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CAN ROLE MODEL VIDEOS BOOST STUDENTS' ENTREPRENEURIAL INTENTIONS?

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ABSTRACT

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Entrepreneurship education, role models and entrepreneurial intentions have been studied for decades. As new and innovative teaching methods emerge, there is much uncovered ground to study. In this experimental research setting, a pre-test–post-test control group design was adopted to measure the short-term changes in intentions and its antecedents between before and after exposure to the entrepreneurial role model video. This thesis investigates whether entrepreneurial role models can affect students' entrepreneurial intentions and its antecedents in the short-term.

The study was conducted in Finland during 2017-2018 and 209 responses were used in the analysis, which were mainly gathered from two educational institutes: Lappeenranta University of Technology (65%) and Helsingin yliopiston Viikin normaalikoulu (21%). The students were randomly assigned to watch different videos. Students in group 1 watched a video of a male entrepreneur (56 students; 55% male respondents), students in group 2 watched a video of a female entrepreneur (86 students; 38% male respondents), and students in the control group (67 students; 58 % male respondents) did not watch any video.

The set-up also allows to compare entrepreneurial female and male role models' effects on the students' intentions, perceptions and attitudes. Additionally, the impact of gender and age is examined in more detail. Several hypotheses were based on previous research, and the analysis is performed using paired-sample tests and regression analysis. The results indicate that entrepreneurial intentions and perceptions of entrepreneurial feasibility were a little increased after exposure to the video. However, the videos had negative impacts on students' attitudes towards entrepreneurship and perceptions about entrepreneurial desirability. The results should be of interest to entrepreneurship educators and policy makers, as this study proved the potential within innovative and multimedia-based entrepreneurship education methods. This thesis demonstrates that changes in perceptions of entrepreneurship and entrepreneurial intentions can be changed even within a short time frame. Hence, it is recommended that innovative entrepreneurship education methods are utilized in education.

TIIVISTELMÄ

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Yrittäjyysaikomuksia ja roolimalleja on tutkittu vuosikymmeniä. Uusia ja innovatiivisia keinoja innostaa nuoria yrittäjyyteen on kehitelty paljon, ja tästä on seurannut paljon uutta tutkittavaa yrittäjyyskoulutuksen tutkimusalalla. Tämän tutkimuksen kokeellisessa tutkimusasetelmassa hyödynnetään ennen-jälkeen-kontrolliryhmä -menetelmää, jonka avulla mitataan lyhytaikaisia muutoksia yrittäjyysaikomuksissa (entrepreneurial intentions) ja sen tekijöissä (antecedents) ennen ja jälkeen yrittäjäroolimallivideon katsomisen. Tämä pro gradu -tutkielma selvittää voivatko yrittäjäroolimallit multimediapohjaisilla keinoilla, tämän tutkimuksen tapauksessa videoitujen yrittäjähaastattelujen avulla, vaikuttaa opiskelijoiden yrittäjyysaikomuksiin lyhyellä aikavälillä.

Tutkimus toteutettiin Suomessa 2017-2018 ja analyysi toteutettiin 209 vastauksen pohjalta. Vastauksia kerättiin pääsääntöisesti kahdesta koulusta: Lappeenrannan teknillisestä yliopistosta (65%) ja Helsingin yliopiston Viikin normaalikoulun lukiosta (21%). Opiskelijat jaettiin sattumanvaraisesti kolmeen eri ryhmään, joista ensimmäinen ryhmä katsoi videon miesyrittäjästä (56 opiskelijaa; 55% miespuolisia opiskelijoita) ja toinen ryhmä katsoi videon naisyrittäjästä (86 opiskelijaa; 38% miespuolisia opiskelijoita). Kolmas ryhmä toimi kontrolliryhmänä, jossa ei katsottu kumpaakaan videota (67 opiskelijaa; 58 % miespuolisia opiskelijoita).

Tämä tutkimusasetelma mahdollistaa nais- ja miesyrittäjäroolimallien vertailun sen suhteen, onko yrittäjäroolimallin sukupuolella yhteyttä opiskelijoiden yrittäjyyteen liittyvien tuntemusten muutoksiin lyhyellä aikavälillä. Lisäksi selvitetään, onko opiskelijoiden sukupuolella ja ikäryhmällä vaikutusta seurauksiin yrittäjävideon katselun jälkeen. Useita hypoteeseja tutkimuksen oletetuista tuloksista muodostettiin aiemman tutkimustiedon pohjalta ja analyysissä käytettiin parillisten otosten t-testiä sekä regressioanalyysiä. Tulokset osoittivat, että yrittäjyysaikomukset ja kokemukset omista kyvyistä (feasibility) olivat hieman korkeammat videoiden katsomisen jälkeen; tosin myös negatiivisia vaikutuksia mitattiin. Videot eivät onnistuneet nostamaan yrittäjyysasenteita (attitudes) ja kokemusta yrittäjyyden haluttavuudesta (desirability). Tulokset osoittavat, että multimediamuodossa olevalla yrittäjyysopetusmateriaalilla on mahdollista vaikuttaa opiskelijoiden käsitykseen yrittäjyydestä, jolloin tulokset voivat olla kiinnostavia myös esimerkiksi opetuksen järjestäjille ja päätöksentekijöille. Tämä pro gradu -tutkielma osoittaa, että uudenaikaisilla, multimediapohjaisilla keinoilla voidaan saada aikaan kaivattuja muutoksia nuorten kiinnostukseen yrittäjyyttä kohtaan lyhyelläkin aikavälillä. Näin ollen yrittäjyyskoulutuksen innovatiivisia metodeita, kuten yrittäjäroolimallivideoiden esittämistä opiskelijoille, on tämän tutkimuksen nojalla suositeltavaa hyödyntää sen positiivisten vaikutusten vuoksi.

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ABBREVIATIONS

EE	Entrepreneurship education
EEM	Entrepreneurial Event Model (Shapero & Sokol 1982)
EI	Entrepreneurial intentions
ERM	Entrepreneurial role model
EC	European Commission
OECD	The Organization for Economic Co-operation and Development
TPB	Theory of Planned Behavior (Ajzen 1991)

1. INTRODUCTION

"Example is not the main thing in influencing others. It is the only thing."
-Albert Schweitzer

Role models have the ability to inspire individuals and affect their attitudes and perceptions by setting an example. In the predominant theoretical models of entrepreneurial intention, intentions are considered as immediate antecedents of behavior. Exogenous influencers can affect attitudes and perceptions, which determine intentions. Entrepreneurship education and entrepreneurial role models are positioned as such exogenous influencers in this study. The integration of entrepreneurial intentions and role models offers and interesting combination to examine, with an innovative entrepreneurship education method brought in the equation. Building on predominant theories of these fields, this thesis investigates the effects web-based entrepreneurial role models narratives have on students' entrepreneurial intentions in the short-term.

1.1 Research background and relevance

Finland, like many countries worldwide, has been troubled by slow economic growth for the past decade. One of the solutions to spur growth and increase employment is entrepreneurship (e.g. Wong, Ho & Autio 2005; Keat, Selvarajah & Meyer 2011; European Commission 2013; Confederation of Finnish Industries 2015). Nevertheless, post-crisis enterprise creation rates in Finland are still lower what they were before the financial crisis, and enterprise exits are at a notably higher level compared to the beginning of the century (OECD 2016). Other European countries have slowly begun to revive back to pre-crisis levels (OECD 2016; OECD Stat 2018), while Finland is still lagging in start-up rates (Lahtinen et al. 2016). Despite moderate growth, the current situation is rather concerning as the entrepreneurial mindset in Europe is at a lower level than elsewhere. According to the European Commission's (EC, 2013; 2018a) study, only 37 % of Europeans would like to be an

entrepreneur compared to 51 % of Chinese and US citizens. Countries have been investing in entrepreneurship education (EE) and business support (Altinay et al. 2012; Lahtinen et al. 2016), and as a resent countermeasure the Finnish Ministry of Economic Affairs and Employment (2017) initiated to support the unemployed with start-up businesses. Yet, more actions need to be taken aimed at enhancing the entrepreneurial spirit and encouraging individuals towards an entrepreneurial path.

Events such as Slush, which are aimed at changing attitudes towards entrepreneurship, and encouraging nascent entrepreneurs and startups forward, are important influencers and supporters of new entrepreneurs in various fields. Slush is described as a leading startup event in Europe and it brings together company founders and investors. (Atomico 2016) Creating a supportive atmosphere and making entrepreneurship seem like an attractive way of living, an addition to lowering the barriers to self-employment such as stressful administrative procedures and accessibility to credit, are key functions of enhancing self-employment in Europe (EC 2013). As Krueger, Reilly and Carsrud (2000) noted, policy changes can only increase business creation if attitudes are also changed. They (2000) state that the first step in encouraging nascent entrepreneurs to start businesses is to increase perceptions of desirability and feasibility.

EE has been studied widely in recent decades and in many cases, it has proven to spur interest and intentions towards self-employment (Peterman & Kennedy 2003; Souitaris, Zerbinati & Al-Laham 2007). Supporting this view, the European Commission (2018b) notes that young people who take part in EE are more likely to take the entrepreneurial path. Especially hearing about real-life experiences and involving more hands-on teaching is highly recommended (EC 2018b) in addition to mentoring (Van Auken, Fry & Stephens 2006). Despite EE's potential the EC (2013) worries, that current EE does not serve its purpose nor provide the right tools for an entrepreneurial career. Additionally, according to some studies the effects EE has had on students' interest towards becoming self-employed have been conflicting, as entrepreneurial intentions (EI) have not changed or even decreased in some studies (Graevenitz, Harhoff & Weber 2010; Oosterbeek, Van Praag & Ijsselstein 2010;

Fayolle & Gailly 2015; Chen et al. 2015). This suggests a need for new and innovative EE pedagogical methods.

The role model research branch offers and interesting viewpoint for EE studies. Recent studies have found that role models have the potential to invoke entrepreneurial spirit amongst students and encourage young people to take on entrepreneurship as a source of livelihood (Dyer 1994; Van Auken, Fry & Stephens 2006; BarNir, Watson & Hutchins 2011). Also, the EC (2016) and the OECD (2009) recognize the importance of entrepreneurial role models (ERM) for self-employment. Gibson (2004) defines that role models have several important functions: *"to provide learning, to provide motivation and inspiration and to help individuals define their self-concept".* Thereby, ERMs can teach students about running a business and inspire them to want to become successful entrepreneurs. Thus, incorporating ERMs in EE would serve the needs of nascent entrepreneurs and in the best-case speed up the sluggish economic growth. Multimedia-based entrepreneurial narratives may be an effective and effortless way to affect students' perceptions about entrepreneurship. Hence, the effects of ERM narratives are investigated in this study.

When it comes to human behavior, predicting future actions is rather difficult. Yet, EI and psychology researchers suggest (e.g. Bagozzi, Baumgartner & Yi 1989; Ajzen 1991; Kim & Hunter 1993; Krueger & Brazeal 1994), intentions serve as a valid predictor of future behavior. Examining intentions allows us to evaluate the changes that occur in an individual's attitudes and perceptions, for example after taking part in an EE course or attending an inspiring role model's lecture. In order to get confirmation for the positive impacts of EE, it is important to understand the factors behind intentions and how those factors can be affected. As it is yet little studied, it is especially interesting to find out whether EI can be influenced within a short timespan with web-based entrepreneurial narratives in video format.

This study uses an integrated EI model adapted from previous EI, EE and ERM research to investigate ERM's impacts on EI and its antecedents. More specifically, the objective of this thesis is to investigate the potential of ERM video narratives in

EE. The main research question answers what effects ERMs have on students' EI in a short time-span. In addition, the moderating effects of the ERM's characteristics as well as the respondents' characteristics are examined. As the gender theme has been of interest in EE and EI research and females' interest towards entrepreneurship has been proven to be lower than males' EI (Zhao, Seibert & Hills 2005), this study will contribute in understanding females' interest in entrepreneurship, and finding ways to get females to take the entrepreneurial path. The results of this research will be beneficial for educators, young potential entrepreneurs, policy makers and the society at large, and will contribute in finding future directions for EE and EE studies.

1.2 Research gaps

Entrepreneurship starts with entrepreneurial intentions (Karabulut 2016). Krueger, Reilly and Carsrud (2000) consider EI as the most important processes explaining and predicting behavior and entrepreneurship, whilst certain attitudes can predict intention. The decision to become an entrepreneur is affected by many factors, and the drivers affecting EI have been studied much in recent years (Shapero & Sokol 1982; Ajzen 1991; Krueger, Reilly & Carsrud 2000). According to researchers, EI can be affected through EE (e.g. Peterman & Kennedy 2003; Souitaris, Zerbinati & Al-Laham 2007) and role models and their effects on individuals' intentions (Van Auken, Fry & Stephens 2006; BarNir, Watson & Hutchins 2011). Authors from the psychology and intentions literature (e.g. Ajzen 1991; Kim and Hunter 1993; Krueger & Brazeal 1994; Krueger, Reilly & Carsrud 2000) suggest that intentions are the best single predictor for a target behavior, especially when the behavior is hard to observe, is rare or involves time lags (MacMillan and Katz 2002). Still, the gap between intentions and action remains problematic: will intention always lead to action? As this thesis has a time constraint, a longitudinal study is not possible but observing intentions still gives us the best answer and comprehension of students' EI and willingness to become an entrepreneur. Other measures, such as attitudes towards entrepreneurship and entrepreneurial desirability are examined as well, which predict EI.

This is one of the first studies to of its kind to evaluate narrative ERM videos' effects on students' EI. Most studies in the role model and EI branch have been long-term studies (such as Van Auken, Fry and Stephens 2006, and Shinnar et al. 2014), not paying attention to short-term effects role models may have on EI and its antecedents. In this study the role model exposure will only take some minutes and the possible effects the ERM video has on students is examined. Fayolle and Gailly (2015) have found that a short 24-hour EE program had no effects on students EI in the short-term, although attitudes towards entrepreneurship increased in the medium-term when measured six months after the program. Thus, the possible effects short-term ERM exposure has on EI requires more research.

As Teixeira and Forte (2015) argue, EI studies often fail to consider the different education backgrounds of students. Because in this study the focus is also in the differences between the students, setting age and gender as a control variables, it may be possible to draw conclusions of how to efficiently affect different students' EI. Simultaneously, age is comparable to different educational levels, as all the secondary school students are in the age group below 18 years and roughly, the rest are in tertiary education. Comparing university students' intentions by field of study has been done before mostly in business and engineering (e.g. Maresch et al. 2016) but including different education levels (secondary vs. tertiary education) offers a new twist to the EI and EE studies. As the data used in this study consists mainly of high school students and business majors, comparing respondents by field of study is not worthwhile. As all the secondary school students are from a high school, vocational schools are not represented in this study.

Empirical evidence suggests students' attitude and EI levels varies greatly depending on have students taken part in EE or not (Fayolle & Liñán 2014). EE and its effects on students' likelihood and desire to start a business have been studied across countries, yet the results are mixed. In some studies, intentions of those who participated in EE even decreased (e.g. Graevenitz, Harhoff & Weber 2010; Oosterbeek, Van Praag & Ijsselstein 2010; Chen et al. 2015; Fayolle & Gailly 2015). Clearly, there is need for studies proving EE's positive effects, and by using ERM

videos as a pedagogical instrument, this study aims to contribute in the search of best methods in EE.

Actually, Fayolle and Liñán (2014) have raised EE's pedagogic view and other education-related matters into discussion. What they (2014) note being problematic is the variance in educational variables, meaning course contents, available resources, teachers' professional profiles and their EI, the time used and pedagogical methods (face-to-face teaching vs. distance learning, theoretical vs. practice-based, using IT or not, etc.) all vary considerably. This makes comparability between differently carried out studies an issue and explains at least some of the differences between studies' results. Thus, there remains much to investigate between the potential causal links between the educational variables, and EI and its antecedents. As mentioned, this study will contribute in the search of suitable and effective methods and new, innovative practices in EE.

The problem with traditional teaching methods in EE is often that university professors don't have practical entrepreneurial experience and thus cannot serve as ERMs (Keat, Selvarajah & Meyer 2011), whereas mentoring done by an entrepreneur has proved to be a useful way to invoke interest towards entrepreneurship and increase EI (Van Auken, Fry & Stephens 2006). Especially direct respondent-role model interaction through positive discussions with the role model and involvement in the business seem to have the greatest impact in EI (Van Auken, Fry & Stephens 2006). That is why in this study uses real entrepreneurs as ERMs, whom by setting example aim to spark an interest towards an entrepreneurial career path.

To current knowledge, such a research setting where a short narrative video of an entrepreneur is shown, has been little studied in the field of EE. It will be intriguing to find out whether the chosen ERMs affect students' EI and can those intentions be reinforced within a short timespan through a video and no face-to-face interaction. Thus, this study will delve into some of the uncovered areas of EI and EE research. As this study uses two entrepreneurs, the setting allows to compare the effects the young female entrepreneur and older male entrepreneur have on the

students, and to compare these ERMs' ability to inspire the observers and affect EI and other antecedents. Specifically, the moderating effects of the control variables are of interest. For further use of ERMs in EE, this study offers valuable information and hopefully leads to other similar studies on how EE is most effective and produces the desired outcome of raising students' EI.

This thesis takes a stand on above-mentioned gaps in current research and increases knowledge of secondary and tertiary students' EI and ERM videos' potential to affect EI. The results offer beneficial implications, which can be used in EE to more effectively increase students EI, attitudes and perceptions about entrepreneurship in different educational levels. Incorporating similar educational ERM videos in EE is recommended and cost effective. The results of this study have the potential to be of use for entrepreneurship educators and the society. This thesis builds on TPB and EEM and role model identification theories to investigate the impacts web-based entrepreneurial narratives have on EI.

1.3 Research problems and objectives of the study

This study aims to empirically test, whether ERMs can affect students' EI through a narrative short video. Other topics investigated are the differences between the role models: do observers' responses differ subject to the watched role model video? Is one entrepreneur more inspirational than the other is? Do female observers consider the woman entrepreneur more inspirational? Does the male entrepreneur's story convince male observers better? Do age or education level affect the results? This study provides a twist to the intentions research framework by studying whether role models and their gender, background, and entrepreneurial story have different effects on the respondents' EI and its constructs, and are those differences dependent on gender, age and prior entrepreneurial experience.

As mentioned before, the effects role models have on intentions has concentrated on long-term studies and face-to-face contact or interaction between the role model and student. The objective in this thesis is to study how two different, short ERM

videos affect students' EI in a short time-span. Therefore, the research question for this thesis is formed as follows:

1) What short-term effects do entrepreneurial role models have on entrepreneurial intentions?

In order to comprehensively understand the effects the ERMs have on students, the research question is supported by the following sub questions:

1.1) What is the overall effect of entrepreneurial role models on entrepreneurial intentions?

1.2) How do the role model's characteristics moderate the effect?

1.3) How does the students' demographic background moderate the effect?

By incorporating the influence of gender and age (or education level) and entrepreneurial experience as control variables, it is possible to compare differences between the students' EI and its antecedents.

1.4 Limitations

This thesis studies secondary and tertiary school students and uses an experimental research design to test ERM's potential impacts on EI and its antecedents. The study targets students and not people in the working life (at least not full-time workers), although EI studies of workers in different fields have been conducted e.g. IT-field (Lee et al. 2011). Students are a relevant target group as EE has the potential to change attitudes and EI through awareness (Liñán 2004). The relevance for the study has been justified in the research gaps section, such as the limited amount of EI studies using secondary school students. The collection of data was designed to support the aims of the study, and an Internet based survey was an efficient tool to collect a larger amount of responses from different education levels. A quantitative analysis method in research allows studying experiences of a larger

sample and enables the generalization of the results, but it fails to observe details. Furthermore, attitudes and human behavior may be better explained with qualitative means (Austin & Sutton 2014), thus this study does not portray EI and its constructs extensively.

One limitation stems from the chosen educational institutes where the data was collected and the respondents. The educational institutes where responses were mainly gathered are 1) Helsingin yliopiston Viikin normaalikoulu (secondary education), and 2) Lappeenranta university of technology (tertiary education). Thus, only high school students (and not vocational school students) and mainly university students (and not university of applied sciences students) are examined in this study. The chosen institutes affect the generalization of the results, and the results are applicable only in similar contexts. Hence, results cannot be generalized to all Finnish students in different cities, or necessarily to other European countries.

Another limitation is the ERMs used on the videos. The entrepreneurs in the videos are Finnish and not a comprehensive representation of all entrepreneurs. Inspiration is a subjective concept. The aim was to select role models that are as different as possible. An older male entrepreneur and a young, inspirational and enthusiastic female entrepreneur. Being able to identify one's self with a role model most likely affects how inspiring the role model is considered (Gibson 2004). If the entrepreneurs and their field of work are not desirable to the observers, whom either cannot relate to the ERMs, can affect the results of this study. With respect to identification, it is important to have a female entrepreneur for the second video, because respondents consist of both genders. Especially females prefer a role model of the same gender to be able to relate and be inspired, whereas for men the gender of the role model is not as important (Latu et al. 2013). Also, as the effects of gender have been present in various EI studies with contradictory results (e.g. Karimi et al. 2013; Shinnar et al. 2014), gender is included as a control variable in this study.

1.5 Implementation and outline of the study

A quantitative, experimental research design is applied in this thesis to gain a comprehensive understanding of students' EI and its antecedents, and the possibility of ERMs increasing them. The data was collected with an online survey and the respondents are mainly from two different educational institutes (upper secondary school and university). A survey design offers a numeric portray of attitudes of a population by studying a sample of the population representing it (Creswell 2014, 155). To get a better response rate, the responses were partially obtained in a classroom setting so that the turnaround of data collection would be better. Potential respondents to the survey studying in Lappeenranta university of technology were approached via e-mail offering a link to the survey, having first randomly assign the students into three groups. After enough responses were obtained (initially determined at 300 responses), the data was analyzed using SAS to test for changes in EI and its antecedents after watching the ERM video.

The thesis proceeds as follows: first, the theoretical framework is presented in chapter 2 including an overview of EI, EE and ERM research. Different internal and external factors influencing EI and other predictors of entrepreneurial activity are presented. The most influential and validated theories of EI, the Theory of planned behavior (TPB) and Entrepreneurial event (EEM) are introduced. EE's and ERM's impacts on EI and its antecedents is presented in the light of previous EI studies. Several hypotheses and an integrated framework are formed based on the two EI models and prior research, allowing us to examine ERM's potential impacts on students' EI. Additionally, the control variables' effects on EI is examined. The conceptual framework can be viewed in Chapter 2.4 (Figure 3).

Chapter 3 provides a more detailed description of the methodology and survey used in this study. The data collection phase is explained in detail following an introduction of the ERM, the description of measure development and course of empirical testing, and lastly reliability and validity evaluation. Chapter 4 presents the results and explains the relationship between EI and its components, and discusses the impacts ERMs have on EI in the short-term. Lastly, in Chapter 5, the findings of

this study are linked to previous literature, and potential implications are suggested. Finally, based on this study's limitations, future research directions are pondered.

2. THEORETICAL FRAMEWORK

2.1 Entrepreneurial intentions (EI)

Entrepreneurship begins with entrepreneurial intentions (Karabulut 2016). EI is the quality needed for an individual to pursue an entrepreneurial career or start ones' own business. Thompson (2009, 676) defines entrepreneurial intention rather aptly as "*a self-acknowledged conviction by a person that they intend to set up a new business venture and consciously plan to do so at some point in the future".* When discussing entrepreneurship, the concept of intentions cannot be left unmentioned, because they are a strong predictor for behavior and future entrepreneurial activity (Bagozzi, Baumgartner & Yi 1989; Kim & Hunter 1993; Krueger & Brazeal 1994; Krueger, Reilly & Carsrud 2000). In fact, psychology researchers claim that intentions predict planned behavior best, especially when a behavior is rare, hard to observe or occurs after a delay. (MacMillan & Katz 1992; Krueger, Reilly & Carsrud 2000).

In the course of the years, different methodologies have been used to explain the entrepreneurial decision (Liñán 2004). EI literature has evolved rapidly as an integration of entrepreneurship theory and neighboring fields, especially social and cognitive psychology (Fayolle & Liñán 2014). Reasons why some people decide to become entrepreneurs have been sought within personality traits and demographic variables, such as gender, age, level of studies, and education background. However, their predictive power in studies has proved to be rather low (Krueger, Reilly & Carsrud 2000). A newer approach establishes on the notion of considering the entrepreneurial decision as a voluntary and conscious act (Krueger, Reilly & Carsrud 2000), and intentions are the preceding element of entrepreneurial behavior. Behavior then again depends on attitudes of the person (Ajzen 1991), which can be influenced by exogenous influencers, such as EE and role models (Krueger & Brazeal 1994; Krueger, Reilly & Carsrud 2000). In-depth meta-analyses have provided empirical proof of attitudes' ability to successfully predict intentions; over 50% of the variance in intentions is explained by attitudes and over 30% of the

variance in behavior is explained by intentions (Kim & Hunter 1993; Krueger, Reilly & Carsrud 2000).

Even though the factors contributing to the decision to become an entrepreneur have been studied for decades, it is still not established what those endogenous and exogenous factors are. EI is not dependent solely on the individual's personality traits, demographic characteristics, attitude and behavior but the surrounding environment and culture also affect them, as this chapter demonstrates. First, the effects personality and environmental factors have on the entrepreneurial decision are presented, following other predictors of entrepreneurial activity, which have had a high profile in recent EI studies.

2.1.1 EI is affected by inherent and external factors

Motives and reasons for entrepreneurship have been studied widely throughout the years, even though predicting entrepreneurship has not proved to be straightforward (Krueger, Reilly & Carsrud 2000). Historically, in the field of entrepreneurship research, there have been many attempts to specify the individual factors that affect the decision to become an entrepreneur (Dyer 1994). Some researchers consider that personality traits determine the occurrence and the success of the entrepreneur (e.g. Zhao, Seibert & Lumpkin 2010; Leutner et al. 2014). For example, Espíritu-Olmos and Sastre-Castillo (2015) argue that when explaining EI of students, the personality traits theory is the most plausible theory. Another interesting inherent perspective is that genetic components are able to explain entrepreneurial behavior. According to Nicolaou and Shane's (2010) study, genetic factors have a statistically significant impact on EI. Nonetheless, a more recent twist to the intentions research branch is examining the enabling factors the external and socio-economic environment contain for the potential entrepreneur. Lévesque and Minniti (2006) categorized the triggering factors to entrepreneurship as contextual (environmental) factors and inherent (individual) factors; although several other synonyms for these factors exist, e.g. trait and rate approach.

Inherent factors explaining EI

The trait approach focuses on inner qualities and characteristics entrepreneurs possess (Gartner 1988). Personality and personality traits theory have been the object of entrepreneurship research for decades in explaining why some people are more entrepreneurial than others. The search of the characteristics determining the emergence of EI, traits and qualities entrepreneurs have and determinants of entrepreneurial success have led to a variety of frameworks and competing models. The inconsistencies and conflicting results have affected the status and popularity of the approach in the past years. (Zhao & Seibert 2006; Brandstätter 2011; Schlaegel & Koenig 2014) To begin with, even the concepts of personality and personality traits are imprecise (Brandstätter 2011), the definition of an entrepreneur in research is inconsistent and there is a confusing variety of traits attributed to an entrepreneur (Gartner 1988). Additionally, scholars Chandler and Lyon (2001) note that reliability and validity of entrepreneurship research has occasionally been rather questionable, and as a solution, they call for multiple source data sets, more advanced theoretical models and longitudinal research. On the other hand, integrating theoretical models has been proposed as a solution to increase explanatory power, theoretical clarity and consistency of the field (Schlaegel & Koenig 2014).

The personality theory increased its popularity in the 1990s, which Zhao and Seibert (2006) consider was due to the emergence of the five-factor model (FFM) developed by Robert McCrae and Paul Costa. The model was able to combine a variety of personality variables into a comprehensive set of concepts. (Digman 1990; Zhao & Seibert 2006) The acronym OCEAN, is used of the model, referring to openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (or emotional stability). Even though there is prevailing consensus of the five-factor model's ability to describe personality inclusively, some concepts of personality cannot be placed into just one of the five dimensions, thus risk propensity was added as an additional personality trait (Zhao, Seibert & Lumpkin 2010). According to Zhao, Seibert and Lumpkin's (2010) meta-analysis there is considerable evidence that personality traits are important determinants of EI.

Other personality constructs explaining entrepreneurship have also been used such as locus of control and need for achievement (e.g. Frank, Lueger & Korunka 2007). Karabulut (2016) proposes that EI is affected by four personality traits: locus of control, need for achievement, risk tolerance and entrepreneurial alertness. The higher the levels of these traits, the more likely the individual will become self-employed. Based on previous EI research, Espíritu-Olmos and Sastre-Castillo (2015) suggest that EI is affected by a slightly different set of personality traits: extroversion, inner control, kindness, tolerance for ambiguity, need for achievement, risk toleration and neuroticism. On a study focusing on EI of students all but neuroticism, explain students' EI. According to their (2015) study personality traits - theory best explains students' EI.

As it can be noted, there is inconsistency due to a variety of traits explaining EI. Scholars have criticized the personality theory due to its large number of explanatory factors and conflicting results to EI as well as its limitation to the individual. Frank, Lueger and Korunka (2007) conclude that assessing the personality traits affecting EI can only be done in conjunction with external factors: the environment, processes and resources. Individual characteristics, attitude and cognitive processes only partially explain entrepreneurial behavior, hence social and economic factors also play a crucial role in the business startup decision (Dyer 1994).

External factors explaining EI

The alternative and more recent view explaining EI focuses on the environmental conditions, called the rates approach (Aldrich 1990). Contextual factors are qualities of the socio-economic environment, such as education, availability of financing, labor markets, and quality of existing infrastructure, and they generate variation in entrepreneurial activity. Contextual factors such as policy interventions may be altered relatively quickly whereas inherent factors are not. (Lévesque and Minniti 2006) Policy initiatives' ability to affect business formation should not be underestimated as intentions can be influenced through positive attitude (Krueger, Reilly & Carsrud 2000). The EC (2013) has undertaken that creating a favorable ambiance for entrepreneurship and making it seem desirable and valuable is an

important theme of improving the social environment of entrepreneurship. Yet, the first step in encouraging new venture creation is increasing perceptions of desirability and feasibility and at the same time promoting those perceptions of critical stakeholders (Krueger, Reilly & Carsrud 2000).

Even though the external environment provided a fruitful, encouraging and optimal environment to start a business, not everyone chooses to start his or her own firm. Dyer (1994) concludes that in addition to the obvious individual factors, the entrepreneurial choice is influenced by social and economic factors. As also Krueger and Brazeal (1994) state, entrepreneurial activity does not occur in a vacuum but is dependent on the cultural and social context.

The social environment

As an example of social factors behind entrepreneurship, the offspring of entrepreneurs are more likely to follow their parents' footsteps, as entrepreneurship seems more acceptable and desirable for them (e.g. Dyer 1994; Van Auken, Fry & Stephens 2006; Solesvik 2013). Especially having an entrepreneur father increases EI (e.g. Espíritu-Olmos & Sastre-Castillo 2015) and in the study of Van Auken et al. (2006) fathers were ranked as the most important role model. In addition, family support and resources are important and a lack of support can affect the willingness to become self-employed (Dyer 1994). In contrast, some researchers have found that entrepreneurs often come from deprived conditions where the childhood is characterized by poverty, desertion, neglect and death (Kets de Vries 1977) motivating the individual to gain control of their life by working for themselves. Yet, as Van Auken, Fry and Stephens (2006) suggest, relationship-orientated activities, especially interaction with an entrepreneur and involvement in their business have the greatest probability of influencing career intentions and sparking an interest towards entrepreneurship.

Related to the social factors influencing entrepreneurship, some empirical studies have found that entrepreneurship can occur in clusters within the society and be unevenly spread. For example, intentions to entrepreneurship seem to be higher in

certain minorities or in certain ethnic communities within the society (e.g. Dyer 1994; Kets de Vries 1977). Role models within the communities serve as examples to seek for the status reached through entrepreneurship. Entrepreneurship within the Asian versus the African American communities within the United States have been studied and due to there being visible entrepreneurs within the Asian community, self-employment among the ethnicity is higher. (Dyer 1994)

The economic environment

Lastly, the prevailing economic situation can affect the prevalence of entrepreneurship. Previous research has found EI to be higher in countries with lower GDP per capita (Griffiths, Kickul & Carsrud 2009). When there is a lack of opportunities, entrepreneurial careers emerge (Dyer 1994). For example, non-natives may face difficulties when trying to find jobs and that might result in more entrepreneurship among ethnic groups. On the other hand, an unfavorable external environment, scarcity of resources and lack of entrepreneurial knowledge can impede intentions from turning into action (Solesvik 2013). In contrast to the lack of opportunities, economic growth can also work as a simulator to self-employment when there is more demand for goods and services, the possibilities the upswing causes can be exploited and commercialized by potential entrepreneurs (Dyer 1994).

In conclusion, the decision to take the entrepreneurial path is most likely a combination of individual and environmental aspects. Yet as mentioned in the introduction chapter, self-employment rates have remained quite static in Finland during the last decade even though the economy has changed. Therefore, situational variables do not work as a good predictor of entrepreneurial activity, in addition to the poor explanatory power and predictive validity of the variables (Gartner 1988; Krueger, Reilly & Carsrud 2000). Personality variables indirectly affect EI through attitudes and motivation to act, but something may be left uncovered. Hence, other predictors of entrepreneurial activity are presented next.

2.1.2 Other predictors of entrepreneurial activity

Age and educational level

A relative large amount of EI studies has examined the effect age has on EI. In extensive global reports, it has been found that there is a positive correlation between higher education of young people and entrepreneurial activity, especially between males (GEM 2005). Therefore, the higher the rate of people are educated, the higher the amount of self-employed should be. Rather conflictingly, some studies have found a negative correlation with education and EI, indicating progressing in studies leads to a decrease in EI (e.g. Wu & Wu 2008; Espíritu-Olmos & Sastre-Castillo's 2015). Similarly, age has been found to correlate negatively with EI. Lévesque and Minniti (2006) conclude that the entrepreneurial decision is mostly affected by age so that people aged 25-35 years have higher intentions to start their own firm, and intentions decrease with age as the value of steady income increases and time is scarce. In student samples, opposite results have also been reported, where older students EI was higher (Maresch et al. 2016).

Most studies have focused on EI of university aged students, thus to improve our understanding of secondary school students' EI, age is included as a control variable, which allows us to study age's moderating effect on EI, and to find out more about younger students' intentions to become entrepreneurs. This information can be developed into effectual methods to support younger students' perceptions of entrepreneurial self-efficacy and desirability. Based on findings of e.g. Maresch et al. (2016), it is proposed that intentions of secondary school students are lower compared to tertiary students' EI. After reaching the mid-thirties, EI tends to decrease and EI starts to correlate negatively with age (Lévesque & Minniti 2006). As the age groups are unevenly represented (12 % over 25 to 34 years), this finding may not be present in this study.

Gender

Another interest of EI researchers has been gender's effects on EI and its antecedents. Attitude towards entrepreneurship and EI has consistently displayed lower for female than male students (e.g. Zhao, Seibert & Hills 2005; Karimi et al. 2013; Espíritu-Olmos & Sastre-Castillo 2015; Teixeira & Forte 2015) which occurs as lower levels of female entrepreneurship worldwide. In addition, subjective norm is a stronger predictor of EI for females, meaning they are more sensitive to social pressure (Karimi et al. 2013). Social norm and cultural reasons may further explain differences in female's entrepreneurial activity.

Seemingly, gender affects career choice, but actually differences in EI between genders can largely be explained by differences in self-efficacy (Krueger, Reilly & Carsrud 2000) or perceived behavioral control and personal attitude (Maes, Leroy and Sels 2014). Krueger, Reilly and Carsrud (2000) believe that raising entrepreneurial efficacy will raise feasibility perceptions of both genders and result in increasing the entrepreneurial mindset. Today, it is still common that women entrepreneurs seek into business in the retail sector rather than manufacturing. This suggests that differences may be created already in school, where differences in genders' perceived feasibility and desirability is maintained. (Krueger, Reilly & Carsrud 2000) Means to spur females' entrepreneurial interest by affecting attitudes should be considered in developing EE's effectiveness and equality. To understand differences in EI and its antecedents between female and male students, gender is controlled in the study. Similarly, as previous studies have found, it is expected that female students' EI is lower compared to male students' EI.

Prior experience

Prior entrepreneurial experience and its effects on EI has also been studied. Besides referring to entrepreneurial parents, entrepreneurial experience refers to an individual's prior entrepreneurial exposure, such as work experience in a small or startup firm (Krueger 1993; Peterman & Kennedy 2003). The direct impact of prior entrepreneurial experience on intentions has been inconclusive (e.g. Chlosta et al.

2012; Teixeira & Forte 2015) but as Shapero and Sokol (1982) suggest, attitude towards entrepreneurship is influenced by prior exposure to entrepreneurship, prior work experience and role models, and through changes in attitude, behavior and EI can be changed. Van Auken, Fry and Stephens (2006) conclude that witnessing and hearing about the positive aspects of entrepreneurial careers affects EI positively, and that relationship-oriented interaction between the entrepreneur and individual has the greatest likelihood of influencing career intentions.

Scott and Twomey (1988) found that work experience helps define career aspirations, and in their study work experience seemed to correlate with having more business ideas. Kautonen, Luoto and Tornikoski (2010) also found that prior work history had an impact on EI – but more so at a later stage in careers – people in the third age (50-64 years). An interesting finding of Fayolle and Gailly's (2015) research was that the more EE course participants had prior entrepreneurial experience, the less the education affected their EI. Conversely, students who had little experience of entrepreneurship had more positive effects. Similarly, the higher the level of initial intentions students have, the less intentions are expected to raise as a consequence of EE (Souitaris, Zerbinati, Al-Laham 2007). Thus, it is possible that prior work experience has no significant effect on students' EI or the effects are distributed depending on the level of prior experience. Gird and Bagraim's (2008) argue that adding prior entrepreneurial exposure in the TPB model can significantly add the predictive power explaining EI whereas other demographic variables did not increase it. Because of conflicting results and interest to find out whether prior experience affects EI in this context, it is expected that students with more prior entrepreneurial experience tend to have higher EI.

Educational background

The choice of field of study is a substantial decision in a student's life, which may project career aspirations. Teixeira and Forte (2015) found that study field is a highly relevant direct and indirect predictor of EI. Differences in EI between fields of study have been of interest in the past years particularly in tertiary education levels. Especially intentions of students majoring in engineering, technology and business

have been studied and compared (e.g. Solesvik 2013). Educational background seems to explain differences in EI and its antecedents (Wu & Wu 2008).

Many pieces of research suggest, perhaps not surprisingly, that EI is stronger with entrepreneurship majors than with those who do not major in it (e.g. Noel 2002; Muofhe & du Toit 2011) and business majors in general (Solesvik 2013). In Claire and Perryman's (2016) study, business majors' intentions to start their own company was higher compared to other college students' intentions, even though most college students thought of it as a plausible option, too. In addition to business studies, the prevailing view is that students with business or technical science orientation have the most comprehensive possibilities for learning entrepreneurship (e.g. Wu & Wu 2008; Nabi, Holden & Walmsley 2010; Solesvik 2013). These findings conflict with Teixeira and Forte's (2015) study of final-year students with 32 different fields of study which found that there is extensive hidden entrepreneurial potential in other study fields, especially in creative and leisure activities such as media production and sports, as well as law and health.

Teixeira and Forte (2015) suggest that there is need for empirical research studying the effectiveness different education backgrounds have on EI. Most previous studies have not taken into consideration the differing EI depending on the heterogenic study backgrounds and fields of study. Fayolle and Gailly (2015) agree that there remains much uncovered ground between students' educational backgrounds and the antecedents of EI. As field of study is unevenly distributed in the sample, it is not examined further. Instead, differences between secondary and tertiary education levels is included in the study.

Table 1. Demographic factors affecting EI

Demographics	Intentions to entrepreneurship	Hypothesis
Age and educational level	Results mixed: EI seems to decrease with age and progressing in studies (e.g. Lévesque & Minniti 2006; Wu & Wu 2008; Espíritu-Olmos & Sastre-Castillo's 2015) but other results suggest that older students' EI is higher (Maresh et al. 2016).	Secondary school students' EI is the lowest.
Gender	Results consistent: females' EI lower compared to males' EI (e.g. Zhao, Seibert & Hills 2005; Karimi et al. 2013).	Female students' EI is lower compared to males' EI.
Prior experience	Results mixed: more prior entrepreneurial experience (inlc. entrepreneurial parents) tends to result in higher EI (e.g. Peterman & Kennedy 2003; Solesvik 2013).	Students with more prior entrepreneurial experience have higher EI.
Educational background	Results quite consistent: business and entrepreneurship majors EI is higher than of students majoring in other fields (e.g. Solesvik 2013).	No hypothesis formed to be applied in this sample.

Table 1 sums up the preceding demographic factors that affect EI. As discussed, there are several inherent and external factors explaining EI. In empirical use, the predictive power of situational and demographical variables has some rough edges. To get a better understanding and possibility to reliably predict entrepreneurial activity, Krueger, Reilly and Carsrud (2000) suggest the use of intention models. Behavioral and attitudinal approaches offer a more productive perspective for EI research than merely examining personality traits (Gartner 1988). The most predominant models – Ajzen's (1991) Theory of Planned Behavior and Shapero and Sokol's (1982) Entrepreneurial Event – are presented next.

2.1.3 Intentions-based models

As intentions represent the first step in the discovery process and emergence towards entrepreneurship, it is important to understand how they are constructed (Schlaegel & Koenig 2014). Examining intentions through intentions-based models allows us to understand how an individual's perceptions, beliefs and motives coalesce into venture creation and offers a tool to predict future behavior. Additionally, intention models can describe how exogenous factors such as EE affects intentions. (Krueger, Reilly & Carsrud 2000)

There are several competing models that have been used to explain EI; Shapero and Sokol's (1982) Entrepreneurial Event model, Bird's (1988) model of Implementing Entrepreneurial Ideas, Ajzen's (1991) Theory of planned Behavior and the Maximization of the Expected Utility model (Douglas & Shepherd 2000). Two of the most influential EI models that share mutual comparability are Shapero and Sokol's (1982) model of Entrepreneurial Event (EEM) and Ajzen's (1991) Theory of Planned Behavior (TPB) (Schlaegel and Koenig 2014). Both models are empirically validated and the models' explanatory power has been validated in numerous studies (e.g. Krueger, Reilly & Carsrud 2000). Because an individual's attitudes affect his or her intentions to perform a certain task, and a more positive attitude increases the intention to do so (Ajzen 1991), thus the "attitude approach" should be preferred over the trait approach (Krueger, Reilly & Carsrud 2000).

As the act of starting a firm is no coincidence but intentional and voluntary, analyzing the reasons behind the decision seems worthwhile. The TPB and EEM both consider entrepreneurship to be intentionally planned behavior that intentions trigger. Additionally, the models share the notion that beliefs and attitudes influence intentions. (Karabulut 2016) Actually, in studies from various fields predicting behavior, attitudes explain over 50% of the variance in intentions, whereas intentions explain over 30% of the variance in behavior. The explaining power of the intentions models is more than the explanatory power of individual or situational variables. (Krueger, Reilly & Carsrud 2000) In addition, the models consider

intentions depend on how desirable and feasible being an entrepreneur is perceived, as well as the tendency to act upon possibilities (Karabulut 2016).

TPB explains EI through three antecedents: attitude toward the behavior, subjective norm and perceived behavioral control. EEM considers perceived desirability, perceived feasibility and propensity to act as EI's antecedents. Thus, both models include factors that refer to perceived self-efficacy (perceived behavioral control in TPB and perceived feasibility in EEM). The other two of TPB's elements correspond to EEM's perceived desirability. Next, a more detailed description of both models is presented following a proposed combination of the models, which will form the base of this study's framework.

Entrepreneurial Event (EEM)

The Entrepreneurial Event model assumes that exogenous factors affect intentions through perceptions of desirability and feasibility (Krueger, Reilly & Carsrud 2000). The decision to take up an act requires the act to be seen as "credible" – meaning it is both desirable and feasible. So that perceptions actually lead to actions, an element of "propensity to act" is added to the model. Entrepreneurship therefore requires both elements to exist. EEM considers that stability guides human behavior until it is discontinued by a significant life event such as migration, unemployment or inheritance. (Shapero & Sokol 1982) Considering entrepreneurship as an option is often a result of these external changes and entrepreneurial activity is often expedited by these happenings (Krueger, Reilly & Carsrud 2000). People's reaction to that external change depend on their perceptions.

Perceived desirability ("I want to do it") refers to the considered attractiveness of entrepreneurship, which includes both intrapersonal feelings and perceptions of other people. Perceived feasibility ("I can do it") refers to the perceived capability to start a business. Situational variables such as socioeconomic level, work experience and education level significantly explain feasibility. (Liñán 2004) When establishing and defining one's feasibility level, being able to interact and discuss with mentors and role models helps in the process. Hence, both types of perceptions are

influenced by social and cultural factors. (Shapero & Sokol 1982) Out of the three elements of the model, feasibility perceptions explain most of the variance in EI but all together, they explain over half in the variance in EI (Krueger 1993).

Propensity to act ("I am going to do it") upon opportunities is considered as a person's facility to act on one's decisions. Given intentions are real and well-formed, it is difficult to picture them without the propensity to act. Whether an individual acts upon their intentions depends on one's control perceptions, referring to the desire to gain control by taking action. (Shapero & Sokol 1982; Krueger, Reilly & Carsrud 2000) Similarly, Van Gelderen, Kautonen and Fink (2015) argue that the intention–action gap is moderated by a higher level of self-control.

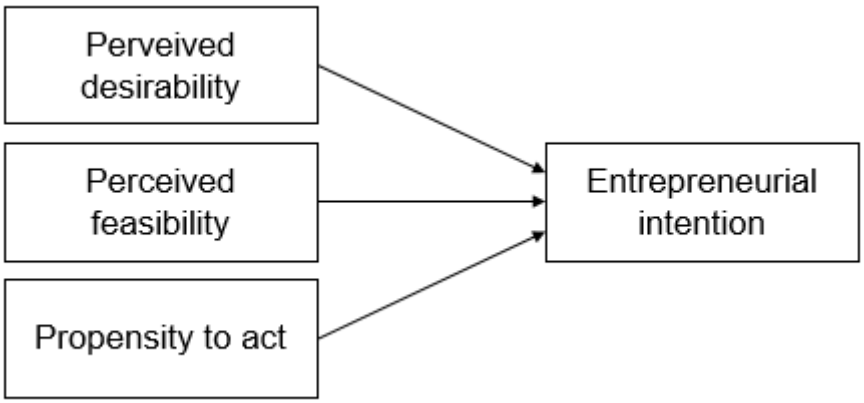

Figure 1. Shapero & Sokol's (1982) model of Entrepreneurial Event

Theory of Planned Behavior (TPB)

The most predominant theory in EI literature is Ajzen's (1991) Theory of Planned Behavior. It initially originated from the field of psychology (Krueger, Reilly & Carsrud 2000). The model has worked as a base for many empirical studies not only in EI confirming its applicability in different settings, although new applications and specifications are continuously emerging (Fayolle & Liñán 2014). The model presumes a relationship between an intention to perform a behavior or task, and the actual act. Therefore, intention is the element of explaining behavior. (Liñán 2004)

The model assumes that for example elements such as prior entrepreneurial experience affects intentions indirectly through its antecedents (Krueger 1993).

TPB identifies three antecedents of intention predicting behavior. Attitude towards a behavior refers to an individual's overall valuation of the behavior. It includes both affective and evaluative aspects, e.g. "it is pleasant" as well as "it has more advantages". Subjective norm points to an individual's perception about the particular behavior, which is influenced by the opinions of significant others. For example, the family's approval and support of the decision to become an entrepreneur is included in this construct. In addition, parental self-employment is expected to influence social norms (Liñán 2004). It may be that social norm is not a very significant contributor to EI, if the will to comply with expectations of others is not strong. Perceived behavioral control is an individual's perception of their ability – the ease or the difficulty – to perform a particular task, and is therefore related to situational competence (self-efficacy). (Ajzen 1991) Self-efficacy influences intentions and is a result of an individual's experiences, self-perceived skills, observational learning, and social persuasion (Van Auken 2013). In the case of entrepreneurship, in order to make a realistic evaluation of one's ability, it is required that one has enough and specific knowledge about the requirements of setting up a business (Liñán 2004).

The model can also be described through different beliefs that determine the level of intention. Either favorable or unfavorable behavioral beliefs determine the attitude towards a behavior; normative beliefs lead to how social pressure or subjective norm is perceived, and control beliefs result in perceived behavioral control (Ajzen 1991). These three components form the level of behavioral intention. Clearly, the more positive the attitude, subjective norm and the greater the perceived control, the stronger the intention. Attitude also depends on beliefs and expectations about the personal outcomes resulting from the behavior (Ajzen 1991). Furthermore, the more positive experiences and breath of the experience are, the more likely they affect attitudes, and through that, intention. Behavior is therefore expected to be a consequence of intentions, and intentions reflect how much work people are willing to put in to achieve the intended behavior (Ajzen 1991).

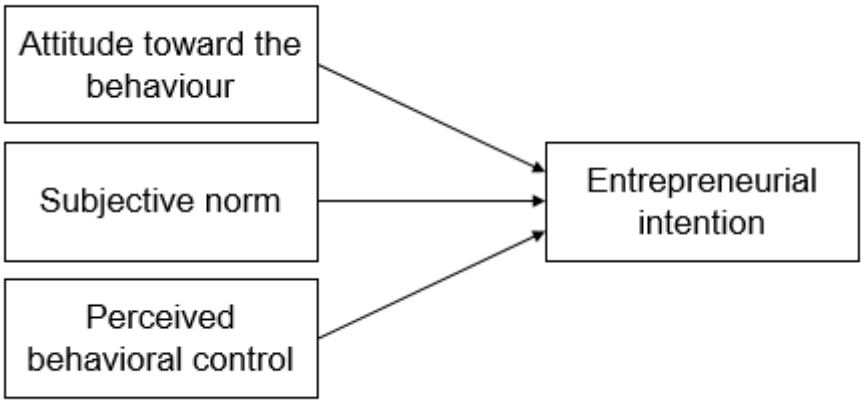

Figure 2. Ajzen's (1991) Theory of Planned Behavior

As mentioned before, TPB has worked as a framework for numerous EI studies. Researchers have suggested and tested including other factors they assume influence intentions to increase the model's explanatory power. For example, Peterman and Kennedy (2003) suggest that intention models would include EE as an exposure item as it has a strong impact on an individual's perceptions of self-efficacy and intentions, and Teixeira and Forte (2015) suggest expanding the model with field of study. However, it has been validated that personality traits nor demographic factors do not significantly increase the predictive power of TPB, indicating the model as such is an apt tool for predicting EI (Gird & Bagraim 2008).

The statistical fit of the model has been validated in many settings. Using the TPB model as a framework has also allowed to examine differences between genders and other demographics. Studies have indicated that intention is positively and significantly correlated with attitude towards the behavior, and attitude towards entrepreneurship is more prominent among male students (Karimi et al. 2013). As predicted by TPB, higher perceptions of behavioral control in the sense that students feel they can perform start-up related tasks, the higher the intentions of students are. In addition, when students believe starting a business is desirable and feasible, EI is higher. (e.g. Krueger, Reilly & Carsrud 2000; Shook & Bratinau 2010) Subjective norm's effects on EI has been conflicting, and in several studies their relation has been non-significant or even negative (e.g. Krueger, Reilly & Carsrud 2000; Liñán 2004; Shook & Bratinau 2010). A high level of locus of control or propensity to act can decrease social norm's ability to predict intentions (Ajzen

1987). On the other hand, lack of supportive social networks or family approval may also lead into lower levels of EI (Kautonen, Luoto & Tornikoski 2010). Karimi et al. (2013) found that female students were more affected by subjective norm, and speculate they may be more sensitive to social pressure. In a comparison between countries, Mexican students were more affected by their families' opinions that US students, as in Mexico children are typically more dependent on parental influence (Van Auken et al. 2000). Krueger, Reilly and Carsrud (2000) highlight the importance of identifying the most meaningful social influencers, whom in addition to significant others can be role models and mentors, as they have an ability to shape individual's perceptions; perceived self-efficacy and desirability as well (Scherer et al. 1991).

Combining the models

Both of the models, EEM and TPB, have strong explanatory power and they produce a high level of mutual compatibility, as their antecedents are somewhat similar and overlapping (Krueger, Reilly & Carsrud 2000; Schlaegel & Koenig 2014). Two components from TPB reflect EEM's perceived desirability, which are attitude and social norms. TPB's perceived behavioral control reflects EEM's perceived feasibility. (e.g. Liñán 2004) The integration of the intentions models has been tested and confirmed (e.g. Schlaegel & Koenig 2014; Teixeira & Forte 2015). An apt reason for combining the models is increasing cumulative knowledge about EI by reducing the number of competing models (Shook, Priem & McGee 2003). Especially, TPB's attitude and EEM's perceived feasibility are the most significant explanatory factors of EI, whereas social norms' explanatory contribution is the smallest (Liñán 2004). Krueger, Reilly and Carsrud (2000) found that EEM offers a slightly higher adjusted R2, and all of its components are statistically supported. Conflicting with their results, Schlaegel and Koenig (2014) found that TPB's constructs explain a larger portion of EI compared to EEM (R2 = .28 and R2 = .21, respectively). Yet, integrating the two models offers better explanatory power and provides additional insight into EI, with explained variance increasing to R2 = .31. In Schlaegel and Koenig's (2014) study, perceived desirability demonstrated the strongest direct effect to EI.

Although the models have been empirically validated both separately and united, some scholars have expressed criticism towards the models' ability to truthfully predict intentions, thus they have brought up the need for further research (Carsrud & Brännback 2009). Van Gelderen, Kautonen and Fink (2015) critique that the constructs in the models are unable to capture real intention, as desirability and feasibility are often generic and abstract assessments of the start-up. According to them (2015), desirability is often given too much credit compared to other antecedents. Intentions may be formed on the base of inaccurate and incomplete information, and on the verge of taking the first steps towards the entrepreneurial act, reality kicks in, and intentions are dropped (Liñán 2004; Van Gelderen, Kautonen & Fink 2015). They (2015) suggest adding volitional constructs in the model, such as self-control and entrepreneurial passion. Similarly, Fayolle, Liñán and Moriano (2014) argue that values and motivations may explain antecedents of intentions and possibly affect the intention-action link. They ground their opinion on the notion that both values and motivations are linked to goals - and the more important a particular goal is, the more likely the individual will plan to achieve it.

As mentioned, EE can be viewed as an external indirect influencer on an individual's intentions and behavior through their attitudes (Krueger & Brazeal 1994; Krueger, Reilly & Carsrud 2000). Using the EI models, it is possible to assess the impacts EE has on EI and its antecedents. Consideration of a self-employed career does not necessarily mean intention to act upon it, but awakening the idea and getting students to even consider it as an option is the first step in raising attitudes and EI (Souitaris, Zerbinati & Al-Laham 2007). In the next section, a comprehensive description of the term, EE's objectives and some used methods, as well as results of some EE studies impacts on EI and other factors are presented.

2.2 Entrepreneurial education (EE)

Entrepreneurs as well as leaders have somewhat been mystified in literature so that they are believed to have a set of inborn qualities making them superior and successful. The presumption is slowly shifting towards a view that entrepreneurship is not a quality one is born with (Laukkanen 2000), and that the skills to become a successful entrepreneur can be learned, such as initiative taking, autonomy as well as other self-management skills (Krueger & Brazeal 1994).

Numerous qualitative and quantitative studies, covering different approaches, have investigated the relationship EE and EI have. EE can be defined in two ways; learning about entrepreneurship as a phenomenon or learning the skills to become an entrepreneur (Rasmussen & Sørheim 2006). Heinonen and Poikkijoki (2005) refer to EE as "*activities aimed at developing enterprising or entrepreneurial people and increasing their understanding and knowledge about entrepreneurship and enterprise*". Perhaps the most important value EE has is the potential to increase entrepreneurial attitudes of students, potential and nascent entrepreneurs (Liñán, Rodríguez-Cohard & Rueda-Cantuche 2011). Regrettably, the definition of EE does not answer how EE is to be taught to reach the wanted outcome, but the present methods are leaning towards more action-oriented learning (Rasmussen & Sørheim 2006).

There are certain key attitudes and beliefs strongly predicting intentions to entrepreneurship, which are both learned and learnable (Krueger & Brazeal 1994). This means that EE has the possibility to increase EI and guide students towards entrepreneurial activity. At least this is the vision of policy makers as they hope that increasing the amount of EE in studies will result in higher levels of self-employment. Even though many EE studies (e.g. Peterman & Kennedy 2003; Souitaris, Zerbinati & Al-Laham 2007) support this notion, results from some studies indicate quite the opposite as intentions to entrepreneurship have decreased (e.g. Graevenitz, Harhoff & Weber 2010; Oosterbeek, Van Praag & Ijsselstein 2010; Van Auken 2013; Chen et al. 2015). The contrasting results may be explained with heterogenic teaching methods, which can come in as many as there are EE professors and

instructors. Nevertheless, there seems to be a consensus about various positive effects EE can have on attitudes, EI and other objectives. Methods, objectives, results and development suggestions for EE are discussed next.

2.2.1 EE's objectives and methods

EE has been studied widely in many cultural concepts. There seems to be a consensus within researchers about the principal role of EE. The objective is to increase intentions and entrepreneurial competencies (Oosterbeek, Van Praag & Ijsselstein 2010) and to raise students' awareness of entrepreneurship and emphasize it as an attractive career path (Fayolle & Gailly 2015). Apart from an increase in start-ups, the aim of EE is to prepare competent entrepreneurs with an innovative mindset and business sense (Rasmussen & Sørheim 2006). Furthermore, EE can offer useful working life skills in general, making people who have participated in EE more employable, responsible and enterprising (Van Auken 2013; EC 2018b). EE courses can for example contain opportunity identification, acquiring of resources, starting of a business, business planning, capital acquires and marketing (Muofhe & du Toit 2011).

Liñán (2004) divides the types of EE into four categories, which depend on the participants' prior exposure to, and knowledge of entrepreneurship, and the methods vary in their methods and objectives. First, there is entrepreneurial awareness education, which aim is to educate people about small firms and self-employment in general. Increasing participants' awareness and knowledge can make them consider self-employment as a viable alternative for a career path, but this type of educating might not affect EI directly, albeit entrepreneurial knowledge, desirability or feasibility may be affected. (Liñán 2004) Consideration of a self-employed career does not necessarily mean intention to do so, but consideration is a trigger and the first step in raising attitudes and EI (Souitaris, Zerbinati & Al-Laham 2007). Educating for start-up includes training for specific and practical actions that are related to the start-up phase. Participants for these types of courses presumably are motivated and may already have business ideas in mind. Hence, the teaching should concentrate on further developing intentions and supplying students with

adequate skills to manage as an entrepreneur. The third type of education is educating entrepreneurial dynamism, which focuses on increasing dynamic behaviors after the start-up phase. Lastly, entrepreneurs can participate in continuous education aimed at improving existing skills. (Liñán 2004) Most of the EE should be aimed at learning and developing the skills to be an entrepreneur and not merely learning about entrepreneurship as a phenomenon, or entrepreneurial awareness education. Even though many scholars argue, that EE's main objective should be to develop students' entrepreneurial skills, some studies have shown its failure to improve the students' self-evaluated levels of their entrepreneurial abilities (Oosterbeek, Van Praag & Ijsselstein 2010). Entrepreneurial awareness education definitely has its place too, and potentially the most effective way of increasing intentions in this type of EE is focusing on inspiring students (Wu & Wu 2008; Souitaris, Zerbinati & Al-Laham 2007).

Heinonen and Poikkijoki (2006) argue that EE should have an entrepreneurial-directed approach to it, and have the teachers act in an entrepreneurial way. Actually, there has been much discussion about teachers' and professors' fitness to teach EE. For example, Keat, Selvarajah and Meyer (2011) criticize university lecturers teaching EE, as they lack practical entrepreneur experience. In Rahman and Day's (2015) opinion, teachers are not able to affect students' entrepreneurial motivation even though they can affect what career path students choose. In their study, Chen et al. (2013) learned that the entrepreneurship course failed to increase technical students' EI. Even so, the students in their study found the mentor co-teaching very fruitful and as a result, they (2013) introduce the use of mentors in EE to improve learning efficacy. According to Van Auken, Fry and Stephens (2006) mentoring increases interest towards entrepreneurship effectively. Additionally, inspirational entrepreneurs telling their entrepreneurial stories has a greater possibility to affect students' EI compared to lecturing university professors.

The traditional mindset in EE has been an individual-based one aiming to generally educate students on how to start up a business (Laukkanen 2000) and at its worst it is described as too theory-based, and it does not prepare students with skills required to set up a business (Muofhe et al. 2011). The traditional approach is

becoming unpopular, and EE courses are now focusing more on actual business creation; business opportunities, start-up strategies and contextual issues (Laukkanen 2000; Rasmussen & Sørheim 2006). A trend in EE is establishing an actual business during the entrepreneurship course. Laukkanen (2000) has conceptualized this educational strategy as the 'business generation model', where students are able to learn a great deal about operating a firm in an environment similar to real-life conditions. Other amendments and suggestions for EE scholars have is adding enterprise educational experiences such as internships in the curriculum aimed at influencing perceived desirability of becoming an entrepreneur (Peterman & Kennedy 2003). In Van Auken's (2013) study other activities and even a short trip abroad were included in the program to affect students' perceptions and give them confidence about their future career. In addition, new and innovative pedagogical methods such as the use of multimedia and web-based content in EE should be further studied, as they may be an effective way to change attitudes about self-employment.

2.2.2 Results of EE studies

Entrepreneurship courses are nowadays offered in higher education levels but even secondary and primary ones. Curriculums are being enthusiastically developed, yet they lack a common theoretical base and their objectives and methods may differ considerably. This makes comparing results of EE studies problematic – even pointless – as they may be comparing very dissimilar experiences. (Liñán 2004) In their article, Fayolle and Gailly (2015) discuss the complexity of evaluating EE programs, as there are different types, methods and objectives of assessment. They (2015) also found that the initial level of interest towards self-employment is a crucial matter when profiling and tailoring EE to reach the best results. Different methods and tools could be used depending on the students' profiles and prior experience, and even personality traits, as studied by Fairlie and Holleran (2012). Even though results and emphasis of EI's constructs in EE studies vary, exploring findings from previous studies allows us to understand what outcomes EE can have, and help find the best practices to reach desired outcomes. Findings from some pieces of research are discussed below.

Previous studies have examined EE's impacts on attitude towards entrepreneurship, motivation to become self-employed, inspiration, EI and its antecedents, and entrepreneurial skills. There seem to be conflicting results for all of the measured items, depending on different contexts and samples. A typical setting in EE studies has been to compare students' intentions between different fields of study or between genders.

One study revealed that an EE program was able to increase attitudes, intentions and subjective norm (Souitaris, Zerbinati & Al-Laham 2007). Another study found that perceptions of desirability and feasibility were increased, and that a person's previous positive experience of entrepreneurship affects desirability but not feasibility of becoming self-employed (Peterman & Kennedy 2003). Desirability seems to be affected easier than feasibility as other studies have gotten similar results (e.g. Hattab 2014). In another setting motivation to start a business and perceived behavioral control increased compared to students who did not take part in the enterprise program, but a comparison between business and engineering students revealed that perceived behavioral control, attitude and intentions were higher with business students (Solesvik 2013). Similarly, Maresch et al. (2016) found that EE has a positive effect on EI and according to them business students profit more from EE.

EE has in some cases been ineffective and the outcomes have been contrary than what was intended. In one study, EI decreased and self-assessed entrepreneurial skills did not increase (Oosterbeek, Van Praag & Ijsselstein 2010). In another setting, EI decreased even though self-evaluated entrepreneurial skills increased (Graevenitz, Harhoff & Weber 2010). Scholars have tried to interpret the negative results the entrepreneurship courses had on EI. For example, Oosterbeek, Van Praag and Ijsselstein (2010) suggested that obligatoriness of the course as well as students losing their over-optimism and getting more realistic perceptions of what is required of an entrepreneur can affect intentions. Liñán (2004) highlights the importance of having enough knowledge about the requirements of being an entrepreneur to increase the credibility of EI as a measure of future business

creation. An objective of EE should also be to educate students of the benefits and risks so that students can assess self-employment as a rational career alternative (Van Auken 2013).

As reported, outcomes of EE vary greatly as there are a variety of methods and implementations. Most of the EE as argued by scholars should be the type of teaching that provides students adequate skills to start a business. Entrepreneurial awareness education is the first step in arousing students' EI, and creating an interesting first impression matters. Entrepreneurship educators whom lack practical entrepreneurial experience may have difficulties in exciting and inspiring students. Web-based entrepreneurial narratives with ERMs may be an effective and effortless way to affect students' perceptions about entrepreneurship. As Krueger, Reilly and Carsrud (2000) and Van Auken, Fry and Stephens (2006) argue, role models have great potential to affect a potential entrepreneur's thought process, career aspirations and intentions. Thus, the use of multimedia in EE's pedagogy is suggested and the short-term effects of ERM narratives are investigated in this study.

2.3 Entrepreneurial role models (ERM)

The last subchapter already instanced the use of real entrepreneurs in EE for students to understand entrepreneurship in practice. As intended to highlight, the aim of EE in addition to transferring knowledge of the success recipe for entrepreneurs, is that intentions need to be awakened for entrepreneurial activity to rise. One effective way to increase entrepreneurial attitudes and intentions is through inspiring (Souitaris, Zerbinati & Al-Laham 2007). Inspiration can be derived from an inspiring individual, a role model. Dyer (1994) categorized role models as social factors that affect career choice, which BarNir, Watson and Hutchins (2011) support by contending that successful ERMs have positive effects on entrepreneurial attitudes and intentions. The role model, mentor and ERM concepts along with several results of role model studies, is presented next. Lastly, this chapter presents how the use of ERM in EE can be an effective way to inspire, raise attitudes and intentions toward entrepreneurship and ultimately increase entrepreneurial activity. The framework in chapter 2.4 combines factors of EI models to demonstrate changes in EI and its antecedents caused by the ERMs used in this study.

2.3.1 Role models, mentors and ERMs

The role model research branch brings forth an interesting addition to entrepreneurship studies. The role model construct remains a generally used but vaguely defined concept. Gibson (2004) defines it as "*a cognitive construction based on the attributes of people in social roles an individual perceives to be similar to him or herself to some extent and desires to increase perceived similarity by emulating those attributes*". It has been studied that nearly all entrepreneurs have ERMs of their own. Nearly half of the entrepreneurs consider another entrepreneur affected their self-employment decision by providing a positive example, and to some the example set by the role model was the one crucial factor to the self-employment decision. (Verheul 2011) Role models influence individual growth and development through identification. Additionally, they provide learning and skills, motivation and

inspiration. Feeling a sense of identification with another person is satisfying and provides an individual insight about their self-concept. (Gibson 2004)

A mentor is a concept often confused with role models, and mentors can of course be role models, too. Mentors Gibson (2004) defines as "*persons who provide advice and support to a protégé through an interactive relationship*". Mentoring is a highly recommended form of learning and influencing career interests for individuals (Van Auken, Fry & Stephens 2006), and can increase perceptions of self-efficacy (Noe 1988b). Yet, compared to role models, mentoring relationships can have notable costs, whereas having role models does not require direct interaction and one can simultaneously have several role models. Actually, the dimensional view highlights the importance of having multiple role models, and selecting attributes and constructing an ideal "composite role model". (Gibson 2004) Also, Scott and Twomey (1988) consider that multiple role models form an individual's career aspirations.

Identifying oneself with a role model can include behavioral modeling or imitation. There are a few theories explaining the construct of role models and their effect on people: role identification theory and modeling theory. Role identification theory considers that individuals are drawn to role models who they feel similar to and observe them to be more like them for example in terms of the role models' behaviors, attitudes and position. (Gibson 2004) Modeling theory is similar to social comparison theory emphasizing learning and self-improvement. Individuals compare and evaluate their selves and current abilities to a role model who has qualities and abilities they would like to have, suggesting that individuals observe role models to learn from them. (Festinger 1954; Gibson 2004) Lockwood and Kunda (1997) suggest that role models who have desired attributes affect the self-concept only if the role models are considered relevant in terms of the individual's goals. At the same time, there may be a risk that an individual feels discouraged by someone who is "too" superior. However, according to Collins (1996) superior role models do not weaken one's self-esteem.

As mentioned, one benefit of role models is that no direct interaction between the role model and individual is necessary for sentiments of identification or inspiration to appear. Gibson (2004) makes a separation between close and distant role models, of which the latter can be observed and followed for example through media and video content. There is evidence, that observing and hearing about benefits of the ERM's career can affect EI (Van Auken, Fry & Stephens 2006). For example, Teixeira and Forte (2015) recommend inviting entrepreneurs to classes to share their entrepreneurial stories with students and inspiring them to consider self-employment as a viable option. However, it is expected that relationship-oriented interaction with the role model has the greatest potential to affect EI. The greater the interaction, which can for example include discussions with the entrepreneur and involvement in the business, the higher increases in intentions. In order for EI to rise, role models need to be able to change the attitudes, feasibility and self-efficacy perceptions of individuals, and their capacity to succeed in the business. (Van Auken, Fry & Stephens 2006)

There seems to be assumption about distant role models' possibilities to shape students' career aspirations. Even short observational exposure to role models may have potential to encourage, inspire and affect career motives. Hence, it is presumed that the students who watched the video of the ERM have higher post means of EI's constructs.

2.3.2 Role models' effects on EI

The use of intention-based models has allowed to examine effects role models have on EI and its constructs. Especially, entrepreneurial parents have been a target of interest within the role model branch. As suggested, EE lecturers might lack the credibility and ability to inspire students and motivate them towards a self-employed career. Hence, it is proposed that students should have several dominant role models, comprising of parents, entrepreneurs and lecturers (Rahman & Day 2015). As lecturers may have difficulties increasing students' entrepreneurial motivation due to lack of practical experience, Souitaris, Zerbinati and Al-Laham (2007)

propose that EE instructors should be trained to inspire and change ‘hearts and minds’ of students, and not only to educate on entrepreneurship.

Several studies have found that role models do not directly affect EI but intentions are increased through EI’s antecedents (Scherer et al. 1989; Krueger 1993; BarNir, Watson & Hutchins 2011; Karimi et al. 2013). ERMs on their own are a weak predictor of entrepreneurial activity (Scott and Twomey 1988). Differing from EE studies’ results, role models seem to affect subjective norm more. Knowing a successful ERM can have positive impacts on all of EI’s antecedents: knowledge and abilities affect perceived behavioral control; attitudes are changed through changes in perceptions of an entrepreneurial career’s desirability; and getting support and encouragement from the ERM affects subjective norm (Karimi et al. 2013).

Being involved in the family business early on influences attitudes and intentions of entrepreneurial parents’ children (Krueger 1993) and makes an entrepreneurial career more acceptable than paid work (Dyer 1994). Having entrepreneurial parents increases the offspring’s probability of and intentions to become self-employed (e.g. Scott & Twomey 1988; Chlosta et al. 2012; Solesvik 2013), and the influence of family role models on EI is often greater in more family-centered countries (Van Auken et al. 2006. Earlier studies report that 35 to 65 percent of entrepreneurs had entrepreneurial parents (Scherer et al. 1989). Especially having an entrepreneur father increases EI (e.g. Van Auken et al. 2006; Espíritu-Olmos & Sastre-Castillo 2015) but in another study entrepreneur mothers have a greater positive effect on EI compared to entrepreneur fathers (Polin, Ehrman & Kay 2016). According to Chlosta et al. (2012) both mothers and fathers can serve as motivators for self-employment, and despite men seem to have a stronger tendency to become entrepreneurs than women, Scherer et al. (1991) found that the propensity of becoming entrepreneurs is the same for females and males in the case of entrepreneurial parents.

There are also conflicting results, as in some samples no correlation between entrepreneurial parents and children’s EI has been found. This may be due to

children seeing entrepreneurship in a negative light through their parents' work. (Teixeira & Forte 2015) Hence, positive exposure is required to develop positive attitudes towards entrepreneurship. Similarly, Scherer et al. (1991) found that the success of parents' business affects the desirability and likelihood of their offspring becoming self-employed. Interestingly, Van Auken et al. (2006) found that role models who at the same time are business owners had a significantly greater influence on EI, compared to non-business-owner role models. Despite not choosing to follow parents' entrepreneurial career, there are benefits children of entrepreneurs seem to have: increased efforts in education and increased task self-efficacy (Scherer et al. 1989). Based on previous research the effects of parental self-employment (e.g. Krueger 1993, Chlosta et al 2012 and Solesvik 2013) and findings of Karimi et al. (2013), it is expected that students' EI is higher when they know more entrepreneurs compared to students who have less entrepreneurs in their lives.

Role models and gender differences

Role models, especially of the same gender, have an important role in guiding women to pull through the historical contradictions they face regarding career paths (Fisher 1988). Douvan (1976) and Gibson (2004) note that women have less role models of the same gender than men have, and adjusting male role models to fit their situation may be difficult. In male-dominated fields of work women lack role models and searching for their professional identities may prove to be difficult with no or little modeling (Douvan 1976). Women may also have doubts about their abilities, which can lead to avoiding tasks that are more challenging and reluctance to advance in their career (Noe 1988b). More female role models could result in more managerial positions for women through encouragement, example and increased self-esteem. Ultimately, it could lead to evening out differences between women's and men's wages and gender discrimination in career advancements.

Noe (1988a; 1988b) has studied mentoring relationships and gender. The relationships of opposite gendered mentors and protégés have been fruitful, suggesting that females may also benefit from male mentors and role models (Noe

1988a). Actually, Ragins and Cotton (1999) argue that women may benefit best from male mentors, and they found that female protégés with male mentors had more career outcomes such as higher salary and more promotions. However, referring to the importance of identification and lack of female ERMs, both genders are represented. Based on views of e.g. Douvan (1976) it is expected that the female ERM video has more effects on the female students than the male ERM video has.

Clearly, role models have many effects on individuals and can guide their career plans. However, there is much uncovered sphere to examine within the role model research branch especially regarding ERMs and using them in EE. Next, the framework is presented, which is adapted from the most predominant EI models, EEM and TPB. Hypotheses, which are built on the research discussed in this chapter are also gathered in the next chapter.

2.4 Integrated conceptual framework and hypotheses

This thesis grounds its analysis on the two most influential EI models, Ajzen's (1991) TPB and Shapero and Sokol's (1982) EEM as well as the role identification theory. This chapter has presented relevant literature along with the hypotheses based on previous findings. Next, the integrated intention-based framework is presented, which allows us to analyze the impact of ERM on EI and its antecedents.

From the initial models, perceived feasibility and desirability, and attitude are included in the model based on e.g. Krueger's (1993) findings of their ability to explain most of the variance in EI. EEM's perceived desirability somewhat overlaps TPB's attitude towards the behavior (Krueger, Reilly & Carsrud 2000). However, as Liñán's (2004) findings propose that attitude and perceived feasibility are the most significant explanatory factors of EI, both explanatory variables are included in the model. EEM's perceived feasibility is consistent with TPB's perceived behavioral control and a similar construct, self-efficacy (Krueger, Reilly & Carsrud 2000). Self-efficacy is not included in this study because it is very similar to feasibility, and because the items measuring self-efficacy in the survey test entrepreneurial skills, knowledge and capacity, which in this setting we do not know the respondents have. Hence, only one of the self-assessed ability measures is included in the model, perceived feasibility. TPB's subjective norm is omitted from the framework because of its poor predictive power in previous studies (Krueger, Reilly & Carsrud 2000; Liñán 2004). Additionally, subjective norm is considered to be included in EEM's perceived desirability, as opinions of important people affect the individual's perceptions (Liñán 2004). By restricting the number of explanatory variables, this model aims to avoid the problem of too many explanatory variables (Schlaegel & Koenig 2014). It is unlikely that the predictive power of the model would increase considerably if the omitted overlapping variables were incorporated in the model.

The model also suggests that entrepreneurial experience affects EI, which accounts for students' prior entrepreneurial experience and knowing ERMs (such as relatives and friends). The ERM videos' impacts on EI and the the research variables (attitude, desirability, feasibility and intention) is studied, and also control variables'

effects – gender, age and experience – are investigated closer. Figure 3 presents the integrated conceptual framework used in the study.

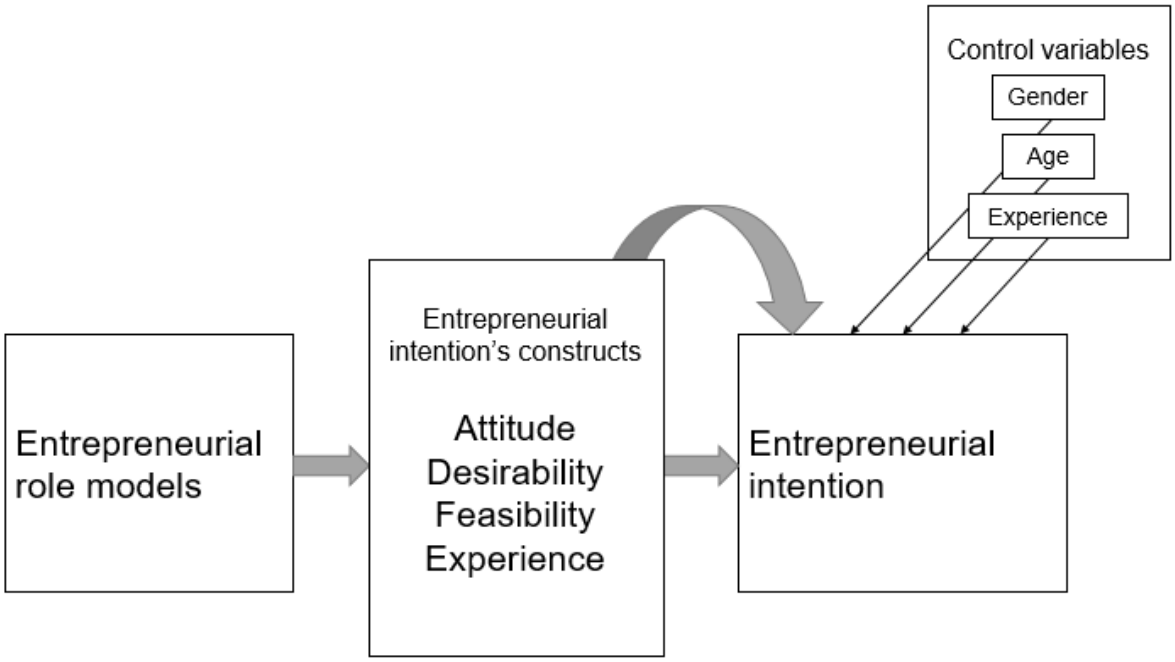

Figure 3. The integrated conceptual framework for assessing ERM's impacts on EI and its constructs

The framework proposes that ERMs have an indirect impact on EI (Scherer et al. 1989; Krueger 1993). The indirect impact is through EI's constructs, that is, attitude, desirability and feasibility, in addition to entrepreneurial experience. By examining the two ERM videos' effects, it is possible to draw conclusions about the effectiveness of using ERM videos in EE taking into account the moderating effects of gender and age. The hypotheses, which are listed below, are based on existing research and literature, and they help answer the research questions.

Hypotheses

Building on the preceding research of e.g. BarNir, Watson and Hutchins (2011) and Van Auken, Fry and Stephens (2006), which found ERMs have a positive impact on individuals' EI, similarly, it is expected that ERM videos affect EI. It is assumed that

post-video means of EI and its antecedents are higher pre-video means. A control group was included in the study for validity reasons to ensure intentions and its antecedents change due to the ERM video. Hence, a significantly larger change in EI and its antecedents of students in the video groups compared to the control group would support H1.

H1: Watching a video of an ERM affects EI and its antecedents.

Previous studies have suggested that age and gender affect EI. As discussed in earlier in this chapter, female students' EI and attitudes towards entrepreneurship tends to be lower than male students' EI (e.g. Zhao, Seibert & Hills 2005; Karimi et al. 2013; Teixeira & Forte 2015). Studies examining age's moderating effect on EI suggest that age correlates negatively with EI, but the intentions of students from their mid-twenties to mid-thirties have the highest EI (e.g. Lévesque & Minniti 2006; Marech et al. 2016). After that, EI starts to decrease. Adding to this, Fayolle and Gailly (2015) suggest, students who have less experience of entrepreneurship, had more positive effects from EE. Younger students referring to secondary school students reported having less experience of entrepreneurship (see Chapter 4.1.1), thus the ERM videos can be expected to affect young students more. Both control variables' moderating impact on ERMs' effects on EI are tested, and it is hypothesized that:

H2: Secondary school students are more inspired by role models, and

H3: Female students are less inspired by role models.

Previous EI studies have found that prior entrepreneurial experience's impacts on EI have been inconclusive. However, as proposed by Gird and Bagraim (2008), adding the construct in the model adds the model's predictive power. As a part of entrepreneurial experience, experience with ERMs is included in the same variable. Earlier findings (e.g. Solesvik 2013) support that entrepreneurial parents may reinforce childrens' EI. Karimi et al. (2013) extend this notion to that knowing

successful entrepreneurs may affect EI through changes in its constructs. Thus, it is expected that:

H4: Students with more entrepreneurial experience are less inspired by the role model videos (as they already have role model exposure).

Drawing on the role identification theory and the need of role models to have similarities students can identify themselves with (Gibson 2004), it is expected that similarities attract. For example, female students are assumed to be inspired more by the female role model than the male role model, and male students by the male entrepreneur.

H5: Students are more inspired by role models they share similar characteristics with (gender and age).

3. METHODOLOGY

An experimental pre-test–post-test control group research design is applied in this thesis, which uses a theoretical framework formed based on earlier research on the subject. Based on preceding chapters, EE (Peterman & Kennedy 2003; Souitaris, Zerbinati & Al-Laham 2007) and role models (Van Auken, Fry & Stephens 2000; BarNir, Watson & Hutchins 2011) can affect perceptions of entrepreneurship and career intentions. Similarly, this thesis positions an innovative type of EE, using narrative ERM videos, with the potential to increase students' EI. Due to practicality and availability, the data was collected from the researcher's previous and current educational institutes as an online questionnaire. The results were obtained by using SAS. Sampling and data collection is explained in more detail in the next sub chapter.

Variables included in the model were reasoned in the preceding theory chapter. Correlation tests were performed to ensure the coherency of the variables' items. Pre and post mean values for the research variables before and after watching the ERM video are presented and categorized. Paired-sample tests were used to test for the significance of changes in the research variables between after and before the video. The results indicate whether the shown ERM videos have any statistically significant effects on the students' EI, attitudes and perceptions. The aim is also to study the moderating effects of the role models' characteristics and the students' demographics moderating effects on EI. Control variables are included to understand how EI differs with different aged female and male students, and with different amounts of entrepreneurial experience. Several regressions were formed to (1) test the framework's ability to explain EI, to (2) test whether control variables affect the changes in EI and related variables and to (3) test if similarity with the role model affects changes in EI and related variables. In the following sections the data collection procedures and questionnaire are described, following a description of the ERM videos and entrepreneurs, reliability and validity of the study, measure development and the course of the empirical testing.

3.1 Data collection and questionnaire

This thesis is a part of an ongoing project of Dr. Katharina Fellnhofer (E-Ship-Stories, www.e-ship-stories.com), who has developed the web-based questionnaire used in the data collection of this thesis. Entrepreneurship literature and similar studies has been used comprehensively in forming the questionnaire, such as work of Krueger, Reilly and Carsrud (2000), Peterman and Kennedy (2003), Liñán and Chen (2009), and Kautonen et al. (2013). The questionnaire used in this study has been used previously in dissertations, indicating its purposefulness.

The questionnaire is divided into several sections. The first questions sort out background information (gender, age, nationality, educational institute, field of study and prior entrepreneurial experience). Next, questions under ten categories are asked (first round = T1): 1. inspiration, 2. subjective norm, 3. personal entrepreneurial attitude, 4. perceptions of entrepreneurial passion, 5. perceived entrepreneurial desirability and feasibility, 6. self-efficacy, 7. perceived behavioral control, 8. entrepreneurial intention, 9. entrepreneurial experience, and 10. performance.

Second, 1) a video of the male ERM is shown (group 1), 2) a video of the female ERM is shown (group 2) or 3) no video is shown (group 3 = control group). Lastly, most of the same questions are asked (second round = T2) with the exception of a few categories leaved out (subjective norm, entrepreneurial experience and performance) and a question about role models is added. With this design, it is possible to observe the possible short-term impacts the entrepreneurial narrative has on the students. Most questions require answers ranked on a 7-point Likert scale (1 = strongly disagree and 7 = strongly agree), some questions are answered “yes” or “no”, and two questions are ranked from 0% to 100%.

The data was collected between October 2017 and March 2018. Roughly one fourth of the responses were gathered in a classroom setting in a secondary school in Helsinki. The rest of the data was gathered by sending an e-mail containing a link to one of the questionnaire versions to potential respondents, having first randomly

assign the students into three groups. The links for two questionnaires included the ERM video and the control group's questionnaire had no video. The students were explained that questionnaires were for research purposes only and that participation was voluntary. The questionnaire was in English but the respondents' English knowledge is good, thus no vocabulary translation was offered except to the upper secondary school students in a classroom setting. The questionnaire takes approximately 20 or 30 minutes to complete depending on whether it includes the ERM video.

A total of 215 responses was received by the set deadline. A cleanup of the data was performed whereby responses of three respondents aged over 35 years, two respondents not attending any educational institute, and an obvious "careless response" were excluded from the analysis resulting in a total of 209 responses. It was randomly selected that students in group 1 watched the video of male entrepreneur (56 students; 55% male respondents), students in group 2 watched the video of the female entrepreneur (86 students; 38% male respondents), and students in the control group (67 students; 58 % male respondents) did not watch any video.

3.2 Introducing the entrepreneurs

There are several definitions for entrepreneurs and entrepreneurship, and its importance for the society can be understood through these definitions. Shane and Venkataraman (2000) refer to entrepreneurship as the discovery, evaluation and exploitation of an opportunity. The video content and entrepreneurs are described next to help understand what kind of ERM exposure students in the first two groups had. The video of the male entrepreneur, Marko Seppä, was filmed before as a part of an ongoing research project, and was not filmed by the researcher. The video of the female entrepreneur, Katariina Järvinen, was filmed and edited by the researcher. Both of the entrepreneurs are Finnish and talk in Finnish. The entrepreneurs were given a question list beforehand to answer on the video. On the video, they introduce themselves, and talk about their work history, their favorite aspects about being an entrepreneur, requirements of successful entrepreneurs,

and give advice to potential entrepreneurs, to mention a few topics. The entrepreneurs are filmed from a close distance and occasionally during their speech, pictures are shown. The questions the entrepreneurs were asked, or key recommendations and story elements are as subtitles in the videos. The videos last for less than ten minutes.

Marko Seppä

The male entrepreneur, Marko Seppä, is an investor in his fifties, and he has a long and notable career working as an entrepreneur. Marko started his first company at the age of 13. The companies he has started range from a disco service to a football club and from a private real estate company to a private investment and advisory company. In his opinion, the favorite aspect of being an entrepreneur is independence, and exploration and exploitation of entrepreneurial opportunities. He considers that the skills required of a successful entrepreneur are goal orientation, belief in one's own capabilities and spunk. In addition, one must have a clear profit possibility and readiness to work hard. Mistakes must not be feared, and they must not paralyze one from making decisions constantly. (Marko Seppä 2016)

Katariina Järvinen

Katariina is a 21-year old entrepreneur enthusiast, who despite her young age has been self-employed for several years. She started her entrepreneurial career at the age of 16 as she found getting a summer job difficult. She learned to do eye lash extensions, and with her client base growing rapidly, she started her own company. The idea of setting up her own brand grew year by year and in 2016, she founded Lion lashes. According to Katariina the best part about being an entrepreneur is freedom and self-fulfillment, especially when planning marketing campaigns. According to Järvinen, qualities of a successful entrepreneur are courage and confidence, not to get discouraged about failures. Courage is needed when starting something new, and also when asking for help. Confidence is crucial because one cannot sell a product if she does not believe in it herself. She advises potential entrepreneurs to ask for help and to talk about entrepreneurship with family and

anyone they know who has started a firm. In addition, she underlines that you do not need a mind-blowing business idea in order to be successful; it is often enough to do things differently or better than others. (Katariina Järvinen 2017)

There are several reasons Katariina was chosen as the other entrepreneur for this study. This thesis intends to find out whether ERM videos have an impact on EI, and it does so by comparing two different entrepreneurs. Hence, for this research setting it was important to find a very different entrepreneur than Marko. Therefore, a young, female entrepreneur, who is around the same age as the study's target group was a clear choice. She was asked to be as enthusiastic and inspirational as she could, compared to Marko, who on his video acts calmer. In addition, she is not over-experienced or successful, which would make it difficult for the observers to relate to her. According to Latu et al. (2013) women can find successful female entrepreneurs intimidating and can feel threatened by them. Katariina started her business while still in secondary school and proves that even at a young age, with relatively little experience and resources, it is possible to start a business.

3.3 Measure development

This section demonstrates the formation of the explanatory and dependent (EI) variables. Measures for the study were formed according to the questionnaire's categories either as a mean average from several Likert –scale items (7-point response scale, with 1 = "Strongly disagree" and 7 = "Strongly agree") or by summing up items in the case of "yes" and "no" answers. Item values (means or sums) from each section were summarized as uniform research variables.

Personal entrepreneurial attitude. Attitude towards entrepreneurship is formed of eleven items, for example, "Among various options, I would rather be an entrepreneur." Its aim is to measure the respondents' attitude towards entrepreneurship, and it is included in both question rounds.

Perceived entrepreneurial desirability. In the questionnaire, three items measure desirability, for example, "I would be very enthusiastic to start my own business."

Perceived entrepreneurial feasibility consists five items, for example, “I will be easy to start my own business.” Both desirability and feasibility are surveyed in both rounds. Changes in desirability, feasibility and attitude are expected to explain for changes in EI. The explanatory power of the model is tested in Chapter 4.4.

Entrepreneurial experience. The measure for prior entrepreneurial experience was formed by summing up eight items that required “yes” or “no” answers (Yes = 1, No = 0). Four questions are related to the students’ own entrepreneurial and work experience, such as “Have you ever stated a business?” The other four questions intend to find out do students know any entrepreneurs, for example, “Have your parents ever started a business?” is one of the questions. These experience-related questions are asked only in the first round (T1). Entrepreneurial experience is expected to affect EI; hence, it is an explanatory variable in the model. Additionally, summary statistics are presented for students’ entrepreneurial experience in Chapter 4.1.

Role models. Four items from role models are included and they are ranked using the Likert -scale, determining whether the respondent has an ERM. The options are “parents and siblings”, friends”, “someone else who is important to me and/or someone I do not know personally” and “the entrepreneur from the video”. This question is asked only in the second round. Summary statistics for this variable are presented in Chapter 4.1. The variable is used as an explanatory variable for EI in the second question round (Chapter 4.3).

Entrepreneurial intention. Nine items finding out about the respondents’ intentions to become an entrepreneur, for example, “I am ready to do anything to be an entrepreneur” measure EI. Intentions are measured in both rounds. The items measure the overall intention of starting a business someday, as well as intentions to take steps to start a business within the next 12 months.

The reliability of the summarized measures was computed using Cronbach’s coefficient Alpha and inter-item correlations as well as correlations with the total were tested. Table 2 displays the results, showing that inter-item correlations are at

least 0.31 for all items and Cronbach's Alphas are higher than 0.75, indicating acceptable reliability. Items that did not meet the requirements above were omitted from the measure. The items each variable consists of are displayed in Appendices 1a to 4b, with descriptive statistics, correlations and Alphas if the item is deleted, for the first (T1) and second (T2) questionnaire round. Appendices 2a and 2b demonstrate that deleting the second item in the desirability measure increases its reliability; hence, it was omitted from the measure. Similarly, deleting the third item in the feasibility measure increased its reliability (Appendix 3a and 3b).

Table 2. Reliability statistics for the research variables

Variable	Items	Items used	Correlation with total minimum	Inter-item correlation minimum	Cronbach's Alpha
Attitude	AT01-AT11	11	0.678	0.361	0.943
Desirability	D01-D03	2	0.834	0.834	0.910
Feasibility	F01-F05	4	0.502	0.306	0.746
Intention	EI01-EI09	9	0.733	0.498	0.952

3.4 The course of empirical testing

3.4.1 Summarizing the data

First, respondent characteristics were summarized to get a better understanding of the data. The control variables were limited to two as nationality and field of study had to be omitted from the examination, as students mainly consist of Finns and business majors and high school students. In the regression analysis, entrepreneurial experience is also controlled. The respondent statistics are tabulated in Chapter 4.1. Statistics for students' role models and entrepreneurial experience are presented in Chapter 4.1.

3.4.2 Statistical significance of the research variables' changes

The research variables descriptive statistics were calculated in several settings categorizing by gender, age and experience (means and standard deviations),

which are tabulated in Chapter 4.2. The significance of the research variables' mean changes is tested using the Paired sample t-test. The first-round questionnaire means of four research variables (attitude, desirability, feasibility, and intention) are compared to the second-round means. The results of the test indicate whether the answers after watching the ERM video differ statistically from the pre-answers. Results for the two groups whom watched the videos and the control group are presented and results are categorized by gender, age and experience.

3.4.3 Regression analysis

The regression analysis uses general least squares (GLS) to determine the relationships between the explanatory variables and the changes in the dependent variable. The impacts of students' entrepreneurial experience, gender, age and video selection (Marko, Katariina, no video) are tested on the research variables' changes (intention, attitude, desirability and feasibility). The changes in the variables are differences in means between after and before seeing the video (T2-T1). Required transformations were performed for the explanatory variables. Pearson correlation coefficients were calculated (see Chapter 4.3 and Appendix 5) indicating no excessive correlations between the variables, thus multicollinearity should not affect the models. Other underlying prerequisites for the linear regressions were also met. Several different regressions were formed to answer the research questions, and specifically Hypotheses 1 to 4. The results are presented in Chapter 4.4.1.

(1a) EI_diff = β0 + β1Exp + β2Ge + β3Age + β4Katariina + β5Marko + e
(1b) Att_diff = β0 + β1Exp + β2Ge + β3Age + β4Katariina + β5Marko + e
(1c) Des_diff = β0 + β1Exp + β2Ge + β3Age + β4Katariina + β5Marko + e
(1d) Fea_diff = β0 + β1Exp + β2Ge + β3Age + β4Katariina + β5Marko + e

Where,
βn = standardized coefficients
EI_diff = difference in EI
Att_diff = difference in attitude

Des_diff = difference in desirability
Fea_diff= difference in feasibility
Exp = entrepreneurial experience
Ge = gender (default = male)
Age = age (default = <18)
Katariina = video of female ERM
Marko = video of male ERM
e = error value

By the means of another regression, hypothesis 5 is answered. First, two new variables were created indicating gender similarity and age similarity, Gensim and Agesim, respectively. This way, we will be able to determine whether representing the same gender as the entrepreneur, or being the same age explains the change in EI. Otherwise, the regression formula remains the same. The results ae presented in Chapter 4.4.2.

(2a) EI_diff = β0 + β1Exp + β2Ge + β3Age + β4Katariina + β5Marko + β6Gensim + β7Agesim + e
(2b) Att_diff = β0 + β1Exp + β2Ge + β3Age + β4Katariina + β5Marko + β6Gensim + β7Agesim + e
(2c) Des_diff = β0 + β1Exp + β2Ge + β3Age + β4Katariina + β5Marko + β6Gensim + β7Agesim + e
(2d) Fea_diff = β0 + β1Exp + β2Ge + β3Age + β4Katariina + β5Marko + β6Gensim + β7Agesim + e

Where,
Gensim = student and ERM are the same gender
Agesim = student and ERM are the (nearly) same age

Two additional regressions were formed to test the models' statistical fit and study the effects EI's antecedents (attitude, desirability and feasibility) and explanatory variables (experience, gender and age) have on EI. The effects are tested both before and after the video (T1 and T2). In the second round (T2), the role model

related questions are also formed into an explanatory variable for EI. The results are presented in Chapter 4.3.

(3) EI (T1) = β0 + β1Att_t1 + β2Des_t1 + β3Fea_t1 + β4Exp + β5Ge + β6Age + e

Where,
EI (T1) = Pre value of EI
Att_t1 = Pre value of attitude
Des_t1 = Pre value of desirability
Fea_t1 = Pre value of feasibility

(4) EI (T2) = β0 + β1Att_t2 + β2Des_t2 + β3Fea_t2 + β4Exp + β5Ge + β6Age + Role + e

Where,
EI (T2) = Post value of EI
Att_t2 = Post value of attitude
Des_t2 = Post value of desirability
Fea_t2 = Post value of feasibility
Role = role model questions from the second questionnaire round

3.5 Reliability and validity

When assessing the accuracy of a quantitative study, focus should not only be in the results' reliability but also in the implementation of the study. In this thesis, it refers to the chosen method and model's ability to precisely measure EI and its constructs. According to Heale and Twycross (2015) reliability relates to the internal consistency of the measures, and stability and consistency of responses and results. Homogeneity refers to items measuring the same construct, and it is evaluated using item-to-total correlation. In this study the chosen test to measure internal consistency of measures is Cronbach's alpha. (Heale & Twycross 2015) The Alpha for items was to exceed 0.6; otherwise, they were omitted from the measure. Stability refers to answers remaining similar, and it can be measured with a test-retest design (Heale & Twycross 2015). Hence, in this study it is addressed with using a control group design. Given, those students, who saw the video, are expected and hoped to change their answers in the second round. Regardless of the study were repeated using a different sample, even with students from the same institutes or area, answers could differ. Equivalence is measured using inter-rater reliability, and it refers to consistency among responses (Heale & Twycross 2015). As the study measures individuals' perceptions and opinions, it is likely that there is variance in answers, thus this condition is not that essential in this study. In addition, the existence of random errors lowers the study's reliability. Hence, risk of errors is taken into account as a measure of standard error of the estimate (e) in the regression formula.

The data used in this study consists of self-reported answers. Van Gelderen, Kautonen and Fink (2015) found that intentions are a good predictor of entrepreneurial action: eighty percent of those who had started to take steps towards entrepreneurship reported having intentions to do so the previous year. However, intentions might always not lead to action, as human behavior is difficult to predict. The intention-action gap is further discussed in the Limitations and future research -chapter (5.3).

Validity refers to the test's capacity to capture the phenomenon. In this study's context, it relates to the questionnaire asking the right questions so that further studying of EI and its constructs is worthwhile, and secondly, are intentions a reliable measure of start-up behavior. Validity can be divided into three terms: content, construct and criterion validity, of which the first indicates whether the measures and model measure what is intended (Heale & Twycross 2015). The items in the constructs (questionnaire sections) are based on research and similar studies and therefore describe the intended measure well. However, items were omitted from the measures, so there is a risk that measures are not fully able to portray the constructs. Specifically, the measure for desirability only has two items left. Also, the models' ability to measure EI depends on the variables included in the framework. The components included in the model are based on previous literature and their ability to predict EI has been proved in many occasions. Several different regression formulas were included to contemplate the constructs from different angles, including the effects first-round answers have on EI.

Construct validity refers to the internal consistency of a measure's items (Heale & Twycross 2015). Inter-item correlation testing was performed to unsure this type of validity. Lastly, criterion validity addresses whether the model correlates with other similar models (Heale & Twycross 2015). Constructs measuring opposite things should have a low correlation. Predictive validity is also included in assessing the criterion validity of a model (Heale & Twycross 2015). Hypotheses, that are grounded in previous studies suggest, that high levels of EI's constructs, e.g. higher entrepreneurial attitudes, should lead to higher levels of EI. The hypotheses for this study are answered in the next chapters.

4. FINDINGS

4.1 Respondents' demographic profile and entrepreneurial experience

The data used in this thesis consists of 209 respondents who answered the survey, of which 51% (106) are females and 49% (103) males. All of the respondents live in Finland and all but four reported their nationality to be Finnish. Nearly 70% (144) of the respondents are aged between 18 to 24 years; 19% (39) are below 18 years and 12% (26) are aged 25 to 34 years. Roughly, one fourth of the surveyed students study in secondary education (48) and the remaining in tertiary education, of which 84% (135) study in Lappeenranta university of technology and 12% (20) in another university or university of applied sciences. The respondents' field of study is mainly in Business and Management (67%; 139) but study field is not examined further in this study. Descriptions of the data are summarized in Table 3 below.

Table 3. Respondent descriptions

	% of Total
Control variable	
Gender	
Female (n = 106)	51
Male (n = 103)	49
Total	*100*
Age	
<18 (n = 39)	19
18-24 (n = 144)	69
25-34 (n = 26)	12
Total	*100*
Education level	
Secondary (n = 48)	23
Tertiary (n = 161)	77
Total	*100*

Next, the respondents' mean values for the most significant results related to entrepreneurial experience (Table 4) with gender and age as categorizing factors, students' role models and inspiration (Table 5) and role model influence (Table 6) are presented. Questions regarding entrepreneurial experience were answered with "yes" or "no" and here percentages are used. Questions about role models and

inspiration were answered on a 7-Likert scale (1 = strongly disagree and 7 = strongly agree), thus means and standard deviations are presented.

Entrepreneurial experience

The respondents' entrepreneurial experience is quite even when categorizing by gender and age. Nearly all of the students have some kind of work experience, even most of the high school students (85%). Twelve students report having started their own company, of which nine are males. Males also have more other entrepreneurial experience than females. As expected, more work and entrepreneurial experience is gained with age.

The entrepreneurial experience of students' relatives is quite even when compared by gender and age: nearly half of the respondents' parents are entrepreneurs. Also, the students report having entrepreneurial friends, and as expected, males more often than females and older students more often than younger students. The results are presented in Table 4. The amounts of entrepreneurs in these students' lives is rather high, and the possible effects on EI is investigated later in this chapter.

Table 4. Entrepreneurial experience and categorizing factors

	Gender		*Age*		
	Male	Female	<18	18-24	25-34
	n = 103	n = 106	n = 39	n = 144	n = 26
Work and entrepreneurial experience					
Small company work experience	48 %	58 %	38 %	51 %	81 %
Any work experience	93 %	94 %	85 %	96 %	96 %
Started a business	9 %	3 %	3 %	5 %	15 %
Other entrepreneurial experience	29 %	8 %	18 %	15 %	38 %
Entrepreneurs in students' lives					
Parents	49 %	44 %	38 %	48 %	50 %
Other family members	40 %	36 %	28 %	38 %	54 %
Friends	59 %	45 %	28 %	55 %	73 %
Other important people	39 %	42 %	33 %	43 %	38 %

Role models

In general, male students report having more role models and entrepreneurial people they admire and want to be like. The mean values of inspiration-related questions excluding having a mentor, in average is 4.39 for males and 3.59 for females. Male students also have mentors more often (mean value = 3.52) than female students (2.98). The difference may be due to lack of female role models for girls and women as suggested by e.g. Douvan (1976) and Gibson (2004).

Categorizing by age, younger students' means are lowest for all role model related questions (Table 5). The average of four inspiration-related questions' means is 3.13. The youngest respondents whom are under 18 years (n = 39) are all from a secondary school in Helsinki. Students aged 18 to 24 years (n = 144) report having the most ERMs they admire and want to pursue similar career paths (4.24). This age group mostly comprises of business students in Lappeenranta University of Technology. The oldest respondents whom are 25 to 34 years old (n = 26), answered having less mentors and inspirational people in their career path compared to the middle age group (3.88). This may be explained by older people having already selected their career path and perhaps may have ruled out entrepreneurship as a career option. Then again, 16- and 17-year-old high school students might not have thought about their career paths so early on, hence the low means for inspiration-related questions. In this case entrepreneurial awareness education would be beneficial to get students to consider entrepreneurship as a plausible option (Liñán 2004). It has to be noted that both the samples for youngest and oldest students is rather small.

The table also depicts the answers for the ERM related question from the second round of the questionnaire. Comparing by gender and age, there is little variation between the responses related to ERMs. Parents, siblings and other important people of students serve as their ERMs evenly, with slightly higher means for male students (e.g. parents and siblings = 3.75) than for female students (3.58) and the middle age group. As it can be expected, friends of students under 18 years have not as often started their company (2.77) compared to the oldest age group (3.58).

Results seem to vary from previous studies, where family, especially fathers were most influential role models (e.g. Van Auken et al. 2006). The results can be seen in the table below.

Table 5. Inspiration, role models and categorizing factors

	Gender				*Age*					
	Male n = 103		Female n = 106		<18 n = 39		18-24 n = 144		25-34 n = 26	
Inspiration and role models	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
There is an entrepreneurial person I am trying to be like in my career pursuits.	4.29	1.75	3.37	1.68	2.95	1.64	4.10	1.71	3.58	1.90
There is an entrepreneurial person particularly inspirational to me in my career path.	4.42	1.72	3.59	1.76	3.15	1.74	4.28	1.71	3.69	1.85
In the career path I am pursuing, there is an entrepreneurial person I admire.	4.46	1.71	3.82	1.75	3.15	1.74	4.39	1.71	4.19	1.58
I know of an entrepreneurial person who has a career I would like to pursue.	4.41	1.69	3.58	1.78	3.26	1.83	4.18	1.76	4.04	1.59
I have a mentor in my potential entrepreneurial career field.	3.52	1.61	2.98	1.70	2.92	1.75	3.39	1.66	2.96	1.56
Who is your ERM?										
Parents and siblings	3.75	1,97	3.57	2.04	3.26	1.97	3.81	2.04	3.42	1.84
Friends	3.33	1,76	3.08	1.74	2.77	1.77	3.25	1.70	3.58	1.98
Someone else who is important to me and/or someone I do not know personally	4.43	1,83	4.00	1.89	3.62	1.95	4.38	1.81	4.15	1.93

Role model video's influence

On the second question round, the survey asks whether the respondents perceived the entrepreneur on the video as their ERM: "If you have an ERM, who is it?", "The entrepreneur from the video". The control group's answers are also included (n = 67), hence the whole sample is used (n = 209), and the answers are categorized by gender, age and treatment group. The mean for the ERM on the video was relatively low, (3.32; n = 142) and female students felt slightly more inspired by either role model (3.36; n = 78) than male students (3.28; n = 64). The youngest students found the role model less inspirational (2.88; n = 25) compared to the oldest students (3.52; n = 21).

The male entrepreneur video was watched by 56 students, and 86 students watched the female video. Looking closer into the differences in responses, the male entrepreneur was found more inspirational by male students (3.61; n = 31) than female students (2.92; n = 25). On the other hand, female students perceived the female role model as their ERM (3.57; n = 53) compared to male students (2.97; n = 33). Previous findings of e.g. Douvan (1976) and Latu et al. (2013) support this

finding. The results indicate that it was in fact reasonable to include a female entrepreneur in the study. Hereby, hypothesis 5 seems to get confirmation, but the impacts on EI will be further analyzed in the following subchapters. Comparing by age, the youngest age group considered the male entrepreneur more inspirational (3.00; n = 13) than the female entrepreneur (2.75; n = 12). In addition, the middle age group felt that the male entrepreneur is more role model material than the female entrepreneur is. The results are presented in Table 6 below.

Table 6. Mean values of role model influence by treatment and categorizing factors

Q: "If you have an ERM, who is it?", A: "The entrepreneur on the video"

Control variable	*Male ERM video*			*Female ERM video*			*Control group*		
Gender	n	Mean	SD	n	Mean	SD	n	Mean	SD
Female	25	2.92	1.61	53	3.57	1.53	28	2.61	1.00
Male	31	3.61	1.41	33	2.97	1.98	39	3.00	1.00
Age									
<18	13	3.00	1.96	12	2.75	1.71	14	2.36	1.65
18-24	38	3.55	1.35	58	3.29	1.64	48	2.94	1.55
25-34	5	2.20	1.10	16	3.94	1.95	5	3.20	1.64

The type of educational institutes the study was conducted in may explain these differences. The high school has a focus in sciences, and students who attend this school are probably going to pursue an academic career or a career in sciences. The middle age group consists mainly of business students, so perhaps the male entrepreneur's field of work appealed more to the students. If the female entrepreneur's video were shown to students attending a vocational school studying for example beauty and healthcare, the female role model, who is employed in the same field, may have gotten significantly higher ranks. The oldest age group related to the female entrepreneur the most, but the sample is rather small, so conclusions are difficult to draw. Perhaps they dream of changing jobs or for other reasons felt inspired by the young female entrepreneur.

4.2 Entrepreneurial intentions and related variables

Intentions to start a business within the next years

This section presents results for the students' EI and related variables. In addition to the EI measure formed in Chapter 3.3, which includes several items measuring EI especially in the short timeframe, a longer perspective is also included presented. Figure 4 demonstrates the students' probability to start a business within the medium-term, to get a better understanding of the entrepreneurial mindset of these students. One year is a short time especially for a high school student, who is in the middle of their studies. The bar chart below portrays results of "Estimate the probability you'll start your own business in the next 5 years?" ranked from 0 to 100% from the first question round (T1), because the setting is identical for all respondents, including the control group.

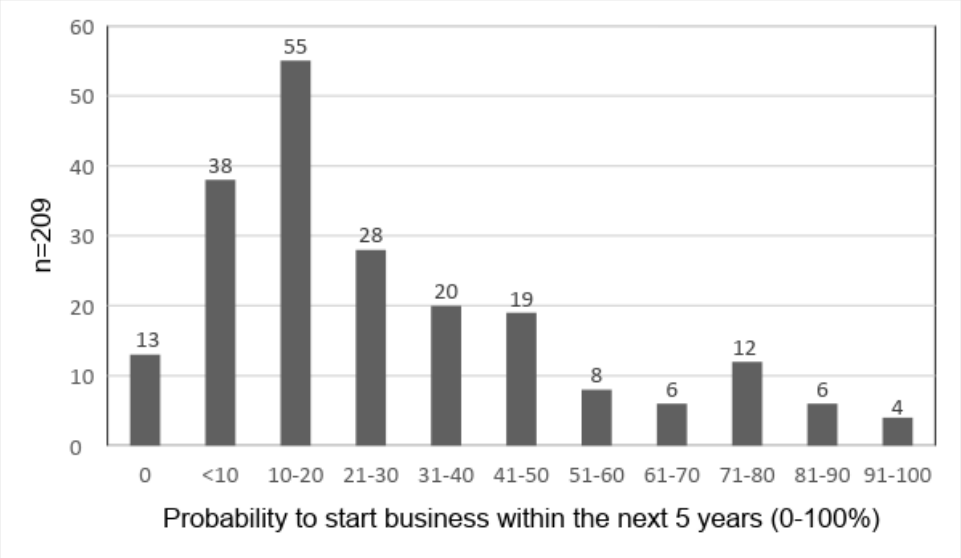

Figure 4. Respondents' probability to start a business within the next five years

The results indicate that most students consider self-employment as a possible alternative in the medium-term, and one fourth of the respondents consider they are unlikely to do so (probability <10%), whereas 5% (probability >80%) are quite certain they intend to take steps towards self-employment within the next five years. Next, mean values of EI and related variables (attitude, desirability and feasibility) are presented.

Pre and post mean values of EI and related variables

The means presented here consist of the variables' items presented in the measure development –chapter. Means for both question rounds are presented (T1 and T2). As it can be expected, the mean value for EI is the lowest compared to other variables. The variables' means are highest for desirability (4.24) and attitude (4.01) for the whole respondent group in the first round (T1). All means are higher for male respondents, for example, desirability is ranked much higher for males (4.81) than for females (3.69) as is attitude (4.45 and 3.59, respectively). However, female students perceive an entrepreneurial career desirable, as the mean value is 3.69. However, females' mean values for all but intention decreased in the second round (T2). Male students' EI and feasibility perceptions increased in the second round (T2). Nonetheless, male students' EI remains higher, thus the findings from this study seem to be equal with many previous studies concerning EI and gender, where females' EI and related variables are at a lower level than males'. Results are in Table 7.

Table 7. Pre and post means for variables categorized by gender

		Attitude		*Desirability*		*Feasibility*		*Intention*	
Gender	Time	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Male	T1	4.45	1.27	4.81	1.56	3.78	1.11	3.41	1.48
(n=103)	T2	4.24	1.35	4.42	1.79	3.84	1.19	3.57	1.53
Female	T1	3.59	1.26	3.69	1.54	3.04	1.02	2.39	1.13
(n=106)	T2	3.21	1.31	3.25	1.77	3.00	1.14	2.43	1.22

Categorizing by age, all variables are ranked highest by the oldest students, and the youngest age group's mean values are the lowest. However, desirability is quite high in the youngest age group (3.74), even though the post value (T2) decreases a little. Examining the changes in variables, attitude decreased in all age groups, desirability increased in the middle age group, feasibility increased in the youngest and oldest age groups, and intention increased in all age groups. Results are presented in Table 8.

Table 8. Pre and post means for variables categorized by age

		Attitude		*Desirability*		*Feasibility*		*Intention*	
Age	Time	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<18	T1	3.62	1.37	3.74	1.38	3.19	1.18	2.50	1.35
(n=39)	T2	3.37	1.34	3.63	1.72	3.20	1.27	2.64	1.40
18-24	T1	4.09	1.28	3.34	1.68	3.40	1.14	2.94	1.39
(n=144)	T2	3.75	1.40	3.79	1.87	3.36	1.23	3.03	1.46
25-34	T1	4.19	1.49	4.42	1.74	3.77	0.87	3.20	1.54
(n=26)	T2	4.06	1.62	4.31	2.02	4.06	1.01	3.32	1.73

The mean values categorizing by the treatment groups are illustrated below in Table 9. The results suggest that the variables' pre mean values are quite even between the groups but values for students who watched the female ERM video were slightly lower in pre and post settings, and students who watched the male ERM video had higher means in all variables. This may be due to the uneven gender amounts in the treatment groups, for example, Katariina's video had 62% female observers. The interesting part is examining the changes in the variables' means. It seems that Katariina's video had more positive impacts: feasibility and intention means increased. Marko's video did not cause any positive changes (with no categorizing demographics), only intention stayed the same in the second round (T2). However, feasibility and intention were also increased in the control group. Therefore, examination of the changes' statistical significance is required.

Table 9. Pre and post means for variables categorized by treatment

		Attitude		*Desirability*		*Feasibility*		*Intention*	
Treatment	Time	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Marko	T1	4.28	1.42	4.38	1.62	3.69	1.11	3.08	1.53
(n=56)	T2	3.89	1.53	3.99	1.80	3.56	1.32	3.08	1.48
Katariina	T1	3.88	1.31	4.00	1.68	3.18	1.15	2.62	1.35
(n=86)	T2	3.59	1.46	3.60	1.95	3.27	1.27	2.77	1.49
No video	T1	3.97	1.27	4.43	1.61	3.46	1.06	3.07	1.34
(n=67)	T2	3.73	1.29	3.97	1.81	3.49	1.11	3.20	1.48

As noted, there were changes in the variables' mean values in the second round regardless of the categorizing. Next, the significance of the variables changes' is tested using Paired two-sample t-tests.

The main research variables' statistical significance of changes

The mean values of variables before and after the video are presented below for both ERM video groups and the control group. Table 10 illustrates the mean values for the research variables before (T1) and after (T2) watching the videos, as well as the differences between the variables. Paired two-sample t-test was applied to test for the significance of changes in the research variables. Table 11 demonstrates the results for all the respondent groups categorized by gender. Table 12 categorizes the results by age.

Even though pre-mean values of the variables were rather high, especially for males, the videos' effects on the means are contradictory. The paired samples test revealed that the changes in variables' means for the group watching the male ERM video were negative, with attitude and desirability significantly negative. In fact, changes in attitude and desirability's means were significantly negative in all three groups. The group watching the female ERM video however had significant positive changes in EI (mean change = 0.15, t = 1.98*), significant at the 10 percent level. However, there is a positive and significant change in the control group's EI as well (mean change = 0.129, t = 2.49**). Exact values can be seen in Table 10.

Table 10. Descriptive statistics and paired samples test (n = 209)

		Male entrepreneur				Female entrepreneur				Control group			
Variable	Time	Mean	SD	Mean difference	t Value	Mean	SD	Mean difference	t Value	Mean	SD	Mean difference	t Value
Attitude	T1	4.28	1.42	-0.37	-5.18***	3.88	1.31	-0.29	-4.37***	3.97	1.27	-0.24	-3.81***
	T2	3.89	1.53			3.59	1.46			3.73	1.29		
Desirability	T1	4.38	1.62	-0.38	-3.37***	4.00	1.68	-0.40	-3.62***	4.43	1.61	-0.46	-4.18***
	T2	3.99	1.80			3.61	1.95			3.97	1.81		
Feasibility	T1	3.69	1.11	-0.13	-1.18	3.18	1.15	-0.09	1.15	3.46	1.06	-0.03	-0.33
	T2	3.56	1.32			3.27	1.27			3.49	1.11		
Intention	T1	3.08	1.53	-0.00	-0.04	2.62	1.35	0.15	1.98*	3.07	1.34	0.13	2.49**
	T2	3.08	1.48			2.77	0.70			3.20	1.48		

*Indicates significance at the 10 %-level

**Indicates significance at the 5 %-level

***Indicates significance at the 1 %-level

When categorizing by age, the significant effects of the male ERM video were negative. Female respondents' means for attitude, desirability and feasibility were all negative, with the first two mentioned significantly negative. This is in line with the conclusion, which was presented in pursuance of Table 6. Perhaps female observers were not that inspired by the male entrepreneur, and require a female entrepreneur to relate to, as suggested by Douvan (1976) and Latu et al. (2013). Also, male respondents' means decreased but less compared to their female counterparts. The only positive increase in means was in female students' EI, even though the change was non-significant. Exact values are in Table 11.

Table 11. Descriptive statistics and paired samples test categorizing by gender

			Male entrepreneur (n = 56)				*Female entrepreneur (n = 86)*				*Control (n = 67)*			
Variable	Gender	Time	N	Mean	SD	t Value	N	Mean	SD	t Value	N	Mean	SD	t Value
Attitude	female	T1	25	3.78	1.51	-4.67**	53	3.58	1.17	-3.71**	28	3.45	1.21	-4.24**
		T2		3.21	1.56			3.27	1.29			3.09	1.16	
	male	T1	31	4.68	1.23	-2.74*	33	4.37	1.40	-2.34*	39	4.34	1.19	-1.70
		T2		4.44	1.29			4.10	1.60			4.20	1.19	
Desirability	female	T1	25	3.72	1.58	-3.10**	53	3.59	1.51	-2.50*	28	3.86	1.61	-2.78**
		T2		3.12	1.88			3.21	1.70			3.45	1.83	
	male	T1	31	4.90	1.48	-1.63	33	4.67	1.75	-2.81**	39	4.85	1.49	-3.14**
		T2		4.70	1.41			4.24	2.17			4.35	1.71	
Feasibility	female	T1	25	3.26	0.97	-1.31	53	2.97	0.99	0.57	28	2.99	1.11	-0.48
		T2		3.01	1.26			3.04	1.12			2.93	1.08	
	male	T1	31	4.04	1.11	-0.30	33	3.52	1.31	1.47	39	3.80	0.90	0.91
		T2		4.00	1.21			3.64	1.41			3.89	0.96	
Intention	female	T1	25	2.41	1.32	0.35	53	2.31	0.99	0.6	28	2.50	1.24	0.25
		T2		2.44	1.28			2.38	1.12			2.51	1.37	
	male	T1	31	3.61	1.50	0.45	33	3.13	1.68	3.72**	39	3.48	1.28	2.84**
		T2		3.58	1.45			3.41	1.79			3.69	1.37	

*Indicates significance at the 5 %-level
**Indicates significance at the 1 %-level

Table 11 also illustrates the changes in variables' means for the second group. The female ERM's video had positive effects on students' perceptions of feasibility and intention for both genders. In fact, intention's change was significantly positive for males (mean change = 0.28, t = 3.72**), significant at the 5 percent level. Similarly as in the first group, changes in attitude and desirability were negative for both genders watching the female ERM video. However, the decrease was smaller for the females watching the female ERM video than for the females watching the male ERM video.

In the last columns, the results for the control group are shown. Three variables' mean values in the control group were significantly changed for either the other or

both genders, and with a significantly positive increase in intentions for male students (mean change = 0.211, t = 2.84**), significant at the 5 percent level. However, the positive effects the female ERM video had on feasibility and intentions were higher than the changes in the control groups' means. Yet, we cannot be entirely sure that the changes in intentions were entirely due to the ERM video.

Categorizing by age, the means' differences are again two-fold. Attitude towards entrepreneurship decreased for all age groups and most for the middle age group (mean change = -0.34, t = -6.94***), significant at the 1 percent level. Desirability also significantly decreased for the middle age group (mean change = -0.55, t = -7.21***), significant at the 1 percent level. Nonetheless, there seem to be positive impacts too, as feasibility means increased significantly for the oldest age group (mean change = 0.29, t = 2.08**), significant at the 5 percent level. Also, intention increased significantly for the youngest age group as well as the middle age group. Exact values are presented in Table 12 below.

Table 12. Descriptive statistics and paired samples test categorizing by age

Variable	Age	N	Time	Mean	SD	SE	Mean difference	t Value
Attitude	<18	39	T1	3.62	1.37	0.22	-0.25	-3.32***
			T2	3.37	1.34	0.22		
	18-24	144	T1	4.09	1.28	0.11	-0.34	-6.94***
			T2	3.75	1.40	0.12		
	25-34	26	T1	4.19	1.49	0.29	-0.14	-1.24
			T2	4.06	1.62	0.32		
Desirability	<18	39	T1	3.74	1.38	0.22	-0.12	-0.72
			T2	3.63	1.72	0.28		
	18-24	144	T1	4.34	1.68	0.14	-0.55	-7.21***
			T2	3.79	1.87	0.16		
	25-34	26	T1	4.42	1.74	0.34	-0.12	-0.73
			T2	4.31	2.02	0.40		
Feasibility	<18	39	T1	3.19	1.18	0.19	0.01	0.06
			T2	3.20	1.27	0.20		
	18-24	144	T1	3.40	1.14	0.10	-0.04	-0.63
			T2	3.36	1.23	0.10		
	25-34	26	T1	3.77	0.87	0.17	0.29	2.08**
			T2	4.06	1.01	0.20		
Intention	<18	39	T1	2.50	1.35	0.22	0.14	2.19**
			T2	2.64	1.40	0.22		
	18-24	144	T1	2.94	1.39	0.12	0.09	1.80*
			T2	3.03	1.46	0.12		
	25-34	26	T1	3.20	1.54	0.30	0.12	1.24
			T2	3.33	1.73	0.34		

*Indicates significance at the 10 %-level
**Indicates significance at the 5 %-level
***Indicates significance at the 1 %-level

When the video-groups and the control group are combined (n = 209), the post-mean of EI increased for male students significantly (mean change = 0.16, t = 3.74***), significant at the 1 percent level. In addition, females' EI increased slightly but the change is not significant. When no categorizing is done, for the whole sample, students' EI increased significantly (mean change = 0.10, t = 2.69***), significant at the 1 percent level. The significant increase in EI seems to derive from male students increase in EI, who watched the female ERM video. Even though the male students' EI in the control group also increased significantly, the increase was lower. Therefore, the study was able to affect EI of male students even though the changes were minor.

Lastly, the effects students' entrepreneurial experience has on EI and related variables was examined. Eight experience related questions, including students' work experience and entrepreneurs they know were asked, which required a "yes" or "no" answer. The variable was formed as a sum of the "yes" responses (yes = 1 and no = 0). Firstly, the table suggest that levels of EI and attitude and desirability are quite consistently higher when the student has more experience. This is especially true in the case of EI. Secondly, the results suggest that students' attitude and perceptions about entrepreneurship, as well as intentions are higher when their parent(s) have started a business. The changes in EI were also higher with more entrepreneurial experience. For example, intention's mean change for students with six "yeses" was 0.34 (t = 2.31**), compared to two "yeses" and a mean change of 0.14 (t = 2.04**), both significant at the 5 percent level. The post-means were also higher in the case of entrepreneurial parents (mean change = 0.12, t = 1.76*), significant at the 10 percent level, compared to non-entrepreneurial parents (mean change = 0.09, t = 2.21**), significant at the 5 percent level. More detailed values are listed below.

Table 13. Students' entrepreneurial experience and EI and other variables (mean values)

Entrepreneurial experience	N	*Attitude*	*Desirability*	*Feasibility*	*Intention*
Amount of "yes"					
8	3	4.39	6.17	3.83	5.11
7	5	5.67	6.30	4.65	5.11
6	14	4.74	4.96	3.69	3.48
5	36	4.64	4.83	3.77	3.43
4	45	3.79	4.02	3.44	2.70
3	41	3.70	3.94	3.15	2.49
2	39	3.49	3.67	3.06	2.35
1	23	3.96	4.20	3.30	2.74
0	3	4.18	3.50	3.50	4.03
Parents have started a business	97	4.23	4.53	3.56	3.17
Parents have not started a business	112	3.83	3.98	3.27	2.65

4.3 Relationships of the variables

Correlations between the pre, post and changed values were calculated for the variables (intention, attitude, desirability, feasibility, experience, gender and age). Multicollinearity should not disturb the regression models, as no excessive correlations between the variables were found, and other underlying prerequisites for the linear regressions were met. Correlations between the changed values (T2-T1) were notably lower than the rest. The correlation matrixes are portrayed in Appendices 5-7.

The results for the additional regressions 3 and 4 are presented in the tables below. Both models are significant at 1 percent and their explanatory power of EI is high. In both models, attitude, desirability and feasibility are significant at 1 percent. Thus, the results support findings from earlier literature (e.g. Krueger, Reilly & Carsrud 2000), that attitude, desirability and feasibility explain EI well. Other explanatory variables were not significant; only gender and having more role models affect the post-value of intention significantly. Results are presented in Tables 14 and 15. In the next subchapter, the effects of the ERM videos on intentions and related variables is examined.

Table 14. Intention and its antecedents (T1)

Dependent variable	*Independent variables*	*B*	*t Value*
Intention (T1)	Intercept	-0.99	-5.14**
	Attitude (T1)	0.31	4.61**
Model fit	Desirability (T1)	0.36	6.69**
F Value 100.57**	Feasibility (T1)	0.27	4.47**
	Experience	0.04	1.31
R-Square	Gender	0.15	1.39
0.75	Age	0.02	0.12

*Indicates significance at the 5 %-level
**Indicates significance at the 1 %-level

Table 15. Intention and its antecedents (T2)

Dependent variable	*Independent variables*	*B*	*t Value*
Intention (T2)	Intercept	-0.66	-3.96**
	Attitude (T2)	0.21	3.33**
Model fit	Desirability (T2)	0.44	10.34**
F Value 144.72**	Feasibility (T2)	0.19	4.14**
	Experience	0.04	1.32
R-Square	Gender	0.21	2.30*
0.83	Age	-0.08	-0.70
	Role model	0.09	2.35*

*Indicates significance at the 5 %-level
**Indicates significance at the 1 %-level

4.4 Can role model videos affect students' EI and its antecedents?

4.4.1 Explanatory variables' ability to explain EI and related variables

Table 16 below represents the results for regressions 1a-1d regarding the explanatory variables' (experience, gender, age and video selection) ability to explain changes in EI. The models were found not significant and the models' ability to explain the research variables (EI, attitude, desirability and feasibility) is only 4 percent at the highest. However, there were some interesting results, such as gender's effect on intentions and attitude, and age's effects on perceptions about desirability. The male gender explains changes in EI (B = 0.13, t = 1.67*), significant at the 10 percent level. The male gender also explains changes in attitude (B = 0.18, t = 2.26**), significant at the 5 percent level. This finding supports hypothesis 3. Age was found to quite strongly and positively affect the change in desirability (B= 0.40, t = 2.35**), significant at the 5 percent level. Younger age explains the positive

change in desirability's mean values after seeing the video. This notion supports hypothesis 2.

The results suggest, that demographic factors do not explain the change in intention well. It has been found that in empirical use, the predictive power of situational and demographical variables has rough edges. The students' prior entrepreneurial experience and knowing entrepreneurs seem to have very little impact on the dependent variables. Prior findings of experience's effects on EI and entrepreneurial attitudes and perceptions have been inconclusive. As it was hypothesized, having more experience leads a smaller change in EI and related variables. As none of the coefficients are significant, hypothesis 4 cannot be confirmed based on these findings. When examining the videos' effects on the variables' changes, it seems that Katariina's video was more liked than Marko's video even though the differences are not significant. Thus, video selection does not have a significant impact on intentions' or related variables' changes.

Table 16. Explanatory variables' ability to explain EI and related variables

	EI change		*Attitude change*		*Desirability change*		*Feasibility change*	
	B	t Value	B	t Value	B	t Value	B	t Value
Intercept	-0.04	-0.35	-0.41	-3.56*	-0.65	-3.44***	-0.10	0.64
Experience	0.02	0.98	0.02	0.62	0.02	0.47	0.01	0.37
Gender	0.13	1.67*	0.18	2.26**	0.08	0.62	0.13	1.23
Age	0.09	0.92	0.10	0.99	0.40	2.35**	0.04	0.33
Katariina	0.04	0.41	-0.02	-0.23	0.10	0.63	0.08	0.68
Marko	-0.14	1.37	-0.15	-1.50	0.07	0.36	-0.16	-1.20
Model fit								
F	1.47		1.71		1.20		0.99	
R^2	0.04		0.04		0.03		0.02	

*Indicates significance at the 10 %-level
**Indicates significance at the 5 %-level
***Indicates significance at the 1 %-level

4.4.2 Does similarity with the role model explain students' changes in EI?

Table 17 illustrates the results for regressions 2a-2d and answers hypothesis 5 regarding the importance of similarity, in terms of being able to identify one's self with the role model. Two similarity factors were formed indicating the student representing the same gender as the role model, and being close to the role model's

age. As none of the students are as old as the male entrepreneur, age similarity refers to Katariina and students in the youngest and middle age group.

Two of the models, the change in attitude and change in desirability are significant. The models' explanatory powers are 0.08 (significant at the 5 percent level) and 0.06 (significant at the 10 percent level), respectively. Similarity or other explanatory variables do not explain intentions' change significantly. However, similar age was found to negatively affect the change in attitude (B = -0.36, t = -2.27**), significant at the five percent level. Perhaps there was some bias because of Katariina's young age. In addition, the young students may have realized that they were not ready for such responsibility, as Katariina spoke about the sacrifices she has had to make, and sometimes having to work around the clock. Similar gender was positive for attitudes and desirability, and they were nearly accepted with the 10 percent significance (Pr = 0.11 and Pr = 0.13, respectively).

In these models, the male gender also explains attitude significantly (B = 0.21, t = 2.59**), significant at the five percent level and younger age explains the positive change in desirability significantly (B = 0.45, t = 2.67***), significant at the 1 percent level. The last significant explanatory variable is Marko's video. It seems that Marko's video accounts for a decrease in attitudes (B = -0.24, t = -2.09**), significant at the 5 percent level. Similar reasoning may apply here as with the decrease in attitudes in the case of age similarity with Katariina. The decrease may be due to understanding that being an entrepreneur requires a lot of hard work, and the students felt that the entrepreneurial career is not for them.

Table 17. Similarity variables' ability to explain EI and related variables

	EI change		*Attitude change*		*Desirability change*		*Feasibility change*	
	B	t Value	B	t Value	B	t Value	B	t Value
Intercept	-0.03	-0.22	-0.41	-3.61***	-0.66	-3.48***	0.09	0.61
Experience	0.02	0.96	0.01	0.38	0.01	0.26	0.01	0.19
Gender	0.11	1.43	0.21	2.59**	0.12	0.93	0.15	1.36
Age	0.07	0.73	0.14	1.35	0.45	2.67***	0.07	0.50
Katariina	0.03	0.17	0.18	1.06	0.38	1.34	0.27	1.18
Marko	-0.07	-0.64	-0.24	-2.09**	-0.07	-0.35	-0.20	-1.34
Similarity_gender	-0.12	-1.22	0.16	1.62	0.26	1.52	0.08	0.63
Similarity_age	0.09	0.61	-0.36	-2.27**	-0.51	-1.96	0.28	-1.33
Model fit								
F	1.31		2.38**		1.76*		1.02	
R^2	0.04		0.08		0.06		0.03	

*Indicates significance at the 10 %-level

**Indicates significance at the 5 %-level

***Indicates significance at the 1 %-level

5. DISCUSSION AND CONCLUSIONS

5.1 Discussing the findings

This thesis intended to answer whether short ERM videos raise students' EI in the short-term. Differences between the role model videos, as well as differences between students' gender, age and experience were examined. The ERMs used in this study were chosen because they are each other's opposites: a young female entrepreneur and an older male entrepreneur representing different fields. The responses for the study were gathered from October 2017 to March 2018 and the estimates for the group were obtained using SAS. To address the research and sub research questions, a pretest–post-test design was used, with hypotheses grounded in previous studies.

The results of this thesis suggest that ERM videos have an impact on students' EI, as the changes in the variables' means were significant but contradictory: both negative and positive effects were found. Especially for male students the increase in EI was significant. In addition, when categorizing by age, perceptions of feasibility increased significantly for the oldest age group, and EI of the youngest and middle age group increased significantly. However, there were also negative effects, as attitude and desirability decreased in all groups significantly when categorizing by gender and age. The negative effects the videos had may be due to students not desiring the ERM's career. Also, perceptions of desirability can be difficult to change in a short time. There were only two items measuring desirability, which are very similar. The decrease in attitudes is perhaps explained as a "reality check". The entrepreneurs also bought up negative aspects of an entrepreneurial career, such as its time-consuming nature and requirement to work very hard to achieve goals. However, the changes in attitudes and desirability were significantly negative in the control group as well. The negative changes in these answers may be due to the survey's design and perhaps the length. Therefore, it is difficult to draw a conclusion were the videos' effects on the variables truly as negative.

When studying the significance of the research variables' mean values' changes, the female ERM video had significant positive impacts on male students' EI. However, the control group's means for EI increased as well. There were some positive, yet not significant changes for the group watching the female ERM video, leading to increases in students' perceptions of entrepreneurial feasibility and intention. This suggests that the ERM videos had positive impacts on students, and *hypothesis 1 is at least partially confirmed*. Examining results of the regression analysis, video selection or videos did not have the intended impacts on EI and related variables. Some significant connections were found: being the same age as Katariina (young) or watching Marko's video significantly explain the negative impact on attitude's change. Katariina's video explains positive changes in EI and other variables but not significantly.

Categorizing by age, EI of the youngest age group was the lowest but increased significantly and the raise in EI was the highest out of the age groups (mean change 0.14, t = 2.19**), significant at the 5 percent level. The result is similar to studies by e.g. Lévesque and Minniti (2006) and Marech et al. (2016). Also, as Fayolle and Gailly (2015) suggested, less experience in EE (as the youngest age group has) leads to more positive effects from EE. The regression analysis similarly found that younger age explains the positive change in desirability. Hence, *hypothesis 2 can be confirmed.*

Examining the mean values for EI, entrepreneurial attitudes and perceptions, females' means are consistently lower than males'. These findings support previous findings (e.g. Zhao, Seibert & Hills 2005; Karimi et al. 2013; Espíritu-Olmos & Sastre-Castillo 2015; Teixeira & Forte 2015). The results of the Paired sample t-tests indicate that the mean values decreased for female students in nearly all situations: in all the groups the only significant changes in EI and related variables were negative. The regression analysis also indicates that the male gender explains a positive change in EI and attitudes. Hence, females' EI and its antecedents were not changed towards the positive after watching the ERM videos, thus *hypothesis 3 is confirmed*.

Another factor that was controlled was students' entrepreneurial experience, including their own experience as well as knowing entrepreneurs, such as family members or friends. The amount of students' parents whom have started a business was quite high, nearly half reported their mothers or fathers having started a business. As Table 13 illustrates, the EI of students, whose parents have started a business was higher (3.17 and 2.65), and also the change in EI was higher when the student had more entrepreneurial experience. This finding is in line with previous research (e.g. Solesvik 2013). More entrepreneurial experience seems to lead to higher means in all variables. Differing from Fayolle and Gailly's (2015) research, which found more prior entrepreneurial experience leading to smaller increases in EI, the opposite was present according to the Paired sample t-test's results. However, the regression analysis did not find experience as a significant contributor to the changes in any research variables, as in all situations the coefficient was nearly 0. This suggests that *hypothesis 4 cannot be confirmed.*

The last hypothesis expected that students are more inspired by role models they share similar characteristics with. As the most significant increase in EI was for male students watching the female ERM video, this is against the presumption of the last hypothesis. However, as Table 6 demonstrates, females perceived the female ERM more inspirational compared to the male entrepreneur (3.57 and 2.92, respectively). Similarly, male observers perceived the male entrepreneur more inspirational than the female entrepreneur (3.61 and 2.97, respectively). Additionally, when categorizing by age, the oldest age group (who are almost the same age as the female ERM) considered Katariina to be more inspirational than the male ERM, who is much older than the students are (3.94 and 2.20, respectively). Also, the decreases in the variables' means were smaller for female students watching the female ERM video. Therefore, similarities seem to attract but hypothesis 5 cannot yet be confirmed. The regression analysis only found one significant and negative contributor to the dependent variables: being the same age as Katariina (young) explains the decrease in attitudes. The negative effect may be because of a "reality check". The regression did not find being the same gender as the role model as an explanatory variable for changes in EI and its antecedents. This would suggest that individuals do not need a role model representing the same gender. This supports

the finding, that male students' EI rose more when they saw the female ERM video. Therefore, *hypothesis 5 is not confirmed.*

A clear issue this thesis intended to address are the gender differences concerning entrepreneurship's desirability, feasibility and EI for females. Gender differences in entrepreneurship remain despite the gap has narrowed in the past decades. In Finland one third of entrepreneurs are women (Statistics Finland 2015). Men's entrepreneurial activity is higher than women's in all age groups in Finland (Statistics Finland 2015; OECD 2017) and in most OECD countries (OECD 2017). There is also a clear age distribution in self-employment: the typical entrepreneur is a male aged over 55 years. Only 2% of the entrepreneurs in Finland are under 25 years (Statistics Finland 2015). Action must be taken to increase the youths' willingness, and especially women's desire to become self-employed. Encouraging women towards entrepreneurship can be done by female-to-female mentoring, networking and focusing on localness (Ministry of economic affairs and employment 2005) in addition to EE and its means to increase perceptions of self-efficacy, entrepreneurial knowledge of and intentions to entrepreneurship. Unfortunately, the results of this study were similar to previous studies, which found EI of females to be lower than males and it is more difficult to affect them using ERM videos.

There are several reasons that may contribute to the results of this study, for example, life stages, age, educational institution, field of study and other exogenous factors. Data and research design related matters are further discussed in the limitations –chapter. Peterman and Kennedy (2003) make a point about different states of life affecting perceptions of desirability and feasibility of entrepreneurship. Especially younger students, as in this study the high school students representing one fourth of the respondents, may not be that concerned about their feasibility and skills to become an entrepreneur because it may not be in their intention to start a business soon. Feasibility was in fact lowest for the youngest age group. On the other hand, desirability is a factor that guides decisions when planning the future career (Peterman & Kennedy 2003). As expected, the perception of desirability was ranked the highest out of the four variables for high school students. Thus, there is a possibility that when entrepreneurial career is perceived desirable, action will be

taken. However, Souitaris, Zerbinati and Al-Laham (2007) note that the time lag between EI and behavior especially with high school students should be highlighted. Even though the results indicate that some intentions were raised, with time, the role model and inspiration may be forgotten if the idea is not nurtured. Therefore, exposure to ERMs should continue, and other entrepreneurial activities should be included throughout studies to sustain enthusiasm towards self-employment.

Even though an intervention such as the ERM video can increase EI, action may never be taken due to various reasons, such as emerging constraints, changes in preferences, prolonging to take action until more experience is gained, or resources saved. In addition, the level of intention affects the likelihood of taking action, in the sense that weaker intentions will less likely lead to a start-up (Van Gelderen, Kautonen & Fink 2015). As Liñán (2004) also pointed out, perceptions about entrepreneurship may be changed when more knowledge about entrepreneurship is acquired. Therefore, especially the secondary school students in this study may change their minds as they gain more knowledge about the requirements of starting a firm.

Despite the inconclusive changes in EI and other variables, slight positive changes in perceptions and small but significant positive changes in EI for male students were found, which demonstrates the potential of using ERM videos in EE. Even though the aim in this explorative setting was to increase EI, entrepreneurial attitudes and perceptions, the failure to do so is not necessarily a bad thing as Graeveniz, Harhoff and Weber (2010) suggest. In fact, the students may have learned about themselves, their preferences and that the entrepreneurial career is not for them (Graevenitz, Harhoff & Weber 2010). One of this study's contributions is also raising students' awareness and consideration of an entrepreneurial career. Consideration does not necessarily mean intention to do so, but it is a trigger and the first step in raising attitudes and EI (Souitaris, Zerbinati & Al-Laham 2007). What is also an important notion based on the findings of this study is that video content may not fully be able to replace face-to-face interaction, or longer role model exposure is required. However, multimedia can and should be used as a supportive method in EE. Implications of the study are presented next.

5.2 Implications of the study

EE and its impacts on EI have been studied in various settings and cultures, and studies seem to have focused on traditional teaching methods, which have led to little improvements in EE. New and innovative teaching methods offer much uncovered ground to study, and as the promising results of this thesis suggest, the use of video-based content in EE deserves more attention. The results of this thesis are useful for teachers, entrepreneurship educators, advisors, entrepreneurs, economic development professionals and decision makers, who intend to spur and facilitate interest towards entrepreneurship.

As the results suggest, video-based ERM content can be an effective way to change students' perceptions about entrepreneurship and EI. Even though the changes were minor, the changes happened within a very short time frame, which should not be underestimated. Therefore, the innovative methods of EE deserve more attention as the results obtained even in a short-term setting are promising. Even though some significant negative changes occurred, the results can be utilized in improving similar content, and making it more effective. In general, EE educators and decision makers should understand the positive impact role models can have on students' entrepreneurial orientation (Van Auken, Fry & Stephens 2006). Including role models in education, both web-based content and face-to-face interaction in education is highly recommended.

The first step how to successfully promote entrepreneurship is to understand how intentions are formed through the potential founders' beliefs, perceptions and motives. Examining students' intentions and motivations through EI models also offers teachers a way to help students to understand their own interests, intentions and motivations. Intention models also provide diagnosis on differences between e.g. genders and ethnicities, allowing to tackle those differences. For example, low self-efficacy can be increased in schools. (Krueger, Reilly & Carsrud 2000) EE practitioners can increase perceptions of entrepreneurship through increasing feasibility and attractiveness of a business start-up, which would likely lead to more interest in an entrepreneurial career (Shook & Bratinau 2010). According to the

results of this study, female students' attitudes, perceptions, and intentions were at a lower level and more negatively affected than male students. Hence, these results suggest that more action needs to be taken to understand females' interests and attitudes, and customize EE accordingly. For example, this could be done by creating a supportive atmosphere for female entrepreneurs and making female entrepreneurs more visible in the society. In addition, it is quite likely, that the field of work the ERM is in affects desirability and attitude. Therefore, the effects may be significantly positive when students share a similar interest with the role model, such as study the field the ERM is in.

Students need to be aware of entrepreneurship as a career option. Exposing young students to entrepreneurs, while they are searching for their path and finalizing their career aspirations, can help students turn vague intentions of starting businesses into realities. Especially when students graduate and are not directly employed or they are unsatisfied with their work, planting an idea of becoming self-employed would also decrease the unemployment rates. Statistics on Finland's workforce found that becoming an entrepreneur when unemployed is the lowest for persons aged under 25 (Statistics Finland 2017).

5.3 Limitations and future research

The limitations of this study offer possibilities for future research within EI, EE and role model research. One of the most obvious limitations is the short timeframe of the study, thus the gap between intentions and entrepreneurial activity remains. This is a typical issue in EI research as studies are able to address attitudes and intentions in the present, but not actual behavior in the future. Without longitudinal data, the results from this thesis remain fairly shallow and incomplete. A longitudinal study would provide evidence of intention that leads to action. Similarly, as in Fayolle and Gailly's (2015) study, an interesting alternative would be to follow up on the students who saw the ERM videos and see whether intentions have remained the same or changed in some direction, and ultimately have those intentions led to starting a firm. Thus, the possibility a short-term ERM exposure has on EI requires more research and development.

Secondly, there are some matters regarding the questionnaire that might affect the reliability and validity of the results, such as were the questions formed appropriately to measure the variables. In addition, as this study did not control or survey the EE experience and knowledge the respondents have of entrepreneurship, it is not known was their knowledge about entrepreneurship sufficient to answer how they truly feel about starting a firm. The survey included a question about prior participation in EE but this was only measured with ”yes” and “no”, without determining the length or quality of the education. The respondents were told that even one lesson of EE counts. Therefore, applying this component in the study was not worthwhile. In similar future studies, the ERM videos could be part of an EE course to get students in a right state of mind. Additionally, because the questionnaire’s questions were in English, there may have been a slight language barrier. Regarding the length of the survey, it was relatively long, which might have led to sloppy answering. Some students started answering the questionnaire but left it unfinished.

Thirdly, the sample size was relatively small and consisted of 209 respondents from mainly two educational institutes in Finland: one secondary school and one university. Therefore, it is apt to suspect the generalizability of the results to different schools in other countries or even within the same area. For example, the results may have been different had the questionnaire been conducted in vocational schools or universities of applied sciences within different fields. The high school students surveyed in this study have a focus in sciences, prefiguring academic studies and careers. The university students’ background is in business, which in previous studies (e.g. Solesvik 2013) has proven to be favorable for a career in entrepreneurship. In the future conducting similar studies in different institutes and fields of study from the same geographical area or similar institutes countrywide, and studies comparing countries in Europe could be done.

Regarding the reliability of the respondents’ responses, the data is self-reported and responses should be treated as proxies rather than absolute measures of business creation actions that the respondents will engage in (Ajzen 2011). Yet, previous EI studies have found that self-reported intentions predict entrepreneurial action well

(e.g. Kautonen, Gelderen & Fink 2015). In addition, regarding the sample, it should be noted how the respondents were chosen: university students chose to answer the questionnaire when sent through e-mail, whereas high school students were obliged to answer as a part of a lesson. Also, a questionnaire setting as such (testing for changes) might affect some people to answer accordingly to what they think the researcher “wants” them to answer. To tackle this issue, the control group was included in the research setting. However, the division between the groups was slightly uneven, and the control group was half the size of the groups that watched a video. Also, the post-mean values of students in the control group changed significantly, thus the differences caused by the ERM videos were more difficult to capture.

Other limitations of this study are dependent on the role models. The two ERMs chosen for the videos might not have appeared inspirational for the respondents. As it seems, intentions and other variables’ means decreased more when students saw Marko’s video. This would suggest that the video was not inspiring in the eyes of the students. According to the regression analysis the changes in research variables were not significantly explained by video selection (only attitude and Marko’s video, see Table 17). As students were not that inspired by the ERM videos, the effects the video had on EI and entrepreneurial attitudes and perceptions is likely smaller. Then again, the lack of influence is also valuable information considering similar future studies as different types of role models can be chosen for the videos. Additionally, the content and quality of the video might affect the respondents’ answers, and the implementation of the video and questionnaire should be receptive for development ideas. Receiving feedback of the questionnaire and video from the respondents would be useful to improve the use of ERM videos in EE.

The effectiveness and expediency of the ERM video should also be assessed. Firstly, the EE and ERM setting was very short in nature and not part of any EE program or course. Therefore, the respondents may have been unmotivated or undedicated about the matter and feel entrepreneurship as a remote subject. Secondly, it should be further investigated can a video of a role model replace face-to-face contact. Are short videos enough to spark an interest towards

entrepreneurship and increase EI, and in which cases could a video be enough? For example, when there is already budding interest towards self-employment, watching a short inspirational video of an entrepreneur could work as a confirming contributor to EI. Van Auken, Fry and Stephens (2006) argue that witnessing and hearing about positive aspects of entrepreneurship careers affects EI. They conclude that the greatest likelihood of influencing career intentions is through relationship-oriented interaction between the role model and respondent. This would suggest a video where students remain passive observes cannot achieve the same results. Although the benefit of a video is that the content can be controlled better than an interaction situation between a student and role model. In a face-to-face setting lies the possibility of negative interaction, which has proven to discourage individuals from starting a business (Van Auken, Fry & Stephens 2006).

In addition, the type of pedagogy of EE is surely to affect EI as Fayolle and Liñán (2014) suggest, and the search for the most efficient way to increase intentions leaves much to be researched within the EI branch. This study addressed how important it is that the role models are inspirational in the eyes of the students. Practice-based knowledge and real entrepreneurs are much likely better influencers than practical professors are, therefore using entrepreneurs in EE should be studied more in the future. In addition, different and innovative teaching methods – active versus passive; and face-to-face versus using web-based content – offers many variations to be studied. To encourage and inspire students and potential entrepreneurs by using ERM videos, it is crucial to find out what kind of content serves this best. Future studies could focus on inspiring presentation styles and inspiring entrepreneurial stories.

Another focus for future EI studies is venture creators instead of students, as suggested by Shook, Priem and McGee (2003). Focusing on individuals with intentions that have led or will lead to business creation would increase the generalizability and validity of EI studies. Research could be extended to study other groups of young people than only students. A socioeconomically important group to target with EE is school dropouts and unemployed graduates. EE, role models,

mentoring programs and entrepreneurship workshops could inspire, guide and encourage to think creatively and lead to a decrease in unemployment.

Continuing the search of innovative and effective EE methods and customizing education accordingly will increase entrepreneurial attitudes, perceptions of entrepreneurship and EI, and ultimately lead to an increase in entrepreneurial activity. Incorporating ERM videos in EE could be a cost-effective way to get students interested about entrepreneurship. More research is needed to find out to whom and how ERM videos can be used in EE and perhaps customizing the content depending on the audience. Thus, using ERM in EE leaves a lot to be researched. As results of this and several other EI and EE studies are promising, role model interaction and using web-based ERM content should be further utilized in students' career planning. As the EC (2013) states, investing in EE is considered one of the most valuable investments to boosting the economy. The question remains, which methods are used to spark students' interest towards entrepreneurship.

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APPENDICES

Appendix 1a. Pre-evaluation of entrepreneurial attitudes (T1). Participants assessed the statements from 1 (strongly disagree) to 7 (strongly agree).

Domain	Item	Mean	SD	Item total	Alpha if item
AT01	Being an entrepreneur implies more advantages than disadvantages to me.	4.45455	1.46730	0.707959	0.939099
AT02	A career as entrepreneur is attractive for me.	4.41627	1.66234	0.784449	0.936065
AT03	If I had the opportunity and resources, I'd like to start a firm.	4.70335	1.62257	0.767661	0.936735
AT04	Being an entrepreneur would entail great satisfactions for me.	4.49761	1.58759	0.762168	0.936954
AT05	Among various options, I would rather be an entrepreneur.	3.94737	1.68195	0.771566	0.936580
	For me, taking steps to start a business in the next 12 months would be…	3.66507	1.82472	0.821052	0.934595
AT06	…attractive	3.77990	1.73188	0.700258	0.939402
AT07	…useful	3.05742	1.56173	0.671098	0.940544
AT08	…wise	3.94737	1.68480	0.790479	0.935824
AT09	…positive	3.15311	1.73635	0.759394	0.937065
AT10	…important	4.53110	1.79214	0.714568	0.938839
AT11	…inspiring				

Appendix 1b. Post-evaluation of entrepreneurial attitudes (T2). Participants assessed the statements from 1 (strongly disagree) to 7 (strongly agree).

Domain	Item	Mean	SD	Item total	Alpha if item
AT01	Being an entrepreneur implies more advantages than disadvantages to me.	4.08134	1.56527	0.770621	0.947483
AT02	A career as entrepreneur is attractive for me.	4.20096	1.69496	0.826113	0.945456
AT03	If I had the opportunity and resources, I'd like to start a firm.	4.29665	1.69786	0.730672	0.948928
AT04	Being an entrepreneur would entail great satisfactions for me.	4.11962	1.65542	0.793825	0.946639
AT05	Among various options, I would rather be an entrepreneur.	3.62679	1.71936	0.784208	0.946989
	For me, taking steps to start a business in the next 12 months would be…	3.44976	1.93615	0.840057	0.944943
AT06	…attractive	3.42105	1.80137	0.760350	0.947856
AT07	…useful	2.82775	1.61096	0.733672	0.948820
AT08	…wise	3.63158	1.79024	0.814267	0.945891
AT09	…positive	3.15789	1.73176	0.782247	0.947061
AT10	…important	4.06220	1.90671	0.742340	0.948507
AT11	…inspiring				

Appendix 2a. Pre-evaluation of entrepreneurial desirability (T1). Participants assessed the statements from 1 (strongly disagree) to 7 (strongly agree).

Domain	Item	Mean	SD	Item total	Alpha if item
D01	I would love to start my own business.	4.17703	1.80071	0.709407	0.593185
~~D02~~	~~I would be very tense to start my own business.~~	~~4.50239~~	~~1.47128~~	~~0.409067~~	~~0.909691~~
D03	I would be very enthusiastic to start my own business.	4.30144	1.63791	0.761036	0.531428

Appendix 2b. Post-evaluation of entrepreneurial desirability (T2). Participants assessed the statements from 1 (strongly disagree) to 7 (strongly agree).

Domain	Item	Mean	SD	Item total	Alpha if item
D01	I would love to start my own business.	3.81340	1.92369	0.823061	0.697120
~~D02~~	~~I would be very tense to start my own business.~~	~~4.11962~~	~~1.62316~~	~~0.531063~~	~~0.965349~~
D03	I would be very enthusiastic to start my own business.	3.83732	1.87143	0.845029	0.674732

Appendix 3a. Pre-evaluation of entrepreneurial feasibility (T1). Participants assessed the statements from 1 (strongly disagree) to 7 (strongly agree).

Domain	Item	Mean	SD	Item total	Alpha if item
F01	It will be easy to start my own business.	2.64593	1.32614	0.626991	0.674466
F02	I will be successful when I have my own business.	4.03349	1.40529	0.569257	0.696048
~~F03~~	~~I won't be overworked when I have my own business.~~	~~2.85167~~	~~1.39436~~	~~0.429750~~	~~0.745536~~
F04	I know enough to start a business.	2.77033	1.58262	0.488317	0.725212
F05	I am sure about myself.	4.17703	1.65896	0.506121	0.718904

Appendix 3b. Post-evaluation of entrepreneurial feasibility (T2). Participants assessed the statements from 1 (strongly disagree) to 7 (strongly agree).

Domain	Item	Mean	SD	Item total	Alpha if item
F01	It will be easy to start my own business.	2.72249	1.40381	0.707112	0.767976
F02	I will be successful when I have my own business.	3.91388	1.46177	0.660473	0.781777
~~F03~~	~~I won't be overworked when I have my own business.~~	~~2.89474~~	~~1.34036~~	~~0.520906~~	~~0.821254~~
F04	I know enough to start a business.	2.90909	1.58913	0.620148	0.793461
F05	I am sure about myself.	4.11962	1.67563	0.609575	0.796487

Appendix 4a. Pre-evaluation of entrepreneurial intentions (T1). Participants assessed the statements from 1 (strongly disagree) to 7 (strongly agree).

Domain	Item	Mean	SD	Item total	Alpha if item
EI01	I am ready to do anything to be an entrepreneur.	2.79426	1.55067	0.749765	0.948734
EI02	My professional goal is to become an entrepreneur.	3.23445	1.70055	0.841210	0.944017
EI03	I will make every effort to start and run my own firm.	3.11483	1.69167	0.867745	0.942628
EI04	I am determined to create a firm in the future.	3.48804	1.78161	0.852748	0.943414
EI05	I have very seriously thought of starting a firm.	3.53589	1.87594	0.853979	0.943350
EI06	I have the firm intention to start a firm some day.	3.49761	1.78973	0.825796	0.944820
EI07	I plan to take steps to start a business in the next 12 months.	2.10526	1.47362	0.757460	0.948342
EI08	I intend to take steps to start a business in the next 12 months.	2.06699	1.45619	0.747819	0.948834
EI09	I will try to take steps to start a business in the next 12 months.	2.15789	1.56246	0.755944	0.948419

Appendix 4b. Post-evaluation of entrepreneurial intentions (T2). Participants assessed the statements from 1 (strongly disagree) to 7 (strongly agree).

Domain	Item	Mean	SD	Item total	Alpha if item
EI01	I am ready to do anything to be an entrepreneur.	2.87081	1.62834	0.802698	0.952150
EI02	My professional goal is to become an entrepreneur.	3.34928	1.75343	0.845703	0.950016
EI03	I will make every effort to start and run my own firm.	3.18182	1.73356	0.881337	0.948231
EI04	I am determined to create a firm in the future.	3.48325	1.81631	0.877250	0.948436
EI05	I have very seriously thought of starting a firm.	3.59330	1.88163	0.860605	0.949271
EI06	I have the firm intention to start a firm some day.	3.57416	1.87993	0.852161	0.949694
EI07	I plan to take steps to start a business in the next 12 months.	2.29665	1.63143	0.761090	0.954194
EI08	I intend to take steps to start a business in the next 12 months.	2.27751	1.59913	0.761710	0.954163
EI09	I will try to take steps to start a business in the next 12 months.	2.29187	1.61304	0.752251	0.954625

Appendix 5. Pearson correlations for variables (T1)

Variable	1	2	3	4	5	6	7
1. Intention (T1)		0.80**	0.82**	0.66**	0.31**	0.36**	-0.13
2. Attitude (T1)			0.82**	0.61**	0.29**	0.32**	-0.14*
3. Desirability (T1)				0.59**	0.29**	0.34**	-0.14*
4. Feasibility (T1)					0.23**	0.33**	-0.09
5. Experience						0.10	-0.21**
6. Gender							-0.08
7. Age							

*Indicates significance at the 5 %-level

**Indicates significance at the 1 %-level

Appendix 6. Pearson correlations for variables (T2)

Variable	1	2	3	4	5	6	7
1. Intention (T2)		0.84**	0.87**	0.66**	0.32**	0.38**	0.11
2. Attitude (T2)			0.84**	0.65**	0.29**	0.36**	-0.12
3. Desirability (T2)				0.57**	0.26**	0.31**	-0.05
4. Feasibility (T2)					0.23**	0.34**	-0.08
5. Experience						0.10	-0.22**
6. Gender							-0.08
7. Age							

*Indicates significance at the 5 %-level

**Indicates significance at the 1 %-level

Appendix 7. Pearson correlations for variables (T2-T1)

Variable	1	2	3	4	5	6	7
1. Intention (T2-T1)		0.08	0.29**	0.17*	0.08	0.11	0.03
2. Attitude (T2-T1)			0.111	0.22**	0.04	0.15*	0.04
3. Desirability (T2-T1)				0.15*	0.01	0.03*	0.55
4. Feasibility (T2-T1)					0.04	0.07	-0.00
5. Experience						0.10	-0.22**
6. Gender							-0.08
7. Age							

*Indicates significance at the 5 %-level

**Indicates significance at the 1 %-level