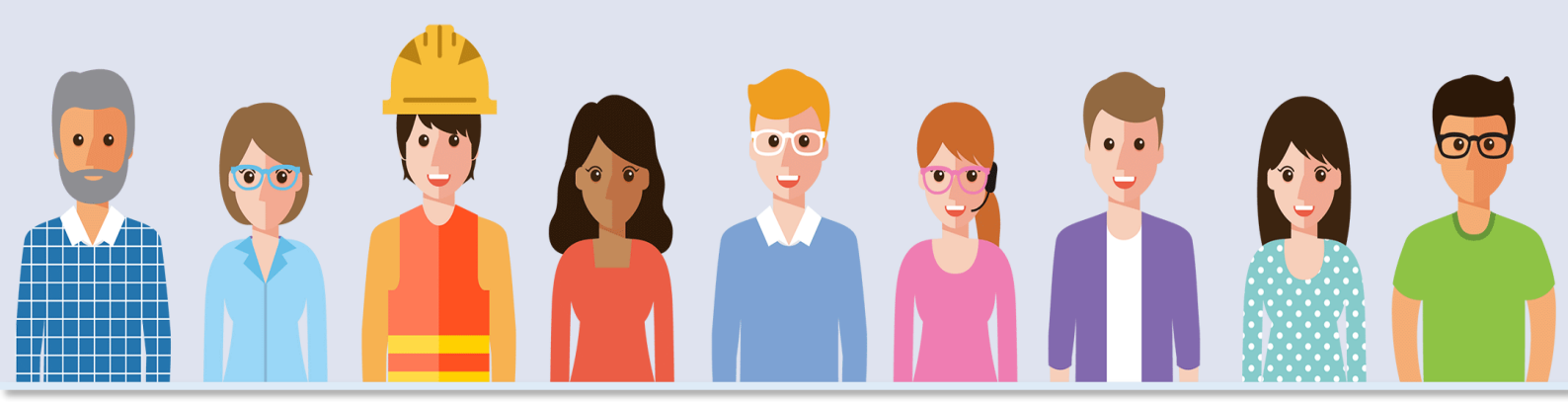

Who is the entrepreneur?

Master Thesis Economic Geography

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Preface

Dear reader,

Right in front of you is the master thesis ''*Who is the entrepreneur?''.* This thesis is written during the academic year of 2019-2020, and researches the personalities of entrepreneurs in the cities of Leeuwarden and Amsterdam. This subject was born out of pure interest developed during my Bachelor *Human Geography & Planning* and my *Master Economic Geography.* As entrepreneurs are not only one of the most creative humans in society, they also provide economies with competitiveness and growth. This often makes entrepreneurialism a policy goal for many countries, provinces and municipalities in the Netherlands. I therefore decided that entrepreneurs deserved attention in my research.

It was striking to me that attracting entrepreneurs is often a policy goal, but research on their personalities has mainly gained interest in the last decade. To research the personalities of this interesting group of people I have contacted several business associations in Leeuwarden and Amsterdam in order to distribute my survey. I want to thank these associations for participating and making these efforts. Secondly, I want to thank the entrepreneurs that have participated in survey for taking the time to answer all the questions. Without you this research would not have been possible. At last, I want to thank my supervisor dr. A. E. Brouwer for the profound feedback she has given during the process of writing this thesis.

Dani Grevelink

Groningen, February 10th 2020

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Abstract

The personality traits of entrepreneurs have received a large share of the attention of researchers in the last decade. However, most researchers did not include a regional context into their research on the personalities of entrepreneurs. And if the regional context is added, it often concerns the national level. This means that differences in personalities of entrepreneurs between for example urban and rural regions are ignored. Personality is influenced by among other things cultural components. It can be expected that there are variations in the personalities of entrepreneurs across space at the regional level. In this thesis entrepreneurs from Amsterdam and Leeuwarden are researched. The first city has an urban, metropolitan culture while the latter city is located in the most rural area of the Netherlands: Friesland. The aim is to find out whether there is geographical variation in the personalities of entrepreneurs between Leeuwarden and Amsterdam.

This is done by making use of the Big-5 personality framework and the Big-5 test. In this framework, personalities are subdivided into five traits: openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. The presence of these traits can be tested by the use of the Big-5 test. The five personality traits from this framework are used as the dependent variables in the regressions that are performed. One of the independent variables is the location in which the enterprise is located. Significant results on this variable denote differences in the personalities of entrepreneurs between Leeuwarden and Amsterdam. Other independent variables are added as control variables. Because of the consequent significance of the variable 'Age' it was decided to run an analysis in which age was kept constant. This was done for the group of entrepreneurs aged 50 and over.

It was found that there are no differences in the personality traits of entrepreneurs between the cities of Leeuwarden and Amsterdam in the sample of 74 entrepreneurs in this thesis. There is some variation in the presence of two of the personality traits between entrepreneurs in Leeuwarden and Amsterdam when age is kept constant. The reason why most results turn out to be insignificant could be that the cultural differences between Leeuwarden and Amsterdam are smaller than expected in advance.

Key words
Entrepreneurs – Personality Traits – Big-5 personality framework – Geographical variation

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1. Introduction

1.1 Background

Much research already points out the importance of entrepreneurs for economies worldwide. Because of the businesses started by entrepreneurs: employment grows (Fritsch & Noseleit, 2013), competitiveness is fostered (McNeill, 2017), innovation is stimulated (Gulati & Desantola, 2016), economic activity becomes clustered (Glaeser et al., 1992; Klepper, 2001), and therefore economies grow (Beugelsdijk, 2007; Koster & Hans, 2017). Policies that stimulate the regional start-up rate are popular among policymakers because of the benefits entrepreneurial activity brings about (Uusitalo, 2001). Entrepreneurial activity has not only been a hot topic among policymakers, but also among researchers as entrepreneurial activity has remained a 'black box' for a long time (Uusitalo, 2001). One of the components of this 'black box' that has received a large share of the attention from researchers in the last decade are the personality traits of entrepreneurs (Kerr et al., 2018).

1.1.1 Personality traits

According to Kerr et al. (2018), since the 1980's, research in the field of psychology on the personality traits of entrepreneurs has been largely influenced by the Big-5 personality model, created and improved by adding personality traits by among others Goldberg (1981, 1990 & 1992). In this model, five macro-traits of entrepreneurs cover a distinct set of characteristics (John et al., 2008 in Kerr et al., 2018). The Big-5 model classifies all human personality traits into five factors: openness to experience, conscientiousness, extraversion, agreeableness and neuroticism (Costa & McCrae, 1992). These traits are measured on a scale. From open to experience to closed to experience, or from extravert personalities to introvert personalities for example. The Big-5 personality traits include:

- *Openness to experience: describes the breadth, depth, originality, and complexity of an individual's mental and experimental life.*
- *Conscientiousness: describes socially prescribed impulse control that facilitates task- and goal-oriented behavior.*
- *Extraversion: implies an energetic approach toward the social and material world and includes traits such as sociability, activity, assertiveness, and positive emotionality.*
- *Agreeableness: contrasts a prosocial and communal orientation toward others with antagonism and includes traits such as altruism, tender-mindedness, trust, and modesty.*
- *Neuroticism: contrasts emotional stability and even-temperedness with negative emotionality, such as feeling anxious, nervous, sad, and tense.*

(Kerr et al., 2018; p: 10)

This Big-5 framework is often used in order to compare entrepreneurs to for example non-entrepreneurs or managers (Kerr et al., 2018). Research often finds that entrepreneurs typically score higher on extraversion, openness, and conscientiousness, and comparatively lower on neuroticism and agreeableness compared to non-entrepreneurs (Liang et al., 2019). Uusitalo (2001) found that entrepreneurs often are dynamic, self-confident and less risk averse than other economic agents. Entrepreneurs also appear to be mostly stress-resistant and have the ability to show interpersonal reactivity (Goebel, 1990; Baron, 2000). However, in this type of research on personality traits it is often assumed that 'the entrepreneur' is a homogeneous group, or, as Uusitalo (2001) would name the group: the homo entreprenaurus. But does this homo entreprenaurus really exist? Can it really be found that there are no differences in the personalities among entrepreneurs? And if not, how are the personalities distributed across space? Can spatial differences be found in the personalities of entrepreneurs across different places? These questions are raised especially since Rentfrow et al. (2015) found that personality traits vary spatially, as some traits turn out to be more prevalent in certain places than in others.

1.2 Problem statement

1.2.1 Variety across contexts

In a large share of research on personality traits of entrepreneurs, context is seldom taken into account. Some researchers like Zhao and Seibert (2006) and Zhao et al. (2010) did take context into account in their research, without finding congruous results. No differences in the presence of personality traits are found by Zhao and Seibert (2006) and Zhao et al. (2010). This could imply that the homo entreprenaurus (Uusitalo, 2001) exists at least on the research scale used in these researches. In their research on green socio-entrepreneurial intentions, Liang et al. (2019) found differences in the Big-5 personality traits between entrepreneurs in Hong Kong and Taiwan. Findings by Obschonka et al. (2013) also aimed to study the regional distribution of personality traits among entrepreneurs in the USA, Germany and the UK. They found geographical variation in the USA, Germany and in the UK by using robust aggregate-level correlations between the trait profile and entrepreneurial activity. Rentfrow et al. (2008) argue that those personality differences of entrepreneurs can emerge because of selective migration patterns, social influences within the region due to responses to, adaption to and socialization with other people according to regional norms and possibly environmental influences.

1.3 Research gap

By comparing entrepreneurs to other groups, one assumes that the group of entrepreneurs is a homogeneous group. It appeared to be hard for researchers however, to gain an understanding of the personality traits of this group (Howorth et al., 2005). According to Kerr et al. (2018), research on personality traits among the group of entrepreneurs has gained interest since the 2010's. According to Smallbone et al. (2013) contextual factors are not taken into account enough in research on entrepreneurs which might be the reason why it is hard to find congruous results when studying entrepreneurs' personalities. Next to that, most researchers focus on the national level instead of the regional level. When personalities are researched on the national level, variations in personalities across urban and rural contexts or within the urban and rural contexts are ignored. All personalities of entrepreneurs within a country are aggregated and compared to aggregated personalities of entrepreneurs in other countries. Thereby it is assumed that for example the "Dutch entrepreneur'' exists, while there could be a lot of variation in personalities of Dutch entrepreneurs. Research on the lower, regional scale could add to the understanding of spatial variation in the personalities of entrepreneurs. More detailed subdivisions of a country often lead to larger deviations in personalities, which is especially found in the Netherlands (Kaasa et al., 2014). Research on the personality of entrepreneurs across different regions could result in interesting findings, as entrepreneurial activity varies across these contexts in economies worldwide (Smallbone et al., 2013).

1.4 Research aim

The previously mentioned results raise the question whether or not the homo entreprenaurus (Uusitalo, 2001) really exists. Therefore, this research aims to find out whether the group of entrepreneurs is a homogeneous group as proposed by Uusitalo (2001), or this group is heterogeneous when considering personality traits as proposed by among others Rentfrow et al. (2008) and Verheul & Thurik (2000). The objective of this research is to find out whether there is a relation between the region where an enterprise is situated and the personality traits of the entrepreneur. This research will focus on the cities of Leeuwarden and Amsterdam.

This research will add to the research in entrepreneurial personality by adding a spatial component at the regional level, which is lacking in previous researches on the topic. Next to that, this research focuses on the regional level, instead of the national level. Most of the research that has focused on the personalities of entrepreneurs, focused on the national level.

The focus on Leeuwarden and Amsterdam is derived from the distinct cultures in both cities, as is explained below. Kaasa et al. (2014) found that there are regional differences in the presence of

personality traits, for example in Belgium where differences are found between the Flemish and Walloon region. As it is found that personalities do interact with cultures (McCrae, 2000), it is interesting to find out whether this is also the case for the personalities of entrepreneurs in Leeuwarden and Amsterdam. Leeuwarden is located in the province of Friesland, which is considered to be a province with a distinct culture from the rest of the Netherlands because of its strong feeling of identity and their own language, also in an economic context (Langevelde & Pellenbarg, 2000). Next to that, Friesland is considered to be the most rural province of the Netherlands (Haartsen et al., 2003). On the opposite side is the largest urban area and the capital of the Netherlands: Amsterdam. Amsterdam is located in the most urbanized area of the Netherlands, which is the economic core of the country: the Randstad. Kashima et al. (2004) found that personalities of people differ across cities with an urban, metropolitan culture like Amsterdam and cities located in rural areas like Leeuwarden.

This raises the question whether or not personality traits of entrepreneurs vary across different contexts or whether contexts shape different personality traits. Consequently, this research aims to answer the following main question: *Is there variation in the personality traits of entrepreneurs between the cities of Leeuwarden and Amsterdam?* Subsequently this provides us with the following sub-questions based on the Big-5 personality framework:

- *Is there variation in the openness to experience of entrepreneurs in Leeuwarden and Amsterdam?*
- *Is there variation in the conscientiousness of entrepreneurs in Leeuwarden and Amsterdam?*
- *Is there variation in the extraversion of entrepreneurs in Leeuwarden and Amsterdam?*
- *Is there variation in the agreeableness of entrepreneurs in Leeuwarden and Amsterdam?*
- *Is there variation in the neuroticism of entrepreneurs in Leeuwarden and Amsterdam?*

1.5 Reading guide

In the next chapter, a framework around the creation of a personality will be built. To be able to research the personalities of entrepreneurs, the creation of personalities will be explained. In Chapter 3 the methods of researching the personalities of entrepreneurs in Leeuwarden and Amsterdam will be explained. Here, mainly the use of the Big-5 framework and the Multiple Linear Regression is set out. In the fourth chapter the results of the analyses with the dependent variables from the Big-5 framework are shown and interpreted. In Chapter 5 concluding remarks on the results of this research are made. Next to this, weaknesses of the research are discussed and recommendations for further research on this topic are listed.

2. Theoretical framework

2.1 The creation of a personality

''Personality refers to important and relatively stable aspects of behavior. Consider a young woman whose personality includes the trait of 'painfully shy'. She will behave shyly in many different situations, and over a significant period of time. There are likely to be exceptions: she may be more outgoing with her family or a close friend, or at her own birthday party. But she will often have difficulty dealing with other people, which will continue for months or even years and will have a significant effect on her general well-being." - Ewen (2010, pp:3)

This citation of Ewen (2010) shows the importance of personality in people's behavior: it is what they are and how they react in different situations. Eventually personality strongly influences how a person's life develops. Barrick & Mount (1991) and Hough & Oswald (2000) add to this that personality exists functionally, which means it predicts behavior in applied settings: personalities are social context dependent. A personality is formed by aggregating different personality traits (Ewen, 2010). These aspects of personality may or may not be observable and conscious (Freud, 1917a). According to Jung (1938, 1968) a share of the personality is already developed at birth, due to the fact that genetic factors are inherited from ancestors. The personalities of parents therefore influence the personality of their children. These genetic factors are an important part of the personality, but are not stable over time (Kandler, 2012). Donnellan & Lucas (2008) even state that personality changes over the whole lifespan, which makes age an important and detrimental factor in personalities. This is also found by Goldberg et al. (1998). They found that older people tend to describe themselves as more conscientious compared to younger individuals. Mroczek & Almeida (2008) found that older people have higher scores on neuroticism compared to younger people. The conscious part of personality is only the tip of the iceberg and constitutes the center of awareness and provides feelings of identity (Jung, 1951). It is the outward face of personality (Jung, 1928). Sullivan (1953) adds to the creation of personality a timeline in which the surroundings of a person are taken into account. Mainly the people in the direct circle of a person play an important role in the creation of a personality. According to Sullivan (1953) this happens from birth onward, but he described mainly the process from birth until the moment of reaching adulthood. Parents, siblings and peers are considered to be an important part of the creation of personalities (Bell, 1968). As these connections with other people are a relevant factor in the creation of a personality, it may also be argued that education has a detrimental influence on personalities. According to Kristjánsson (2008) educational experiences can shape the personality of a human being as well. This is not surprising as most people attend education in a large share of their lives.

It is partly because of the importance of surrounding people that personalities vary significantly across contexts. Ahmetoglu & Chamorro-Premuzic (2013) state that from a behaviorist point of view, it is only the social environment that influences the creation of a personality. This happens through a process of conditioning. Past experiences that lead to learning (conditioned behavior): learning occurs through rewards and punishments. Behavior that is rewarded is more likely to happen in the future, and behavior that is punished is less likely to occur again. In other words: what is deemed normal in a certain social context, will be reinforced. Eap et al. (2008) state that cultural norms and values play an important role in the creation of a personality and therefore this conditioning process. Research often finds evidence for the fact that personality is culturally – and thus geographically - bounded. Examples of these researches are McCrae et al. (1998) who found differences in personalities between Chinese- and European Canadians, and Mastor et al. (2000) found differences between Malays and Western personalities. Eap et al. (2008) found results that suggest that the presence of each Big-5 personality trait may depend on social and geographical contextual variables. This implies that there are differences in the presence of certain personality traits across contexts. Kandler (2012) and South & Krueger (2008) add that there is an interplay between genetic- and environmental factors, which results in a continuation of the personality traits of a person.

However, differences between personalities across places cannot only be ascribed to for example heritability of personality traits (Feldman & Lewontin, 1975) and the influence of environmental factors in that place. Gelade (2012) found a geographical component in personalities, but states that there could also be a link with migration patterns. Ciani & Capiluppi (2011) found that genetic personality changes in populations are the result of non-random patterns of migration. This may be the result of the correlation between culture and aggregate personality (Hofstede and McCrae, 2004). They researched this correlation on the national level, but the same mechanism might emerge within countries. It is found as well that presence of the Big-5 traits extraversion, agreeableness and openness to experience predicts migration within the US (Jokela, 2009). It could therefore be the case that migration patterns can strengthen the personality differences across cities. People with specific traits will tend to move towards other places where migrants feel more in place (for example from smaller to larger cities). This could mean people that extraverts move to places where other extraverts live. Cities that attract many migrants therefore keep drawing in people with the same personality traits. This mainly concerns people with high scores on extraversion, agreeableness and openness to experience as Jokela (2009) found.

It is obvious that personality exists roughly out of two main components: congenital characteristics and characteristics that emerge during life. In research, these are often referred to as the nature and nurture components of personality. The nature component involves personal factors, the nurture component mainly involves contextual factors (upbringing, environment, culture/region etc.). The nature component also depends on the regional context because of the fact that migration is selective. In other words, individuals migrate towards a city that fits their personalities. Therefore, more of the same 'type of genes' are centered in certain places, passing on this type of personality to their offspring. When nature and nurture components are blended together, different personality traits emerge. The collection of traits a person expresses is therefore called the personality.

2.2 Personality traits: the Big-5 framework

Personality trait theorists aimed to compose a list of all possible personality traits for decades, and they have found consensus about several structural conceptualizations of personality traits (Bouchard & Loehlin, 2001). One of the most used conceptualizations is the Big-5 framework that has been mentioned already. The Big-5 framework consists of five personality traits which all are overarching traits for sub-facets in the framework (see Figure 2 in Chapter 3). In the introduction, the 5 personality traits were already introduced slightly by using the work of Kerr et al. (2018). Turiano et al. (2013) used the next sub-characteristics to compose the 5 personality traits from the Big-5 framework: creative, imaginative, intelligent, curious, broadminded, sophisticated, adventurous (1:Openness to experience); organized, responsible, hardworking, careless, thorough (2: Conscientiousness) outgoing, friendly, lively, active, talkative (3:Extraversion); helpful, warm, caring, softhearted, sympathetic (4: Agreeableness); moody, worried, nervous (5: Neuroticism). In Figure 2 (see Chapter 3) other sub-characteristics from Judge et al. (2013) are visualized. Despite the fact that sub-characteristics are varying across different research papers, there is a lot of overlap in the different sub-characteristics per Big-5 factor. Due to the consensus about the usefulness of the model, also in work of economist and geographers such as Dean (2000), Judge et al. (2013), Brandstätter (2011) the Big-5 model is a suitable model to measure personalities of individuals across contexts.

2.3 Personalities: entrepreneurs

Now that it is clear how personalities are formed in general, and what the important, influential factors are, the question arises how personality creation works for entrepreneurs. What are the traits that are commonly more present in the personality of an entrepreneur? To be able to dive deeper into this question, some clarification is needed on the concept of 'entrepreneurs'. For years, researchers have struggled to determine what factors make a firm entrepreneurial. And still no clear-cut definition of 'entrepreneurial' exists. Lumpkin and Dess (1996, p: 162) consider a firm that *''engages in an effective combination of autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness''* as entrepreneurial. Gartner (1988) adds that entrepreneurs are part of the establishment of a firm.

'The entrepreneur' is not something fixed, but an unstable concept over time. In general, it is found that an entrepreneur is a person that identifies a market-opportunity, decides to create an enterprise with the aim of taking ownership of the income it generates (Shane & Venkataraman, 2000). Dyer et al. (2008) created a distinction within the group of entrepreneurs, namely *entrepreneurs* and *innovative entrepreneurs* in which the latter category is constituted of entrepreneurs that came up with an idea or product and started a firm from scratch. However, in research all types of entrepreneurs are regularly referred to as entrepreneurs. Nevertheless, most researchers aim to find a distinction between entrepreneurs through the behavioral sciences. Therefore, a lot of research in the last decade focuses on the personalities of entrepreneurs (Kerr et al., 2018).

According to Holland (1997), personality in essence is the detrimental factor in occupational choices. In literature consensus is found that the decision of becoming an entrepreneur reaches further than financial considerations only. Becoming an entrepreneur often includes the willingness of achieving status, creating an employer-employee relationship with employees (Eddleston and Powell, 2008), and wellbeing considerations as well (Dolan et al., 2008; Abreu et al., 2019). Research often finds that entrepreneurs typically score higher on the Big-5 traits extraversion, openness to experience, and conscientiousness and comparatively lower on neuroticism, and agreeableness compared to non-entrepreneurs (Liang et al., 2019). Howard and Howard (1995) found approximately similar results but stated that entrepreneurs scored 'average' on agreeableness. A high score on extraversion stands for a sociable person enabling him/her to develop social networks more easily, which may result in stronger partnerships with clients and suppliers (Judge et al., 1999). Hurtz and Donovan (2000) state that the low scores on neuroticism of entrepreneurs lead to an entrepreneur that is emotionally stable, and can handle stress relatively well. Therefore, they have the ability to remain optimistic and retain social relationships. The importance of the trait openness to experience in fact stands for itself as an entrepreneur needs the courage and creativity in approaching entrepreneurship in order to become an entrepreneur (Sarasvathy, 2004). One of the components of conscientiousness is the orientation on status and achievements, which is mainly relevant for the survival of a company (McClelland, 1961). Caliendo et al. (2014) add an understanding to the relevance for entrepreneurs of the last Big-5 trait: agreeableness. High scores on this trait stands for a forgiving, trusting and altruistic person, while low scores stand for a person that is self-centered and hard-bargaining. As both, low and high scores of agreeableness have advantages and disadvantages for entrepreneurs, no further statements can be made about this Big-5 factor (Caliendo et al., 2014).

According to Shane and Venkataraman (2000), a personality is one of the detrimental factors influencing entrepreneurial behavior and chances of becoming successful. Context also matters in the development of the personality of entrepreneurs as changes in the environment and the entrepreneurial learning process appear to have an influence on the personality of entrepreneurs (Littunen, 2000). The importance of the sectoral and regional contexts in personality will be elaborated in the next two sections.

2.4 Entrepreneurs in different sectors

Gibb and Richie (1982) state that individuals change throughout life and that it is the individual's transactions in specific social contexts and reference groups that shape the personality. Earlier on, the influence of the social network on personality was already mentioned. However, these contacts mainly concerned informal contacts. For entrepreneurs also formal networks are of major importance. Think about venture capitalists, accountants, creditors and trade associations (Das and Teng, 1997). *''No two entrepreneurs are the same. Entrepreneurs differ with respect to the sector they work in, their background and experience, the size of their enterprises, etc.''* (Verheul & Thurik, 2000; pp: 13). Entrepreneurs appear to have different personalities across different sectors. This seems obvious when comparing entrepreneurs in different sectors like the IT-sector and the entertainment sector for example. Entrepreneurs in the ICT-sector are often found to be logical, analytical, dependable, organized, and systematic as well as being inflexible, weak communicators, and resistant to change (Schwalbe, 2006). On the other hand, entrepreneurs in the entertainment sector appear to have a high

tolerance for ambiguity, perseverance, self-reliance, adaptability, autonomy and creativity (Henry, 2007).

According to Roberts et al. (2003), it is the personality of an entrepreneur that determines in which sector the entrepreneur will end up. An entrepreneur feels attracted to sectors which characteristics match the personality of him/her. Once an entrepreneur is working in a sector, the entrepreneur will socialize with people in the sector. This can result in adjustments in the personality of the entrepreneur (Woods et al., 2013). An entrepreneur can also be expected to become for example more extravert, while this is not in the nature of the personality of the entrepreneur. This can also result in slight adjustments of the entrepreneur's personality (Woods et al., 2013).

It is clear that personality-patterns of entrepreneurs vary across sectors (Abdul Halim et al., 2012). It is therefore important to know in which sector an entrepreneur is active when researching entrepreneurial personalities. The aim of this research however, is to gain insight into the personalities of entrepreneurs across another context: regions.

2.5 Personalities: entrepreneurs per region

Despite the share of research that has focused on personalities across sectors, the spatial context remains underexposed. In most papers, the spatial context is barely taken into account. In their paper on well-being of self-employed individuals, Abreu et al. (2019) did find varying results across regional contexts. This demonstrates the relevance of taking the regional context into account when it comes to personalities of entrepreneurs. It remains the question therefore, whether or not there are personality differences between entrepreneurs in similar sectors but in different regions.

Researchers have dedicated more attention to entrepreneurial attitudes across regions compared to personalities. It is found in a wide array of research already that entrepreneurial attitude varies across space (Tamásy, 2006; Sternberg & Litzenberger, 2004; Bosma & Schutjens, 2010). It is also found that creativity varies largely across space, as most creative, new ideas are being made by entrepreneurs in large, urban centers (Lee et al., 2004; Koster, 2007). Schulte-Holthaus (2018) found that large, urban areas host a relatively large share of enterprises in the creative sector, with largely creative entrepreneurs. Personalities of entrepreneurs in different areas might therefore vary across regions. Lastly, it is found that environmental factors are influencing entrepreneurial resilience (Ayala & Manzano, 2014) and in urban areas entrepreneurs relatively often engage in entrepreneurial risk-taking (Bosma & Schutjens, 2010).

As Bryant (1989) points out, inhabitants of rural areas and smaller places adapt their economic activities more to exogenous economic influences like recessions. Delfmann et al. (2014) find that rural dwellers adjust to these exogenous influences by for example becoming an entrepreneur. A smaller choice-set of profitable economic activities is available in rural areas compared to larger, urban cities In smaller places, people can therefore end up in an entrepreneurial position because of a lack of choice (Delfmann & Koster, 2016). While in larger cities, the people who are most suitable for entrepreneurial activities will end up becoming entrepreneurs. This structure of thinking overlaps with the ideas of Glaeser et al. (2001), who stated that, in the largest cities, people end up in the economic position that suits them best. This mechanism could result in personality differences between entrepreneurs in larger and smaller cities. People that are not suitable for an entrepreneurial position because of their personalities could still end up there because of a lack of choice in rural areas. In urban areas, only those with suitable personalities will end up in entrepreneurial positions.

In studies on the success of entrepreneurs in different contexts, researchers have often found different results (Shahwan, 1992; DePillis & Reardon, 2007). Elmuti et al. (2011) found a significant link between entrepreneurs' organizational effectiveness and the environmental factors the entrepreneur has been subjected to during life. Location can influence the choice of becoming an entrepreneur, as stated by Abreu et al. (2019). They for example found significant differences in job-satisfaction between self-employed people in urban areas and semi-urban or rural areas. Self-employed in the latter two areas appear to have a significantly larger job-satisfaction than self-employed in the urban area. *''Factors related to geographical context cause variations in entrepreneurial well-being even when individual*

characteristics are held constant'' (Abreu et al., 2019; pp: 602). While entrepreneurs in semi-urban and rural areas often enter entrepreneurship because of a lack of choice (Delfmann et al., 2014; Delfmann & Koster, 2016), these entrepreneurs do experience larger job-satisfaction than entrepreneurs in urban areas. Regional context appears to be related with the job-satisfaction of entrepreneurs.

Therefore, it depends among other things on the contextual factors whether an individual enters entrepreneurship and succeeds (DePillis & Reardon, 2007; Folger, 2008). It has to be taken into account however, that identifying and defining certain sets of characteristics depends on the community this occurs in (Markman & Baron, 2003). This is the result of the fact that personality traits are valued and defined differently across different communities. This could also be the case within the cities of Leeuwarden and Amsterdam.

It is possible that the regional context has an influence on the personality of entrepreneurs. Regions with distinct cultures could therefore contain entrepreneurs with distinct personalities because personalities are culturally bounded (Ewen, 2010). In the Introduction the distinct cultures of the cities of Leeuwarden and Amsterdam were mentioned already. The different cultures in these cities stem from the strong feeling of identity in the province of Friesland (Langevelde & Pellenbarg, 2000) and the Frisian language (Extra & Gorter, 2001), and the high rate of urbanity in Amsterdam (Kashima et al., 2004).

2.6 Conceptual model & hypotheses

It is clear how the personality of an entrepreneur emerges and why region-specific factors play a detrimental role, a conceptual model can be created (see Figure 1). It is visible that there are roughly two components that influence personality traits at first: the nature and nurture components; with both components containing regional-specific factors. These components have an influence on the Big-5 personality traits that compose the framework: openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. The extent to which these traits are present in a person, composes the personality of that individual. As was mentioned earlier, the manner of upbringing has a strong influence on the creation of an individual's personality (Bell, 1968). From a behaviorist point of view the social network is of relevance as well (Sullivan, 1953), whether the contacts are formal or informal. Next to that, different experiences that happen to a person through life shape an individual's personality as well. An example are the educational experiences that are present in the lives of most individuals (Kristjánsson, 2008). The factor that will be researched in this thesis however, is the regional context. The regional context appears to have an influence on personalities due to the fact that some personality traits are deemed as 'normal' while others are not (Ahmetoglu & Chamorro-Premuzic, 2013). The presence of certain personality traits result in an occupational choice as explained in Chapter 2.3, for example to become an entrepreneur. Once a person has become an entrepreneur, the regional- and sectoral context remain affecting a person's personality. The personality of a person determines in which sector one ends up, as certain personalities are attracted to specific sectors. Once an entrepreneur has ended up in a specific sector, the entrepreneur's personality traits will be strengthened further (Roberts et al., 2003). The same is the case for the regional context which is researched in this thesis. The region where the enterprise is located will remain influencing the personality of an entrepreneur due to a process of conditioned behavior (Ahmetoglu & Chamorro-Premuzic, 2013). The Influence of the regional context on personalities is researched in the next part of this thesis, as this has remained underexposed in research on this subject.

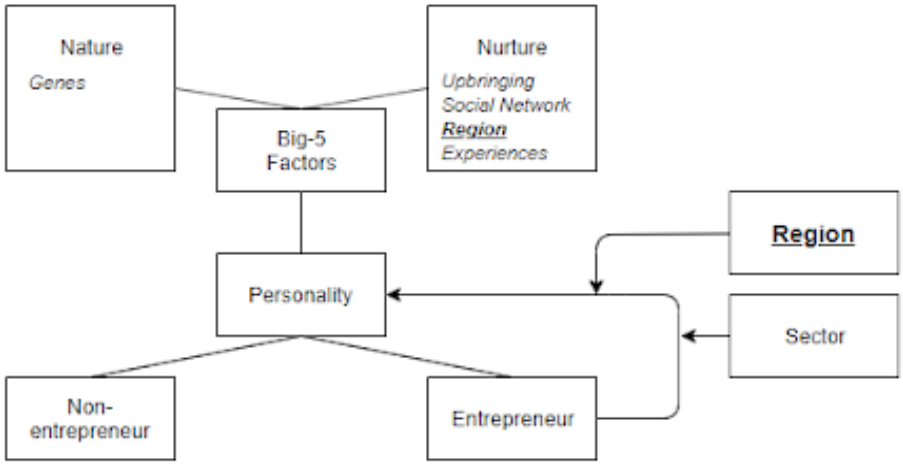

Figure 1: Conceptual model of personality creation entrepreneurs

Based on the Theoretical Framework, differences between the personalities of entrepreneurs in the cities of Leeuwarden and Amsterdam can be expected. This will be researched for all five of the personality traits from the Big-5 personality framework. The resulting hypotheses are therefore:

H1.1: There is a difference in the presence of the personality trait openness to experience between entrepreneurs in Leeuwarden and Amsterdam.

H1.2: There is a difference in the presence of the personality trait conscientiousness between entrepreneurs in Leeuwarden and Amsterdam.

H1.3: There is a difference in the presence of the personality trait extraversion between entrepreneurs in Leeuwarden and Amsterdam.

H1.4: There is a difference in the presence of the personality trait agreeableness between entrepreneurs in Leeuwarden and Amsterdam.

H1.5: There is a difference in the presence of the personality trait neuroticism between entrepreneurs in Leeuwarden and Amsterdam.

The resulting 0-hypothesis therefore is *'there is no difference in the presence of either of the 5 personality traits between entrepreneurs in Leeuwarden and Amsterdam'.*

3. Methodology

3.1 Quantitative research

To be able to answer the main question ''Is *there variation in the personality traits of entrepreneurs between the cities of Leeuwarden and Amsterdam?''* it is necessary to approach entrepreneurs from Leeuwarden and Amsterdam. This is done by conducting a quantitative research and handing out surveys to the entrepreneurs. A quantitative approach is chosen, since this gives insight into the relationships that (might) exist between different variables (Carr, 1994). Researchers in the behavioral sciences therefore often engage in a quantitative method (Durand & Chantler, 2014). In this thesis, the relationship between personality traits and location is researched which makes quantitative research the most suitable option.

According to Bakeman & Robinson (2005), quantitative research in the behavioral sciences are relevant because regularities in behavior among groups cannot be observed with the naked eye. These regularities are probabilistic and the evidence for them may appear to be ambiguous. Statistics are essential in order to resolve such ambiguities. By using statistical techniques, phenomena that can otherwise only be predicted imperfectly, can be predicted more accurate (Bakeman & Robinson, 2005). Finding out what the distribution of personality traits of entrepreneurs across cities is, can be considered such an ambiguity.

3.1.1 Survey

In order to collect the data that are necessary to find these regularities in personality traits, a survey is conducted. According to Durand & Chantler (2014) surveys are particularly suitable for finding regularities as they focus on generalities rather than in-depth information about social phenomena. Surveys are the most suitable option when there are no opinions involved in the data, which is called 'hard data' (Durand & Chantler, 2014). When the demanded answers given by respondents tend to be objective, a survey is more suitable than an interview. In the case of the questions asked in the Big-5 test, answers concern the personality traits of the respondent. There is no guarantee that people's self-descriptions are accurate. However, in research on personality this is often assumed (Matthews et al., 2009). This is also the case in this thesis. The remaining questions in the survey do concern variables like age, questions about the enterprise and location of residence (see Appendix I). The answers to these questions can be considered objective and function as control variables. According to Ahmetoglu & Chamorro-Premuzic (2013) it is important for research on personality that there is consensus about the number and nature of traits in order to advance with this type of research. Researchers have attempted to do research by using sixteen or three traits instead of five (Ahmetoglu & Chamorro-Premuzic, 2013). Many researchers state however, that using five personality traits is both necessary and sufficient to explain fundamental structures in personality (Tupes & Christal, 1992). Therefore, the Big-5 framework is used in this research.

To find the earlier mentioned regularities in the data, a statistical test has to be executed. In order to get reliable results from a statistical test, it is essential that the researched group of entrepreneurs is large enough. According to Fowler (2012), conducting a survey is the most suitable way of gaining the necessary data from a population that is large enough and represents the research group. The main reason that surveys are suitable for this purpose is that they are time-efficient and the researcher can create a list of necessary data before the collection of the data (Mathers et al., 2007). The survey will be shared with the entrepreneurs in Leeuwarden and Amsterdam in several manners, as is explained below.

3.1.2 Sample

As indicated in the Chapter 2 it is difficult to define the concept of entrepreneur. Therefore, the concept is defined in this research in the broadest sense. Every type of entrepreneur in Leeuwarden and Amsterdam (whether they sell a product designed by themselves or not) is part of the target group. Despite the weakness of still approaching a heterogeneous group of entrepreneurs within the cities, this method is the most suitable for this research. In the first place the survey will distributed indirectly. To approach entrepreneurs from Leeuwarden and Amsterdam, several business associations are contacted. These business associations were asked to share the survey with their entrepreneurial members. Approximately 50% of all entrepreneurs in the Netherlands is a member of a business association (Maasvallei, 2019), which makes sharing the survey via these associations an efficient mode of distribution. In total, approximately 80 business associations are approached, distributed across the two cities. Despite the fact that the focus is on the cities Leeuwarden and Amsterdam, some respondents are from places in the proximity of the cities for two reasons. Firstly, some associations outside the cities are approached in order to create a sample of entrepreneurs that is large enough for the analysis. Secondly, some associations also have members in the direct surroundings of the cities Leeuwarden and Amsterdam. It is assumed that this does not affect the results due to the small distance from those entrepreneurs to either city. The assumption is made that personalities will not vary within these short distances to the cities of Leeuwarden and Amsterdam.

It is attempted to approach these business associations distributed over the cities in order to create a representative sample of entrepreneurs in Leeuwarden and Amsterdam. One of the approached business associations in Leeuwarden invited the researcher to attend a meeting at which surveys were conducted physically instead of digitally. Also, the social media accounts and newsletters of several business associations are used to distribute the survey. To increase the number of respondents, the link to the survey is also shared on social media platform LinkedIn.

To increase the number of respondents in Amsterdam, entrepreneurs are also approached directly in this city. Because of the low participation of business associations (see Chapter 5.2), the direct approach of entrepreneurs turned out to be the last step in gathering the data. Contact information of the entrepreneurs is gathered by visiting the sites of enterprises.

3.1.3 Ethics

The aim is to conduct the survey anonymous, as respondents tend towards honesty when anonymity is guaranteed (Hay, 2010). Among the questions in the survey, some may be deemed personal. Next to that, when answers about specific working place, age and sector are given, it may be possible that the respondent is verifiable. The only person with access to the data will be the researcher in order to protect the sensitive information given by the respondents. This is done by protecting the dataset with a password. For questions regarding the survey, the contact details of the researcher are added on the last slide of the survey. Respondents therefore have the ability to get to know more details about the data filled in by themselves. They also have the ability to be left out of the sample after the survey.

3.2 Big-5 test: the data

The survey that will be conducted among the entrepreneurs will exist largely out of the questions that compose the Big-5 test. Next to these questions, several general questions will be asked to function as the control variables. As was mentioned earlier, the Big-5 test consists of five traits (Costa & McCrae, 1992). In Figure 2 the five factors are visualized, including the personality sub-facets they consist of. Judge et al. (2013) added a category between the Big-5 factors and the sub-facets, which divides each Big-5 factor into two categories; creating 10 categories, that can be used to indicate the meaning of the Big-5 factors.

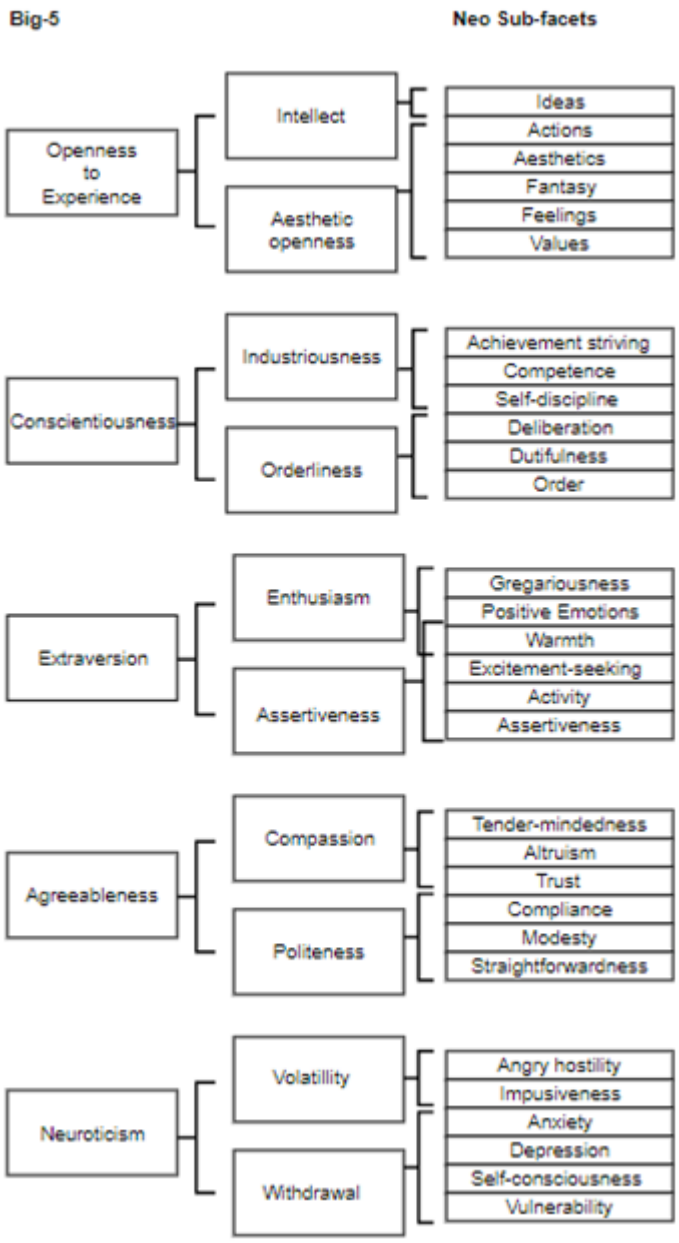

Figure 2: Big-5 factor model (Judge et al., 2013. Edited.)

Each Big-5 factor consists of six sub-facets which compose the personality of, in this case, an entrepreneur. There are multiple known versions of the Big-5 test available with varying quantities of questions. The version used during the survey in this research is a version with 50 questions (see Appendix), based on the ideas of Goldberg (1992). This test was chosen as the number of 50 questions is considered manageable for the respondents. There are 10 questions concerning each Big-5 factor. Respondents are required to answer each question on a five-point Likert-scale ranging from 'Disagree' (score 1) to 'Agree' (score 5). When the questions are answered, it is possible to calculate a score for every Big-5 personality trait. As is showed in Figure 3, the formulas make sure that scores per factor range from zero to 40. This score will be used for the statistical test on which is elaborated later. A score of zero represents the total absence of a personality trait, while a score of 40 represents the total presence of a trait. Scores between zero and 40 represent a certain degree of presence of the specific Big-5 personality trait.

It should be noted that the use of Likert scales in this way can result in homogeneous scores on the Big-5 personality traits. Because of the social desirability of respondents, they tend to fill in

the answers that they may find most desirable (Garland, 1991). If this is done by a large share of the respondents, the scores will be centered around the mean. This results in implications, as the scores that are calculated per trait do not necessarily represent the true personality.

E = 20 + (4)__ - (9)__ + (14)__ - (19)__ + (24)__ - (29)__ + (34)__ - (39)__ + (44)__ - (49)__ = _____

A= 14 - (5)__ + (10)__ - (15)__ + (20)__ - (25)__ + (30)__ - (35)__ + (40)__ + (45)__ + (50)__ = ____

C = 14 + (6)__ - (11)__ + (16)__ - (21)__ + (26)__ - (31)__ + (36)__ - (41)__ + (46)__ + (51)__ = ____

N = 38 - (7)__ + (12)__ - (17)__ + (22)__ - (27)__ - (32)__ - (37)__ - (42)__ - (47)__ - (52)__ = ____

O = 8 + (8)__ - (13)__ + (18)__ - (23)__ + (28)__ - (33)__ + (38)__ + (43)__ + (48)__ + (53)__ = ____

Figure 3: Calculation scores per Big-5 factor[1] *(Goldberg, 1992. Edited.)*

Asking respondents to fill in 50 questions with an answer from one to five requires the assumption of equidistance between all options in this case. Only in the case of equidistance further calculations can be done with the outcomes of the survey. Normally, equidistance cannot be assumed when the results of the Likert-scales are used without aggregation of Likert-scale results. Next to this, research on personality often 'assumes' equidistance when Likert-scales are used (Schmitt et al., 2007; Oshio, 2018). When aggregation of the results happens, like in this thesis, one does not have to assume that the outcomes are an ordinal variable (Joshi et al., 2015). The score between 0 and 40 resulting from aggregation of the Likert-scale results as visible in Figure 3 above, is considered to be a ratio variable and is therefore continuous. This means the assumption of equidistance is not necessary. Therefore, the scores on the Big-5 personality traits ranging from zero to 40 will be used as the dependent variable in the multiple linear regression.

3.3 Multiple linear regression

To be able to find out whether there are any significant differences between entrepreneurs in Leeuwarden and Amsterdam, five multiple linear regressions (further referred to as MLR) will be performed in which the five factors of the Big-5 are the dependent variables. This will result in 5 tables containing the relation of all added variables with one of the Big-5 personality traits. According to Mehmetoglu & Jakobsen (2017), MLR is a technique that is used to examine the relationship between a continuous dependent variable and two (or more) continuous or/and categorical independent variables. This statistical analysis is performed in the statistical program SPSS.

It should be noted that no conclusions can be drawn about causal relationships. The weakness of linear regressions is that only the presence, size and nature (positive or negative) of the relation can be found. Significant results drawn from the MLR do not imply causality, but only imply the presence of a relation.

As was explained, the dependent variable is the aggregated score per Big-5 personality trait. As this can be considered a continuous variable, the MLR-analysis technique fits this research. When the result for the 'Region' variable is significant, it can be concluded that there is a difference in the presence of the personality trait researched in that specific analysis. Next to the region belonging to the entrepreneurs, several control variables are added to the regression based on the Theoretical Framework. It is important to involve enough variables in order to get a complete picture of complex

[1] The numbers in parentheses represent the questions in the survey as is visible in the Appendix. The first question that represents the Big-5 test in the survey is question 4, while the last question from the Big-5 test is question 53. By filling in the scores per question, a score between zero and 40 is calculated per Big-5 trait.

phenomena (Mehmetoglu & Jakobsen, 2017). Involving the detrimental factors that create personalities increases the predictive power of the regression: the adjusted R^2. It is relevant however, not to include too many variables for two reasons. Firstly, the interpretability of the analysis will decrease due to the overwhelming number of variables. Secondly, the model will suffer from overfitting. On the other side however, it is important to involve all relevant factors that could influence the dependent variable in the regression. This will prevent the research from missing out on influences that are kept out of the analysis (Krzywinski & Altman, 2015). It is decided therefore in this thesis to include nine variables that have appeared to influence the creation of a personality, one of which is the 'Region' variable. (see Theoretical Framework).

There is a large chance on low or even negative adjusted R^2 values, as this is often the case in social and psychological sciences. In this thesis, it is attempted to research the broad concept of 'personality' by using several variables. Only a small proportion of a personality depends on the variables that are taken into account. Personalities are complex constructs, resulting in a lot of variables affecting the creation of a personality. This could result in a low amount of variance explained: a low or even negative adjusted R^2 value. This is not a problem however (Lewis-Beck et al.,2004). When researching complex constructs, the aim is not necessarily a high adjusted R^2. Finding out whether there is a relationship or not, is most relevant.

A weakness of this research is that it assumes that the total heterogeneity of personality traits among entrepreneurs in both cities is captured with these variables. Despite the fact that a large share of the heterogeneity is captured, it might be the case that a share of it remains unobserved. The variables that are taken into account however, lead to the next specification:

$$\boldsymbol{Y(O/C/E/A/N)} = \boldsymbol{\beta 0} + \boldsymbol{\beta 1}\textit{Region} + \boldsymbol{\beta 2}\textit{Lives in region} + \boldsymbol{\beta 3}\textit{Age} + \boldsymbol{\beta 4}\textit{Sex} + \boldsymbol{\beta 5}\textit{Sector} + \boldsymbol{\beta 6}\textit{Education} + \boldsymbol{\beta 7}\textit{Work experience} + \boldsymbol{\beta 8}\textit{Parent entrepreneur} + \boldsymbol{\beta 9}\textit{Own product} + \varepsilon$$

In Appendix I it is visible how these variables are measured during the survey. The Y(O/C/E/A/N) in the model specification represents the continuous, dependent variables that result from the 50 questions in the Big-5 test as explained above. For every trait an MLR will be executed.

As was just mentioned, the categories that can be chosen for regions were made slightly broader than Leeuwarden and Amsterdam as the surroundings of both cities were also taken into account for practical reasons. The control variables are based on the factors that appear to be relevant in the creation of a personality (see Theoretical Framework). For the next variable, ''Lives in region'' it is asked whether the respondent lives in the city (or its surroundings) where the enterprise is located. For the ''Sex'' variable, four different categories are created: Men, Woman, Other, No answer. For the variable ''Sector'', the industries as used by the CBS (2019) were the answer-possibilities. These are: construction, rental of movable property and other business services, specialist services, catering industry, industry, information and communication, trade, culture, sports and recreation, transport and storage, rental and trade in real estate, governmental, education and care, water and waste, energy, financial, agriculture and fishery, mineral extraction, and other. The reason for using industries instead of sectors themselves is the fact that multiple sectors are aggregated into industries. Therefore, a lower amount of categories is used compared to using sectors. A sectoral division would have resulted in a low number of respondents per category. This would have led to implications during the MLR. The variable ''Education'' consists of the categories: Primary education, Secondary education, MBO, HBO, University and Other, which represents the highest completed level.

The variables ''Age'' and ''Work experience'' are more straightforward as a simple number of years is asked. For ''Work experience'' it is demanded to leave out 'side jobs' as it is assumed that regular jobs have the largest influence on the personality of an individual. As it is possible that there is a correlation between ''Age'' and ''Working experience'', this is checked beforehand. When there is

multicollinearity, the variable of ''Working experience'' is left out of the analysis (see Appendix II). The eighth and ninth variables ask for the presence of an entrepreneurial parent and whether or not the entrepreneur sells a product which is (partly) designed by him- or herself. Therefore, these questions can be answered with a ''Yes'' or ''No''.

All independent variables except for the variables ''Age'' and ''Work experience'' concern categorical/binary variables. Therefore, it is decided to use dummy variables for the categorical/binary variables in order to be able to statistically analyze these independent variables. Before the analysis of the data, adaptions will be made in the categories if some of the categories appear to be unimportant. This process is described in Chapter 4.1.

3.4 Non-response

After the data collection it is found that 80 entrepreneurs across both cities have filled in the survey. Six of these entrepreneurs did however not fill in the complete survey, and left several blank spaces randomly across the survey, or after filling in several questions. To find out whether respondents have systematically left questions blank, the concepts of *missing at random (MAR), missing completely at random (MCAR)* and *missing not at random (MNAR)* are used (Schafer & Graham, 2000). They state that ''*If participants are independently sampled from the population, then MCAR, MAR, and MNAR have simple interpretations in terms of X and Y: MCAR means that the probability that Y is missing for a participant does not depend on his or her own values of X or Y (and, by independence, does not depend on the X or Y of other participants either). MAR means that the probability that Y is missing may depend on X but not Y, and MNAR means that the probability of missingness depends on Y.*'' -Schafer & Graham (2000, pp: 151).

As the non-response in the data is not systematic, the non-response in the data is assumed to be MCAR. This means that deleting the cases with non-response does not result in biased results (Schafer & Graham, 2002). Schafer & Graham (2002) propose several solutions to solve the problem of non-response (listwise deletion for example). After the data-collection, aggregated scores are created however, to compose the Big-5 scores as was mentioned. Therefore, most solutions proposed by Schafer & Graham (2002) are not applicable. Due to the MCAR assumption and the fact that the cases with non-response is a small part of the total amount of cases, it is decided to delete the cases that are incomplete. This left the research with 74 respondents.

4. Results

4.1 Descriptive statistics

To prepare the data for the analysis, several adaptations in some of the variables had to be made. Firstly, the variable concerning the sector/industry in which the entrepreneurs are active had to be adapted due to the small number of respondents per sector. The industries in which none of the respondents were active are left out of the analysis. These are ''Energy'', ''Agriculture and fishery'', and ''Mineral extraction''. To increase the number of respondents per category, several categories are merged together based on common sense. The new categories are therefore:

- Catering industry
- Specialist services
- Finance, information and communication
    - Financial/Information and communication
- Construction, industry, water and waste
    - Construction/Industry/Water and waste
- Trade , renting, transport and storage
    - Trade/Rental of movable property and other business services/Rental and trade in real estate/Transport and storage
- Quality time and governmental
    - Culture, sports and recreation/Government, education and care
- Other

Despite the fact that the number of respondents is still low, categories are not merged any further in order to keep the results of the analysis interpretable. The descriptive statistics are visible in Table 1 below.

Variable		Frequency	Variable		Frequency
Sector	Catering industry	9	**Education**	Secondary education or MBO	21
	Specialist services	9		HBO	30
	Finance, information & communication	8		University	23
	Construction, industry, water & waste	11		Total	74
	Trade, renting, transport & storage	11			
	Quality time & governmental	12			
	Other	14			
	Total	74			

Table 1: Descriptive statistics sector- and education variable

The second variable to which changes have been made is the variable of ''Education''. The categories of ''Primary education'' and ''Other'' are left out of the analysis because of non-response. The categories of ''Secondary education'' and ''MBO'' are merged due to the low number of entrepreneurs that stopped after their secondary education.

Lastly, the categories of ''Other'' and ''No answer'' are left out of the variable of ''Sex'' because none of the respondents answered one of these options. All other descriptive statistics are visible in the next tables:

Variable	Yes	No	Total
Lives in location of enterprise	61	13	74
One of parents/caretakers is entrepreneur	30	44	74
Sells product invented by themselves	32	42	74

Variable		Frequency	Variable		Frequency
Location Enterprise	Leeuwarden and surroundings	43	**Sex**	Man	40
	Amsterdam and surroundings	31		Woman	34
	Total	74		Total	74

Variable			Variable		
Age Leeuwarden	N	43	**Age Amsterdam**	N	31
	Minimum	25		Minimum	25
	Maximum	70		Maximum	65
	Mean	52.33		Mean	42.06
	Std. Dev	12.029		Std. Dev	12.383

Tables 2a, b & c: Descriptive statistics

It is visible that for every variable, except for the ''Lives in region'' (Lives in location of enterprise) variable, respondents are distributed equally across the categories. The ''Lives in region'' variable of Table 2a does not contain this equal distribution as only 13 of the entrepreneurs did not live in the region where their enterprise was located. Because of the fact that 13 respondents is too few to draw strong conclusions from the analysis, this should be taken into account during the interpretation of the results. In Table 2c it is visible that the entrepreneurs in the sample that are from Leeuwarden are on average 10 years older. The variability of the ages is almost identical as in both cities, the youngest respondent was 25. The oldest respondents were 70 in Leeuwarden and 65 in Amsterdam.

In Appendix II scatterplots per city are created with ''Age'' on the X-axis and the Big-5 traits on the Y-axis. It is showed in these scatterplots that in both cities it looks like there is a relation between the variable of ''Age'' and the scores for the Big-5 traits. This could indicate that there is variation in the presence of personality traits across different ages.

The average scores on the dependent variables, the Big-5 traits, per city are visible in Figure 4. It is visible that there is barely any variance in the average scores per city. Next to that, all scores are centered around the mean, as expected by the findings of Garland (1991). This could imply that the answers on the Likert-scales were given because of the earlier mentioned social desirability. This should be taken into account when the results are interpreted.

Only the average score on extraversion for ''Leeuwarden and surroundings'' turns out to be lower than the average for ''Amsterdam and surroundings''. The error bars at the 95% confidence interval show that there barely is any variance in the absolute scores of the Big-5 traits either.

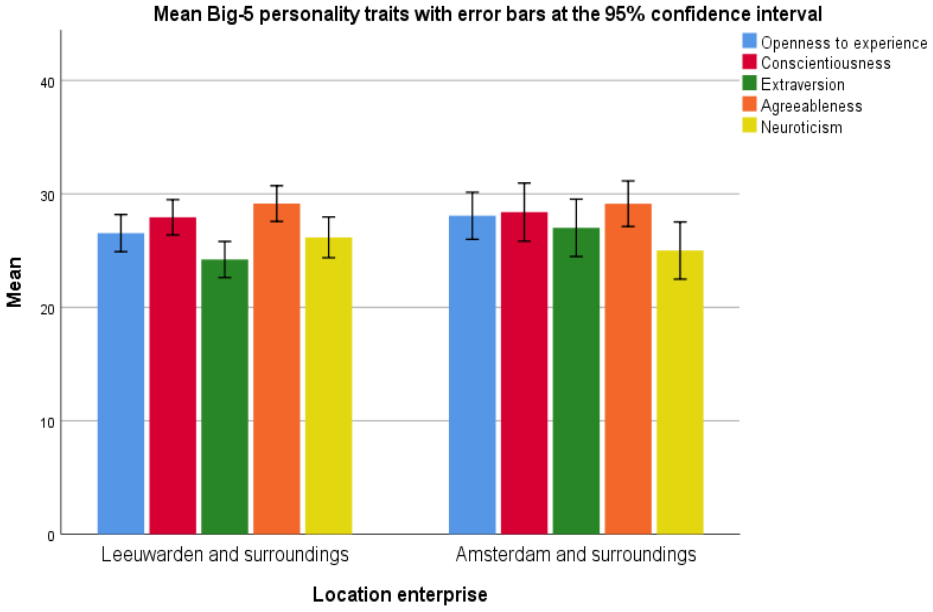

Figure 4: Average Big-5 score per city

4.2 Assumptions MLR

Before analyzing the data, firstly the data are prepared to make them suitable for analysis because of several assumptions that have to be met during an MLR. The assumptions are:

1. Normal distribution of the errors
2. No multicollinearity
3. Homoscedasticity
4. Linearity between Y and X's

On the assumptions of the MLR is elaborated in the Appendix II. By leaving out the variable ''Working experience'' the assumption of ''No multicollinearity'' is met. As it turned out all other assumptions are met either, the results of the MLR have been listed and interpreted below.

4.3 Results MLR

In this section the results of the five regressions that have been executed are presented. It is important to note that the results of the variable ''Location enterprise'' are of particular interest in answering the main question of this thesis. The city of Leeuwarden has been used as the reference category. Significant results therefore indicate that the presence of the specific Big-5 trait of entrepreneurs in Amsterdam differs from the presence of the Big-5 trait in Leeuwarden. Significance is measured at three different levels: the 99% significance level (P<0,01: ***), the 95% significance level (P<0,05: **) and the 90% significance level (P<0,1: *).

4.3.1 Openness to experience

Control variables

Table 3 shows the results of the first regression with the dependent variable openness to experience. In Table 3 it is visible that there are two significant results among the control variables.

Firstly, the variable ''Age'' is significant at the 99% significance level. For every year that an individual gets older in the sample, his/her openness to experience deteriorates with a factor of 0,308. This means that the younger an individual is, the more that individual is welcoming new experiences in live.

Secondly, the result for the variable ''Sells product invented by themselves'' is significant at the 99% significance level. Compared to people that do not sell a product that was invented by

themselves, people that do sell such a product have a score on openness to experience that is 0,366 higher.

Variable	B	Coefficients std. error	Standardized coefficients Beta
Constant	29.214***	3.646	
Location enterprise			
- Amsterdam	0.525	1.416	0.048
Lives in location of enterprise			
- Yes	2.477	1.500	0.173
Age	-0.128	0.048	-0.308***
Sex			
- Woman	-0.347	1.209	-0.032
Sector			
- Catering industry	-2.125	2.678	0.106
- Specialist services	-0.272	2.460	-0.128
- Construction, industry, water & waste	-3.089	2.301	-0.016
- Trade, renting, transport & storage	-2.411	2.256	-0.202
- Quality time & governmental	-0.991	2.179	-0.067
- Other	1.476	2.204	0.106
Highest attended education			
- HBO	1.133	1.454	0.102
- University	2.283	1.457	0.194
One of parents/caretakers entrepreneur			
- Yes	0.277	1.314	0.025
Sells product invented by themselves			
- Yes	4.018	1.216	0.366***

a. Dependent variable: Openness to experience
b. Adjusted R^2: 0.277
c. Reference categories:
   i. 'Leeuwarden' for Location enterprise
   ii. 'Man' for Sex
   iii. 'Finance, information & communication' for sector
   iv. 'Secondary education or MBO' for Highest attended education
d. ***p<0.01, **p<0.05, *p<0.1

Table 3: Regression results ''Openness to experience''

Variation openness to experience across cities

In the graph it is visible that the coefficient of the variable ''Location enterprise'' is positive with 0,048. This result is however not significant, which means no conclusions can be drawn from the results in the table. There is no difference between the cities in the presence of 'openness to experience' within the personalities of the 74 entrepreneurs in this sample. This means that hypothesis 1.1 ''*There is a difference in the presence of the personality trait openness to experience between entrepreneurs in Leeuwarden and Amsterdam''* cannot be accepted.

4.3.2 Conscientiousness

Control variables

Table 4 shows the results of the regression in which conscientiousness is the dependent variable. One of the control variables has significant effects on the presence of the Big-5 trait conscientiousness. This is again the variable ''Age''. This variable is significant at the 90% significance level. For every year increase in age, people in the sample have a 0,267 lower presence of conscientiousness in their personalities. This means that younger people in the sample are more achievement striving, dutiful, orderly etc. compared to older people in the sample.

Variable	B	Coefficients std. error	Standardized coefficients Beta
Constant	33.401***	4.730	
Location enterprise			
- Amsterdam	-2.078	1.840	-0.175
Lives in location of enterprise			
- Yes	-0.035	1.945	-0.002
Age	-0.120	0.062	-0.267*
Sex			
- Woman	-1.984	1.568	-0.169
Sector			
- Catering industry	4.317	3.473	0.241
- Specialist services	2.944	3.191	0.164
- Construction, industry, water & waste	-0.104	2.984	-0.006
- Trade, renting, transport & storage	1.188	2.926	0.072
- Quality time & governmental	1.991	2.956	0.125
- Other	3.100	2.858	0.207
Highest attended education			
- HBO	0.816	1.886	0.068
- University	-1.127	1.889	-0.089
One of parents/caretakers entrepreneur			
- Yes	1.831	1.705	0.153
Sells product invented by themselves			
- Yes	-0.882	1.577	-0.075

a. Dependent variable: Conscientiousness
b. Adjusted R^2: -0.051
c. Reference categories:
   i. 'Leeuwarden' for Location enterprise
   ii. 'Man' for Sex
   iii. 'Finance, information & communication' for sector
   iv. 'Secondary education or MBO' for Highest attended education
d. ***p<0.01, **p<0.05, *p<0.1

Table 4: Regression results ''Conscientiousness''

Variation conscientiousness across cities

For the variable ''Location enterprise'' the coefficient is negative with 0,175. However, this result is not significant at any significance level. There is no difference between the cities in the presence of conscientiousness within the personalities of the 74 entrepreneurs in this sample. This means that hypothesis 1.2 *''There is a difference in the presence of the personality trait conscientiousness between entrepreneurs in Leeuwarden and Amsterdam''* cannot be accepted.

4.3.3 Extraversion

Control variables

In the next table the results of the regression with the dependent variable extraversion are shown. It is visible that also for this Big-5 trait, the variable ''Age'' has a significance at the level of 95%. For every year that individuals in the sample get older, the score for extraversion increases with a factor of 0,298. Older people in the sample therefore appear to be more excitement seeking, warm and positive as is visible in Figure 2 in Chapter 3.

Secondly, the variable for '' Sells product invented by themselves'' is significant at the 90% significance level. Compared to the reference category, which is not selling a product that is invented by the entrepreneur, the score for extraversion of people who did invent a product and sell it is lower with a factor of 0,219.

Variable	**B**	**Coefficients std. error**	**Standardized coefficients Beta**
Constant	18.028***	4.507	
Location enterprise			
- Amsterdam	2.309	1.753	0.189
Lives in location of enterprise			
- Yes	-0.784	1.854	-0.049
Age	0.138	0.059	0.298**
Sex			
- Woman	1.264	1.494	0.104
Sector			
- Catering industry	4.638	3.310	0.251
- Specialist services	4.566	3.041	0.248
- Construction, industry, water & waste	0.928	2.844	0.055
- Trade, renting, transport & storage	1.253	2.789	0.074
- Quality time & governmental	0.545	2.817	0.033
- Other	-1.398	2.724	-0.091
Highest attended education			
- HBO	-0.513	1.797	-0.042
- University	-0.003	1.800	-0.000
One of parents/caretakers entrepreneur			
- Yes	-0.167	1.625	-0.014
Sells product invented by themselves			

- Yes	-2.670	1.503	-0.219*

a. Dependent variable: Extraversion
b. Adjusted R^2: 0.099
c. Reference categories:
   i. 'Leeuwarden' for Location enterprise
   ii. 'Man' for Sex
   iii. 'Finance, information & communication' for sector
   iv. 'Secondary education or MBO' for Highest attended education
d. ***p<0.01, **p<0.05, *p<0.1

Table 5: Regression results ''Extraversion''

Variation extraversion across cities

For the variable ''Location enterprise'' the coefficient is positive: 0,189 and not significant. There is no difference between the cities in the presence of extraversion within the personalities of the 74 entrepreneurs in this sample. This means that hypothesis 1.3 *''There is a difference in the presence of the personality trait extraversion between entrepreneurs in Leeuwarden and Amsterdam''* cannot be accepted.

4.3.4 Agreeableness

Control variables

In the regression-table with the dependent variable agreeableness (Table 6), it shows that two of the control variables have significant effects on the presence of the Big-5 trait agreeableness. This is both on the significance level of 90%.

The first control variable that is significant is the variable ''Age''. The coefficient of this variable is positive with a factor of 0,262. This means the older a person from the sample gets, the higher the score of the Big-5 factor agreeableness. As is visible in Figure 2, older people therefore tend to be more straightforward, modest and tender-minded for example.

The second control variable that is significant is the variable sex. This coefficient is positive with a factor of 0,231. As the reference category is ''Man'', the score on agreeableness of women in the sample appears to be 0,231 higher than the score on agreeableness for men.

Variable	**B**	**Coefficients std. error**	**Standardized coefficients Beta**
Constant	20.903***	4.140	
Location enterprise			
- Amsterdam	1.103	1.611	0.105
Lives in location of enterprise			
- Yes	1.613	1.703	0.118
Age	0.105	0.054	0.262*
Sex			
- Woman	2.416	1.373	0.231*
Sector			
- Catering industry	-1.205	3.041	-0.076
- Specialist services	1.290	2.793	0.081
- Construction, industry, water & waste	0.190	2.612	0.013
- Trade, renting, transport & storage	1.121	2.562	0.077
- Quality time & governmental	0.089	2.587	0.006

- Other	-2.118	2.502	-0.159	a.
Highest attended education				
- HBO	0.830	1.651	0.078	
- University	-0.404	1.654	-0.036	
One of parents/caretakers entrepreneur				
- Yes	0.630	1.492	0.059	
Sells product invented by themselves				
- Yes	0.031	1.381	0.003	

a. Dependent variable: Agreeableness
b. Adjusted R^2: -0.021
c. Reference categories:
   i. 'Leeuwarden' for Location enterprise
   ii. 'Man' for Sex
   iii. 'Finance, information & communication' for sector
   iv. 'Secondary education or MBO' for Highest attended education
d. ***p<0.01, **p<0.05, *p<0.1

Table 6: Regression results ''Agreeableness''

Variation agreeableness across cities

For the variable ''Location enterprise'' the coefficient is 0,105 and therefore higher than the reference category Leeuwarden. As is visible in the table above, this result is not significant at any significance level. There is no difference between the cities in the presence of agreeableness within the personalities of the 74 entrepreneurs in this sample. This means that hypothesis 1.4 *''There is a difference in the presence of the personality trait agreeableness between entrepreneurs in Leeuwarden and Amsterdam''* cannot be accepted.

4.3.5 Neuroticism

Control variables

Table 7 displays the results of the regression with neuroticism as dependent variable. In this table it is visible that three of the control variables have significant impact on the dependent variable. Firstly, the coefficient of the variable ''Age'' is significant at the 95% significance level. The coefficient of this variable is positive with a factor of 0,271. This means the score of neuroticism increases with 0,271 every year for individuals in the sample.

Secondly, the sector-category ''Catering industry'' is significant at the 90% significance level compared to the reference category ''Finance, information & communication. The coefficient 0,269, which means this category has a negative impact on the Big-5 trait neuroticism compared to the reference category ''Finance, information & communication''. However, this result is debatable as is explained in Chapter 5.2 Discussion.

Lastly, it turns out that the result for ''Sells product invented by themselves'' is significant at the 90% significance level. Compared to the reference category, entrepreneurs in the sample that sell a product invented by themselves have a score of 0,239 lower on neuroticism.

Variable	**B**	**Coefficients std. error**	**Standardized coefficients Beta**
Constant	20.047***	4.524	
Location enterprise			
- Amsterdam	-1.209	1.760	-0.096
Lives in location of enterprise			

- Yes	1.502	1.861	0.092
Age	0.130	0.059	0.271**
Sex			
- Woman	-1.161	1.500	-0.093
Sector			
- Catering industry	5.648	3.322	0.269*
- Specialist services	-0.509	2.844	-0.027
- Construction, industry, water & waste	1.063	3.052	0.061
- Trade, renting, transport & storage	-4.385	2.799	-0.250
- Quality time & governmental	-1.901	2.827	-0.112
- Other	0.119	2.734	0.007
Highest attended education			
- HBO	0.467	1.804	0.037
- University	1.513	1.807	0.112
One of parents/caretakers entrepreneur			
- Yes	-0.010	1.631	-0.001
Sells product invented by themselves			
- Yes	-3.009	1.508	-0.239*

a. Dependent variable: Neuroticism
b. Adjusted R^2: 0.150
c. Reference categories:
   i. 'Leeuwarden' for Location enterprise
   ii. 'Man' for Sex
   iii. 'Finance, information & communication' for sector
   iv. 'Secondary education or MBO' for Highest attended education
d. ***p<0.01, **p<0.05, *p<0.1

Table 7: Regression results ''Neuroticism''

Variation agreeableness across cities

Table 7 exposes that the variable ''Location enterprise'' has a coefficient of -0,096 compared to the reference category Leeuwarden. The table also shows that this result is not significant either. There is no difference between the cities in the presence of neuroticism within the personalities of the 74 entrepreneurs in this sample. This means that hypothesis 1.5 *''There is a difference in the presence of the personality trait neuroticism between entrepreneurs in Leeuwarden and Amsterdam''* cannot be accepted.

4.4 Keep age constant: 50+ age category

In the previous regressions it is showed that the variable ''Age'' consequently shows a significant relationship with personality traits. Therefore, it is decided to filter out the effect of ''Age'' by using only the respondents from one age category. By keeping age constant, it could be the case that the coefficients for the variable ''Location enterprise'' are estimated more precise. To do this, an age category with enough respondents is selected in order to get reliable results. The results that are showed in Table 8 are the results of those respondents aged 50 and over, which exists of 34

respondents. The results for the variable ''Location enterprise'' are listed below. The complete regression tables are visible in Appendix V.

Variable	B	Coefficients std. error	Standardized coefficients Beta
Location enterprise (Openness to experience)			
- Amsterdam	1.572	3.128	0.120
Location enterprise (Conscientiousness)			
- Amsterdam	-8.350	4.047	-0.604*
Location enterprise (Extraversion)			
- Amsterdam	4.612	3.014	0.349
Location enterprise (Agreeableness)			
- Amsterdam	5.718	3.036	0.464*
Location enterprise (Neuroticism)			
- Amsterdam	-1.809	2.795	-0.147

a. ***p<0.01, **p<0.05, *p<0.1

Table 8: Regression results 50+ age category

It is visible that focusing on the 34 respondents of the age of 50 and over, two significant results emerge. Firstly, the coefficient of the Big-5 trait conscientiousness turns out to be -0,604 and significant at the 90% significance level. This means that for respondents from Amsterdam aged 50 and over, the score on conscientiousness is 0,604 lower compared to the same age group in Leeuwarden.

Secondly, Table 8 shows that the coefficient for agreeableness is significant at the 90% significance level. Respondents from Amsterdam aged 50 and over have a score on this trait that is 0,464 higher compared to their peers in Leeuwarden.

This means that entrepreneurs in this age category from Amsterdam are for example less achievement striving and dutiful (conscientiousness) and more modest and straightforward (agreeableness) compared to their peers from Leeuwarden.

5. Conclusion

5.1 Concluding remarks

This research aimed to find out whether there is variation in the personalities of entrepreneurs across geographical contexts by using a primary database of 74 entrepreneurs in the cities of Leeuwarden and Amsterdam. This is done with the use of the Big-5 personality framework (Goldberg, 1981;1990 & 1992) which consists of the five personality traits: openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. The variance in the presence of the five traits was analyzed by multiple linear regressions. To create a model that could predict the relationship with personality as complete as possible, several control variables were added to the regression. These were based on the literature review on personalities and variations in personalities across time and contexts.

Due to the lack of contextual factors taken into account in research on personalities of entrepreneurs (Smallbone et al., 2013), including context can be considered the next step in this type of research. This research made an effort to increase awareness and understanding about the relevance of context in research. This was done by adding a regional component in the research on personalities of entrepreneurs.

It is argued in this thesis that region can influence the creation and development of the personalities of entrepreneurs. It was stated that personalities are for example influenced by cultural norms and values (Eap et al., 2008) and social networks (Gibb and Richie, 1982). Two places with distinct cultures in the Netherlands are the cities of Leeuwarden and Amsterdam. Kashima et al. (2004) found that personalities of people differ across cities with an urban, metropolitan culture like Amsterdam and cities located in rural areas like Leeuwarden. The question that was raised therefore was: *Is there variation in the personality traits of entrepreneurs between the cities of Leeuwarden and Amsterdam?*

As indicated in Chapter 4.3, in the sample of 74 entrepreneurs, no variations were found in the Big-5 traits among entrepreneurs in Leeuwarden and Amsterdam. No significant differences were found in any of the five traits between Leeuwarden and Amsterdam entrepreneurs. Therefore, the concept of *homo entreprenaurus* (Uusitalo, 2001) cannot be disclaimed by the results of this research. The answer to the sub-questions that are raised in Chapter 1 can therefore all be answered with 'no'. This is in accordance with the results of Zhao and Seibert (2006) and Zhao et al. (2010) who did not find congruous results in their research on geographical variation in personalities of entrepreneurs either. The only control variable that has proved to be consequently significant across the regressions is ''Age''. As personality often appears to change over the years, as was stated by Donnellan & Lucas (2008), this seems to be a reliable result. This is also in accordance with the work of Goldberg et al. (1998) and Mroczek & Almeida (2008) who found varying results in respectively conscientiousness and neuroticism across age. This can also be seen in Appendix V.

Because of the significance of ''Age'' it was decided to perform the same regressions again, but this time only with respondents in the same age category. This resulted in significant differences between the personality traits of entrepreneurs in Leeuwarden compared to entrepreneurs in Amsterdam aged 50 and over. The trait of conscientiousness turned out to be less prevalent in personalities in Amsterdam, while the trait of agreeableness turned out to be more prevalent in Amsterdam. This means that if age is kept constant, hypothesis 1.2 and 1.4 can be confirmed for entrepreneurs aged 50 and over. There is variation in the presence of conscientiousness and agreeableness in the personalities of entrepreneurs in Leeuwarden and Amsterdam aged 50 and over. It can be concluded that both, the regional context and age could have a relation with the creation of the personalities of entrepreneurs in Leeuwarden and Amsterdam.

One of the reasons why significant results were barely present at first could also be that the differences between the cities Leeuwarden and Amsterdam are not large enough to create completely different personalities. For Dutch standards Leeuwarden and Amsterdam are located far away from

each other and their cultures are distinct. These differences may however not be large enough to create completely different personalities among entrepreneurs. In Chapter 1 it was mentioned already that Obschonka et al. (2013) did find differences in the personalities of entrepreneurs from the USA, Germany and the UK. Cultural norms and values between these distinct countries probably vary more than those between Leeuwarden and Amsterdam.

5.2 Discussion

As has become obvious in the descriptive statistics, more entrepreneurs from Leeuwarden than from Amsterdam have filled the survey. Approaching business associations and entrepreneurs directly turned out to be harder in Amsterdam compared to Leeuwarden. One of the reasons a business association gave for not participating in the survey, was the fact that they were involved in research of the two universities located in Amsterdam. This complicated the data gathering in Amsterdam. Due to the absence of universities in Leeuwarden (except for one faculty of the University of Groningen) this problem was not found here.

Next to the lower number of respondents in Amsterdam, the overall number of respondents is 74. In Chapter 4.4, a regression was performed with those entrepreneurs aged 50 and over. This resulted in a sample of 34 entrepreneurs from Leeuwarden and Amsterdam. As these samples are a minimal share of all respondents in Amsterdam and Leeuwarden, the results from the analysis are debatable. For practical reasons it was decided to stop gathering data after a distinct period of time and move on to the analysis of the data, despite the low number of respondents. When interpreting the results from the statistical data-analysis, the low number of respondents should be borne in mind.

It should be noted that the question ''*Does your enterprise sell a product that you (partly) invented yourself?*'' from the survey is not a complete question. As selling a service that was designed by the entrepreneur is also a possibility, this should have been added to the question in hindsight. It is assumed that the respondents that sell a service that was designed by themselves have answered ''Yes''.

During the analysis it was found that the variable ''Sector'', which made use of several industries as categories, created implications. Because there were too many categories, the number of respondents per category turned out to be too low for analysis. Even after merging categories, there were barely enough respondents per category. When interpreting the results this should therefore be borne in mind, as a low number of respondents per category can result in biased results. A larger sample-size could have resulted in a lower error-margin and a more precise image of the spatial distribution of entrepreneurs' personalities.

A second implication was found when the option ''Other'' within the variable ''Sector'' was chosen more often than other categories. After being invited by a business association, where surveys were conducted on paper the reason for this implication was established. Most entrepreneurs in creative sectors that were present here found themselves unsuitable for the other categories in the variable ''Sector'' and therefore decided to choose the category ''Other''. It is possible therefore that the category ''Other'' is largely composed of entrepreneurs in the creative sectors. However, this cannot be assured. The result of the diversity of entrepreneurs in the ''Other''-category is that the relation between the dependent variables (the Big-5) and the variable ''Sector'' is not properly estimated. This also leads to bias in the other components of the regression, among which the variable ''Location enterprise''. This should be taken into account when the results are interpreted.

Thirdly, the findings of Garland (1991) already made clear that it was possible that the scores on the personality traits could center around the mean-score. This is the result of the social desirability of the respondents. This means that the scores per personality-trait for the respondents do not necessarily represent the real personality. This should be taken into account during the interpretation of the results.

The last implication that was found in the analysis concerns the variable 'Lives in location of enterprise'. In the descriptive statistics it is visible that only thirteen of the respondents do not live

within the city in which their enterprise is located. All other 61 respondents do live in the city where their enterprise is located. The results concerning this variable are therefore debatable. The low number of respondents in the first category should be borne in mind when interpreting the results.

5.3 Recommendations

For future research it is interesting to repeat this research, firstly with more respondents than has been done in this thesis. This will result in more reliable and representative results. It could be due to the low number of respondents that the resulting coefficients in the analysis were incorrect and results became insignificant.

Secondly, it may be interesting to perform this research in multiple cities in order to find out whether the same results also hold for the personalities of entrepreneurs in other cities (within or outside the Netherlands). The scope of this research was kept small for practical reasons. Researchers that have the capabilities and time to increase the scope may be able to increase the scope and add multiple cities to the research.

Thirdly, it is interesting to change the scale on which the research has been conducted. One could think about researching city-centers and their rural counterparts in order to find out whether there are differences in the personalities of entrepreneurs between urban centers and the most rural areas. As migration to centers is a selective concept, researching these personalities can result in interesting findings. On the other hand, one could move from the city to a higher scalar level, for example provinces or municipalities. In the Netherlands for example, many cultural values are defined on the provincial level. This is for example the case for the Frisian culture (Langevelde & Pellenbarg, 2000). This makes it interesting to research personalities on this level, as it turned out that culture has a strong effect on personalities.

A last recommendation for future research is to dive deeper into the differences in personalities of entrepreneurs across ages and sectors. Because it was found in the analysis that age appeared have a relation with all five of the Big-5 personality traits, in this research it was decided to perform one regression in which age was kept constant. This resulted in significant results for the variable ''Location enterprise''. This means that there could be variations in the presence of personality traits if age is kept constant. By conducting more surveys and creating a larger sample, regressions can be performed for multiple age categories or even for every age. This can result in a better estimation of the relation between geographical location and the presence of personality traits. The same process could be executed for the variable Sector (Abdul Halim et al., 2012), as keeping the sector constant could also lead to a better estimation of variation in personality traits across space.

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Appendix I
Survey

Translated version:

1. **Where is your enterprise situated?**

   Leeuwarden and surroundings/Amsterdam and surroundings

2. **Do you live in the place where your enterprise is situated?**

   No/Yes

3. **In which of the next industries does your enterprise fit best?**

Test

Rating	I....	Rating	I.....
	1. Am the life of the party.		26. Have little to say.
	2. Feel little concern for others.		27. Have a soft heart.
	3. Am always prepared.		28. Often forget to put things back in their proper place.
	4. Get stressed out easily.		29. Get upset easily.
	5. Have a rich vocabulary.		30. Do not have a good imagination.
	6. Don't talk a lot.		31. Talk to a lot of different people at parties.
	7. Am interested in people.		32. Am not really interested in others.
	8. Leave my belongings around.		33. Like order.
	9. Am relaxed most of the time.		34. Change my mood a lot.
	10. Have difficulty understanding abstract ideas.		35. Am quick to understand things.
	11. Feel comfortable around people.		36. Don't like to draw attention to myself.
	12. Insult people.		37. Take time out for others.
	13. Pay attention to details.		38. Shirk my duties.
	14. Worry about things.		39. Have frequent mood swings.
	15. Have a vivid imagination.		40. Use difficult words.
	16. Keep in the background.		41. Don't mind being the center of attention.
	17. Sympathize with others' feelings.		42. Feel others' emotions.
	18. Make a mess of things.		43. Follow a schedule.
	19. Seldom feel blue.		44. Get irritated easily.
	20. Am not interested in abstract ideas.		45. Spend time reflecting on things.
	21. Start conversations.		46. Am quiet around strangers.
	22. Am not interested in other people's problems.		47. Make people feel at ease.
	23. Get chores done right away.		48. Am exacting in my work.
	24. Am easily disturbed.		49. Often feel blue.
	25. Have excellent ideas.		50. Am full of ideas.

Table 9: Questions Big-5 test

Translated version:

54. **What is your age?**

55. **I am a…**

    Man/Woman/Other/No answer

56. How many years of working experience do you have? (do not count side-jobs)

57. What is the highest level of education you have attended?

Primary school/Secondary school/MBO/HBO/University/Other

58. Was at least one of your parents/caregivers an entrepreneur?

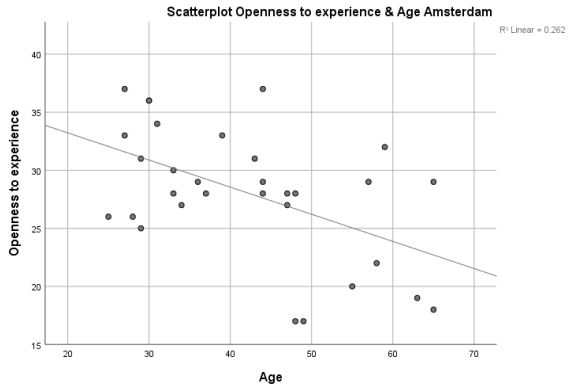
No/Yes

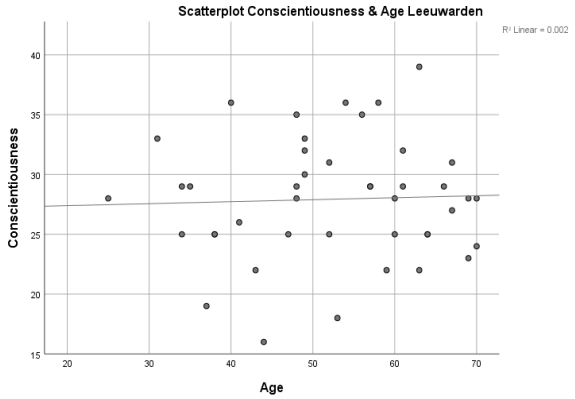
59. Does your enterprise sell a product that you (partly) invented yourself?

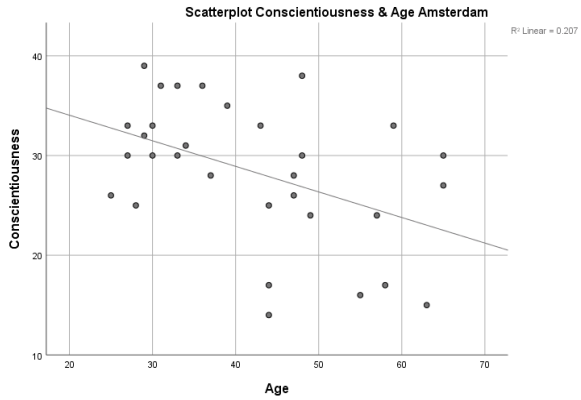
No/Yes

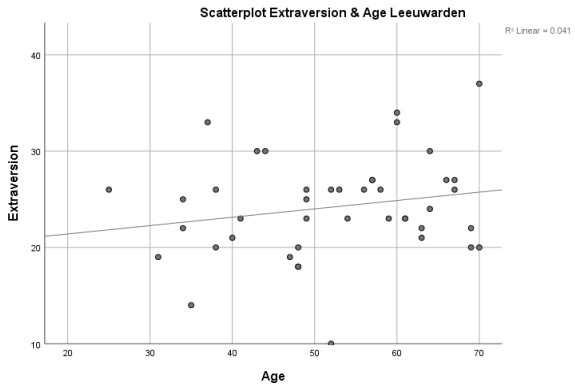
Appendix II

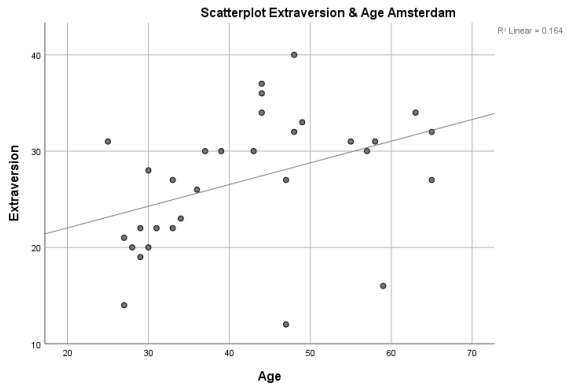
Scatterplots Big-5 versus ''Age'' per city.

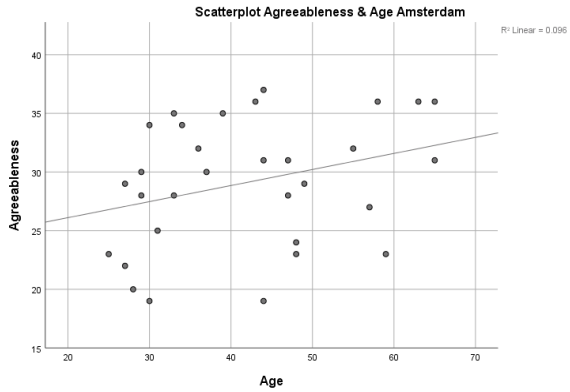












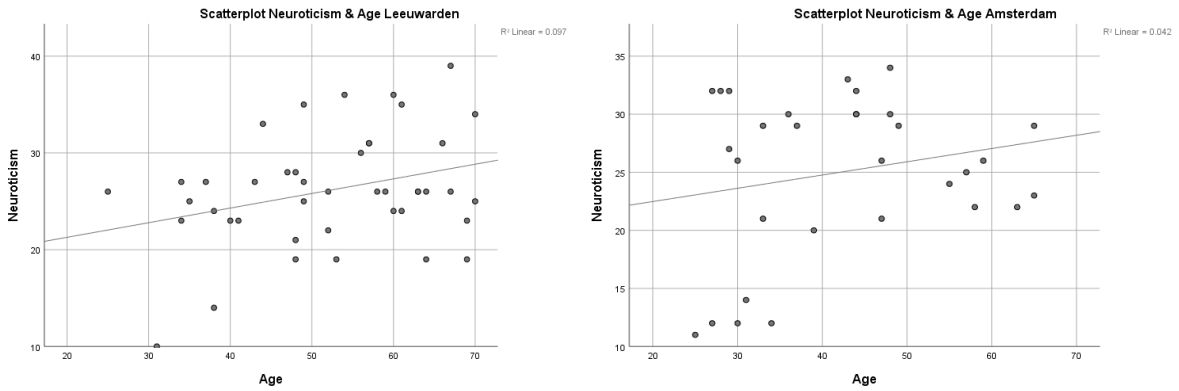


Figure 5: Linearity Big-5 and ''Age'' per city

Appendix III

Assumptions Multiple Linear Regression

1. *Linearity between x's and y*

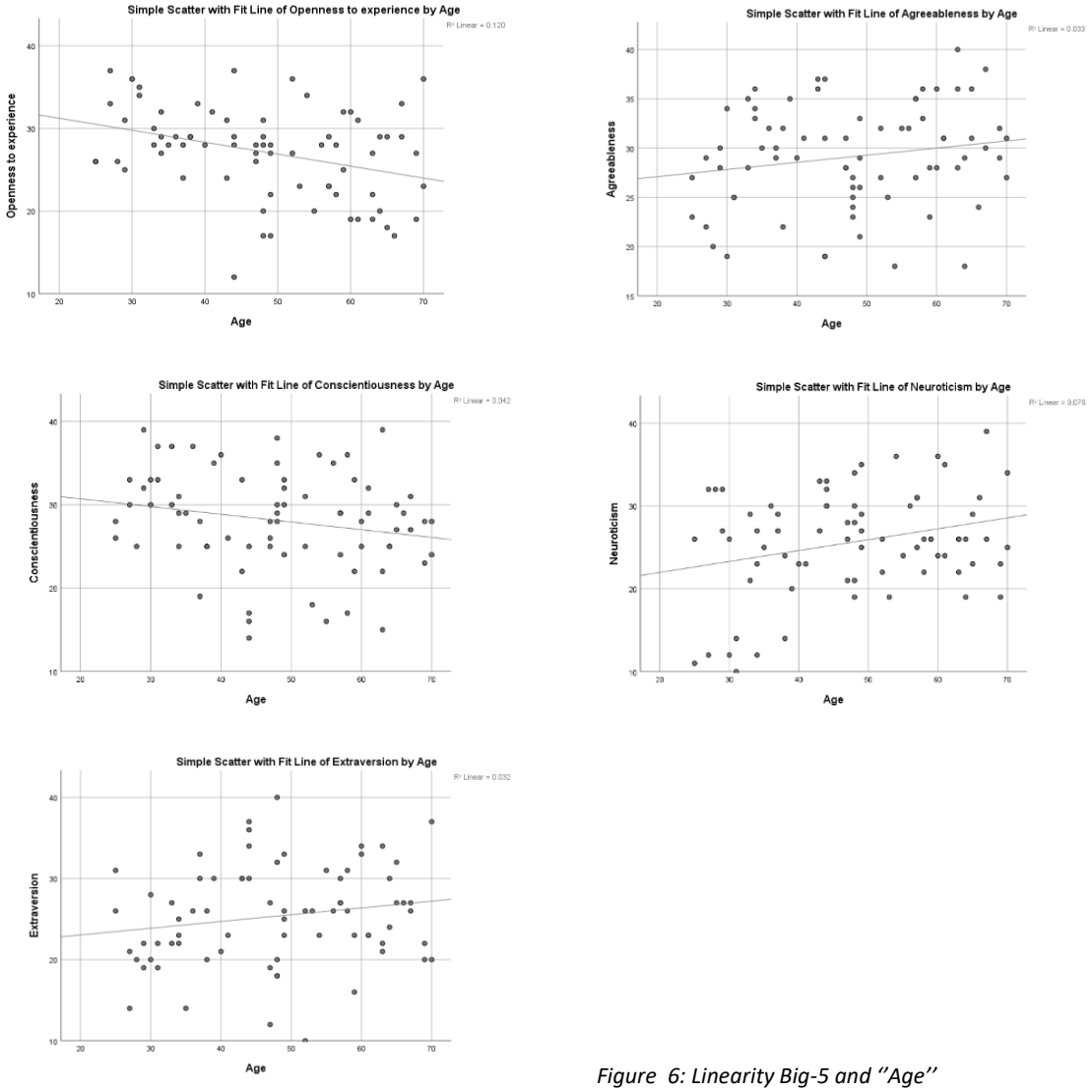


Figure 6: Linearity Big-5 and ''Age''

The first assumption of the multiple linear regression is the presence of linearity between the independent variables (X) and the dependent variable (Y). This can be visualized by using scatterplots on which the dependent variable is situated on the Y-axis. On the X-axis the independent ratio variable ''Age'' is expressed. Linearity is only tested for with the independent variables that are of a ratio-level because binary variables always have a linear relationship.

In the scatterplots above it is visible that there are no strong linear relations found between the independent and dependent variables. However, some weak linear relations can be observed. Therefore it is decided that this assumption is met.

It is also visible that all results of the dependent variables are within the range of 0-40 (see Chapter 3). Because of this small range, it is assumed that no outliers are present.

2. No multicollinearity

Multicollinearity is tested by looking at the VIF-scores. If the VIF-scores in the regressions remain lower than 5, they are acceptable. It is visible in the table below that this is the case. For smaller regressions a VIF-score of 2.5 or lower is even more preferred. This is the case for almost every variable. This was not so for the variables of ''Age'' and ''Working experience''. These variables have VIF-scores of respectively 7,9 and 8,2. It is therefore decided that the variable of ''Working experience'' is left out of the analysis to overcome the problem of multicollinearity. This led to the following VIF-scores (see Table 9).

Variable	**VIF**
Constant	
Location enterprise	
- Amsterdam	1.668
Lives in location of enterprise	
- Yes	1.109
Age	1.312
Sex	
- Woman	1.236
Sector	
- Catering industry	2.609
- Specialist services	2.201
- Construction, industry, water & waste	2.281
- Trade, renting, transport & storage	2.193
- Quality time & governmental	2.402
- Other	2.537
Highest attended education	
- HBO	1.736
- University	1.547
One of parents/caretakers entrepreneur	
- Yes	1.418
Sells product invented by themselves	
- Yes	1.236

Table 10: VIF-scores per variable

3. Homoscedasticity

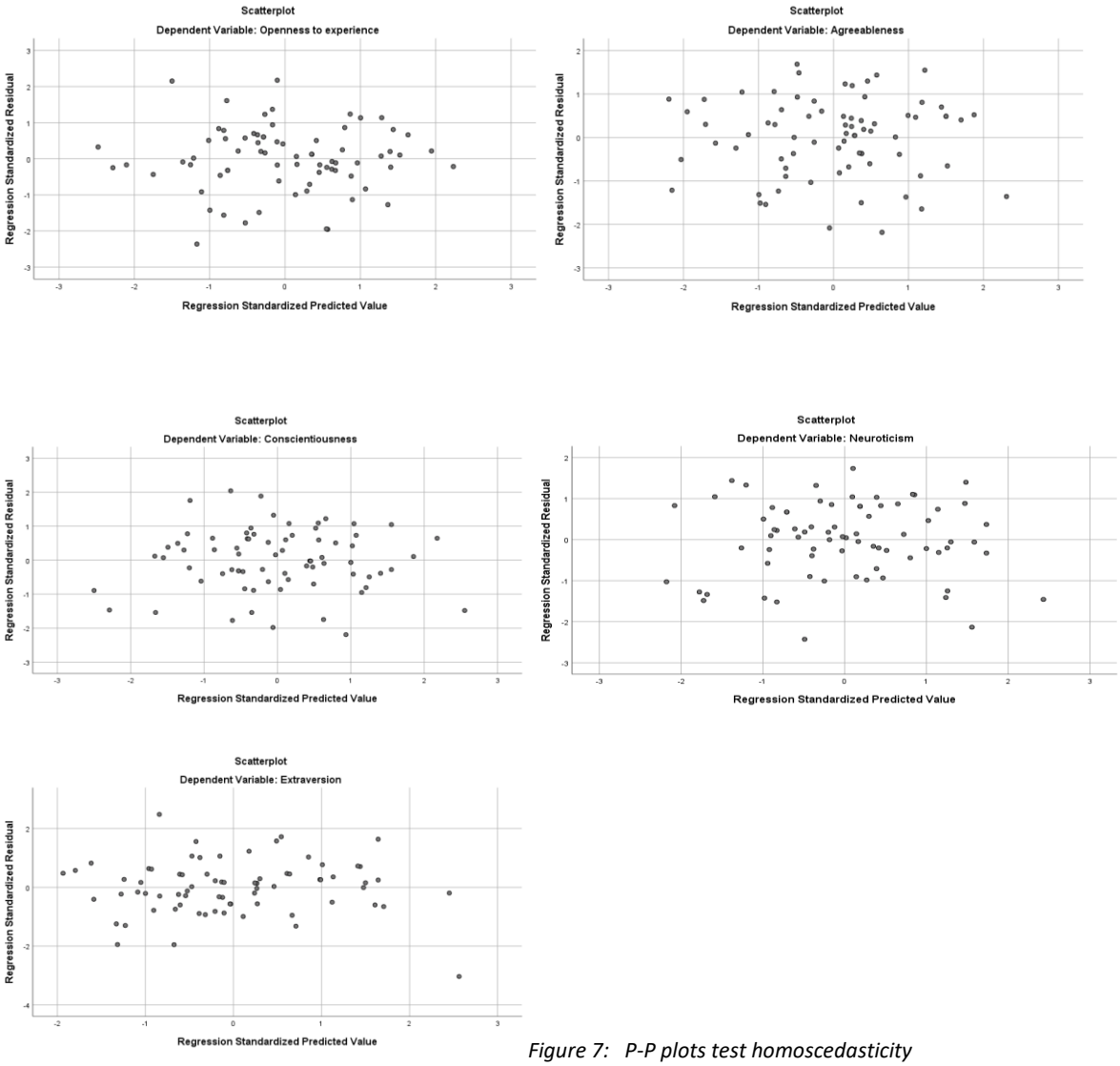
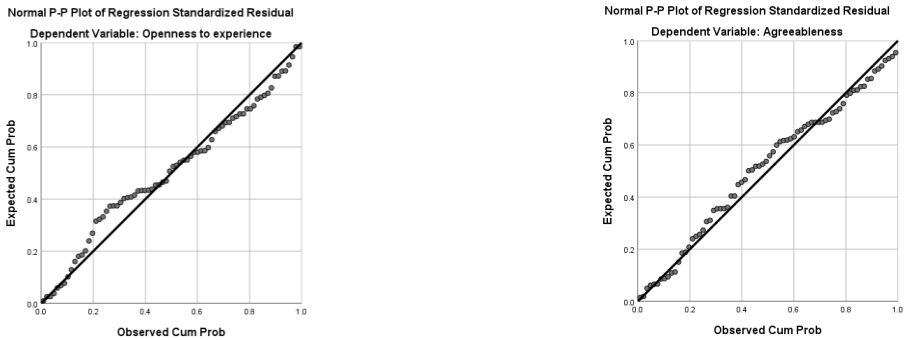
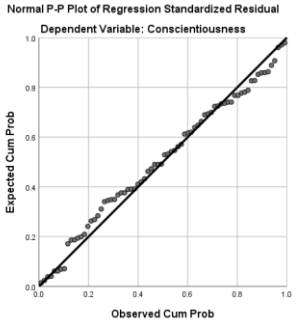


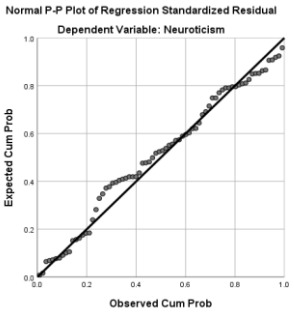
Figure 7: P-P plots test homoscedasticity

The assumption of homoscedasticity means that the residuals in the regressions are equally distributed, and do not bunch together at some values. This tested by the P-P plots as visualized above. There should be no visibly clear pattern in the plots in order to meet this assumption. As this is the case for every of the five regressions, the assumption of homoscedasticity is met.

4. Normal distribution of the errors







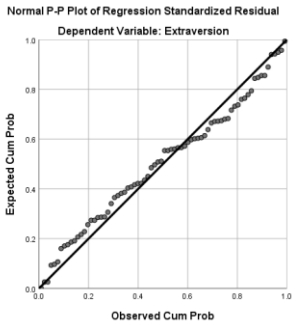


Figure 8: P-P plots test normality errors

When a perfect normal distribution is present, all dots in the P-P plots above would be located on the diagonals that are visible in the plots. The dots are however all located approximately on the diagonal, or close to the diagonal. The errors are therefore not perfectly normal but there are no strong deviations. Therefore this assumption is met.

Appendix IV

Syntax regressions Chapter 4.3

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA COLLIN TOL
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT @60.O
  /METHOD=ENTER @1.Location_enterprise @2.Lives_in_place_of_enterprise @54.Watisuwleeftijd
    @55.Ikbeneen...._____Vrouw Catering_industry Specialist_services Construction_industry_water_waste
    Trade_renting_transport_storage Quality_governmental Other HBO University
    @58.Waserminimaaléénvanuwoudersverzorgersondernemer___Ja
    @59.Verkooptuwbedrijfproductendieudeelszelfbedachtheeft___Ja
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS NORMPROB(ZRESID).

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA COLLIN TOL
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT @61.C
  /METHOD=ENTER @1.Location_enterprise @2.Lives_in_place_of_enterprise @54.Watisuwleeftijd
    @55.Ikbeneen...._____Vrouw Catering_industry Specialist_services Construction_industry_water_waste
    Trade_renting_transport_storage Quality_governmental Other HBO University
    @58.Waserminimaaléénvanuwoudersverzorgersondernemer___Ja
    @59.Verkooptuwbedrijfproductendieudeelszelfbedachtheeft___Ja
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS NORMPROB(ZRESID).

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA COLLIN TOL
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT @62.E
  /METHOD=ENTER @1.Location_enterprise @2.Lives_in_place_of_enterprise @54.Watisuwleeftijd
    @55.Ikbeneen...._____Vrouw Catering_industry Specialist_services Construction_industry_water_waste
    Trade_renting_transport_storage Quality_governmental Other HBO University
    @58.Waserminimaaléénvanuwoudersverzorgersondernemer___Ja
    @59.Verkooptuwbedrijfproductendieudeelszelfbedachtheeft___Ja
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS NORMPROB(ZRESID).
```

```
REGRESSION
  /MISSING LISTWISE
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  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT @63.A
  /METHOD=ENTER @1.Location_enterprise @2.Lives_in_place_of_enterprise @54.Watisuwleeftijd
    @55.Ikbeneen...._____Vrouw Catering_industry Specialist_services Construction_industry_water_waste
    Trade_renting_transport_storage Quality_governmental Other HBO University
    @58.Waserminimaaléénvanuwoudersverzorgersondernemer___Ja
    @59.Verkooptuwbedrijfproductendieudeelszelfbedachtheeft___Ja
  /SCATTERPLOT=(*ZRESID ,*ZPRED)
  /RESIDUALS NORMPROB(ZRESID).

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA COLLIN TOL
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT @64.N
  /METHOD=ENTER @1.Location_enterprise @2.Lives_in_place_of_enterprise @54.Watisuwleeftijd
    @55.Ikbeneen...._____Vrouw Catering_industry Specialist_services Construction_industry_water_waste
    Trade_renting_transport_storage Quality_governmental Other HBO University
    @58.Waserminimaaléénvanuwoudersverzorgersondernemer___Ja
    @59.Verkooptuwbedrijfproductendieudeelszelfbedachtheeft___Ja
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  /RESIDUALS NORMPROB(ZRESID).
```

Figure 9: SPSS-syntax regressions Chapter 4.3

Appendix V

Regression results 50+ age category

- *Openness to experience*

Variable	B	Coefficients std. error	Standardized coefficients Beta
Constant	20.343***	5.036	
Location enterprise			
- Amsterdam	1.572	3.128	0.120
Lives in location of enterprise			
- Yes	4.208	2.576	0.302
Sex			
- Woman	-2.943	2.276	-0.264
Sector			
- Catering industry	4.255	6.698	0.137
- Specialist services	-6.520	4.425	-0.397
- Construction, industry, water & waste	-2.132	4.036	-0.143
- Trade, renting, transport & storage	-4.533	4.152	-0.303
- Quality time & governmental	-2.197	3.602	-0.158
- Other	1.050	3.901	0.080
Highest attended education			
- HBO	3.312	2.470	0.297
- University	4.217	2.564	0.358
One of parents/caretakers entrepreneur			
- Yes	0.347	2.634	0.029
Sells product invented by themselves			
- Yes	4.502	2.349	0.407*

a. Dependent variable: Openness to experience (''Age'' ≥50)
b. Adjusted R^2: 0,267
c. Reference categories:
   i. 'Leeuwarden' for Location enterprise
   ii. 'Man' for Sex
   iii. 'Finance, information & communication' for sector
   iv. 'Secondary education or MBO' for Highest attended education
d. ***p<0.01, **p<0.05, *p<0.1

Table 11: Regression results ''Openness to experience'' 50+ age category

- Conscientiousness

Variable	B	Coefficients std. error	Standardized coefficients Beta
Constant	27.067***	6.517	
Location enterprise			
- Amsterdam	-8.350	4.047	-0.604*
Lives in location of enterprise			
- Yes	0.051	3.334	0.003
Sex			
- Woman	-2.020	2.945	-0.172
Sector			
- Catering industry	15.809	8.667	0.483*
- Specialist services	5.253	5.726	0.304
- Construction, industry, water & waste	1.421	5.222	0.090
- Trade, renting, transport & storage	3.532	5.373	0.225
- Quality time & governmental	4.943	4.662	0.338
- Other	1.126	5.048	0.081
Highest attended education			
- HBO	0.743	3.197	0.063
- University	-0.296	3.318	-0.024
One of parents/caretakers entrepreneur			
- Yes	0.738	3.408	0.058
Sells product invented by themselves			
- Yes	-2.151	3.040	-0.185

a. Dependent variable: Conscientiousness (''Age'' ≥50)
b. Adjusted R^2: -0.110
c. Reference categories:
   i. 'Leeuwarden' for Location enterprise
   ii. 'Man' for Sex
   iii. 'Finance, information & communication' for sector
   iv. 'Secondary education or MBO' for Highest attended education
d. ***p<0.01, **p<0.05, *p<0.1

Table 12: Regression results ''Conscientiousness'' 50+ age category

- Extraversion

Variable	B	Coefficients std. error	Standardized coefficients Beta
Constant	13.764**	4.852	
Location enterprise			
- Amsterdam	4.612	3.014	0.349
Lives in location of enterprise			
- Yes	1.574	2.482	0.113
Sex			
- Woman	1.891	2.193	0.169
Sector			
- Catering industry	-12.963	6.454	-0.415*
- Specialist services	6.853	4.263	0.416
- Construction, industry, water & waste	10.370	3.888	0.690**
- Trade, renting, transport & storage	6.814	4.001	0.454
- Quality time & governmental	5.894	3.471	0.422
- Other	5.972	3.759	0.452
Highest attended education			
- HBO	1.395	2.380	0.125
- University	4.602	2.470	0.389*
One of parents/caretakers entrepreneur			
- Yes	2.521	2.538	0.207
Sells product invented by themselves			
- Yes	1.195	2.264	0.108

a. Dependent variable: Extraversion (''Age'' ≥50)
b. Adjusted R^2: 0.325
c. Reference categories:
   i. 'Leeuwarden' for Location enterprise
   ii. 'Man' for Sex
   iii. 'Finance, information & communication' for sector
   iv. 'Secondary education or MBO' for Highest attended education
d. ***p<0.01, **p<0.05, *p<0.1

Table 13: Regression results ''Extraversion'' 50+ age category

- Agreeableness

Variable	B	Coefficients std. error	Standardized coefficients Beta
Constant	22.761***	4.888	
Location enterprise			
- Amsterdam	5.718	3.036	0.464*
Lives in location of enterprise			
- Yes	5.730	2.501	0.439**
Sex			
- Woman	1.711	2.209	0.164
Sector			
- Catering industry	-16.348	6.501	-0.560**
- Specialist services	-3.682	4.294	-0.239
- Construction, industry, water & waste	3.573	3.917	0.255
- Trade, renting, transport & storage	3.500	4.030	0.250
- Quality time & governmental	1.494	3.496	0.114
- Other	0.535	3.786	0.043
Highest attended education			
- HBO	-0.182	2.398	-0.017
- University	0.359	2.488	0.033
One of parents/caretakers entrepreneur			
- Yes	3.068	2.556	0.270
Sells product invented by themselves			
- Yes	-1.354	2.280	-0.131

a. Dependent variable: Agreeableness (''Age'' ≥50)
b. Adjusted R^2: 0.214
c. Reference categories:
   i. 'Leeuwarden' for Location enterprise
   ii. 'Man' for Sex
   iii. 'Finance, information & communication' for sector
   iv. 'Secondary education or MBO' for Highest attended education
d. ***p<0.01, **p<0.05, *p<0.1

Table 14: Regression results ''Agreeableness'' 50+ age category

- Neuroticism

Variable	B	Coefficients std. error	Standardized coefficients Beta
Constant	17.867***	4.500	
Location enterprise			
- Amsterdam	-1.809	2.795	-0.147
Lives in location of enterprise			
- Yes	1.283	2.302	0.098
Sex			
- Woman	-3.160	2.033	-0.303
Sector			
- Catering industry	4.220	5.985	0.145
- Specialist services	6.100	3.953	0.397
- Construction, industry, water & waste	4.070	3.606	0.291
- Trade, renting, transport & storage	2.441	3.710	0.174
- Quality time & governmental	5.160	3.219	0.396
- Other	9.426	3.486	0.766**
Highest attended education			
- HBO	7.562	2.207	0.725***
- University	6.000	2.291	0.545**
One of parents/caretakers entrepreneur			
- Yes	1.599	2.353	0.141
Sells product invented by themselves			
- Yes	-2.287	2.099	-0.221

a. Dependent variable: Neuroticism (''Age'' ≥50)
b. Adjusted R^2: 0.332
c. Reference categories:
   i. 'Leeuwarden' for Location enterprise
   ii. 'Man' for Sex
   iii. 'Finance, information & communication' for sector
   iv. 'Secondary education or MBO' for Highest attended education
d. ***p<0.01, **p<0.05, *p<0.1

Table 15: Regression results ''Neuroticism'' 50+ age category

Appendix VI

Syntax regressions Chapter 4.4

```
USE ALL.
COMPUTE filter_$=(@54.Watisuwleeftijd  >=  50).
VARIABLE LABELS filter_$ '@54.Watisuwleeftijd  >=  50 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT @60.O
  /METHOD=ENTER @1.Location_enterprise @2.Lives_in_place_of_enterprise @55.Ikbeneen...._Vrouw
    Other Catering_industry Specialist_services Construction_industry_water_waste
    Trade_renting_transport_storage Quality_governmental HBO University
    @58.Waserminimaaléénvanuwoudersverzorgersondernemer_Ja
    @59.Verkooptuwbedrijfproductendieudeelszelfbedachtheeft_Ja filter_$.

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT @61.C
  /METHOD=ENTER @1.Location_enterprise @2.Lives_in_place_of_enterprise @55.Ikbeneen...._Vrouw
    Other Catering_industry Specialist_services Construction_industry_water_waste
    Trade_renting_transport_storage Quality_governmental HBO University
    @58.Waserminimaaléénvanuwoudersverzorgersondernemer_Ja
    @59.Verkooptuwbedrijfproductendieudeelszelfbedachtheeft_Ja filter_$.

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT @62.E
  /METHOD=ENTER @1.Location_enterprise @2.Lives_in_place_of_enterprise @55.Ikbeneen...._Vrouw
    Other Catering_industry Specialist_services Construction_industry_water_waste
    Trade_renting_transport_storage Quality_governmental HBO University
    @58.Waserminimaaléénvanuwoudersverzorgersondernemer_Ja
    @59.Verkooptuwbedrijfproductendieudeelszelfbedachtheeft_Ja filter_$.

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT @63.A
  /METHOD=ENTER @1.Location_enterprise @2.Lives_in_place_of_enterprise @55.Ikbeneen...._Vrouw
    Other Catering_industry Specialist_services Construction_industry_water_waste
    Trade_renting_transport_storage Quality_governmental HBO University
    @58.Waserminimaaléénvanuwoudersverzorgersondernemer_Ja
    @59.Verkooptuwbedrijfproductendieudeelszelfbedachtheeft_Ja filter_$.
```

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT @64.N
  /METHOD=ENTER @1.Location_enterprise @2.Lives_in_place_of_enterprise @55.Ikbeneen...._Vrouw
    Other Catering_industry Specialist_services Construction_industry_water_waste
    Trade_renting_transport_storage Quality_governmental HBO University
    @58.Waserminimaaléénvanuwoudersverzorgersondernemer_Ja
    @59.Verkooptuwbedrijfproductendieudeelszelfbedachtheeft_Ja filter_$.
```

Figure 10: SPSS-syntax regressions Chapter 4.4