study. This suggests that students of both samples have a similar demographic background, and do not differ in the measures used in this study before the training (i.e. control aspiration, employment, employment income, and business creation).

any employees and whether they made any sales with the businesses. Only participants who indicated that they had started a business, had employees and/or made sales were coded with “1”.

Employment: At all four measurement waves, we asked participants in the structured interview, if they were currently employed. To validated participants’ answers, we asked additional questions about their employment. Participants should indicate the title of their job, the most important activities of their job and what business industry their job was in. The questions were derived from studies by Erikson and Goldthorpe (1987) and Hauser and Warren (1997). Participants, who did not have any employment were coded as ”0” while participants, who were employed were coded as “1”.

Employment income: At all four measurement waves, we asked participants in the structured interview if they were employed. If participants were not employed, they received a zero in employment income as they did not earn any salary through employment. If participants, however, were employed, we asked them to indicate their monthly salary in Uganda Shillings (pre-tax). We converted Uganda Shillings into US dollars using the following exchange rates: One US dollar equals 1950 UGX at T1, 2160 UGX at T2, 2055 UGX at T3 and 2260 UGX at T4. Due to the skewed distribution of income, we used the natural logarithm transformation to compute the scale of employment income (Cohen, Cohen, West, & Aiken, 2013). Participants in our study were able to have zero employment income. Scholars suggest to add a constant to the variable (Afifi, May, & Clark, 2003; Cohen et al., 2013) in order to deal with the undefined logarithm of zero. We therefore added a positive constant to employment income (c = 0.01) before applying the logarithm transformation.

Control aspiration: We used a questionnaire to measure control aspiration at T1. The measurement was developed by Frese (1984) (see also Frese, Kring, Soose, & Zempel, 1996 and Frese et al., 2007). Example items were:

“*I do only what I am told to do. Then nobody can reproach me for anything”*;

“*Work is easier if I am always told how to do it”*;

"I prefer to have a supervisor who tells me exactly what I have to do. Then he or she is at fault if something goes wrong".

Participants answered the items on a seven point Likert scale ranging from *"strongly disagree"* (1) to *"strongly agree"* (7). In line with Frese and colleagues (2007), we inverted the coding of the items. There is empirical evidence that supports recoding the items: Research has validated the measurement and has revealed that wanting control and responsibility correlates with the present scale (Frese, Erbe-Heinbokel, Grefe, Rybowiak, & Weike, 1994). The internal consistency of the scale was good (Cronbach's Alpha = 0.79)

Control variables: In the present study, we included the following control variables: *gender*, *cognitive ability*, *university*, *relatives in business* and *social norms*. Researchers argue that these variables have an impact on business creation (Davidsson & Honig, 2003; De Witt & van Winden, 1989; Krueger et al., 2000; Meek et al., 2010; Van Praag & Cramer, 2001; Wang & Wong, 2004). We asked participants in the structured interview at T1 to indicate their gender (*female* = 0, *male* = 1) and to mention at which university they studied (*Makerere University* = 0, *Uganda Christian University* = 1). Participants should provide this information because research shows that gender influences the process of business creation (Wang & Wong, 2004) and because participants studied at two different universities. Additionally, we asked participants at T1 if they had had relatives, who owned a business (*yes* = 1, *no* = 0) because relatives who own a business have an impact on starting one's own venture (Davidsson & Honig, 2003; Wang & Wong, 2004). Furthermore, there is empirical evidence in the literature showing that social norms affect new venture creation (Krueger et al., 2000; Meek et al., 2010). Thus, we included social norms as a control variable using a measurement based on Krueger et al. (2000) to assess social norms. In the questionnaire at T1, participants answered six items on a five point Likert scale (*Not at all* = 1, *Absolutely* = 5). Examples of items were:

"*It is expected of me that I should start a business*";

"*Most people who are important to me are self-employed*";

"*The people in my life whose opinion I value are self-employed*".

The six items were averaged to build the scale of social norms revealing an acceptable internal consistency (Cronbach's Alpha = 0.78). Additionally, we controlled for cognitive ability because research has shown that cognitive ability influences business creation (De Witt & van Winden, 1989; Van Praag & Cramer, 2001). To measure cognitive ability, we applied the digit span test. The digit span test is included in the Wechsler test (Wechsler, 1997) and measures capacity of people's working memory or general mental ability (Colom et al., 2004). The interviewers read rows of numbers and the interviewees repeated the numbers from their memory. The rows included three to nine numbers, which interviewers read forward and backward. They read the numbers twice forward and twice backwards. This formed items. The mean of the four items built the scale of cognitive ability that had an adequate internal consistency (Cronbach's Alpha = 0.78).

Furthermore, we measured *opportunity identification* and *entrepreneurial action* as additional control variables. We controlled for these variables because Gielnik et al. (2015) have shown that these variables are key predictors of business creation. At all four measurement waves, we measured opportunity identification in the structured interview and asked participants to indicate the number of business opportunities they had identified in the last three months. We also asked participants to mention how many business opportunities they had rated as promising for starting a business and how many business opportunities they had pursued in the last three months. The measurement of business opportunity identification was based on Hills et al. (1997), and Ucbasaran et al. (2008). For every question, the maximum of business opportunities should not exceed six in order to allow a normal distribution. Thus, we recoded participants' answers. This approach is similar to Ucbasaran and colleagues' (2008) study. We used the mean of the three items to build the scale that revealed an adequate internal consistency: Cronbach's alpha was $\alpha = 0.67$ at T1, $\alpha = 0.70$ at T2, $\alpha = 0.71$ at T3, and $\alpha = 0.75$ at T4. To measure entrepreneurial action, we used the structured interview and asked participants at all four measurement waves if they currently tried to start a business. If they answered with "yes", we continued the interview and asked what they had done so far to start the business. Participants, who answered that they did not try to start a business, should indicate whether they intended to start a business in the next 12 months. If yes, we

asked them to explain what they had done so far to start the business. Participants, who affirmed that they tried to start a business, should indicate if they intended to start another business in the next 12 months. If they affirmed, we asked them what they had done so far to start this business. Independent raters coded the answers according to 35 start-up activities. The 35 start-up activities were based on studies by Davidson & Honig (2003), Dimov (2007), and Reynolds (2007). Two independent raters coded all answers per start-up activity. If participants gave details about what they had done regarding the start-up activity, the raters coded participants' answers as "2". ". If participants had mentioned the start-up activity raters coded them "1". The raters coded the answers as "0" if participants had not performed any start-up activity. We calculated an average score per participant over all 35 start-up activities. Calculations of intraclass correlation coefficients (ICC; Shrout & Fleiss, 1979) showed good inter-rater reliabilities for all measurement waves: ICC = .90 at T1, ICC = 0.93 at T2, ICC = 0.96 at T3, and ICC = 0.97 at T4.

4.5 Results

Table 4.1 presents the descriptive statistics and zero-order correlations of the variables used in this study. Results showed a significant and positive relationship of action-oriented entrepreneurship training and business creation at T3 (r = .16, p < .05) and a marginal significant and positive relation with business creation at T4 (r = .14, p < .10). These results indicate that there is a relationship between the training and business creation in the long term. Results also revealed that employment at previous measurement waves was significant and positively correlated with business creation at subsequent measurement waves: Employment at T1 was significant and positively related to business creation at T2 (r = .24, p < .01); the same applied for the relationship of employment at T2 and business creation at T4 (r = .16, p < .05). Furthermore, results showed that employment income at T1 was significant and positively correlated with business creation at T2 (r = .24, p < .01). The correlation coefficient of employment income at T2 and business creation at T4 was also significant and positive (r = .17, p < .05). These results indicate that employment income at previous measurement waves was related to business creation at subsequent measurement waves. Additionally, results

Table 4.1

Descriptive statistics and inter-correlations of the study variables.

	Variable	Time	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Gender[a]	T1	0.58	0.49																
2	Cognitive ability	T1	2.93	0.91	-0.04															
3	University[b]	T1	0.26	0.44	0.05	-0.20**														
4	Relatives in business	T1	0.55	0.50	-0.06	-0.02	0.03													
5	Social norms	T1	3.84	0.72	0.14*	-0.06	0.05	0.22**												
6	Training[c]	T1	0.58	0.49	0.08	0.04	-0.06	-0.01	0.08											
7	Control aspiration	T1	4.10	1.29	0.02	0.06	-0.01	0.06	-0.16**	0.02										
8	Opportunity identification	T1	1.61	0.74	0.21**	0.03	0.03	0.19**	0.14*	0.01	0.04									
9	Entrepreneurial action	T1	1.06	1.24	0.10^{+}	0.00	0.12*	0.08	0.07	-0.04	0.15*	0.27**								
10	Employment[d]	T1	0.11	0.32	0.01	0.07	-0.06	0.05	0.08	-0.06	0.02	0.17**	0.04							
11	Employment income[e]	T1	-3.54	3.02	0.00	0.07	-0.06	0.06	0.07	-0.07	0.03	0.17**	0.05	1.00**						
12	Business creation[f]	T1	0.21	0.41	0.01	0.03	-0.01	0.15*	0.10	-0.06	0.17**	0.21**	0.03	0.20**	0.20**					
13	Opportunity identification	T2	1.63	0.81	0.12*	-0.08	0.06	0.03	0.14*	0.22**	0.02	0.32**	0.09	0.07	0.07	0.12^{+}				
14	Entrepreneurial action	T2	1.35	1.46	0.08	0.01	0.03	-0.05	0.09	0.10^{+}	0.10	0.23**	0.28**	0.04	0.04	0.07	0.14*			
15	Employment[d]	T2	0.11	0.31	0.03	0.00	0.01	-0.05	0.05	-0.07	-0.01	0.20**	0.11^{+}	0.76**	0.75**	0.13*	0.12^{+}	0.04		
16	Employment income[e]	T2	-3.56	2.99	0.03	0.00	0.01	-0.05	0.05	-0.08	0.00	0.20**	0.11^{+}	0.77**	0.76**	0.14*	0.11^{+}	0.05	1.00**	
17	Business creation[f]	T2	0.23	0.42	0.04	0.01	0.02	0.16**	0.11^{+}	-0.09	0.18**	0.19**	-0.01	0.24**	0.24**	0.44**	0.19**	0.05	0.17**	0.17**
18	Opportunity identification	T3	1.63	0.69	0.20**	-0.16*	0.06	0.05	0.12^{+}	0.22**	0.04	0.32**	-0.01	-0.02	-0.02	0.08	0.55**	0.14*	-0.01	0.00
19	Entrepreneurial action	T3	2.09	1.60	0.09	0.08	0.04	0.05	0.05	0.07	0.10	0.14*	0.08	0.03	0.03	0.05	0.03	0.24**	0.06	0.06
20	Employment[d]	T3	0.35	0.48	0.15*	-0.01	-0.20**	-0.01	0.01	0.09	0.13*	0.16*	0.11	0.37**	0.37**	0.08	0.08	0.06	0.35**	0.35**
21	Employment income[e]	T3	-1.15	4.76	0.15*	0.00	-0.20**	-0.01	0.00	0.09	0.15*	0.17**	0.12^{+}	0.37**	0.37**	0.08	0.08	0.06	0.35**	0.35**
22	Business creation[f]	T3	0.43	0.50	0.13*	-0.09	0.02	0.16*	0.08	0.16*	-0.01	0.20**	0.14*	0.04	0.04	0.11^{+}	0.20**	0.16*	0.06	0.06
23	Opportunity identification	T4	1.55	0.74	0.15^{+}	-0.01	0.02	-0.01	-0.07	0.06	-0.05	0.31**	0.05	-0.05	-0.05	0.01	0.34**	0.27**	0.07	0.07
24	Entrepreneurial action	T4	1.77	1.65	0.12	-0.12	-0.07	-0.03	0.07	0.00	0.00	0.09	0.20*	0.07	0.08	0.07	0.09	0.34**	0.11	0.11
25	Employment[d]	T4	0.57	0.50	0.16*	-0.07	-0.11	-0.13	-0.06	0.09	0.20**	0.00	0.07	0.27**	0.27**	-0.05	-0.01	-0.07	0.22**	0.22**
26	Employment income[e]	T4	1.04	4.96	0.17*	-0.05	-0.12	-0.12	-0.09	0.08	0.22**	0.03	0.08	0.27**	0.27**	-0.04	-0.01	-0.06	0.22**	0.22**
27	Business creation[f]	T4	0.52	0.50	0.22**	-0.12	0.13	0.10	0.04	0.14^{+}	0.07	0.14^{+}	0.15^{+}	0.08	0.09	0.22**	0.25**	0.09	0.16*	0.17*

Table 4.1

Descriptive statistics and inter-correlations of the study variables.

	Variable	Time	M	SD	17	18	19	20	21	22	23	24	25	26
17	Business creation[f]	T2	0.23	0.42										
18	Opportunity identification	T3	1.63	0.69	0.20**									
19	Entrepreneurial action	T3	2.09	1.60	0.07	0.19**								
20	Employment[d]	T3	0.35	0.48	0.03	-0.06	0.11+							
21	Employment income[e]	T3	-1.15	4.76	0.04	-0.07	0.11+	1.00**						
22	Business creation[f]	T3	0.43	0.50	0.30**	0.31**	0.02	-0.07	-0.08					
23	Opportunity identification	T4	1.55	0.74	0.07	0.31**	0.18*	-0.01	-0.01	0.19*				
24	Entrepreneurial action	T4	1.77	1.65	0.04	0.13	0.16+	0.05	0.06	0.04	0.26**			
25	Employment[d]	T4	0.57	0.50	-0.05	-0.04	0.04	0.40**	0.40**	-0.05	-0.04	0.12		
26	Employment income[e]	T4	1.04	4.96	-0.05	-0.04	0.03	0.42**	0.43**	-0.03	-0.05	0.10	0.98**	
27	Business creation[f]	T4	0.52	0.50	0.29**	0.23**	0.05	0.05	0.07	0.48**	0.23**	-0.08	-0.01	0.01

Note. [a]Gender: 0 = female, 1 = male. [b]University: 0 = University A, 1 = University B. [c]Training means action-oriented entrepreneurship training: 0 = control group, 1 = training group. [d] Employment: 0 = not employed, 1 = employed. [e] Employment income means logarithm of employment income. [f]Business creation: 0 = no business owner, 1 = business owner. + p <.10; *p < .05; **p < .01.

revealed that control aspiration was significant and positively correlated with employment at T3 (r = .13, p < .01) and with employment income at T3 (r = .15, p < .05). The correlation coefficients of control aspiration and employment at T4 (r = .20, p < .01) and the coefficient of control aspiration and employment income at T4 (r = .22, p < .01) were also significant and positive. These findings indicate that control aspiration is positively related to employment and employment income.

4.5.1 Results of growth model analyses

To test our theoretical model, we calculated growth models using random coefficient modeling. We used random coefficient modeling because this analysis allowed us to control for the nested structure in the data (Bliese & Ployhart, 2002). There was dependency in our data, because we assessed the same participants over four measurement waves. If we had ignored the dependency in the data, it would have affected the significance of coefficients in the regression analyses, since standard errors would be overestimated (Bliese & Ployhart, 2002). To calculate the growth models, we created a hierarchical data set with two levels: Level 1 consisted of the variables that changed over time. Level 2 comprised the control variables, the variable of action-oriented entrepreneurship training and control aspiration. The data set consisted of 962 observations from 293 participants (3.28 observations per participant). The 962 observations of the variables at level 1 were nested within the variables at level 2. For our analyses, we used the nlme package of the open source software R and applied restricted maximum likelihood (REML) estimation (Bliese & Ployhart, 2002). In all analyses in the present study, we controlled for gender, cognitive ability, university, relatives in business and social norms.

The first step in growth models with random coefficient modeling is to test whether slopes across units vary significantly (Bliese & Ployhart, 2002). To examine whether the models with random coefficients had better model fits than the models with fixed coefficients, we calculated a Chi²-test with employment as the dependent variable and a further Chi²-test with employment income as the dependent variable. We entered action-oriented entrepreneurship training, time and the controls as independent variables. Results of the Chi²-test with employment as the dependent variable showed

that a model with random coefficients for time was significantly better than a model with a fixed coefficient for time ($Chi^2 = 37.47$, $p < .01$). The model with random coefficients for time had a lower deviance (-2·LogLikelihood = 844.05) than the model with a fixed coefficient for time (-2·LogLikelihood = 881.52). In both models, the coefficient for time was significant and positive (model with random coefficients for time: $B = 0.15$, $SE = 0.01$, $p < .01$; model with a fixed coefficient for time: $B = 0.15$, $SE = 0.01$, $p < .01$). The results implied that employment changed over time and that there were differences between participants in these changes over time. Similar results applied for the test with employment income as the dependent variable: A model with random coefficients for time was significantly better than a model with a fixed coefficient for time ($Chi^2 = 47.89$, $p < .01$). The deviance of the model with random coefficients for time was lower (-2·LogLikelihood = 5194.71) than the deviance of the model with a fixed coefficient for time (-2·LogLikelihood = 5242.59). The results showed a significant and positive coefficient for time in both models (model with random coefficients: $B = 1.45$, $SE = 0.12$, $p < .01$; model with a fixed coefficient: $B = 1.49$, $SE = 0.10$, $p < .01$) indicating that there were differences between the participants in employment income over time.

To examine factors that explain why participants varied in their development of employment and employment income over time, we calculated additional growth models with random coefficient modeling (Bliese & Ployhart, 2002). First, we examined moderating effects of action-oriented entrepreneurship training on the relationship between time and employment in order to test hypothesis H1a, stating that action-oriented entrepreneurship training has a positive effect on employment. We regressed employment on the controls and on the interaction of time and training (see model 1a in table 4.2). Results of the analyses showed a significant and positive coefficient for the interaction of time and training ($B = 0.05$, $SE = 0.02$, $p < .05$), indicating that there was a stronger increase in employment over time for the training group than for the control group. Thus, results provided support for hypothesis H1a. Figure 4.2 illustrates the slopes of the training group and the control group and shows that participants of the training group increased more strongly in employment over time than participants of the control group.

Table 4.2

Growth models with random slopes testing the moderating effects of action-oriented entrepreneurship training and control aspiration on the relationship between time and employment.

	Employment			
	Model 1a		Model 1b	
	B	SE	B	SE
Gender	0.04	0.03	0.04	0.03
Cognitive ability	0.00	0.02	0.00	0.02
University	-0.07^{+}	0.04	-0.06	0.04
Relatives in business	-0.01	0.03	-0.01	0.03
Social norms	0.03	0.02	0.03	0.02
Training[a]	0.00	0.04	0.00	0.04
Time[b]	0.15**	0.01	0.15**	0.01
Control aspiration	0.02	0.01	0.03*	0.01
Time × training	0.05*	0.02	0.05*	0.02
Time × control aspiration			0.02**	0.01
Training × control aspiration			0.00	0.03
Time × training × control aspiration			0.04*	0.02
Deviance (-2·LogLikelihood)	849.87		857.44	
AIC[c]	877.87		891.44	
BIC[d]	945.89		973.99	

Note. Unstandardized regression coefficients (B) and standard errors (SE) are reported. [a] Training means action-oriented entrepreneurship training. [b] Time means four different measurement waves (T1-T4). [c] AIC means Akaike Information Criterion. [d] BIC means Bayesian Information Criterion. $^{+}p < .10$; $^{*}p < .05$; $^{**}p < .01$.

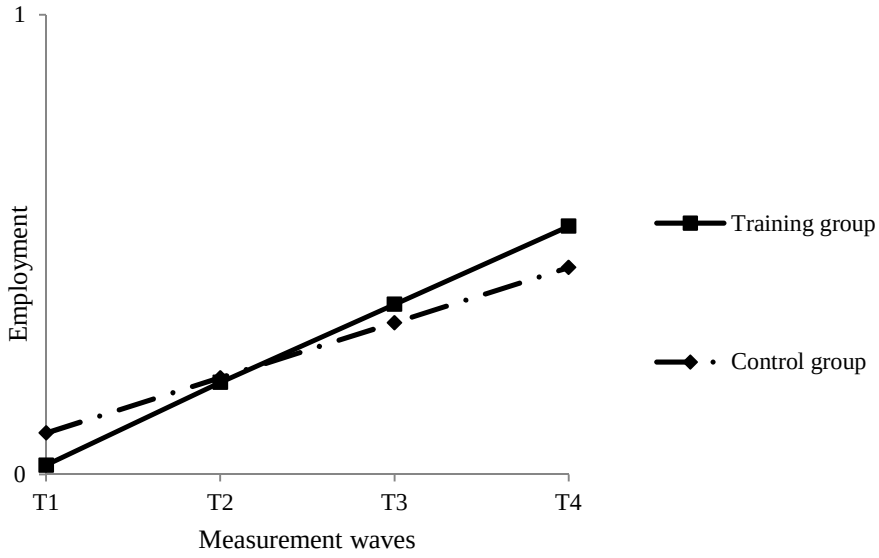

Figure 4.2. The moderating effect of action-oriented entrepreneurship training on the relationship of time and employment.

Secondly, we investigated if action-oriented entrepreneurship training had a moderating effect on the relationship between time and employment income. We calculated a growth model with employment income as the dependent variable and the interaction of time and training as independent variable (see model 2a in table 4.3). Results showed a significant and positive coefficient for the interaction of time and training ($B = 0.46$, $SE = 0.24$, $p < .05$). This provides empirical support for hypothesis H1b, implying an effect of training on employment income over time. Figure 4.3 presents the slopes of the training group and the control group. The slopes show that the training group increased more strongly in employment income over time than the control group. To plot the slopes, we calculated the average income for the training group and the control group for each measurement wave based on the statistical model. We transformed the logarithm scale of employment income back to US dollars to facilitate the interpretation of the graph.

Thirdly, we used growth models with random coefficient modeling to test moderating effects of control aspiration on the relationship between training and employment (hypothesis H2a). We calculated a growth model with employment as the dependent variable and the interaction between time, training, and control aspiration as

Table 4.3

Growth models with random slopes testing the moderating effects of action-oriented entrepreneurship training and control aspiration on the relationship between time and employment income.

	Employment income[e]			
	Model 2a		Model 2b	
	B	SE	B	SE
Gender	0.35	0.33	0.35	0.33
Cognitive ability	0.01	0.18	0.02	0.18
University	-0.64^{+}	0.38	-0.62	0.38
Relatives in business	-0.05	0.34	-0.05	0.34
Social norms	0.30	0.24	0.29	0.24
Training[a]	-0.04	0.35	-0.03	0.35
Time[b]	1.45**	0.12	1.45**	0.11
Control aspiration	0.20	0.13	0.32*	0.13
Time × training	0.46*	0.24	0.45^{+}	0.23
Time × control aspiration			0.27**	0.09
Training × control aspiration			0.02	0.27
Time × training × control aspiration			0.38*	0.18
Deviance (-2·LogLikelihood)	5191.74		5184.35	
AIC[c]	5219.74		5218.35	
BIC[d]	5287. 76		5300.89	

Note. Unstandardized regression coefficients (B) and standard errors (SE) are reported. [a] Training means action-oriented entrepreneurship training. [b] Time means four different measurement waves (T1-T4). [c] AIC means Akaike Information Criterion. [d] BIC means Bayesian Information Criterion. [e] Employment income means logarithm of employment income. $^{+}p < .10$; $^{*}p < .05$; $^{**}p < .01$.

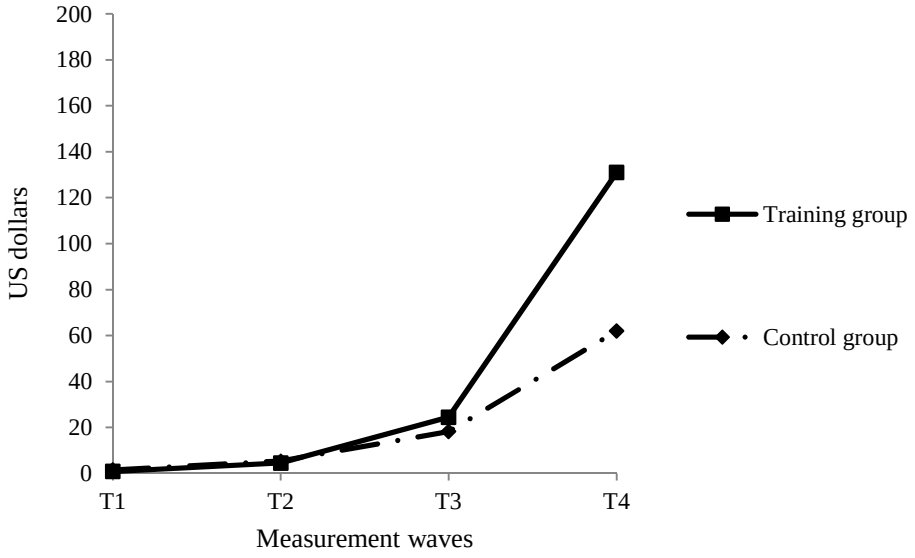

Figure 4.3. The moderating effect of action-oriented entrepreneurship training on the relationship of time and employment income.

the independent variable. Results revealed a significant and positive effect of the interaction of time, training and control aspiration on employment ($B = 0.04$, $SE = 0.02$, $p < .05$). Hence, results provided support for hypothesis H2a. Table 4.2 presents the results of the analysis (see model 1b). To plot the slopes of the training group and the control group, we calculated the values of employment for one standard deviation above and below the means of control aspiration for both groups (see figure 4.4). Figure 4.4 exhibits that participants of the training group with high control aspiration increased most strongly in employment over time.

Fourthly, we tested hypothesis H2b, which posits that control aspiration moderates the effect of training on employment income in such a way that the effect is stronger for participants, who score high on control aspiration than for participants, who have low control aspiration. We calculated growth models with random coefficient modeling and regressed employment income on the interaction of time, training, and control aspiration. Table 4.3 presents the results that provided empirical support for Hypothesis H2b (see model 2b). The results showed a significant and positive

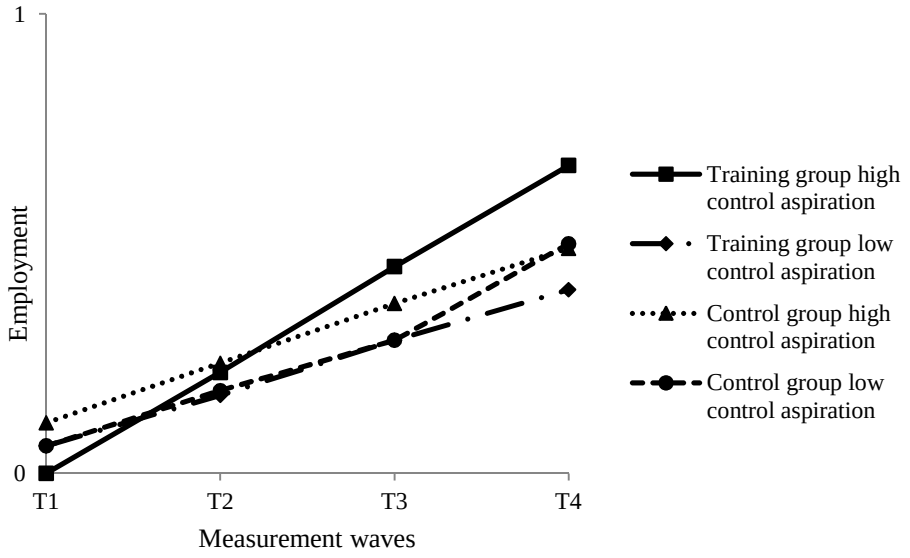

Figure 4.4. The moderating effects of control aspiration on the relationship of time and employment for the training and control group.

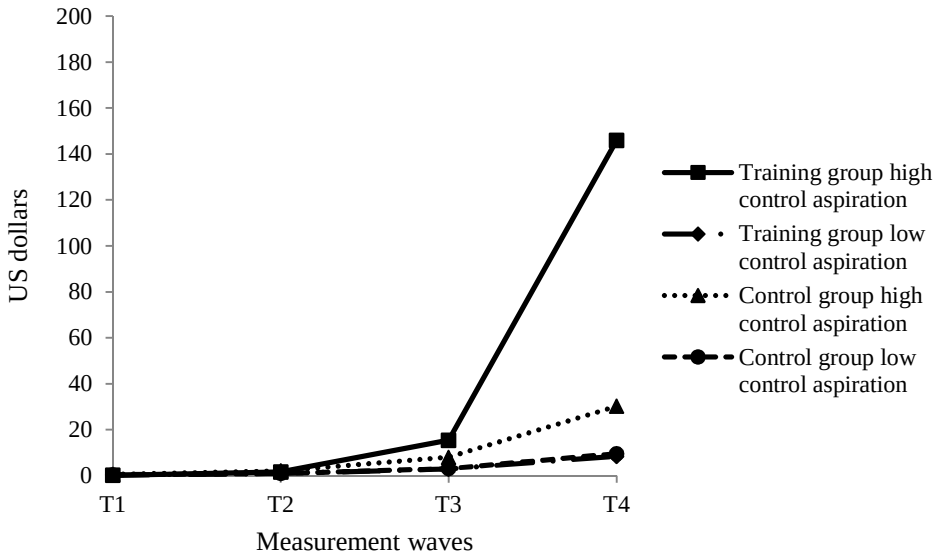

Figure 4.5. The moderating effects of control aspiration on the relationship of time and employment income for the training and control group

coefficient for the interaction of time, training and control aspiration ($B = 0.38$, $SE = 0.18$, $p < .05$). Figure 4.5 illustrates the slopes for employment income over time per training group and control group with high versus low control aspiration. To plot the slopes, we calculated the values of employment income for one standard deviation above and below the means of control aspiration for the training group and for the control group. We recalculated the logarithm of employment income into US dollars to allow for a simplified interpretation of the graph. Figure 4.5 shows that students from the training group with high control aspiration increased most strongly in employment income over time.

4.5.2 Results of hierarchical linear analyses testing combined lagged effects

In further analyses, we examined if employment and employment income had positive effects on business creation (hypotheses H3a and H3b). To test these two hypotheses (H3a and H3b), we conducted hierarchical linear regressions that allowed us to control for the nested structure in the data (observations were nested in participants). We used hierarchical linear regressions for analyzing combined lagged effects. Analyses of combined lagged effects examine the effects of an independent variable at one point in time (e.g. at T2) on a dependent variable at a subsequent point in time (e.g. at T3). These analyses allowed us to test the overall effects of employment and employment income at previous measurement waves on business creation at subsequent measurement waves across the four measurement waves (from T1 to T2, T2 to T3 and T3 to T4) in one analysis. In our analyses, we modeled the variable of action-oriented entrepreneurship training in such a way that it reflected a positive effect from T3 onwards. Modeling the variable for action-oriented entrepreneurship training in such a way is important to account for the delayed effects of training on business creation. We assumed that T3 and T4 would be the earliest points at which business creation would occur. We based our assumptions on research showing that the effects of training on business creation unfold over time and do not occur immediately after the training (Reynolds & Curtin, 2008). Reynolds and Curtin (2008) showed that starting a new venture takes several months. We therefore coded the training variable in such a way

that it included no effect at T1 and no effect at T2 (immediately after the training). The variable captured an effect at T3 and T4.

Table 4.4 and 4.5 present the results of the hierarchical linear regression analyses examining the combined lagged effects. First, we used business creation at subsequent measurement waves ($time_{t+1}$) as the dependent variable and entered the control variables, and the training variable as predictors (see model 3a in table 4.4 and 4.5). Besides the control variables of gender, cognitive ability, university, relatives in business, and social norms, we also controlled for time and business creation. All variables that we used as predictors were included at previous measurement waves ($time_t$). Results of the analyses revealed a significant and positive effect of the training variable ($B = 0.16$, $SE = 0.04$ $p < .01$) (see model 3a in table 4.4 and 4.5).

Secondly, we used business creation at subsequent measurement waves ($time_{t+1}$) as the dependent variable and used the same variables as in model 3a as predictors. We additionally entered employment at previous measurement waves ($time_t$) as a predictor (see model 3b in table 4.4). Results of the analyses showed a significant and positive lagged effect of employment on business creation ($B = 0.10$, $SE = 0.05$, $p < .05$). Thus, results provided empirical support for hypothesis 3a stating that employment has a positive effect on business creation.

Thirdly, we regressed business creation at subsequent measurement waves ($time_{t+1}$) on employment income at previous measurement waves ($time_t$) (see model 3c in table 4.5). We included the same control variables as in model 3a. Results of the analyses showed a significant and positive lagged effect of employment income on business creation ($B = 0.01$, $SE = 0.00$, $p < .05$). Thus, the results provided empirical support for hypothesis H3b stating that employment income has a positive effect on business creation.

Table 4.4

Hierarchical linear regressions testing the combined lagged effect of employment on business creation.

	Business creation[e]			
	Model 3a		Model 3b	
	B	SE	B	SE
Gender	0.08*	0.04	0.08*	0.04
Cognitive ability	-0.02	0.02	-0.02	0.02
University	0.04	0.04	0.04	0.04
Relatives in business	0.10**	0.04	0.10**	0.04
Social norms	0.00	0.03	0.00	0.03
Training[a]	0.16**	0.04	0.17**	0.04
Time[b]	0.06*	0.03	0.05+	0.03
Business creation (previous wave)	0.38**	0.04	0.36**	0.04
Employment			0.10*	0.05
Deviance (-2·LogLikelihood)	749.64		749.73	
AIC[c]	771.64		773.73	
BIC[d]	820.39		826.88	

Note. Unstandardized regression coefficients (B) and standard errors (SE) are reported. [a] Training means modeled variable of action-oriented entrepreneurship training. [b] Time means four different measurement waves (T1-T4). [c] AIC means Akaike Information Criterion. [d] BIC means Bayesian Information Criterion. [e] Business creation means business creation subsequent wave. +p <.10; *p < .05; **p < .01.

Table 4.5

Hierarchical linear regressions testing the combined lagged effect of employment income on business creation.

	Business creation[f]			
	Model 3a		Model 3c	
	B	SE	B	SE
Gender	0.08*	0.04	0.08*	0.04
Cognitive ability	-0.02	0.02	-0.02	0.02
University	0.04	0.04	0.05	0.04
Relatives in business	0.10**	0.04	0.10**	0.04
Social norms	0.00	0.03	0.00	0.03
Training[a]	0.16**	0.04	0.17**	0.04
Time[b]	0.06*	0.03	0.05+	0.03
Business creation (previous wave)	0.38**	0.04	0.36**	0.04
Employment income[c]			0.01*	0.00
Deviance (-2·LogLikelihood)	749.64		753.88	
AIC[d]	771.64		777.88	
BIC[e]	820.39		831.04	

Note. Unstandardized regression coefficients (B) and standard errors (SE) are reported. [a] Training means modeled variable of action-oriented entrepreneurship training. [b] Time means four different measurement waves (T1-T4). [c] Employment income means logarithm of employment income. [d] AIC means Akaike Information Criterion. [e] BIC means Bayesian Information Criterion. [f] Business creation means business creation subsequent wave. +p <.10; *p < .05; **p < .01.

4.5.3 Supplemental analyses

Gielnik and colleagues' (2015) study showed that opportunity identification and entrepreneurial action are important predictors for business creation. The results of Gielnik and colleagues' (2015) study revealed that opportunity identification and entrepreneurial action significantly mediated the relationship between action-oriented entrepreneurship training and business creation. To test if opportunity identification and entrepreneurial action also had an effect on business creation in our model, we ran additional hierarchical linear regression analyses. We examined the combined lagged effects of employment and employment income on business creation and included opportunity identification and entrepreneurial action as control variables. First, we tested if action-oriented entrepreneurship training had a positive effect on business creation. We used business creation at subsequent waves ($time_{t+1}$) as the dependent variable, controls and the training variable as predictors. All predictors were entered at previous measurement waves ($time_t$). Controls comprised gender, cognitive ability, university, relatives in business, social norms, time, and business creation at previous measurement waves. In addition to these control variables, opportunity identification and entrepreneurial action were also included as control variables. Table 4.6 and 4.7 present the results (see model 4a) showing a significant and positive effect of training on business creation ($B = 0.15$, $SE = 0.04$, $p < .01$). Secondly, we tested the combined lagged effect of employment on business creation. Business creation at subsequent measurement waves ($time_{t+1}$) served as the dependent variable, controls and employment as predictors. We used the same controls as in model 4a. Controls and employment were entered at previous measurement waves ($time_t$). Table 4.6 depicts the results of the analyses (see model 4b) revealing a marginal significant and positive lagged effect of employment on business creation ($B = 0.09$, $SE = 0.05$, $p < .10$). Thirdly, we examined the combined lagged effect of employment income on business creation using hierarchical linear regression. We entered the same control variables as in model 4a and added employment income as a predictor. Table 4.7 presents the results of the analysis showing a significant and positive lagged effect of employment income on business creation ($B = 0.01$, $SE = 0.00$, $p < .05$).

Table 4.6

Hierarchical linear regressions testing the combined lagged effect of employment on business creation controlling for opportunity identification and entrepreneurial action.

	Business creation[e]			
	Model 4a		Model 4b	
	B	SE	B	SE
Gender	0.07*	0.04	0.07+	0.04
Cognitive ability	-0.02	0.02	-0.02	0.02
University	0.03	0.04	0.04	0.04
Relatives in business	0.09*	0.04	0.09*	0.04
Social norms	-0.01	0.03	0.00	0.03
Opportunity identification	0.04+	0.02	0.04	0.02
Entrepreneurial action	0.01	0.01	0.01	0.01
Training[a]	0.15**	0.04	0.16**	0.04
Time[b]	0.06*	0.03	0.05+	0.03
Business creation (previous wave)	0.37**	0.04	0.35**	0.04
Employment			0.09+	0.05
Deviance (-2·LogLikelihood)	758.25		758.92	
AIC[c]	784.25		786.92	
BIC[d]	841.82		848.89	

Note. Unstandardized regression coefficients (B) and standard errors (SE) are reported. [a] Training means modeled variable of action-oriented entrepreneurship training. [b] Time means four different measurement waves (T1-T4). [c] AIC means Akaike Information Criterion. [d] BIC means Bayesian Information Criterion. [e] Business creation means business creation subsequent wave. +p <.10; *p < .05; **p < .01.

Table 4.7

Hierarchical linear regressions testing the combined lagged effect of employment on business creation controlling for opportunity identification and entrepreneurial action.

	Business creation[f]			
	Model 4a		Model 4c	
	B	SE	B	SE
Gender	0.07*	0.04	0.07+	0.04
Cognitive ability	-0.02	0.02	-0.02	0.02
University	0.03	0.04	0.04	0.04
Relatives in business	0.09*	0.04	0.09*	0.04
Social Norms	-0.01	0.03	0.00	0.03
Opportunity identification	0.04+	0.02	0.04	0.02
Entrepreneurial action	0.01	0.01	0.01	0.01
Training[a]	0.15**	0.04	0.16**	0.04
Time[b]	0.06*	0.03	0.05+	0.03
Business creation (previous wave)	0.37**	0.04	0.35**	0.04
Employment income[c]			0.01*	0.00
Deviance (-2·LogLikelihood)	758.25		763.07	
AIC[d]	784.25		791.07	
BIC[e]	841.82		853.05	

Note. Unstandardized regression coefficients (B) and standard errors (SE) are reported. [a] Training means modeled variable of action-oriented entrepreneurship training. [b] Time means four different measurement waves (T1-T4). [c] Employment income means logarithm of employment income. [d] AIC means Akaike Information Criterion. [e] BIC means Bayesian Information Criterion. [f] Business creation means business creation subsequent wave. +p <.10; *p < .05; **p < .01.

4.6 Discussion

In the present study, we developed a theoretical model examining the impact of action-oriented entrepreneurship training on participants' career development over time in terms of employment and self-employment. To develop our theoretical model, we took a career development perspective (Briscoe & Hall, 2006; Direnzo & Greenhaus, 2011; Fouad, 2007) and investigated pathways from action-oriented entrepreneurship training to business creation through employment and employment income. Gielnik and colleagues (2015) revealed in their study that action-oriented entrepreneurship training led to business creation through entrepreneurial action and opportunity identification. They showed that entrepreneurial action and opportunity identification mediated the relationship between action-oriented entrepreneurship training and business creation. However, Gielnik and colleagues (2015) could not provide a complete explanation on how action-oriented entrepreneurship training led to new venture creation. They only found a partial mediation, which suggests that there are additional pathways leading from action-oriented entrepreneurship training to business creation. Our theoretical model adds to this line of research by examining such additional career paths. It implies that action-oriented entrepreneurship training leads to business creation through employment and employment income. The findings of our study provided empirical support for our hypotheses that action-oriented entrepreneurship training had an effect on employment and employment income. This suggests that compared to a control group, the training group found employment faster and increased stronger in employment income over time. In addition to this, results of our analyses revealed that employment and employment income predicted business creation in the long run.

Furthermore, results of our supplemental analyses showed that when including the mediating variables of Gielnik and colleagues' (2015) model (opportunity identification and entrepreneurial action) into the hierarchical regressions, our theoretical model still holds. Including opportunity identification and entrepreneurial action led to minor changes in the results: The lagged effect of employment on business creation was marginally significant when opportunity identification and entrepreneurial action were included. The lagged effect of employment income on business creation remained significant when we entered opportunity identification and entrepreneurial action as

control variables. We could not replicate the findings by Gielnik et al. (2015) insofar as opportunity identification and entrepreneurial action were not significant predictors of business creation. A possible reason for this finding is that the importance of opportunity identification and entrepreneurial action might be less strong compared to that of employment and employment income. Financial aspects, such as employment income might play a more important role in the entrepreneurial career path hypothesized in this study than psychological factors like opportunity identification and entrepreneurial action. Employment income provides financial resources that can be used for business creation. Students, who are employed and have more financial capital, might be more able to invest this capital in business creation than students, who do not have jobs. It might be the case that participants who are employed, have sufficient financial resources that allow them to pay for people who perform the necessary start-up activities for the start of a new venture. This would for example imply that participants do not have to perform start-up activities themselves. Additionally, the financial resources might allow participants to invest in businesses or buy businesses and hence become business owners. In Uganda, it is for example common that people provide financial capital for family members, who want to start their own businesses (Balunywa et al., 2013). Thus, it is likely that participants who have access to financial capital, for instance through their employment income, invest in family members' businesses or support a family member that already has identified a promising business opportunity. Further, it is likely that participants who receive employment income pay a family member for carrying out the necessary start-up activities. This would imply that participants who have employment income are not in need for identifying business opportunities or carrying out entrepreneurial actions. Furthermore, sufficient financial capital enables participants to invest in consultants that have profound knowledge in entrepreneurship. These consultants can provide advices regarding profitable business opportunities and about the process of successfully starting a business. Thus, performing entrepreneurial action and identifying business opportunities are less important when participants have access to financial capital, which is the case for participants who are employed.

Our study did not provide empirical findings about which of the two career paths is more promising for business creation, the direct path from action-oriented entrepreneurship training via opportunity identification and entrepreneurial action as described in Gielnik and colleagues' (2015) study or the career paths of the present study leading from action-oriented entrepreneurship training to business creation through employment or employment income. Zacher and colleagues (2012) showed in their study that continuous self-employment and changes from employment to self-employment are two prominent career paths. The study provides empirical support that in particular young people are more likely to follow a career path via employment, whereas older people will rather follow the career path of continuous self-employment. Thus, it is likely that for students the career path of the present study, leading from training to business creation through employment and employment income, is more useful than the direct path to business creation. However, future research should compare the model of Gielnik and colleagues' (2015) study with the model of this study and investigate which career path is more promising and for whom which career path is most suitable. Studies comparing both models will shed light on the question whether entrepreneurship education and training should guide trainees to start businesses immediately or to find employment first.

We think that our study, which examined students' career paths leading from action-oriented entrepreneurship training to business creation via employment and employment income, contributes to the literature in several ways:

First, our study contributes to the literature on entrepreneurial careers. Scholars have called for studies that focus on individuals' career development over time (Arnold & Cohen, 2008). We followed this call and developed a theoretical model that analyzed the effects of action-oriented entrepreneurship training on the development of students' careers over time. Based on a career development perspective, we argued that careers are multidirectional and unfold over time (Arthur et al., 2005; Arthur, 1994; Briscoe & Hall, 2006). This means that instead of following a fixed career path, people change between different jobs and also between employment and self-employment (Arthur & Rousseau, 2001; Briscoe et al., 2006; Sullivan & Arthur, 2006). We examined students' career development regarding entrepreneurship. In line with the career development

perspective, the results of our study showed that, students changed between employment and self-employment in the long term. The findings of our study suggest that a possible way to business creation is through employment. Taking a job in a company allows students to earn a salary and thus to acquire financial resources, which facilitates the start of a new venture. Our study, therefore, indicates that a multidirectional career path is of importance for business creation and that employment can be a useful step on the way to business creation.

Secondly, the findings of our study contribute to research in the field of entrepreneurship education and training. Scholars have called for research that examines the effect of entrepreneurship education and training on students' careers (Pittaway & Cope, 2007; Vanevenhoven & Liguori, 2013). There is little evidence in the literature about the impact of entrepreneurship education and training on participants' entrepreneurial careers (Pittaway & Cope, 2007). Studies in this field of research mainly examine the impact of entrepreneurship education and training on students' entrepreneurial intentions (Hatten & Ruhland, 1995; Lee, Chang, & Lim, 2005; McMullan & Gillin, 1998; Peterman & Kennedy, 2003; Souitaris et al., 2007). These studies argue that entrepreneurial intentions predict business creation. However, there is a lack of evidence that entrepreneurial intentions lead to business creation (Davidsson & Honig, 2003; Katz, 1990). The literature examining students' entrepreneurial careers lacks studies about the impact of entrepreneurship education on students' business creation and neglects the influence that entrepreneurship training has on employment (Pittaway & Cope, 2007). We contribute to addressing this gap in the literature by studying the effects of action-oriented entrepreneurship training on employment and employment income that lead to business creation over time. The findings of our study revealed that action-oriented entrepreneurship training successfully supports students in finding employment and in increasing employment income over time. Our study, therefore, demonstrates that action-oriented entrepreneurship training is able to increase the employability of students and enables them to succeed in their jobs. Furthermore, our study showed that students' employment and their employment income enabled them to start businesses in the long haul. Thus, action-oriented entrepreneurship training

is of value for supporting students' career development, both in term of self-employment and employment.

Thirdly, our study contributes to research in the field of training and transfer of training. The training literature suggests to take trainees' characteristics in to account, since trainees' characteristics influence the effects of training on training outcomes (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Grossman & Salas, 2011; Kraiger et al., 1993; Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012). Research indicates that trainees' characteristics have an impact on the trainees' motivation and transfer ability (Baldwin & Ford, 1988; Burke & Hutchins, 2007; Colquitt, LePine, & Noe, 2000; Grossman & Salas, 2011; Kraiger et al., 1993; Salas et al., 2012). Scholars have called for research that helps to identify for whom training programs are effective (Burke & Hutchins, 2007; Grossman & Salas, 2011; Salas et al., 2012). Our study adds to the understanding on entrepreneurship training by taking into account that trainees' individual characteristics can boost the impact of action-oriented entrepreneurship training on employment and employment income. Building on transfer theory (Baldwin & Ford, 1988) and theories on boundaryless or protean careers (Arthur & Rousseau, 2001; Arthur, 1994; Briscoe et al., 2006; Briscoe & Hall, 2006; Hall, 1996; Sullivan & Arthur, 2006), we identified control aspiration as an important individual characteristic that affects the relationship between training and training outcomes. Specifically, we argued for a moderating effect of control aspiration on the relationship of action-oriented entrepreneurship training with employment and employment income. Results of our study provided empirical evidence for the moderating effect of control aspiration and thus indicate that trainees, who took control and responsibility for their work increased most strongly in employment and employment income over time. In line with theories on boundaryless or protean careers (Arthur, 1994; Briscoe & Hall, 2006; Hall, 1996), the findings suggest that trainees, who have high control aspiration, will be more likely to take control over their careers and be in charge of their careers as an employee. These trainees will, therefore, find employment faster and get promoted faster, which leads to higher income, when compared to participants, who do not want to take control and responsibility for their work. These findings contribute to the training literature because they provide insights into individual characteristics that explain who will

benefit most from action-oriented entrepreneurship training with regard to finding employment and getting employment income.

Fourthly, scholars have criticized that research in the field of entrepreneurship training mainly focuses on short-term outcomes and does not examine effects over time (Martin et al., 2013; McKenzie & Woodruff, 2012; Pittaway & Cope, 2007). Our study adds to the understanding of entrepreneurship training because it examined effects of action-oriented entrepreneurship training over a period of 21 months on both, employment of students and business creation. Scholars call for studies that measure the effects of entrepreneurship training in the long run in order to develop a better understanding of the training's impact (Martin et al., 2013; McKenzie & Woodruff, 2012; Vanevenhoven & Liguori, 2013). This is particularly important since training effects vary over time and some effects take time to unfold (McKenzie & Woodruff, 2012; Reynolds & Curtin, 2008). Thus, researchers have explicitly requested to conduct studies that cover a longer period than the first year after the training (McKenzie & Woodruff, 2012). Additionally, scholars have suggested having a minimum of three measurement waves, in order to examine the temporality of effects and investigate changes over time (Holcomb, Combs, Sirmon, & Sexton, 2010; Ployhart & Vandenberg, 2010). Our study contributes to the literature since it comprised four measurement waves over a period of 21 months and was thus able to provide insights into effects of training that unfold over time. Further, the present study adds to the literature because it investigated the temporality of effects and hence allows unveiling changes in participants' career development over time. Including time in the study and examining the timing of effects contributes to solid theory building and is important in order to draw valid conclusions from empirical findings (George & Jones, 2000; Gielnik, Barabas, et al., 2014; Mitchell & James, 2001; Zaheer, Albert, & Zaheer, 1999).

4.6.1 Strengths & limitations

Scholars have called for more rigorous methodologies in the field of entrepreneurship education in order to examine entrepreneurship training effects (Glaub & Frese, 2012; Martin et al., 2013; McKenzie & Woodruff, 2007; Pittaway & Cope,

2007). Specifically, they suggest that research on entrepreneurship training should comprise a randomized control group design with pre- and post-testing (Martin et al., 2013; McKenzie & Woodruff, 2012). In the present study, we used a randomized controlled field experiment with measurement waves prior to the training and several measurement waves after the training. By employing such a rigorous design, our study overcomes methodological limitations and contributes to the literature in the field of entrepreneurship education.

Research shows that compared to the general population, students are more inclined to entrepreneurship (Krueger et al., 2000). Therefore, a student sample is often viewed as a limitation. However, since we investigated effects of action-oriented entrepreneurship training on career development over time, the student sample is appropriate. Our study comprised a sample of undergraduate students who were in their final year. A student sample is of value for this line of research since students are at the beginning of their careers. They will start developing their careers after they leave university. Thus, a student sample allows scholars to track participants directly at the start of their careers and examine the developments in their careers over time. A student sample is therefore highly useful for research on entrepreneurial careers and career development over time.

A potential limitation of the present study relates to its context. Participants of the study were students in Uganda. In the context of Uganda, it is common that people acquire funding from business angels for the start of new businesses (Namatovu et al., 2011). Business angels are informal investors who provide funds for the start of high-risk ventures and add value to these business through their human or social capital (Politis, 2008; Wetzel, 1983). Uganda scores very high on the number of business angels (Namatovu et al., 2011). This means that business angels are an important source of capital for Ugandan students. It is thus possible that investments from business angels are an alternative source of capital to employment income. This would imply the possibility of an additional career path from action-oriented entrepreneurship training to business creation, which leads through investments from business angels. Such a path is probable since participants learn strategies to acquire financial capital in the action-oriented entrepreneurship training. Looking for investments from business angels is one

strategy taught in the training. In our study, we put the focus on employment income as a source of capital and did not investigate the effects of business angels. Two important arguments support our approach to concentrate on employment income as a key factor for business creation. First, research indicates that the average amount of money provided by business angels in Uganda is low (Namatovu et al., 2011). Business creation seems to be mainly financed by personal resources and resources from family members (Balunywa et al., 2013). This means that employment income as a resource provided by the owners themselves is of high importance for business creation. Secondly, research dealing with the importance of finance in business creation has highlighted income as a crucial factor for successful business creation (Evans & Jovanovic, 1989). Employment income is a key bootstrapping strategy that enables people to acquire starting capital and positively influences business creation (Winborg & Landström, 2001). It is, however, useful that future research examines the role that different bootstrapping strategies play with respect to action-oriented entrepreneurship training and business creation. Answers to these research questions would yield a broader picture on the influence of action-oriented entrepreneurship training on various bootstrapping strategies and different sources of capital. It would also shed light on the question if the effects of training on bootstrapping strategies support business creation by overcoming the lack of starting capital.

A second potential limitation is also related to the context of Uganda. In Uganda, employment and self-employment are not two separate career paths. Self-employment and employment can occur at the same time. Research shows that 18% of young Ugandans who have a full-time employment also own a business (Balunywa et al., 2013). This also applies for part-time employment as 31% of part-time employees are business owners (Balunywa et al., 2013). Research additionally reveals that young people, who own a business are searching for employment at the same time (Balunywa et al., 2013). Scholars may want to criticize that the findings of our study are not generalizable and cannot be applied to countries where people choose to either be employed or self-employed. By taking a career development perspective (Briscoe & Hall, 2006; Direnzo & Greenhaus, 2011; Fouad, 2007), we, however, argue that the findings of our study are generalizable. The Ugandan youth chooses a multidirectional

career path instead of a fixed career path with varying sequences between employment and self-employment. This means that Ugandans are following boundaryless or protean careers (Arthur et al., 2005; Arthur, 1994; Briscoe & Hall, 2006). Research provides support that boundaryless or protean careers frequently occur in western countries (Briscoe & Hall, 2006). In fact, the concept of boundaryless or protean careers is developed on the background of western countries (Arthur & Rousseau, 2001; Arthur, 1994; Briscoe et al., 2006; Briscoe & Hall, 2006; Hall, 1996; Sullivan & Arthur, 2006). Scholars even mention that this cultural background is probably limiting the generalizability of the underlying theories and empirical research with regard to boundaryless or protean careers (Briscoe & Hall, 2006). Our study contributes to this line of research by showing that boundaryless or protean careers are particularly prevailing in developing countries and that these careers are of great importance in the context of entrepreneurship. This also implies that work related sequences as employees are of high importance in entrepreneurial careers and should gain more attention in different fields of research, e.g. research on new venture creation, entrepreneurial careers and entrepreneurship education.

A third possible limitation is that our study did not investigate any influences of mechanisms explaining why action-oriented entrepreneurship training leads to employment and employment income. Gielnik and colleagues' (2015) study provided empirical evidence that action-oriented entrepreneurship training positively affects action-regulatory factors. It is, thus, of interest to examine whether these action-regulatory factors are also of importance in our model. For instance, does the training have effects on employment through these action-regulatory factors? In addition, Gielnik et al. (2015) showed that the training improves opportunity identification. In the present study, we argue that the training leads to employment because it enhances trainees' potential to be innovative. Since innovation is a key aspect for employers, it is possible that trainees who are able to identify innovative opportunities will find employment faster than trainees' who are less able to identify innovative opportunities. Furthermore, we argue that the trainees' find employment faster and are promoted faster than students of the control group, since the training teaches them personal initiative, which may lead to a more proactive behavior. In the present study, we aim at drawing a

broader picture on the different career paths to business creation taking into account employment and employment income. Future research should investigate the influence of psychological factors, such as opportunity identification and personal initiative with regard to the training effects on employment and employment income. This research will help to understand how action-oriented entrepreneurship training leads to employment and provides valuable insights into the usefulness of entrepreneurship education regarding participants' employability. Future research in this area will allow for building more solid theories about entrepreneurship education and career development.

4.6.2 Practical implications and conclusions

Our study suggests that action-oriented entrepreneurship training has important impacts on students' career development. It affects students' employment and their employment income. This implies that action-oriented entrepreneurship training is able to enhance students' employability and allows them to succeed in their jobs. Thus, educational institutions should use action-oriented entrepreneurship training to support learners in developing and succeeding in their careers. Therefore, educational institutions should apply action-oriented entrepreneurship training more frequently. This applies to every educational institution that aims at promoting learners to build their careers, for example universities and colleges, vocational training institutes, and secondary schools (high schools). Our study indicates further that students' employment and employment income leads to business creation over time. Thus, by enhancing students' employability and enabling them to earn employment income, students can be supported to start own businesses in the long run. This means that action-oriented entrepreneurship training should be applied to both groups of participants: those who want to become self-employed and those who want to start a career as an employee. Based on these findings, we also suggest that educational institutions put a stronger focus on educating their learners about multidirectional career paths (Arthur et al., 2005; Arthur & Rousseau, 2001; Arthur, 1994; Briscoe & Hall, 2006; Sullivan & Arthur, 2006). We are of this opinion as our findings showed that different working sequences of employment and self-employment were important parts of the career paths leading to

successful entrepreneurial careers. Thus, employment is to be viewed as a possible step in the process of business creation. Policy makers and practitioners should support education about multidirectional careers in order to facilitate business creation.

Furthermore, our findings showed that the effect of action-oriented entrepreneurship training on employment and employment income was strongest for those students who have high control aspiration. Hence, we suggest the following approach. First, educational institutions should offer action-oriented entrepreneurship training to participants, who score high in control aspiration, meaning those who take control and responsibility for their work. These participants will benefit most from the training in terms of employment and employment income. Secondly, educational institutions should put particular focus on encouraging participants to take control and responsibility for their work. Educational institutions should consider control aspiration as an important factor in career development. They should promote an education that enables participants to understand the importance of taking responsibility for one's work and being charge of it.

Overall, our findings endorse the application of action-oriented entrepreneurship training to promote participants' career development. This is also of interest for practitioners and policy makers, who intend to ascertain how peoples' careers could be promoted best. Our findings can be of value, since they provide insights into the effectiveness of entrepreneurship training, show for whom the training is beneficial, and reveal insights into students' career paths over time.

CHAPTER 5

General discussion

In this dissertation, I examined effects of action-oriented entrepreneurship training and its role for capital requirements from a psychological perspective. The findings of the present dissertation contribute to the literature in the field of entrepreneurship and entrepreneurship education. They add to the understanding of how nascent entrepreneurs can be supported in successfully starting new businesses despite of financial requirements and capital constraints. Furthermore, the findings help to provide more solid theories regarding entrepreneurship training and its impact on career development.

First, I explained how entrepreneurship leads to economic development and poverty alleviation, which is of great relevance for developing countries. I reasoned that action-oriented entrepreneurship training, which is based on action-regulation theory (Frese & Zapf, 1994; Frese, 2009; Hacker, 1998) is useful for promoting entrepreneurship. Findings about the impact of action-oriented entrepreneurship training showed that the training lead to short- and long-term effects on business creation and long-term entrepreneurial success. The chapter adds to the understanding on how a country's economic development can be supported through entrepreneurship education and provides insights into the question how the training can be sustainably implemented at different institutions to ensure an ongoing implementation without the need for continued foreign support. Furthermore, the chapter contributes to the literature on entrepreneurship education because it provides guidelines about entrepreneurship training, for instance which training methodology is useful for promoting successful entrepreneurship and how the training should be implemented at different institutions. Additionally, the qualitative findings of the statements reported by the two students provide valuable contributions. The statements of the two trainees emphasize the

importance of financial aspects in business creation and provide insights into how the training supported the students in dealing with financial requirements and capital constraints. One of the students, for instance, mentioned that he wanted to start a business that required a high amount of capital. Through the training, he learned to start business using the resources he had. Thus, he chose to first start another business that did not require much capital. He decided to save the profits and invest it into the start-up of the other business. The other student described similar incidences. She mentioned that she engaged in the start-up of two businesses that required a lot of capital. She decided to abandon these two business opportunities and instead invested her resources in another business that she had already started. Furthermore, she acquired capital by selling one of her businesses and used the capital to start a new business. These statements suggest that the training teaches students ways to deal with financial requirements and capital constraints. It thus supports them in successfully continuing with business creation although financial requirements and capital constraints impede their efforts to start a business.

Secondly, I provided a theoretical model that explains under which conditions capital constraints affect or do not affect business creation. I provided empirical evidence that action-oriented entrepreneurship training reduces the negative effect of capital constraints on business creation through developing financial mental models. Action-oriented entrepreneurship training successfully improved trainees' financial mental models and was, therefore, able to compensate for the negative effect of capital constraints on business creation. The findings add to the understanding of boundary conditions of capital constraints and contribute to research on entrepreneurship education and training. Different from the common view in the literature, implying that an improved access to capital is the major solution for capital constraints (De Mel et al., 2008; Evans & Jovanovic, 1989; Ho & Wong, 2007; Wiklund & Shepherd, 2003), the findings show that action-oriented entrepreneurship training is a potential alternative solution for the problem of capital constraints. Further, the findings contribute to the literature because they showed that entrepreneurship training improved participants' financial mental models. The literature on financial mental models reveals that financial mental models emerge through experience (Baron & Ensley, 2006). Our results indicate

that financial mental models can be trained. Further, the present findings provided support for an interactionist perspective in entrepreneurship (Gielnik & Frese, 2013; Terborg, 1981; Welter & Smallbone, 2011) suggesting that the interplay of individual characteristics, such as financial mental models, and financial aspects, such as capital constraints better explains new business creation than financial aspects alone. Thus, research investigating the impact of financial aspects in entrepreneurship should take into account individual factors and consider underlying psychologic mechanisms. This will lead to more solid theories in the field of new venture creation.

Thirdly, I developed a theoretical model that helps to understand the influence of entrepreneurship education on students' careers taking into account employment and self-employment. I argued for a career path leading from action-oriented entrepreneurship training to business creation in the long haul through employment and employment income. The findings provided empirical evidence for a positive effect of the training on employment and employment income indicating that the training enhanced students' employability and enabled them to get promoted faster. Furthermore, the results showed that the effect of the training on employment and employment income was moderated by control aspiration. The effect of the training on employment and employment income was strongest for students, who were high in control aspiration, meaning who took control and responsibility for their work. Additionally, the results revealed that employment and employment income predicted business creation in the long term. The findings of this study contribute to the literature on entrepreneurship education and training and shed light on the impact entrepreneurship training has on students' careers. The results suggest that action-oriented entrepreneurship training can support students in their careers as employees. The findings also contribute to research on career development by providing support for taking a multidirectional career approach (Arthur, 1994; Briscoe & Hall, 2006; Sullivan & Arthur, 2006). The results suggest that employment and employment income are of great importance for the process of business creation. Additionally, the results showed that individual characteristics, such as control aspiration play a major role with regard to the impact of entrepreneurship training on students' career development. High scores in control aspiration, implying strongly taking control and responsibility for one's work

enabled participants to benefit most from the training. These findings add to the understanding of entrepreneurship training by revealing for whom the training is beneficial and who draws the greatest advantage from the training.

Fourthly, this dissertation contributes to the literature on entrepreneurship education and training, because it followed the calls in the literature to apply a rigorous methodology (cf. Martin et al., 2013; McKenzie & Woodruff, 2012). I conducted studies using a randomized controlled experiment, which is seen as the "gold standard" in evaluation research (Reay, Berta, & Kohn, 2009, p. 9). Furthermore, I add to the understanding of entrepreneurship training and their effects, due to the longitudinal design that covered four measurement waves in a period of 21 months. Such a design is able to unveil changes in participants' behavior over time and thus provides valuable insights into training outcomes in the long haul. The design allowed for capturing the temporality of effects, which enabled me to investigate whether training effects unfold over time.

5.1 Future research

This dissertation suggests several future research possibilities and raises new research questions in the field of entrepreneurship and entrepreneurship training.

First, future research should examine the effects of action-oriented entrepreneurship training on different bootstrapping strategies. The present dissertation concentrates on employment income as an important bootstrapping strategy (Winborg & Landström, 2001), because employment income is a key source of capital for new venture creation (Evans & Jovanovic, 1989). However, besides employment income entrepreneurs make use of additional bootstrapping strategies (Winborg & Landström, 2001). Research would benefit from studies that investigate the effects of action-oriented entrepreneurship training on different bootstrapping strategies. These studies could shed light on the question how entrepreneurship education supports acquiring starting capital and what role various bootstrapping strategies play in the process of business creation.

Secondly, research on entrepreneurship education and training would benefit from studies investigating training effects on serial and portfolio entrepreneurship. Serial and

portfolio entrepreneurship implies that entrepreneurs own more than one business at the same time or have owned minimum one other business prior to their current business (Westhead et al., 2005). The qualitative cases of the two trainees indicate that participants did not only start a single business, but started several businesses at the same time or consecutively. This indicates that trainees became serial and portfolio entrepreneurs. Scholars argue that serial and portfolio entrepreneurship support entrepreneurial success in developing countries over the long haul (Rosa, 2013). In fact, results showed that participants of the training group, who had more businesses at the same time than participants of the control group, had higher revenues than the control group. These findings suggest that action-oriented entrepreneurship training promotes serial and portfolio entrepreneurship and these types of entrepreneurship lead to more entrepreneurial success. However, more research is needed to understand the effects of the training on serial and portfolio entrepreneurship. Research should investigate the underlying mechanisms explaining how the training fosters serial and portfolio entrepreneurship and who the training supports in becoming a serial or portfolio entrepreneur. Thus, besides main effects of the training on serial and portfolio entrepreneurship, research should examine mediating and moderating effects regarding the relationship of the training and serial/portfolio entrepreneurship. Particularly interesting are the influences of financial aspects with regard to serial and portfolio entrepreneurship. The qualitative findings indicate that having several businesses at the same time protected the student against complete bankruptcy. Additionally, saving profits of businesses and selling businesses enabled both students to start new businesses. Future research would benefit from studies that investigate how serial and portfolio entrepreneurship relates to acquiring financial capital. It would be of interested to examine how serial and portfolio entrepreneurship supports overcoming financial requirements and capital constraints and how entrepreneurship training influences this relationship.

Thirdly, research should further investigate the role of personal initiative with regard to financial requirements and capital constraints. Personal initiative means to be self-starting, persistent and proactive (Frese & Fay, 2001). This implies to self-initiate action, to overcome barriers and to have a future perspective (Frese & Fay, 2001),

These facets help to continue with one's effort to start a business and prevent abandoning the start-up process when facing challenges such as financial requirements and capital constraints. Personal initiative enables people to stay persistent and to continue one's effort when facing barriers (Frese & Fay, 2001). Also, personal initiative implies that people start actions themselves to overcome these barriers. For example, it is likely that people with high personal initiative perform more actions to search for capital, consider more options for acquiring capital, do not give up when they get rejected (e.g. from capital providers). Thus, people high in personal initiative might better handle the situation of being capital constrained than people with low personal initiative. In case of capital constraints, personal initiative might, therefore, be an important psychological factor that allows for successful business creation.

Fourthly, research provides empirical evidence that action-oriented entrepreneurship training enhances personal initiative and hence leads to entrepreneurial success (Glaub et al., 2014). A possible agenda for future research is to investigate the influence of personal initiative regarding students' career development. It is of interested to study the impact of personal initiative concerning the career paths leading from action-oriented entrepreneurship training to business creation through employment and employment income. This research would contribute to an understanding on how personal initiative influences students' entrepreneurial and corporate careers and allows for more solid theories on entrepreneurship education and career development.

5.2 Practical implications

This dissertation showed that action-oriented entrepreneurship training led to successful business creation, reduced the negative effect of capital constraints on business creation, enabled participants to acquire financial resources in terms of employment income, and supported participants' career development. These findings provide several practical implications for practitioners, institutions and policy makers.

First, due to the effectiveness of action-oriented entrepreneurship training, I suggest implementing this training in educational institutions and training institutes that aim at teaching entrepreneurship. The training helped trainees to deal with financial requirements and capital constraints and successfully supported them in starting

businesses. These outcomes might also be of interest for institutions that provide knowledge in financial literary. It might be useful for these institutions to use action-oriented entrepreneurship training or integrate parts of it in their curriculum on financial literacy. Furthermore, I suggest implementing action-oriented entrepreneurship training at educational institutions and training institutes that aim at supporting participants in their career development. Besides effects on entrepreneurship, action-oriented entrepreneurship training facilitated finding a job and led to increased employment income. Thus, educational institutions and training institutes should conduct the training for people who are interested in entrepreneurship and for people who target a corporate career, meaning a career as an employee in a company.

Secondly, I recommend to policy makers to adopt a perspective that is geared toward the entrepreneur in order to facilitate entrepreneurship. To promote entrepreneurship, policy makers often follow an approach that aims at establishing regulatory frameworks and introducing regulatory reforms (cf. The World Bank, 2010). However, regulatory changes are not sufficient for successfully promoting entrepreneurship. In fact, research shows that regulations have little effects on business creation(van Stel, Storey, & Thurik, 2007). Based on the findings of this dissertation, I suggest that entrepreneurship should be supported by providing interventions that are geared toward the entrepreneur. Specifically, I emphasize the importance of action-oriented entrepreneurship training and suggest policy makers to facilitate the implementation of action-oriented entrepreneurship training. For instance, it is useful that action-oriented entrepreneurship training is included into the curriculum of educational institutions.

Thirdly, I suggest that practitioners and policy makers are open for different solutions for the problem of capital constraints and do not simply focus on improving access to capital. Implementing action-oriented entrepreneurship training can be a more cost-effective solution for enhancing business creation despite of capital constraints than providing capital to entrepreneurs. Providing capital to entrepreneurs may support them in the start-up of a specific business, but it lacks lasting effects. For example, when businesses fail, the capital entrepreneurs have received to start these businesses, is burned. Failure and mistakes are part of the entrepreneurial process (Frese, 2009). In

fact, about one third of new businesses are closed down, because they are unsuccessful (Headd, 2003). Training outcomes in terms of financial mental models or other skills and knowledge remain and enable entrepreneurs to continue starting businesses in case they have to close down their current businesses. This implies that the effects of action-oriented entrepreneurship training might provide a more sustainable support in dealing with financial requirements and capital constraints than the provision of financial capital. However, I do not argue against enhancing access to capital. A more effective approach in promoting entrepreneurship might be to combine strategies to facilitate access to capital with entrepreneurship education and training. One of our trainings in Lesotho provides an example on how improving access to capital and entrepreneurship training can be combined. The Lesotho National Development Corporation (LNDC), which belongs to the government of Lesotho and is part of the Ministry of Trade and Industry, Cooperatives and Marketing, funded four start-up teams that participated in our action-oriented entrepreneurship training. After taking part in the training, the teams participated in a business plan competition that was offered by LNDC. They succeeded in the competition and acquired 2.000 US dollars each. The start-up capital allowed the four teams to continue with their businesses. This example shows a useful joint effort of government funding and entrepreneurship education that can successfully support business creation.

5.3 Conclusions

To conclude, this dissertation investigated effects of action-oriented entrepreneurship training and its influence regarding financial aspects in the process of business creation from a psychological perspective. The findings provide support that action-oriented entrepreneurship training is an important means that helps to deal with financial requirements and capital constraints. It diminished negative effects of capital constraints on business creation and led to more access to financial capital in terms of employment income. This way, it successfully promoted business creation. Based on the findings of this dissertation, I recommend implementing the action-oriented entrepreneurship training in order to enable trainees to handle barriers such as financial requirements and capital constraints. I also suggest that policy makers create structures

that facilitate the implementation of the training (i.e. including the training into the curriculum of educational institutions). Furthermore, I recommend taking into consideration that efforts should not only be made regarding improving access to capital, but toward improving and enhancing entrepreneurship education and training. Supporting the implementation of action-oriented entrepreneurship training can make a difference for people, who would like to start their own businesses, but face severe capital constraints, which are particularly prevailing in developing countries.

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APPENDIX

A. Scales manual of the dependent, independent and moderator variables used in this study

Business creation

Question asked in the interview
Are you currently the owner of a business?
☐ yes ☐ no

To validate participants' answers, we asked:

Questions asked in the structured interview
In the last year, what was the sales level in a good month, in a bad month, and in a fair month?
In the last year, how many good months, how many bad months, and how many fair months did you have?
How many full-time employees do you have?
How many part-time employees do you have?

Capital constraints

The measurement of capital constraints is adapted from:

Wiklund, J., & Shepherd, D. (2003). Aspiring for, and achieving growth: The moderating role of resources and opportunities. *Journal of Management Studies*, *40*(8), 1919–1941.

Scale	Items
1-7	Potential sources to get the necessary starting capital would be limited.
1-7	A great impediment for my venture would be a lack of available sources for starting capital.
1-7	Getting access to sufficient financial capital would be difficult.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither nor	Somewhat agree	Agree	Strongly agree

Financial mental models

The measurement of financial mental models is based on:

Baron, R. A., & Ensley, M. D. (2006). Opportunity recognition as the detection of meaningful patterns: Evidence from comparisons of novice and experienced entrepreneurs. *Management Science*, *52*(9), 1331–1344.

Questions asked in the structured interview
Describe an idea for a new product, service, etc., that you considered but then ultimately rejected. Please indicate why you rejected this idea.
Describe a 2nd idea for a new product, service, etc., that you considered but then ultimately rejected. Please indicate why you rejected this idea.
Describe a 3rd idea for a new product, service, etc., that you considered but then ultimately rejected. Please indicate why you rejected this idea.

Financial mental models – Rating Guide

Guidelines for the rating are derived from:

Baron, R. A., & Ensley, M. D. (2006). Opportunity recognition as the detection of meaningful patterns: Evidence from comparisons of novice and experienced entrepreneurs. *Management Science*, *52*(9), 1331–1344.

Answers shall be rated for concreteness of relevant subcategories that are addressed.

Concreteness: Does the subject give examples or describe in detail what he means? (e.g. "I have to know all about the market players, how many products are in the market, how well they sell, why they sell, who are the target groups" versus "I need to know who my competitors are").

Each subcategory receives points (0, 1 or 2) depending on the fact whether it is mentioned and depending on the concreteness (roughly or detailed descriptions).

Score	Description
0	No
1	Rough
2	Detailed

Category	Content of Category
Financial mental models	High margins
	Quick cash flow
	Short sales cycle
	High return / low investment

Employment

The measurement of employment is derived from:

Erikson, R., & Goldthorpe, J. H. (1987). Commonality and variation in social fluidity in industrial nations. Part I: A model for evaluating the "FJH hypothesis." *European Sociological Review*, *3*(1), 54–77.

Hauser, R. M., & Warren, J. R. (1997). Socioeconomic indexes for occupations: A review, update, and critique. *Sociological Methodology*, *27*(1), 177–298.

Question asked in the interview
Are you currently employed?
☐ yes ☐ no

To validate participants' answers, we asked:

Questions asked in the structured interview
What is the title of your position? What kind of work do you do? (For example, electrical engineer, stock clerk, typist, farmer)
What are your most important activities, tasks or duties at that job? (For example, types, keeps account books, files, sells cars, operates printing press, finishes concrete)
What kind of business or industry is this? (For example, TV and radio, manufacturing, retail shoe store, government, farm)

Employment income

Question asked in the interview
What is your monthly salary (earnings)? (pre-tax)

Control aspiration

The measurement of control aspiration is based on:

Frese, M. (1984). *Do workers want control at work or don't they: Some results on denial and adjustment*. Berlin: Institut für Humanwissenschaft in Arbeit und Ausbildung der Technischen Universität.

Frese, M., Garst, H., & Fay, D. (2007). Making things happen: Reciprocal relationships between work characteristics and personal initiative in a four-wave longitudinal structural equation model. *Journal of Applied Psychology*, *92*(4), 1084–1102.

Frese, M., Kring, W., Soose, A., & Zempel, J. (1996). Personal initiative at work: Differences between East and West Germany. *Academy of Management Journal*, *39*(1), 37–63.

Scale	Items
1-7	I do only what I am told to do. Then nobody can reproach me for anything.
1-7	Work is easier if I am always told how to do it.
1-7	I would rather be told exactly what I have to do. Then I make fewer mistakes.
1-7	I act according to the motto: I follow order, then nobody is going to reproach me.
1-7	I have to think about too many things when I have to make decisions. I'd rather have routine work.
1-7	I prefer to have a supervisor who tells me exactly what I have to do. Then he or she is at fault if something goes wrong.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither nor	Somewhat agree	Agree	Strongly agree

B. Scales manual of the control variables used in this study

Gender

Question asked in the structured interview
Please indicate your gender
☐ female ☐ male

University

Item
University
☐ Makerere University Business School ☐ Uganda Christian University

Relatives in business

Items
Does somebody in your family own his/ her own business?
☐ yes ☐ no
If yes, who:

Social norms

The measurement of social norms is based on:

Krueger, N. F., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing, 15*(5), 411–432.

Scale	Items
1-5	Would family and friends want you to start your own business?
1-5	Do most people who are important to you think you should become self-employed?
1-5	It is expected of me that I should start a business.
1-5	Most people who are important to me are self-employed.
1-5	The people in my life whose opinion I value are self-employed.
1-5	Many people like me start a business.

1	2	3	4	5
Not at all	A little bit	Medium	Much	Absolutely

Cognitive ability

The measurement of cognitive ability is a subtest of the Wechsler test:

Wechsler, D. (1997). *WAIS–III Administration and Scoring Manual*. San Antonio, TX: Psychological Corporation.

Scale	Questions asked in the structured interview	
	We would like to do a little memory quiz: I will tell you a line of numbers and you just repeat the numbers that I read to you.	
	First trial	Second trial
0-1	5-8-2	6-9-4
0-1	6-4-3-9	7-2-8-6
0-1	4-2-7-3-1	7-5-8-3-6
0-1	6-1-9-4-7-3	3-9-2-4-8-7
0-1	5-9-1-7-4-2-8	4-1-7-9-3-8-6
0-1	5-8-1-9-2-6-4-7	3-8-2-9-5-1-7-4
0-1	2-7-5-8-6-2-5-8-4	7-1-3-9-4-2-5-6-8
	Now you should reverse it! For example when I say 7-1-9, what would you say? (9-1-7); If the subject couldn't complete the example, correct him/her and give another example (3-4-8).	
	First trial	Second trial
0-1	2-4	5-8
0-1	6-2-9	4-1-5
0-1	3-2-7-9	4-9-6-8
0-1	1-5-2-8-6	6-1-8-4-3
0-1	5-3-9-4-1-8	7-2-4-8-5-6
0-1	8-1-2-9-3-6-5	4-7-3-9-1-2-8
0-1	9-4-3-7-6-2-5-8	7-2-8-1-9-6-5-3

Opportunity identification

The measurement of opportunity identification is based on

Hills, G. E., Lumpkin, G. T., & Singh, R. P. (1997). Opportunity recognition: Perceptions and behaviors of entrepreneurs. In P. D. Reynolds, W. D. Bygrave, N. M. Carter, P. Davidsson, W. B. Gartner, C. M. Mason, & P. P. McDougall (Eds.), *Frontiers of Entrepreneurship Research* (pp. 168–182). Babson Park, MA: Babson College.

Ucbasaran, D., Westhead, P., & Wright, M. (2008). Opportunity identification and pursuit: Does an entrepreneur's human capital matter? *Small Business Economics*, *30*(2), 153–173.

Scale	Questions asked in the structured interview
0-5	How many opportunities for creating a business have you identified ("spotted") within the last three months?
0-5	Out of all those opportunities, how many were in your opinion promising for creating a profitable business?
0-5	How many opportunities for creating a business have you pursued, that is committed time and resources to, within the last three months?

0	1	2	3	4	5
Zero	One or two	Three to five	Six to eight	Eight to ten	More than ten

Entrepreneurial action

The measurement of entrepreneurial action is based on

Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing, 18*(3), 301–331.

Dimov, D. (2007). Beyond the single-person, single-insight attribution in understanding entrepreneurial opportunities. *Entrepreneurship Theory and Practice, 31*(5), 713–731.

Questions asked in the structured interview
Are you, alone or with others, now trying to start a new business?
☐ yes ☐ no
So far, what did you do to get the business up and running?
Anything else?
Do you intend to start a(nother) business within the next 12 months?
☐ yes ☐ no
So far, what did you do to get the business up and running?
Anything else?

Entrepreneurial action – Rating Guide

Guidelines for the rating are derived from:

Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing, 18*(3), 301–331.

Dimov, D. (2007). Beyond the single-person, single-insight attribution in understanding entrepreneurial opportunities. *Entrepreneurship Theory and Practice, 31*(5), 713–731.

Answers shall be rated for concreteness of relevant subcategories that are addressed.

Concreteness: Does the subject give examples or describe in detail what he means? (e.g. "I have to know all about the market players, how many products are in the market, how well they sell, why they sell, who are the target groups" versus "I need to know who my competitors are").

Each subcategory receives points (0, 1 or 2) depending on the fact whether it is mentioned and depending on the concreteness (roughly or detailed descriptions).

Score	Description
0	No
1	Rough
2	Detailed

Note:

Do not give a score for very abstract statements (e.g., "I need resources", "encourage people).

If participants mention (market) research, give a score on development and start-up activity number 11; if participants did (market) research to identify demands and needs, give a score on development and start-up activity number 11 and development and start-up activity number 1. Reason: participants might do (market) research for other reasons.

If participants talks about where to open up the business, give a score on development and start-up activity number 21; if participants mention they need a location (room), give score on development and start-up activity number 25.

No.	Development and start-up activity
1	Check whether there is a demand or niche for product/service (in what people are interested in; need vs. Dasa.o11?)
2	Discuss a business idea with friends or family.
3	Discuss a business idea with advisors, colleagues, potential investors, or other business men.
4	Gather information about your customers, competitors, or the industry you are going to enter (e.g. get into existing business to gather information).
5	Gather information about the product (e.g. where I can get the product, what are good suppliers, ask people how it works).
6	Save money for (starting) the business.
7	Seek a partner, a start-up team, or employees.
8	Talk to potential customers.
9	Attend classes, workshops, or seminars to start a business.
10	Identify target customers.
11	Do market research (e.g., to research the viability of your idea).
12	Check laws and regulations.
13	Develop a vision for your business.
14	Develop a development plan for your business (i.e., next steps you have to take to get the business up and running; also goals and milestones) / Develop a plan for the future of the business (e.g., growth goals, product or service line extensions).
15	Develop an operations plan for your business (get raw material, produce, sell).
16	Develop a marketing strategy for your business (e.g., based on a customer analysis, customer segmentation, or industry analysis; make the business unique).
17	Develop a business strategy for your business (e.g., based on a SWOT-analysis or product analysis).

No.	Development and start-up activity
18	Develop an investment plan for your business (i.e., planned how much money you need for starting the business).
19	Develop a financial plan for your business (i.e., estimated the expenditures, sales, and profits you will have in the first months of your business; also cash-flow or break-even analysis; check if profitable).
20	Keep records; Calculate a price for your product.
21	Decide about a point of sell for your product or service / decide a place to set the business.
22	Think about critical risks that might hinder the start-up of your business (difficulties, threats).
23	Outline a business plan for your business (e.g. write a business plan, write a proposal).
24	(I need) Apply or receive starting capital (e.g., from bank, government, or other capital providers).
25	(I need) Buy or rent equipment, raw materials, or other facilities for your business (also premises) / get the needed resources to produce / get transport means.
26	Produce a prototype for your product or service.
27	Make agreements with suppliers.
28	Produce your final product or service in such a way that it is ready for sale (also packaging).
29	Apply for a patent / copyright.
30	Devote full time to the business.
31	Organize contact information for your business (email, phone, fax, address, web-page, business cards).
32	Register your business (also for VAT or TIN) or apply for trade licenses.
33	Do marketing (e.g., promotion, advertising, media, inform people).
34	Sell any products or services to customers.
35	Train employees.