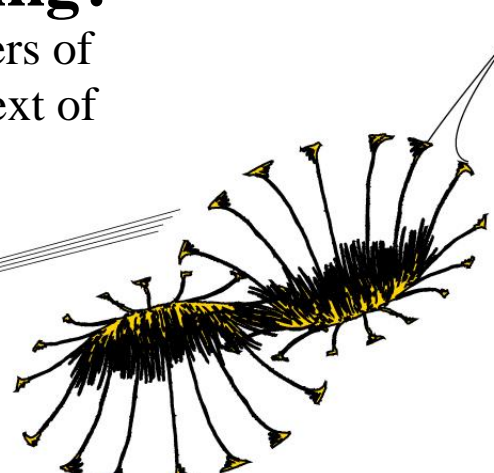# How to stimulate Transformative Learning?

An explorative study into the triggers of transformative learning in the context of entrepreneurial development.

Bachelor Thesis
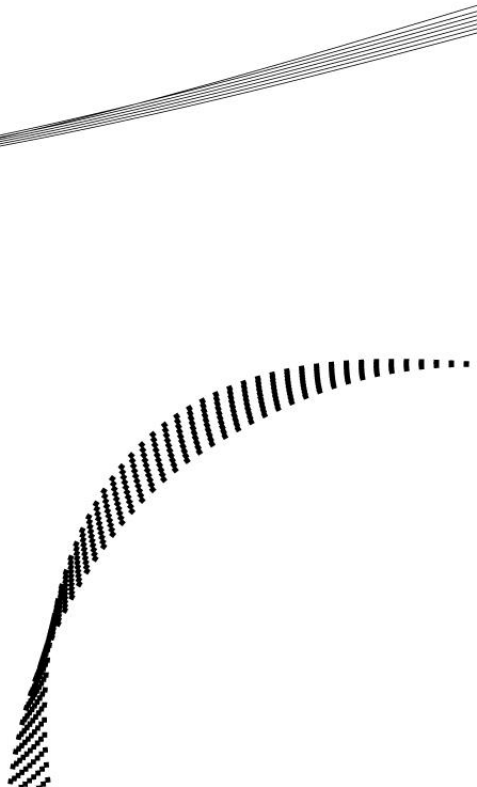
Dora Timmer (s1122533)
Faculty of Behavioural, Management and Social sciences, Bachelor Educational Science
University of Twente, Enschede, the Netherlands

Supervision
Dr. M.D. Endedijk
A. Oude Groote Beverborg, MSc

Enschede, May 2015

UNIVERSITY OF TWENTE.

Abstract

This research focused on developing a greater understanding of the process of – and factors that affect transformative learning within the entrepreneurial context. Diaries of entrepreneurs engaged in an incubator program were analysed and coded on instances of transformative learning and related triggers. After the qualitative analysis, 386 instances of transformative learning were found, divided among three elements of transformative learning: Critical Self Reflection, Reflective Dialogue and Reflective Action. Four categories of triggers were found: (1) internal VentureLabTwente related triggers, which are related to the incubator program in which the entrepreneurs participated; (2) external business related triggers, for example industrial partners or investors; (3) the triggers that are related to their internal business environment, i.e. colleagues or product developments and (4) non-business related triggers, for example family or health. A chi-square analysis has been performed to investigate the relationship between the element of transformative learning and found trigger(s). The results show that the best way to stimulate Critical Self Reflection, is to make use of Non-business related environment triggers, while the optimal way to stimulate Reflective Dialogue is to make use of the Internal VLT environment triggers. Furthermore, the best way to stimulate Reflective Action is to make use of the Internal business related triggers in encouraging actions that are executed within the venture of the entrepreneur.

Keywords: transformative learning, entrepreneurial development, entrepreneurs, business incubator programs

Introduction

The 21ˢᵗ century is challenging for organisations, their owners and entrepreneurs that start up new ventures: they have to deal with constant change, globalization, increased competition, and continuous technological changes (Ciporen, 2010; Illeris, 2014). Consequently, not every new venture survives the first three years. Of the companies that started in 2009 25% did not exist anymore in 2012 (Centraal Bureau voor Statistiek, 2013). In the first half of 2014, a total of 3,428 companies went bankrupt (Kamer van Koophandel, 2014). This while successful entrepreneurship has a profound impact on economic growth, labour demand and innovation (Hartog, Van Praag & Van der Sluis, 2010). The survival of the ventures and entrepreneurs is thus essential for the country's economy.

The difference between successful entrepreneurs and entrepreneurs with businesses that do not survive the first three years can be explained by the way that entrepreneurs cope with challenges and problems while they work on their new venture. All entrepreneurs face complex issues while executing their business, but the way they address their problems and overcome them defines the successful entrepreneur (Johnson, 2008; Cope & Watts, 2000). According to Johnson (2008), entrepreneurs are more successful when they are skilled in adapting their *frames of reference*. Frames of reference are sets of assumptions and expectations that guide the decisions that are made and actions that are taken (Brown, 2004; Franz, 2010; Hoggan & Cranton, 2014). Adapting the frame of reference makes the frame more useful and as a result the entrepreneurs are more able to tackle their problems. It can be concluded that the same problems might be less threatening for entrepreneurs who are skilled in adapting their frame of reference than for entrepreneurs who are not that skilled in adapting theirs (Franz, 2010; Hoggan & Cranton, 2014).

Transformative Learning can help entrepreneurs in this challenge of adapting (Ciporen, 2010; Cope, 2003; Johnson, 2008). In the process of Transformative Learning, individuals transform their frames of reference after an encounter with a critical event or disorienting dilemma to make them more applicable in a new situation (Dirkx & Mezirow, 2006; Mezirow, 2011). This transformation changes the way people understand themselves and their relationship with others and the world (Franz, 2010; Hodge, 2008; Isopahkala-Bouret, 2008). After such a transformation of perspective, individuals are able to have adapted existing or new ways of thinking and doing, which they can apply in their actions (Dirkx & Mezirow, 2006; Isopahkala-Bouret, 2008; Howie & Bagnall, 2013). Thus, Transformative Learning (TL) has useful qualities and characteristics in the unique entrepreneurial development context as it makes entrepreneurs develop their ability to transform their frame of reference to adapt better to changing environments.

There has been a lot of attention for the added value of TL in being skilled to adapt to new situations or to tackle challenges. This resulted in a lot of publications on this subject, but there is less information available about the triggers for TL: the events that stimulate and induce TL. To be able to support and stimulate TL, an identification of triggers of TL is needed. This study had the goal to investigate those triggers in the context of the entrepreneur and to be able to advise coaches, trainers or organisers of incubator programs on how they can best stimulate TL. Guided by the assumptions on entrepreneurial development of Cope (2003) and utilizing the transformative learning theory from Mezirow (2011. In: Illeris, 2011), this study assessed the data for evidence of TL in the diaries of the entrepreneurs, examined the triggers behind these events and investigated the relationship between TL and the specific trigger.

Theoretical framework

This theoretical framework presents the relationship between entrepreneurial development and transformative learning (TL) to examine whether TL can be of added value for entrepreneurs. TL appears to have ties within the entrepreneurial development theories as learning from Critical Incidents (Cope, 2003) bears resemblance to the learning from disorienting dilemmas (Mezirow, 2011). Next to this resemblance, three situations where transformative learning can be of added value are outlined: (1) the importance to be able to handle the complex issues the entrepreneur faces (Cope, 2003; Johnson, 2008; Pittaway & Thorpe, 2012), (2) the high rate of critical incidents due to the close relationship the entrepreneur has with his business (Cope, 2003; Hartog et al., 2010) and (3) the work role transition in the work role from non-entrepreneur to entrepreneur (Isopahkala-Bouret, 2008). To understand clearly

what transformative learning is and in what forms it occurs, an extensive exploration of transformative learning will be carried out after an initial introduction into entrepreneurial development.

The importance of Entrepreneurial Development and its facilitation
On average, ten percent of the labour force in any developed country consists of entrepreneurs (Hartog et al., 2010). In the Netherlands, the percentage of entrepreneurs is even higher: 14.6% of the total labour force is an entrepreneur (Centraal Bureau voor Statistiek, 2012). The importance of success of the ventures is, due to this profound impact on the economy, not only of interest for the entrepreneur, but for a country's government as well. The survival of the ventures and entrepreneurs is thus essential for the country's economy. Unfortunately, not every new venture survives the first three years, for different reasons. The 21st century is challenging for organisations, their owners and of course the entrepreneurs that start up new ventures: they have to deal with constant change, globalization, increased competition, and continuous technological changes (Ciporen, 2010; Illeris, 2014). Of the companies that started in 2009 25% did not exist anymore in 2012 (Centraal Bureau voor Statistiek, 2013). In the first half of 2014, a total of 3,428 companies went bankrupt (Kamer van Koophandel, 2014). To keep their business up and running, developing themselves is an absolute necessity for entrepreneurs (Cope & Watts, 2000; Illeris, 2014). When entrepreneurs learn, they do not only develop themselves (personal development) but it also contributes to the development of their firm (Cope & Watts, 2000), and by this, contributes to the country's economic growth, labour demand and innovation (Hartog et al., 2010).

The impact of entrepreneurs on for example innovation is also underlined by the Austrian economist Joseph Schumpeter. In the early thirties of the 20th century he was already of the opinion that a country's economy would only be able to survive if its entrepreneurs kept following the path of continuous innovation (Schumpeter, 1942. In: Aerts, Matthyssens & Vandenbempt, 2007). That innovation drives competition is now commonly acknowledged, including the role of start-up companies in the innovation process. A confirmation of this acknowledgment is the fact that around 71% of the entrepreneurial development programs in Europe (for example business incubators) receive subsidies from the government, the European Union or other public funds (Aerts et al., 2007). One of the priorities of the European Union is to encourage the establishment and growth of new innovative ventures (Commission of the European Communities, 2000).

There are multiple instruments to promote entrepreneurial innovation and entrepreneurial learning, e.g. entrepreneurial education in schools/communities (Hyclak & Barakat, 2010; Pittaway & Thorpe, 2012; Rae, 2009) or incubator programs (Aernoudt, 2002; Aerts et al., 2007). The first one (entrepreneurial education) focuses in general on students within universities or higher educational programs. Students are enabled to get in touch with entrepreneurship, for example by establishing their own companies as work experience projects. Projects like this give potential entrepreneurs the chance to test out business concepts and to develop entrepreneurial and business management skills, while the risk is controlled (Rae, 2009).

Another instrument to promote entrepreneurial development and minimize the high start-up failure rate is the business incubator (Aerts et al., 2007). Incubation programs are not only used as a tool to develop entrepreneurs, but to promote entrepreneurship and start-ups as well (Aernoudt, 2002). The programs, with an average incubation period of around three years, are accessible to everyone, but generally cost an entrance fee (Aernoudt, 2002; Aerts et al., 2007). The main goal of a business incubator is "to produce successful firms that will leave the incubator financially viable and freestanding within reasonable delay" (Aernoudt, 2002, p.128), while "contributing to the competitiveness of the local economy" and "stimulating the entrepreneurial spirit" (Aerts et al., 2007, p.10). The number of business incubators is increasing, from 200 in the beginning of the 1980s to over 3000 in 2002 (Aernoudt, 2002; Aerts et al., 2007). Of the business incubators 30% are located in Western Europe (Aerts et al., 2007).

Business incubators encourage and foster new ventures, assist them in their survival and growth process during the period in which they are most vulnerable: the start-up period (Aernoudt, 2002; Aerts et al., 2007). Most business incubators offer personal coaching, opportunities for networking, peer sessions and legal and financial advice as well as for example meeting rooms or conference facilities (Aernoudt, 2002; Aerts et al., 2007; Bergek & Norrman, 2008).

Exploration of Entrepreneurial Development

In contrast to employees, entrepreneurs are as strong as the level of their weakest ability: they are assumed to possess all the skills themselves and have no other form of compensation in colleagues as employees have (Hartog et al., 2010). Entrepreneurs differ from managers as well, who in general focus primarily on managing people, finances and marketing and changes in the strategic planning. Entrepreneurs create value through their new venture by innovation and some extent of uniqueness. Research has shown that entrepreneurs have higher achievement motivation and risk-taking behaviour than managers (Culbertson, Smith & Leiva, 2011). Besides considering entrepreneurs different from regular employees and managers, entrepreneurs are a specific type of learner as well. They differ in terms of their responsibility and over-all competencies (Hartog et al., 2010). Entrepreneurs are responsible for their own business and for their own development; there is no HRD manager that will send them to a training course. Starting a new venture and keeping it up and running is a major challenge, but it also allows individuals to develop themselves in a particular way (Hartog et al., 2008). This is important for the entrepreneur to adapt and change as his business goes through its life-cycle in the process of growth (Cope & Watts, 2000). An interesting aspect of the life-cycle is the synonymous relationship between entrepreneur and business: during the early stages of the start-up, the entrepreneur and the business are linked and the entrepreneur 'is' his business (Cope, 2003; Hartog et al., 2010). The first time an entrepreneur starts up a new venture, he also makes a transition of work role (Isopahkala-Bouret, 2008). Every entrepreneur makes the transition from non-entrepreneur to entrepreneur somewhere between having the ideas for his first business, during stages of the start-up or when the business is already running for some time.

A distinction that is made in learning theory that also is applicable for entrepreneurial learning, is the distinction between three levels of learning: (1) single loop learning, (2) double loop learning (Argyris & Schön, 1978. In: Pittaway & Thorpe, 2012, p. 846) and (3) Transformative Learning (Cope, 2003; Cope & Watts, 2000; Pittaway & Thorpe, 2012). In single loop learning, learning is superficial and is related to more practical and routine oriented tasks (Cope, 2003). Double loop learning, is less superficial than single loop learning, but still situation specific. It changes whole perspectives on the way to approach strategies or problems (Pittaway & Thorpe, 2012, p. 843), but still within the context of one situation. Level 3 (Transformative Learning) expands the change of the double loop learning to transcend situations: it changes the learner's vision at a deeper level. This significant learning involves an adaption of "beliefs, viewpoints and perspectives that shape the individual's perception of the world" (Cope & Watts, 2000, p. 106). It has a personal dimension where individuals are conscious about their abilities and limitations, with the opportunity to make changes in the entrepreneur's self-understanding, changes in their perception of themselves as entrepreneurs (Cope, 2003).

Some of the literature on entrepreneurial learning suggests that much of the learning that entrepreneurs undergo is experiential in nature: they learn from their past experiences (Politis, 2005; Weinstein, 2007). This type of learning is recognized by Cope (2003), but he considers this only as one 'level' of learning: learning by doing. *Learning by doing* has a strong relation with the experience an entrepreneur gains: the learning or personal change is due to a continual flow of information gained in experience (Cope, 2003; Cope & Watts, 2000; Pittaway & Thorpe, 2012). This learning is of interest to entrepreneurs, since they are generally action-oriented and learn experience-based (Pittaway & Thorpe, 2012).

Cope (2003) suggests that next to learning by doing, there is another 'level': *Learning through critical events*, in which learning and adaption is stimulated through critical events, incidents and crises. Critical events occur during critical episodes and have a significant accelerating impact on the process of learning (Cope & Watts, 2000; Pittaway & Thorpe, 2012). The critical events can be considered as "powerful events in the histories of the businesses and stimulated fundamental and transformational learning for the entrepreneurs concerned" (Cope & Watts, 2000, p. 113). Part of this learning is also reflective learning, which happens when entrepreneurs stand back from their daily activities and reflect on their problems, decisions and actions (Cope & Watts, 2000; Pittaway & Thorpe, 2012). Cognitive change can only be achieved when the entrepreneur is able to reflect on his experiences (Pittaway & Thorpe, 2012). It must be stressed that the critical events can be perceived as both positive and negative (Cope & Watts, 2000). Due to the close relationship between the entrepreneur and their business, a lot of events that happen to the company also influence, and are reflected in the life of the entrepreneur (Cope, 2003). Incidents that might not feel critical to regular employees, because they are not the owners

of the company, can be critical incidents to entrepreneurs because of this close relationship (Cope, 2003; Hartog et al., 2010).

The learning through critical events is considered the key entrepreneurial learning mechanism (Cope, 2003; Pittaway & Thorpe, 2012). This form of learning bears strong resemblance to the Transformative Learning theory from Mezirow, where learning takes place due to a disorienting dilemma or crisis (Cope, 2003; Mezirow, 2011; Pittaway & Thorpe, 2012). Cope (2003) draws four conclusions about Transformative Learning in an entrepreneurial context: "(1) As a consequence of a close interrelationship between the entrepreneur and the business, organisational discontinuous events play an important role in stimulating transformative personal learning. (2) The catalyst for Transformative Learning is not always 'externally imposed' but instead is often 'self-imposed' and can be the result of mistakes made by the entrepreneur, particularly where more serious mistakes can trigger an organisational crisis for the business. (3) Both double-loop and Transformative Learning outcomes appear to be triggered by discontinuous events. (4) Much higher-order learning appears to occur as an outcome of 'critical reflection'" (2003. In: Pittaway & Thorpe, 2012, p.846). Johnson (2008) is consistent with this view and even attributes the difference between effective and not effective individuals to their frames of reference and their ability to acquire and adapt them. The development of effective entrepreneurs should focus on enhancing their frames of reference, to be able to handle and learn from complex issues they face. The most promising way of enhancing frames of reference is through context specific experiences, which forces reflection and challenges existing frames of reference (Cope, 2003; Johnson, 2008). This is also what happens in Transformative Learning.

Transformative Learning
The Transformative Learning (TL) theory was introduced by the American Jack Mezirow in 1978 (Howie & Bagnall, 2013; Dochy, Gijbels, Segers & Van den Bossche, 2011). He was the first to use the label *transformation* in his study of women returning to education after a long time of absence (Kitchenham, 2008). The theory altered over the years by Mezirow himself and other authors (e.g. Dirkx, 2012) due to advanced insights. TL is rooted in constructivism, where it is assumed that the learner actively construes his learning as a frame of reference and that learning is an active process of constructing these frames by making sense of experiences (Erickson, 2007; Illeris, 2011; Stuckey, Taylor & Cranton, 2013). TL considers the individual to be operating in a conscious and critical relationship with social context (Hodge, 2008). Transformative Learning differs from the other types of adult learning in that most adult learning is additive: learners keep their frames of reference and gain new information, develop understandings and extend their skills within this framework (Apte, 2009; Ciporen, 2010; Illeris, 2011; Johnson, 2008).

TL exists of two kinds of transformations: epochal and cumulative transformations (Brock, 2010; Dirkx & Mezirow, 2006; Howie & Bagnall, 2013; Mezirow, 2011). Epochal transformations are most known among theorists in relation to TL and involve a sudden major change in the personal frame of reference, often due to significant life crises like a job loss, health problems or the loss of a family member (Brock, 2010). Cumulative transformations or incremental transformations are based on a sequence of events or insights also resulting in a change in the personal frame of reference, however, this change is less abrupt (Howie & Bagnall, 2013; Mezirow, 2011). It may take a learner months or years to realise that his perspective has shifted (Howie & Bagnall, 2013). Most of the transformations occur without the person being specifically aware of the transformation, as the critical reflection of assumptions and expectations is not something people usually do completely consciously. This is habitually a task of the subconscious (Mezirow, 2011).

Exploration of Transformative Learning
Transformative Learning (TL) changes the way people view themselves and the world that is surrounding them (Brown, 2004). It is the process by which an individual transforms personal frames of reference to make them more fitting with a new situation (Erickson, 2007; Dirkx & Mezirow, 2006; Mezirow, 2011). TL is any type of learning that has a lasting impact, for example on how individuals interact with others, frame problems and how they view themselves (Ciporen, 2010; Groen & Hyland, 2010). It is considered to be the process in which perceptions/frames of reference are examined, questioned and revised (Hoggan & Cranton, 2014).

Personal frames of reference can be seen as sets of assumptions and expectations concerning mind-sets, personal perspectives or habits of minds. People construct personal frames of reference to be able to make sense or give meaning to events that happen around us all the time (Hoggan & Cranton, 2014; Mezirow, 1990; Mezirow, 2011). They are needed to understand and make sense of an experience (Mezirow, 1990), and influences what one thinks and how one acts (Hoggan & Cranton, 2014; Johnson, 2008). These frames are created based on a totality of cultural and contextual experiences (Brown, 2004), when perspectives are uncritically perceived from one's social environment (Hoggan & Cranton, 2014). These perspectives can include distortions, stereotypes and prejudices. The personal frame of reference (perspectives) guides the decisions that are made and actions until a situation is encountered where the reality is not congruent with the perspectives and experiences (Franz, 2010; Hoggan & Cranton, 2014). This is the point where one critically reflects on their perspectives and assumptions and where one might enter the process of TL (Brown, 2004). This could lead to a rejection of one's old perspective (Hoggan & Cranton, 2014).

This transformation of perspective changes the way people understand themselves and their relationship with others and the world (Franz, 2010; Hodge, 2008; Isopahkala-Bouret, 2008): "It changes cognitive, emotional, and behavioural routines of perceiving and interpreting things" (2008, p.72). After such a transformation of perspective, people are able to have adopted new priorities and ways of thinking and doing (Brown, 2004; Dirkx & Mezirow, 2006; Isopahkala-Bouret, 2008). The improved personal frame of reference can be seen as an improvement: adapted to the new situation of the individual and hereby more likely to create 'output' that will prove truer in this new situation (Dirkx & Mezirow, 2006; Howie & Bagnall, 2013; Mezirow, 2011). Output in this example are beliefs and opinions that an individual can apply in his actions.

Process of Transformative Learning
The process of TL can be divided into ten stages. Not everyone passes every stage, completion of one stage is not necessary before starting another one, and stages can be repeated during the transformation process (Brock, 2010; Isopahkala-Bouret, 2008; Mezirow, 2000; Wood, 2007). The ten stages are: (1) a disorienting dilemma; (2) self-examination with feelings of guilt or shame; (3) recognition that one's discontent and the process of transformation are shared and that others have negotiated a similar change; (4) exploration of options for new roles, relationships, and actions; (5) a critical assessment of assumptions; (6) provisional trying of new roles; (7) planning of a course of action; (8) acquisition of knowledge and skills for implementing one's plans; (9) building of competence and self-confidence in new roles and relationships; and (10) a reintegration into one's life on the basis of conditions dictated by one's new perspective (Apte, 2009; Brock, 2010; Franz, 2010; Nohl, 2015; Mezirow, 2011). Hereby are critical reflection and reflective dialogue the focal points of the process that encourages the development of Transformative Learning (Franz, 2010; Howie & Bagnall, 2013).

A few publications on TL noted adaptations made to the ten stages of Mezirow. In some of them, the stages are combined such that the stages of Mezirow become three elements in which the process of Transformative Learning can be divided: Critical Self Reflection, Reflective Dialogue and Reflective Action (Kitchenham, 2008; Wood, 2007). From earlier publications on TL (i.e. Franz, 2010; Howie & Bagnall, 2013) it is already known that critical self-reflection and reflective dialogue are the focal points of the TL process. In this adaption, those two focal elements are maintained, combined with an action-oriented factor: Reflective Action (Wood, 2007). From this point of view, the first three stages can be combined in Critical Self Reflection, stages four to seven in Reflective Dialogue and the last four stages in Reflective Action. This is shown in Table 1.

Critical Self Reflection (CSR) is triggered when the learner is confronted with something that questions the deep-seated assumptions of his or her frame of reference (Kitchenham, 2008). This can be something in the form of a disorienting dilemma or caused by a random event (Wood, 2007). The underlying process of Critical Self Reflection is reflection. Reflection forms a catalyst for a critical assessment of assumptions and as a result, individuals become more open for alternative ways of reasoning and behaving (Raelin, 2001. In: Gray, 2007). It forms the bridge between experience and learning (Gray, 2007). Not all reflection is critical (self-) reflection. Reflection itself can be defined as an "active and purposeful process of exploration and discovery, often leading to unexpected outcomes." (Gray, 2007, p.496). In other words it examines the justifications for one's beliefs (Gray, 2007). Critical reflection is not a process that comes naturally to every individual, and thus this ability to reflect may

have to be trained or facilitated in formal classroom settings or through learning processes such as coaching (Gray, 2007).

Table 1
Representation of the subdivision of the ten stages of Mezirow (1978) to the three elements of TL

#	TL elements of Wood (2007)	Included stages of Mezirow (1978, 1991, 2000)
1	Critical Self Reflection	1. A disorienting dilemma 2. Self-examination with feelings of fear, anger, guilt or shame 3. A critical assessment of assumptions and relationships
2	Reflective Dialogue	4. Recognition of one's discontent and the process of transformation are shared 5. Exploration of options for new roles, relationships, and actions 6. Provisional trying of new roles 7. Building competence and confidence in new roles and relationships
3	Reflective Action	8. Planning a course of action 9. Acquiring knowledge and skills for implementing one's plan 10. A reintegration into one's life on the basis of conditions dictated by one's new perspective

Reflective Dialogue (RD) is initiated when the learners validate their (new) assumptions or a 'best judgement' (Brown, 2004; Kitchenham, 2008; Wood, 2007). The learners might negotiate with others in this stage of the process, to test their new assumptions and to develop a consensual validation of these in their frame of reference (Brown, 2004; Franz, 2010; Howie & Bagnall, 2013; Wood, 2007). Reflective Dialogue is an essential medium for the promotion and development of transformation (Brown, 2004). There are a few prerequisites that must be met before one can engage in Reflective Dialogue, learners must: "(1) have accurate and complete information, (2) be free from coercion and distorting self-conception, (3) be able to weigh evidence and assess arguments objectively, (4) be open to alternative perspectives, (5) be able to reflect critically on presuppositions and their consequences, (6) have equal opportunity to participate (including the chance to challenge, question, refute, and reflect and to hear others do the same) and (7) be able to accept an informed, objective, and rational consensus as a legitimate test of validity." (Mezirow, 1996, p.78. In: Brown, 2004, p.85).

Reflective Action (RA) follows up CSR and RD, as it is defined as action based on the CSR and RD and is intended to integrate the new set of assumptions into the frame of reference and in that way into the life of the learner (Wood, 2007). Context is an important factor: RA is always taken in relation to the learner's situation (Higgins & Aspinall, 2011).

Conditions & Known Triggers for Transformative Learning
Franz (2010) studied the conditions for TL in publications from Cranton (1996), Daloz (2000), Franz (2005), Mezirow (2000) and Yorks and Marsick (2000). In summary, the results show an emphasis on the learning environment with two characteristics: (1) the support from peers or "others" in general and (2) room for critical reflection or reflective discourse. Others mention the importance of recognizing the pivotal role trainers and instructors play in stimulating Transformative Learning (Groen & Hyland, 2010; Haber-Curran & Tillapaugh, 2015; Soutern, 2007). To make the learners feel valued and to build a trusting relationship is an important part of the attitude of the trainers and instructors towards their learners (Groen & Hyland, 2010). They should also proactively promote TL. Military force or hierarchical structure are not stimulating for transformation, it rather occurs when the people consider themselves free (Carrington & Selva, 2010).

There are a few triggers known to cause Transformative Learning. What really stimulates TL is the event that disorients the learner (Howie & Bagnall, 2013; Sessa, London, Pingor, Gullu & Patel, 2010), but this event can be caused by different triggers, for example family-related, health-related, education-related and personal work-related (e.g. loss of job) triggers (Illeris, 2011; Stuckey et al., 2013). More specific triggers include activities like journaling, role-playing and group discussions (Brock, 2010). Reading fiction can also trigger TL, mostly due to the use of metaphors (Hoggan & Cranton, 2014). A metaphor can have different functions within learning, and relevant to TL are: (a) as a medium of reflection, (b) as a mental model and (c) as a springboard for change (Gray, 2007; Hoggan & Cranton, 2014; Nohl, 2015). Storytelling can help stimulate reflection as it involves creating order in a story line and exploring and understanding it before sharing (Gray, 2007). Stories can also promote

social cohesion (Gray, 2007). There are a few prerequisites to be fulfilled before storytelling can be used as an instrument to stimulate reflection, namely a degree of self-understanding, self-insight and self-respect (Gray, 2007). Reflective journals can also trigger reflection when they contain assessments and thoughts related to the daily practices of the writers, beyond a simple recording of events or merely a reproduction of emotions or fears (Gray, 2007). The writing of reflective journals stimulates the process in which individuals define goals for themselves and keep focused to achieve them, and thereby helps with the development of reflection skills (Gray, 2007).

The present study

In this paper, the transformative learning of a group of entrepreneurs who were engaged in a business incubator is studied. The research question guiding the study is: *What triggers different elements of transformative learning in the process of entrepreneurial development?* The aim is to explore instances of transformative learning and the triggers behind these instances of transformative learning in the context of entrepreneurial learning. Three elements of transformative learning are distinguished: Critical Self Reflection, Reflective Dialogue and Reflective Action. Diaries of 31 entrepreneurs will be analysed for instances of transformative learning and related triggers. The search for triggers is explorative. To be able to evaluate the relationship of the triggers with the element of transformative learning, a chi-square analysis will be performed.

Method

This section presents a short outline of the context of this study, followed by background data of the 31 participating entrepreneurs. After this, the coding of instances of TL is outlined, including information about the codebook that is used to investigate evidence of TL and related triggers in the dataset. Finally, the way of examining the relationships between the elements of TL and the categories of triggers is explained.

Sample
Thirty-one entrepreneurs were chosen from a larger group of participants of the entrepreneurship incubator program of VentureLabTwente (VLT) in the Netherlands. The group participated in exchange for an individual incentive (money compensation), consisting of a reduced fee for the incubator program. The whole dataset contains a total amount of 199 participants, who all completed the VLT program between 2009 and 2012. Background data is available for 183 of the participants (Hoffman, 2014; Kaffka, Singaram, Kraaijenbrink & Groen, 2013). Of these participants 161 (88.0%) were male and 22 (12.0%) female, with an average age of 44.10 (SD = 9.89, age range 22-63 year). The participants have different educational backgrounds: 25 (14.2%) of them only completed lower education, 56 (31.8%) intermediate higher level of education, for example higher vocational, and 95 (54.0%) completed higher education, for example at a university. The whole group of participants have an average of 15.13 years work experience (SD = 10.07). From all participants, 142 (80.2%) had at least one year of entrepreneurial experience before starting the VLT program, while 35 participants (19.8%) did not have any former business ownership experience. The extreme unequal distribution of gender was due to the high participation of male entrepreneurs in the VLT program (Kaffka et al., 2013).

The subset used in the present study is randomly selected from the whole dataset. Three criteria for admission to this research were applied: (1) the participants' engagement in the incubator program offered by VLT (2) and thus in setting up a new venture and (3) the respondents had to report on their learning activities. The learning activities were reported in a digital diary about their week.

Data collection
After agreeing to the individual incentive, the filling-in of the digital diary was a mandatory requirement and agreed explicitly between VentureLabTwente and the entrepreneur. The diary used in this study was based on a set of questions, designed to help the respondent focus on the aspects that are important in this research. The digital diaries the entrepreneurs had to fill in were structured along four open questions: (1) Learning: 'What were the most important things that you learned in the past week?' (2) Results: 'What results have you made in the past week?' (3) Issues: What issues have you been most concerned with in the past week?' and (4) Next Steps: 'What are the next steps that you are going to take in the coming weeks?' These four open questions were constructed based on an initial other four

in a pilot group (Kaffka et al., 2013). Their analysis of a second set of diaries (after the pilot group) showed that these questions provided the kind of detailed data about the entrepreneur and his development that was needed.

The objective was to have 52 diaries per entrepreneur, as the incubator program runs for one year (52 weeks). The actual response ranged from 14 to 76 diaries (for entrepreneurs who prolonged their engagement to VLT), with an average of 41.71 weekly entries per entrepreneur (Median = 44). The total amount of diaries is 1292, with a word count of 115.100 (average per respondent: 3712.9 words).

Coding the instances of TL and their triggers
The data of the digital diaries was analysed with a codebook. When coding, quotations were assigned to codes listed in the codebook. Part of this codebook was established before coding (deductive coding, Staa & Evers, 2010) and is based on the codebook of Wood (2007). The three elements of transformative learning were listed in the codebook: Critical Self Reflection, Reflective Dialogue and Reflective Action. The operationalization of these three constructs is based on the information in the theoretical framework and is shown in Table 2 in the results section. The second part of the codebook was established during coding (inductive coding, Staa & Evers, 2010). During the year in the incubator program, the respondents reported several instances of transformative learning with numerous triggers for this learning. The triggers were coded, and when none of the existing codes were applicable for the quotation a new code was added to the codebook. Examples of the triggers are mentors/business coaches, trainers, expert panel members, fellow participants of the incubator program etc. Interaction with parties outside the program can influence the decision or be the trigger for learning. Examples of those external triggers are investors, business partners and family.

Data from the digital diaries were imported as PDF files into Atlas.ti. This software is a tool to assist with qualitative data management and analysis. After coding all diaries with the codebook, an independent researcher coded randomly selected diaries to check how consistent scores were from different raters (McHugh, 2012; Pallant, 2005). This was done to improve the overall quality and the reliability of this research. To measure the inter-rater reliability, the Cohen's kappa statistic was used after the coding by the second researcher. As a criteria for this analysis, the sample size should not consist of less than 30 units of comparison (McHugh, 2012). The respondents were randomly selected, but the amount is dependent on the amount of quotations of the respondent after the coding of researcher 1 (D. Timmer). The amount of quotations of the respondent must be >30, to be sure of the minimum of the 30 units of comparison for the Cohen's kappa. The result of the inter-rater analysis for the elements of TL is Kappa (N=68) = 0.790 (p <.001). This indicates a moderate level of agreement (McHugh, 2012). The result of the inter-rater reliability for the triggers is Kappa (N=35) = 0.801 (p <.001). This indicates a strong level of agreement (McHugh, 2012).

The data is coded twice by researcher 1 ensuring that an intra-rater analysis for the elements of TL is possible as well (McHugh, 2012; Sim & Wright, 2005). The procedure is almost the same as performing the inter-rater reliability, with the only difference being that the coding of the same data by one researcher will be compared. The result of the intra-rater analysis is Kappa (N=36) = 0.819 (p <.001). This indicates a strong level of agreement (McHugh, 2012).

Investigation of the relations between the triggers and TL
The data was statistically analysed using a Chi-square test. There are two different types of chi-square tests: the test for goodness of fit and the test for independence (Pallant, 2005). The test for independence, also called Pearson's chi-square test or the chi-square test of association, is most suitable for this research, as it determines whether two categorical variables are related. The chi-square test for independence compares the frequency of cases found of one variable across different categories of another variable. Applied to this research: the triggers found in the data were compared to the amount of Transformative Learning found in the data, to investigate whether there are specific triggers stronger related to a specific kind of transformative learning. The chi-square indicates whether there are significant relationships in the sample, while the adjusted residual values (comparing the observed frequency with the expected frequency) show which relationships contribute to the chi-square number. When the adjusted residual (p <.05) has a bigger value than +1.96/-1.96, the found relationship can be interpreted as significantly different.

Results

In the following section, the results of the exploration of the data for instances of TL, related triggers and the assessment of the relationship between them are presented. Quotes with explanation will be given to illustrate the results. All quotes in the results paragraph are taken from the diaries and might be slightly adapted due to the translation from Dutch to English. Only pseudonyms are used to ensure anonymity.

Instances of TL
A total of 386 instances of transformative learning were reported by the respondents and coded by the researchers; 190 (49.22%) of them are instances of Critical Self Reflection (CSR), 104 (26.94%) of them are instances of TL element Reflective Dialogue (RD) and 92 (23.83%) of them are instances of Reflective Action (RA). Table 2 shows an overview of these results, with general examples of the codes.

Table 2
Presentation of the first part of the codebook with the coding key for the three elements of TL

Name	Operationalization	Key terms	Observed amount
Critical Self Reflection Code: [TL: CSR]	CSR: Instance where individual is confronted with a disorienting dilemma that causes questioning of his frame of reference, and deposits a base for new assumptions. NOT CSR: Everything that is already outside of the person. It can be triggered by something outside of the person, but the disorienting dilemma and other aspects are still processed by the entrepreneur.	Disorienting dilemma, Individual reflection or an individual realisation, Self-examination, including feelings of fear, anger, guilt or shame, Critical analysis/ assessment of actions, assumptions and relationships.	190
Reflective Dialogue Code: [TL: RD]	RD: instance where the individual validates the new assumptions in dialogue or negotiation with others to develop a consensual validation of the assumptions that make up the frame of reference. NOT RD: Everything that is not due to conversation, dialogue or other communication with others.	Validating new assumptions in dialogue, pitching ideas in conversations, After/in + conversation/ discussion/ dialogue with (…) + I learned/understand, The triggering of reflection due to a dialogue, Recognition of another person's discontent and sharing the need for change, Conversational exploration options for new roles/relationships, assumptions and possibilities, Trying of new roles and assumptions and building confidence/competence in them by receiving positive feedback and recognition from others.	104
Reflective Action Code: [TL: RA]	RA: instance that follows up on a theme or incident that is already mentioned in a CSR of RD incident and is action based on the integration of the new parts of a personal frame of reference into one's life. NOT RA: Every action that is not related to a previous CSR of RD instance.	A description of one or more actions related to an instance of CSR and RD, Planning actions for the future that contain integration of new assumptions, A description of the way the individual plans to integrate a new frame of reference into his life, for example about the competencies he needs develop to integrate it.	92

The next quotes are examples of instances of Critical Self Reflection (CSR). In all these quotes instances are shown where individuals are confronted with something that causes a questioning of their frame of reference. The first and second example are from entrepreneur Abel, who questions his own frame of reference on two different aspects:

Abel: "The turnover definitely dropped 35%, compared to last year November. What could be the cause? The rehousing? Are the prices too high? Is the website not findable? We are going to try to find out." [Abel, APA reference, 9:380-9:561]

Abel: "Making a decision… stays an issue for me. Where are we going to spend the most money? Website or advertisements? And for which target group?" [Abel, APA, 17:374-17:519]

In the first example, the negative development of his turnover makes Abel question his frame of reference: what could have caused this fall of 35%? He critically assesses the processes in his business and his actions. The second example from the same entrepreneur shows different aspects of CSR: a description of a moment of choice and a critical assessment of actions.

Teun: "There are companies that can attract investors with a much simpler concept. What do I do wrong?" [Teun, APA, 48:205-48:448]

Jan: "(…) need to make a shift from worker to manager? Or is that too early?" [Jan, APA reference, 30:430-30:497]

Entrepreneurs Teun & Jan show reflection in these instances of CSR: Teun about his business and Jan about the role he should personally take in his business. Teun questions his frame of reference about his business in relation to other companies and critically assesses his actions: why doesn't it work in his company and how do others succeed? Jan reflects on a more personal base: his role in his business. His CSR is in the form of a dilemma: does he need to change his role and related frame of reference? Although he doesn't enclose what those roles actually include for him, it is clear he is reflecting on his personal role. Participant Thomas in the last CSR example reflects as well: he critically assesses the existence of his company:

Thomas: "Do I know well enough why my company exists?" [Thomas, APA reference, 1:262-1:321]

The next few quotes are examples of instances of Reflective Dialogue (RD). In all these instances, a dialogue is involved: individuals validate new assumptions or start to reflect due to a conversation. This dialogue can be with business partners, personal coaches or family. In the first two quotes of entrepreneur Hilde, the dialogues are with some people at a networking event and with a new colleague:

"Another thing; in a conversation, where I introduced some people to each other, we discussed the fact that you should be aware of the fact that (when you work in a company for a longer time), you might get stuck to 'standards', which are killing for your (innovative) company and maybe also your joy in working." [Hilde, APA, 3:105-3:564]

"A new student started at AAA. He was able to make a jump start! I noticed that he works very systematically and that it costs him some effort when plans change. It's interesting to see, maybe I should work somewhat more systematically." [Hilde, APA, 10:646-10:904]

In both the quotes, she notices something after or in a conversation with others that made her reflect upon her attitude (stay away from 'standards') and work structure (systematically versus not systematically). Both instances and reflection could potentially change her frame of reference, but that depends on the action she takes after the RD. The next quote of entrepreneur Rik shows this potential as well, as he talks with his coach about problems with his new co-worker:

"I had a deep conversation with SL [coach]. I had some problems with a new co-worker. SL showed me that I need to be clear about what I want, need to concentrate on the positive aspects and need to be willing to have a conversation about the more difficult aspects." [Rik, APA, 5:98-5:359]

Rik validates new assumptions about the way he could treat the conflict with his coach. He actively explores possible actions and the confirmation from SL will contribute to Rik's confidence in handling this conflict in the future. The positive feedback entrepreneur Thea receives in the next example will also contribute to her confidence in the new customer approach she tried out:

I have been on the road last week, for the purpose of marketing and PR. I went to some schools unprompted, to bring information about our business and to get to know the people at the schools. I received a lot of positive responses on this new way of customer approaching." [Thea, APA, 23:120-23:328]

Thea validates a new way of approaching her customers with the target group: her customers. In conversation with them (the positive response), she validates the assumption that this is a good way, and builds confidence to maybe integrate this new way into the standard practice for her company.

The next quotes are examples of instances of Reflective Action (RA), where the entrepreneurs integrate new assumptions or actions into their frame of reference and into their daily lives and/or

company practices. In the first two quotes of Hilde, she talks about the integration of a new way of organizing her time: weekly calendars.

"How to organize my time in a way I can do as much as possible, without it being too much... Working is nice, but it's not okay to be busy all the time. From Monday July the 18th I will start with the weekly calendars to see if that's a way of working that fits me." [Hilde, APA, 4:1697-4:1969]

"I am improving myself in following the weekly calendars. Extra, since there are some students working again, which is structuring my activities (I don't have to do the things they are doing now)." [Hilde, APA, 9:428-9:652]

In these examples, it is clearly shown that Hilde tries to integrate the weekly calendars in her daily life as an action related to organizing her time. That she needs to organize her time in a different way is already mentioned a few times in her diaries and by taking action with the weekly calendars she integrates the change in her frame of reference. A different way of working is not the only action that the entrepreneurs can undertake when they need to change a thing in their frame of reference. For example, Cees changes the scope of a new project: instead of considering it a new product, he uses it as a pilot project:

"Conclusion: the project MCB must be seen as a project and not as a product. It is not interesting enough to produce it as a product and the market is too small for this. It is very useful as a pilot project though!" [Cees, APA, 26:338-26:570]

This change in scope is initiated after Cees had several meetings with his coach and the panel presentation with experts at VLT. The new and validated assumption that the product MCB is not suitable as a unique product is integrated when the action of changing it into a pilot project is carried out. The last example of RA treats the integration of a drastic decision of entrepreneur Tjalling:

"This was my first working week after our 2 weeks (in fact only 1 real week) vacation. The first day after my vacation I had a 'bad news' talk with one of my employees. In fact: my first employee. I had to tell her that I will not continue her contract. So for her it stops after 1 year. I am not satisfied about her. I learned that it is good to mention all the remarks I have. But I also learned that I should have spent more time with her to discuss these things earlier. On the other hand I don't really think it would have helped. I learned that you cannot really change people. I also learned that I did not see in the beginning of her contract what I see now." [Tjalling, APA, 55:155-55:835]

Tjalling has to make the decision whether or not to continue with one of his first employees. After passing through CSR and RD, the stage of RA followed and telling her is the action that integrates this decision into his business practices.

Factors that stimulate TL: categorization of the found triggers

Of the 386 found instances of TL, sixteen had no identifiable trigger, which means there are 370 instances of TL with an identifiable trigger. In this part of the results, the found triggers will be presented and reinforced with examples. Table 3 shows an overview of the results and general examples of the different categories of the triggers. The quotations with a non-identifiable trigger are not included in this part of the results. A total of 28 different trigger types were found, which are grouped in four different groups that all represent a trigger category: (1) internal VLT related triggers, (2) external business related triggers, (3) internal business related triggers and (4) non-business related triggers.

Table 3

Presentation of the second part of the codebook with the coding key for the triggers

Name	Operationalization	Key terms	Observed amount
Internal VLT related Code: [TR: IVR]	Internal VLT related triggers are the triggers that come from the VLT environment.	Meeting VLT, Class/training VLT, Panel presentation, Personal Development Plan, Personal coach VLT, Colleagues VLT	82
External business related Code: [TR:EBR]	External business related triggers are triggers that are related to the business of the entrepreneur, but are set outside of the company.	Industrial partners, (Governmental) agencies, Financial partners/agencies, Conferences, Customer/client, Former employer, Personal coach extern	78
Internal business related Code: [TR: IBR]	Internal business related triggers are triggers that are related to the business of the entrepreneur, and from inside of the company.	Management team, Associate/business, partner, Class/training extern, Finances, Networking, Assignment/product, Pilot, Intern/Work student, Team of colleagues	110
Non-business related Code: [TR: NBR]	Non-business related triggers do not have any relationship to the business the entrepreneurs are conducting or VLT.	Book, movie, television, Family related, Health related, Time/work balance related, Individual Reflection	70

The next quotes are examples of triggers from the different categories. The first two, from Cees and Hilde are from the Internal VLT related trigger category. In the first one, Cees had a talk with his personal coach from VLT, which did not help him a lot with new ideas for his company, but the conversation did help with a realization about the use of his existing network. The second one shows a part of the diary of Hilde, which describes a discussion that was held after the panel presentation. Both are examples of the Reflective Dialogue element of TL.

"I didn't make progress with regard to new ideas. Had a session with my personal coach. It became clear to me that we should 'network' within our existing network (maybe with my current employer?)" [Cees, APA, 7:170-7:398]

"Last Thursday, we had our last panel presentation [where] we had a discussion about the long run [company name] needs to recruit new customers. This should actually go smoother. The time we need now for every customer is still unprofitably high. I suspect that a proper planning and a few strategic steps will contribute to an improvement." [Hilde, APA, 45:710-45:1038]

Examples of External business related triggers are encounters with customers (the first quote of Thea below) or industrial partners (the second quote of Hilde, below). Customers and industrial partners are related to the business of the entrepreneurs, but are not under direct control of the entrepreneur. The entrepreneurs can influence them, for example through marketing or by choosing another supplier for their magnets, but they cannot influence them the way they can influence processes within their own company e.g. their own product. Thea's example is also an example of Reflective Dialogue, while Hilde's quote is an example of Reflective Action.

"Two potential clients approached us to come to them for a conversation: they want to make use of our product for next year. Apparently, we are at a turning point where our efforts are finally rewarded" [Thea, APA, 17:116-17:368]

"Last Tuesday, I went to the company that used to place the magnets on the rotors of our motors. These magnets didn't work, but we didn't know why. Last Tuesday, we had a conversation and they explained their findings. With this information, it is possible for us to investigate how and if we want to make use of magnets (we expect to have a higher efficiency)" [Hilde, APA, 31:106-31:548]

The next quotes are examples from the Internal business related trigger category. The first quote, from entrepreneur Ronald, follows in a sequence of paragraphs about his partner.

"Blue eyes are pretty, but you need more for a good cooperation. My business partner goes their own way, despite our conversation and related advises and learning points." [Ronald, APA, 31:111-31:305]

"I am worried about the uneven spread of knowledge in my team related to [the product] and the inability of one individual developer to execute a project independently (there is too much checking

required on all aspects for all projects). This forms a threat for further growth. [Jan, APA, 1:1007-1:1278]

Non-business related triggers are the last category of triggers. In this category, all triggers that do not have an origin in VLT or business are grouped:

"I realized that I feel more like a business owner than an entrepreneur. I like my job and I like to work in my company, but I would function as well in other jobs or companies." [Thea, APA, 3:454-3:647]

"I found an article from 1993 about [product] where the CEO describes the growth ambitions, including the market coverage. The situation of today is almost exactly like the situation 20 years ago. What can I learn from this?" [James, APA, 1:103-1:296]

The first quote shows a glimpse into the self-reflection of Thea about her role. This realization was due to nothing other than thinking, without intervention from her personal coach or anybody else.

Exploring the relationship between the elements of TL and the triggers

A chi-square test was performed to investigate the relationship between the element of TL and the trigger categories. A relationship was found between elements of TL and the triggers for learning. The overall analysis shows that the frequency of triggers reported was significantly different at the three elements of TL: X^2 (6, N = 370) = 37.4, p<.001. This result indicates that in the cross tabulation, the observed frequencies differ significantly from the expected frequencies. The cross tabulation and corresponding chi-square number are shown in Table 4. A closer examination of the table enables us to answer the research question: what triggers the different elements of transformative learning in the process of entrepreneurial development? The significant adjusted residual values have been marked with an asterisk (p<.05).

Table 4

Subdivision of triggers into trigger categories and the number of instances of triggers in combination with element of TL. Elements: Critical Self Reflection (CSR); Reflective Dialogue (RD) and Reflective Action (RA).

Trigger category		CSR	RD	RA	Total
Internal VLT related	Observed frequency	26	32	24	82
	Expected frequency	40.8	21.9	19.3	
	Adjusted residual	-3.7*	2.8*	1.4	
External business related	Observed frequency	38	26	14	78
	Expected frequency	38.8	20.9	18.3	
	Adjusted residual	-.2	1.5	-1.3	
Internal business related	Observed frequency	67	30	43	140
	Expected frequency	69.6	37.5	32.9	
	Adjusted residual	-.6	-1.8	2.5*	
Non-business related	Observed frequency	53	11	6	70
	Expected frequency	34.8	18.7	16.5	
	Adjusted residual	4.8*	-2.3*	-3.3*	
	Total	184	99	87	

* An adjusted value that is significantly (p <.05)

Two types of triggers have a significant relationship with the first element of TL (***Critical Self Reflection***). One type of trigger with a significantly higher observed frequency than expected is the Non-business related triggers (with an adjusted value of 4.8). In other words: non-business related triggers cause significantly more CSR than other type of trigger. The second type of trigger that significantly differs at p <.05 level, are the Internal VLT related triggers (with an adjusted residual value of -3.7), which means that this group of triggers significantly causes less CSR than other triggers. When the table is examined for the type of triggers that cause the ***Reflective Dialogue*** form of TL, it is visible that the Internal VLT related triggers significantly cause more instances of RD (adjusted residual value: 2.8). Apparently, triggers as VLT colleagues and the personal coach cause more reflective dialogue than any of the other triggers. The Non-business related triggers, on the other hand, do not stimulate

RD (adjusted residual value: -2.3). The last form of TL (***Reflective Action***) has a significantly higher amount of instances caused by the Internal business related triggers (adjusted residual value: 2.5). Similar to RD, Non-business related triggers also do not stimulate RA (adjusted residual value: -3.3). This adjusted residual value is significantly lower than expected. The one category of triggers that has not been mentioned, are the External business related triggers. For this category the observed frequency does not differ significantly from the expected frequency.

Discussion

The present study aimed to explore the triggers behind instances of TL in the context of entrepreneurial learning. Three elements of TL were distinguished: Critical Self Reflection, Reflective Dialogue and Reflective Action. After analysing and coding diaries of 31 entrepreneurs, participants of an incubator program, eighteen different triggers were found and divided into four groups: (1) internal VLT related triggers, (2) external business related triggers, (3) internal business related triggers and (4) non-business related triggers. Subsequently a chi-square analysis was performed to evaluate the relationship of the trigger categories with the elements of transformative learning.

In the diaries of the entrepreneurs, 386 instances of transformative learning were found, distributed among the three elements (190 instances of CSR, 104 instances of RD and 92 instances of RA). This does not differ much from the results from Woods' (2007) study, although her research does not explore the triggers related to the instances of transformative learning she finds. In her study, all 21 respondents showed a total of 196 instances of TL, in comparison with this research, where 31 respondents showed 386 instances of transformative learning. This similarity in results reinforces the results of the present study. Also, the distribution among the elements of transformative learning correspond with the results of Brock (2010), who found a distribution of 44% CSR, 33.5% RD and 19.9% RA (N=256). In the present research, the distribution was 49% CSR, 27% RD and 23.5% RA (N=386). The percentages are not identical, but the difference regarding the exact percentages can be explained by considering the sample. The sample of Brock (2010) consisted of undergraduate business school students, whereas in the current sample, entrepreneurs are not in a school environment. It may therefore be expected that in the results of Brock the amount of RD instances is slightly higher (more contact with peers and thus more RD) and the actual RA is slightly lower (because they are still in school).

Of the 386 instances found of TL in this study, 370 had an identifiable trigger. Of these triggers 82 of them were related to the Internal VLT environment, 78 to the External business environment, 140 to the Internal business environment and 70 triggers are not business related. Since there are no other known publications that studied the triggers of TL in this way, there are no results with which the results of the present study can be compared with. However, some publications offered insights on triggers of TL in general (e.g. Gray, 2007; Stuckey et al., 2013). These publications also found health and family-related triggers (in this study combined to the Non-business related category) and work related triggers. In research of Brock (2010), group discussions also were identified to trigger TL. The reading of fiction however is not confirmed as a trigger of TL in the present study (Hoggan & Cranton, 2014).

The exploration into the relationship of the elements of TL and the triggers show that: (1) the best way to stimulate Critical Self Reflection, is to make use of the triggers out of the Non-business related environment, (2) the best way to stimulate Reflective Dialogue is to make use of the triggers out of the Internal VLT environment and (3) the best way to stimulate Reflective Action is to make use of the Internal business related triggers. The most remarkable are the External business related triggers, where the observed count is very close to the expected frequency. This means that External business related triggers do stimulate TL, but do not stimulate a particular element of TL, as was more or less expected.

Thus, when incubator programs, such as VentureLabTwente, seek to stimulate transformative learning these results can be implemented. This means for example to use study books that promote and support individual reflection to stimulate Critical Self Reflection. Reflective Dialogue can be best stimulated by organising peer meetings with VLT colleagues, panel presentations and meetings with the personal coach and last but not least the way to stimulate Reflective Action is in encouraging actions that are executed within the venture of the entrepreneur, for example team meetings.

Limitations and future research directions

Altogether, the present study provided new insights in the triggers behind TL in an entrepreneurial context, however, there are still some limitations that must be noted. One of the limitations related to method of the present study concerns the sample size. The sample in this study is relatively small, with 31 respondents. This is partly compensated by the amount of data units (1292 diaries), but future research is needed with a bigger sample of respondents to verify the results of this study.

Another point of attention of this research is the decision to use nested data. Whereas all instances of TL and triggers were considered to be independent in this study, some of the instances may be related. The relationship of multiple consecutive instances could lead to a misinterpretation of the results, since the related instances had been treated as independent cases. For example, there might be a respondent who writes down in different diaries that he has problems with his business partner and these problems are recognized to trigger TL. These instances are then viewed as independent and thus analysed as TL triggered twice by his business partner, while it may be the same TL transformation. Regarding the disadvantage of nested data in this context, it is important to note that it is sometimes difficult to decide whether two instances are related or not, due to the two kinds of transformations related to TL (Brock, 2010; Dirkx & Mezirow, 2006; Howie & Bagnall, 2013; Mezirow, 2011). When the instances are considered to be *cumulative*, in which a sequence of events all contribute to the same TL transformation, the two should be viewed as dependent and analysed as one instance because there is one TL transformation. When the two instances are considered to be *epochal*, which involves one sudden major change per TL transformation, the two should be viewed as independent and the similarity of the trigger should then be considered as a coincidence. It was not achievable in all situations to determine which kind of transformation the respondent is going through (cumulative vs. epochal). The identification of the kind of transformation and the distinction whether data is legitimately clustered or nested is a possible direction for future research.

Although the use of diaries as a research instrument offers many benefits, it is important to know the limitations associated with the diary method. One of the limitations is that diaries always consist of self-reported data (Bolger, Davis & Rafaeli, 2003). Because it is all self-reported data, all information the respondents give is self-selected, thus it is impossible to know whether they exclude experiences. Also, in comparison to other types of research, diary research needs a high level of participant commitment and dedication to be able to obtain reliable and valid data (Bolger et al., 2003). A remark that has to be made is that the diaries used are solicited diaries. This means that the writers in most cases reflect about topics of interest to the researcher and in all cases know their diaries will be used (Jacelon & Imperio, 2005). The four questions that the respondents used for writing their diaries in the present study, structured their writings around the topics provided by the researchers (Learning, Results, Issues and Next Steps).

Next to this, little is known about the effect of diary keeping itself on respondents' responses (Bolger et al., 2003). There is some suspicion of effects that are caused, for example that the writing of diaries itself stimulates reflection (Jacelon & Imperio, 2005). When the respondent writes down his experiences, he is also rethinking them and this can help reflection. The repetition of having to write a diary every week could also influence the degree of reflection (Bolger et al., 2003). Both stimulating effects for reflection could have influenced the results of the present study since reflection is such a big part of TL. There is, however, little evidence that these effects pose threats to the validity of the data (Bolger et al., 2003).

Besides these limitations of the diaries as data collection instruments, there are a lot of benefits too. Diaries offer the opportunity to analyse "social, psychological, and physiological processes, within everyday situations" (Bolger et al., 2003, p.580). Even when they are solicited, respondent diaries are a useful strategy for data collection and can provide a rich source of data (Jacelon & Imperio, 2005). Diaries permit the analysis of reported events and experiences in their original and natural context (Bolger et al., 2003). The minimization of the amount of time elapsed between the actual event or experience and the account of it reduce the likelihood of retrospection (Bolger et al., 2003). Another benefit of the use of diaries as research instrument is the longitudinal aspect. Since the diaries are collected over a long period of time, it is possible to investigate temporal patterns of TL. The present study, however, did not make full use of this advantage, since the patterns over time per respondent were beyond the scope of the present investigation.

The present study is also influenced by the relationship between the elements of TL (Critical Self-Reflection, Reflective Dialogue and Reflective Action). In the present study, these elements are considered to be partly independent (CSR and RD) and partly dependent (CSR-RA and RD-RA). There are publications (e.g. Mezirow, 1997, p.60. In: Dochy, Gijbels, Segers & Van den Bossche, 2011, p.43) where TL is only considered to be significant TL when all elements are involved. On the other hand, there are publications as well that mention that not all elements have to be passed and completion of one element is not necessary before starting another (Brock, 2010; Isopahkala-Bouret, 2008; Wood, 2007). The decision to consider the elements partly independent and partly dependent influences the results and is therefore important to note here.

It would also be recommended to take the entrepreneurial experience of the respondents into account, to make the results more general for the whole entrepreneurial learning process. In the present study, there is no attention for this factor, while the previous experience of entrepreneurs could be a big influence in their TL process. For example, entrepreneurs who have already started up and managed a new venture, also seem to be more successful and effective in the second and third venture they start up and manage (Politis, 2005). This suggests that entrepreneurs gain knowledge and experience from their first start-up and that they are able to apply this knowledge and experience into a more successful organisation. To understand more about the role of past experiences in TL, future research is needed.

Conclusion

The present study aimed to explore the triggers behind instances of transformative learning (TL) in the context of entrepreneurial development. Results showed that the best way to stimulate Critical Self Reflection, is to make use of the triggers out of the Non-business related environment (by using study books that promote and support individual reflection), while the optimal way to stimulate Reflective Dialogue is to make use of the triggers out of the Internal VLT environment (by organising peer meetings with VLT colleagues, panel presentations and meetings with the personal coach). Lastly, the best way to stimulate Reflective Action is to make use of the Internal business related triggers in encouraging actions that are executed within the venture of the entrepreneur (by encouraging actions that are executed within the venture of the entrepreneur, for example team meetings).

References

Aernoudt, R. (2004). Incubators: tool for entrepreneurship? *Small Business Economics*, *23*(2), 127-135. doi:10.1023/B:SBEJ.0000027665.54173.23

Aerts, K., Matthyssens, P., & Vandenbempt, K. (2007). Critical role and screening practices of European business incubators. *Technovation*, *27*(5), 254-267. doi:10.1016/j.technovation.2006.12.002

Apte, J. (2009). Facilitating Transformative Learning: A Framework for Practice. *Australian Journal of Adult Learning*, *49*(1), 169-189. ISSN: ISSN-1443-1394

Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation*, *28*(1), 20-28. doi:10.1016/j.technovation.2007.07.008

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual review of psychology*, *54*(1), 579-616. doi:10.1146/annurev.psych.54.101601.145030

Brock, S. E. (2010). Measuring the Importance of Precursor Steps to Transformative Learning. *Adult Education Quarterly: A Journal of Research and Theory*, *60*(2), 122-142. doi:10.1177/0741713609333084

Brown, K. M. (2004). Leadership for social justice and equity: Weaving a transformative framework and pedagogy. *Educational administration quarterly*, *40*(1), 77-108. doi:10.1177/0013161X03259147

Carrington, S., & Selva, G. (2010). Critical Social Theory and Transformative Learning: Evidence in Pre-Service Teachers' Service-Learning Reflection Logs. *Higher Education Research and Development*, *29*(1), 45-57. doi:10.1080/07294360903421384

Centraal Bureau voor Statistiek (2012). Toename Ondernemerschap in Nederland. Retrieved from http://www.cbs.nl/nl-NL/menu/themas/dossiers/ondernemingsklimaat/publicaties/artikelen/archief/2012/2012-ondernemerschap-zzp-art.htm

Centraal Bureau voor Statistiek (2013). Overlevingskansen Startende Eenmanszaken Gestegen.

Retrieved from http://www.cbs.nl/nl-NL/menu/themas/bedrijven/publicaties/artikelen/archief/2013/2013-3902-wm.htm

Ciporen, R. (2010). The Role of Personally Transformative Learning in Leadership Develoment: A Case Study. *Journal of Leadership & Organizational Studies*, *17*(2), 177-191. doi:10.1177/1548051810368544

Commission of the European Communities (2000). Innovatie in een Kenniseconomie. Retrieved from http://www.eumonitor.nl/9353000/1/j4nvhdfcs8bljza_j9vvik7m1c3gyxp/vikqhidt52zg

Cope, J. (2003). Toward a dynamic learning perspective of entrepreneurship. Retrieved from http://eprints.lancs.ac.uk/48679/

Cope, J. (2005). Toward a dynamic learning perspective of entrepreneurship. *Entrepreneurship theory and practice*, *29*(4), 373-397. doi:10.1111/j.1540-6520.2005.00090.x

Cope, J., & Watts, G. (2000). Learning by doing- An Exploration of Experience, Critical Incidents and Reflection in Entrepreneurial Learning. *International Journal of Entrepreneurial Behavior & Research*, *6*(3), 104-124. doi: 10.1108/13552550010346208

Culbertson, S. S., Smith, M. R., & Leiva, P. I. (2011). Enhancing entrepreneurship: The role of goal orientation and self-efficacy. *Journal of Career Assessment, 19*(2), 115-129. doi:10.1177/1069072710385543

Dirkx, J. M. (2012). Self-Formation and Transformative Learning: A Response to" Calling Transformative Learning into Question--Some Mutinous Thoughts," by Michael Newman. *Adult Education Quarterly: A Journal of Research and Theory*, *62*(4), 399-405.

Dirkx, J. M., & Mezirow, J. (2006). Musings and Reflections on the Meaning, Context, and Process of Transformative Learning: A Dialogue between John M. Dirkx and Jack Mezirow. *Journal Of Transformative Education*, *4*(2), 123-139. doi:10.1177/1541344606287503

Dochy, F., Gijbels, D., Segers, M., & Van den Bossche, P. (2012). Theories of learning for the workplace: Building blocks for training and professional development programs. New York, NY: Routledge.

Erickson, D. M. (2007). A developmental re-forming of the phases of meaning in transformational learning. *Adult Education Quarterly*, *58*(1), 61-80. doi:10.1177/0741713607305936

Franz, N. (2010). Catalyzing Employee Change with Transformative Learning. *Human Resource Development Quarterly*, *21*(1), 113-118. doi:10.1002/hrdq.20033

Groen, J., & Hyland-Russell, T. (2010). Humanities Professors on the Margins: Creating the Possibility for Transformative Learning.*Journal Of Transformative Education*, *8*(4), 223-245. doi:10.1177/1541344611423401

Gray, D. E. (2006). Executive Coaching: Towards a Dynamic Affiance of Psychotherapy and Transformative Learning Processes. *Management Learning*, *37*(4), 475-497. doi:10.1177/1350507606070221

Haber-Curran, P., & Tillapaugh, D. W. (2015). Student-Centered Transformative Learning in Leadership Education: An Examination of the Teaching and Learning Process. *Journal of Transformative Education*, *13*(1), 65-84. doi:10.1177/1541344614559947

Hartog, J., Van Praag, M., & Van Der Sluis, J. (2010). If you are so smart, why aren't you an entrepreneur? Returns to cognitive and social ability: Entrepreneurs versus employees. *Journal of Economics & Management Strategy*, *19*(4), 947-989. doi:10.1111/j.1530-9134.2010.00274.x

Higgins, D., & Aspinall, C. (2011). Learning to learn: A case for developing small firm owner/managers. *Journal of Small Business and Enterprise Development*, *18*(1), 43-57. doi: 10.1108/14626001111106424

Hodge, S. (2014). Transformative Learning as an "Inter-Practice" Phenomenon. *Adult Education Quarterly*, *64*(2). 165-181. doi:10.1177/0741713613520405

Hoggan, C., & Cranton, P. (2015). Promoting Transformative Learning through Reading Fiction. *Journal Of Transformative Education*, *13*(1), 6-25. doi:10.1177/1541344614561864

Howie, P., & Bagnall, R. (2013). A Beautiful Metaphor: Transformative Learning Theory. *International Journal of Lifelong Education*, *32*(6), 816-836. doi:10.1080/02601370.2013.817486

Hyclak, T., & Barakat, S. (2010). Entrepreneurship education in an entrepreneurial community. *Industry and Higher Education*, *24*(6), 475-486.

Isopahkala-Bouret, U. (2008). Transformative Learning in Managerial Role Transitions. *Studies in continuing education*, *30*(1), 69-84. doi:10.1080/01580370701841556

Illeris, K. (2011). Contemporary Theories of Learning. New York, NY: Routhledge

Illeris, K. (2014). Transformative Learning and Identity. *Journal of Transformative Education*, *12*(2), 148-163. doi:10.1177/1541344614548423

Jacelon, C. S., & Imperio, K. (2005). Participant diaries as a source of data in research with older adults. *Qualitative health research*, *15*(7), 991-997. doi:10.1177/1049732305278603

Johnson, H. H. (2008). Mental Models and Transformative Learning: The key to Leadership Development? *Human Resource Development Quarterly*, *19*(1), 85-89. doi:10.1002/hrdq.1227

Kaffka, G. A., Singaram, R., Kraaijenbrink, J., & Groen, A. J. (2013). Sensebreaking and the Development of Entrepreneurial Cognition. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2251927

Kamer van Koophandel (2014). Meer Starters en Minder Faillissementen. Retrieved from http://www.kvk.nl/over-de-kvk/nieuws-en-persberichten/07-2014-meer-starters-en-minder-faillissementen-eerste-helft-2014/

Kitchenham, A. (2008). The Evolution of John Mezirow's Transformative Learning Theory. *Journal Of Transformative Education*, *6*(2), 104-123. doi:10.1177/1541344608322678

McHugh, M. L. (2012). Interrater reliability: the kappa statistic. *Biochemia medica*, *22*(3), 276-282. Retrieved from http://hrcak.srce.hr/index.php?show=clanak&id_clanak_jezik=132393

Mezirow, J. (2011). An Overview on Transformative Learning. In Illeris, K. (2011). Contemporary Theories of Learning, 90-105. New York, NY: Routhledge

Nohl, A. M. (2015). Typical Phases of Transformative Learning a Practice-Based Model. *Adult Education Quarterly*, *65*(1), 35-49. doi:10.1177/0741713614558582

Pittaway, L., & Thorpe, R. (2012). A framework for entrepreneurial learning: A tribute to Jason Cope. *Entrepreneurship & Regional Development*, *24*(9-10), 837-859. doi:10.1080/08985626.2012.694268

Politis, D. (2005). The process of entrepreneurial learning: A conceptual framework. *Entrepreneurship theory and practice*, *29*(4), 399-424. doi:10.1111/j.1540-6520.2005.00091.x

Rae, D. (2009). Connecting entrepreneurial and action learning in student-initiated new business ventures: the case of SPEED. *Action Learning: Research and Practice*, *6*(3), 289-303. doi:10.1080/14767330903301799

Sessa, V. I., London, M., Pingor, C., Gullu, B., & Patel, J. (2011). Adaptive, generative, and transformative learning in project teams. *Team Performance Management: An International Journal*, *17*(3/4), 146-167. doi:10.1108/13527591111143691

Southern, N. L. (2007). Mentoring for Transformative Learning. *Journal Of Transformative Education*, *5*(4), 329-338. doi:10.1177/1541344607310576

Staa, A. L., van, & Evers, J. (2010). 'Thick analysis': strategie om de kwaliteit van kwalitatieve data-analyse te verhogen. *KWALON. Tijdschrift voor Kwalitatief Onderzoek in Nederland*, *43*(1), 5-12.

Stuckey, H. L., Taylor, E. W., & Cranton, P. (2013). Developing a Survey of Transformative Learning Outcomes and Processes Based on Theoretical Principles. *Journal of Transformative Education*, *11*(4), 211-228. doi:10.1177/1541344614540335

Taylor, E. W. (2008). Transformative Learning Theory. *New directions for adult and continuing education*, *2008*(119), 5-15. doi:10.1002/ace.301

Wood, K. D. (2007). Experiences of transformative learning in the appreciative inquiry event. Retrieved from http://appreciativeinquiry.case.edu/uploads/kelley_wood_dissertation_1.4.doc