

Master Thesis

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**The Relationship Between Personality and
Entrepreneurship, Entrepreneurial Success and
Transformational Leadership: Moderation by Business
Start**

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Management summary

One of the main goals of Vantisgo is to advise entrepreneurs and support their development. It is important to advise everyone as individually as possible, as every entrepreneur faces different challenges and has a different background. If support is too general and not scientifically based, it is usually the case that counselling and coaching is not effective and does not lead to the desired results. That is why it is important to have good scientific knowledge about change and which factors lead to entrepreneurial success. For a well-founded and individual development of everyone's potential, a personality analysis serves as one of the basic assessments.

This report examines in which personality aspects of the Five-Factor Aspect Scale entrepreneurs tend to differ from the average population. It also aims at what personality aspects relate to successful entrepreneurship which in this case is conceptualised as business performance and a transformational style of leading. It also takes into account, whether entrepreneurs started their own business or inherited it from their family, since many of Vantisgo's clients are family businesses.

It turns out, that entrepreneurs tend to be significantly different from the average population in several personality aspects. Specifically, they perceived themselves as more enthusiastic, assertive, industrious, compassionate, higher in intellect and less prone to withdrawal and politeness. Whereas they scored neutral in volatility, orderliness, and openness. Regarding the relationships between the personality aspects and business performance, only industriousness was found to be significantly positively related to business performance, with a relatively small effect size. However, this effect tends to get weaker when entrepreneurs did not start their business on their own but inherited it from their family. Last, this study showed that entrepreneurs who scored higher on transformational leadership also perceived themselves to be more intellectual and less orderly.

By showing where entrepreneurs differ in their personalities, it can indicate which qualities and characteristics are important for entrepreneurship. Therefore, the personality assessment is a good basis to recognise specific strengths and identify the points where someone needs to develop further or receive support. However, it is less suitable for predicting overall business performance, especially for family businesses. Regarding leadership skills, results suggest that it is mainly an intellectual task to lead an organisation in a transformational style and may be less applied by more conservative entrepreneurs.

Abstract

Although previous research has indicated that personality traits are related with entrepreneurial activity and success by using the Five-Factor model, it has also shown that these relationships need to be examined at a deeper level of personality traits. Thus, the aim of this study was to investigate whether entrepreneurs would differ in their personality from the average population on an aspect level by using the Five-Factor Aspect Scale. Further, what personality aspects relate to entrepreneurial success and the moderating influence of the way entrepreneurs started in a business. Successful entrepreneurship was measured in terms of business performance and leadership skills. Results showed that entrepreneurs score higher on industriousness, intellect, enthusiasm, assertiveness, and compassion and lower on withdrawal and politeness. Industriousness was the only aspect found that is positively linked to business performance. This relation was weaker when entrepreneurs inherited a family business. In terms of leadership skills, a transformational way of leading was positively related to intellect and negatively with orderliness. Theoretical and practical implications are discussed.

Entrepreneurs like Elon Musk and Steve Jobs shape the world with their ideas and innovations. Their impact on the economy and the society is enormous (Van Praag & Versloot, 2007). However, being an entrepreneur can be extremely challenging and a lot of skills and characteristics are needed to lead a successful business such as perseverance in the face of mistakes, the need for achievement, ability to take risks, tolerance for ambiguity, good locus of control, creativity and innovation (Chen & Lai, 2010; Deakins & Freel, 2009; Venter, Urban, & Rwigema, 2008). Since about half of all businesses fail within the first five years (Gustafson, 2022), there is a high demand for good consultation. Otherwise, business failure can have various negative consequences for the entrepreneur including psychological, social and financial ones and for the employees and their families (Ucbasaran, Shepherd, Lockett, & Lyon, 2012). Consequently, researchers tried to investigate what characteristics define entrepreneurs and what factors lead to business success.

One factor that plays an important role in determining when people become entrepreneurs and how successful they are at it is personality. McCrae and Costa (1994) defined personality traits as stable and systematic tendencies in how someone behaves in different situations and over time. Personality is most widely measured with the Five-Factor model, or Big-Five, which classifies personality in five broad personality domains: openness

for new experiences which describes the tendency to be more open for new ideas, aesthetics, phantasy, and creativity; conscientiousness, the tendency to be achievement striving, disciplined, and to avoid distractions; extraversion, an energetic approach towards social interactions including sociability, assertiveness and positive emotions; agreeableness, the focus on altruism and cooperation; and neuroticism, the tendency to experience negative emotions such as nervousness, anxiety, and sadness (Costa & McCrae, 1992; Goldberg, 1990).

When examining the personality factors in which entrepreneurs differ from the average population, it was found that conscientiousness and openness to new experiences had the strongest and most consistent relationship with starting and succeeding in business. (Brandstätter, 2011; Zhao & Seibert, 2006; Zhao, Seibert, & Lumpkin, 2010). As for the other traits, meta-studies show that entrepreneurs tend to be more extraverted and less neurotic, and somewhat less agreeable (Brandstätter, 2011). Of these three factors, neuroticism and agreeableness have not been shown to be related to business success (Zhao et al., 2010).

However, research about personality and entrepreneurship has recently been criticised. In addition to studies showing divergent results, e.g., for conscientiousness and neuroticism (Antoncic, Bratkovic kregar, Singh, & Denoble, 2015) the structure of the five-factor model has been criticised. It measures personality at too broad a level to make confident predictions of situation-specific behaviour and to infer possible mechanisms by which personality influences entrepreneurial attitudes and actions (Kerr, Kerr & Xu, 2018). In fact, Zhao et al. (2010) concluded in their meta-analysis that only 13% of entrepreneur activity and 10% of entrepreneur success could be explained by personality. One reason for these uncertain results could be the broad classification of the Five-Factor model. As a result, the effects of personality traits may cancel each other out at a lower level of the hierarchy and may not be represented at the level of the five domains. For example, someone can score high on achievement striving and disciplined but at the same time score low on dutifulness and orderliness. However, both of these personality traits are part of the general domain conscientiousness, consequently leading to an average score in conscientiousness. For this reason, more recent developments use a factor solution with a narrower level of analysis that provides a more fine-tuned and specifically nuanced perspective (DeYoung, Quilty, & Peterson, 2007).

In 2007, DeYoung, et al., developed the Big-Five Aspect Scale, which provides a factor solution at a level of trait organization that lies between the Big-Five and the facets.

This solution is based on a growing body of research that suggests two distinct biological sources underlying the common variance among the domains. Their factor analysis supports the assumption that each of the Big domains can be divided into two subdomains, which they call aspects. In their framework, conscientiousness consists of industriousness and orderliness; extraversion of enthusiasm and assertiveness; agreeableness of compassion and politeness; neuroticism of volatility and withdrawal, and openness for new experiences of openness and intellect (DeYoung et al., 2007). This subfactor structure allows us to measure personality at a smaller level and consequently gives us the ability to make more specific predictions about behaviour. However, this model has not been used to examine the relationship between personality and entrepreneurship.

An example of a distinction into two subfactors is found in the domain of neuroticism. While neuroticism as a whole reflects only a general sensitivity to threats and negative emotions, the withdrawal aspect has been hypothesized to correlate with the behavioural inhibition system while the volatility aspect is related to the fight-flight freeze system (Gray & MacNaughton, 2003). A similar observation was made in the field of entrepreneurship, where Zhao and Seibert (2006) found that within conscientiousness only the achievement-oriented aspect (similar to industriousness) and not the dependability aspect (similar to orderliness) correlated with entrepreneurial activity. These examples demonstrate the usefulness of a two-factor subdomain model, and suggest that a more detailed analysis of personality could provide a more nuanced picture when examining what traits lead people to become entrepreneurs.

When it comes to the relationship between personality and successful entrepreneurship, success as an entrepreneur can be conceptualized through both financial aspects and leadership qualities, both of which play an important role in business performance. In regard to the financial aspect, business performance can best be represented by financial performance and growth performance (Zahra, 1991). Thus, this study takes financial indicators like the business being profitable and financial secure into consideration, as well as growth indicators like rising number of employees and increased profits. An influential factor that may influence the relationship between personality aspect and business performance is whether the entrepreneur started and build their company themselves, compared to entrepreneurs that inherited the business from their families. Research shows that in the latter case, many additional challenges besides the normal business challenges are crucial for the successful continuation of the family business. Such as conflicts within the family, difficulties in maintaining family values, favouritism and sibling rivalry, as well as

stagnation and rigidity (Bizri, 2016). This may affect the relationship between personality and success in that personality plays a lesser role in the business success of entrepreneurs in family businesses, as more other factors are at play. Therefore, this study also takes into account whether the entrepreneurs started their business themselves or inherited a family business.

Next to business performance, this study takes leadership style into account to measure entrepreneurial success. According to the literature about leadership styles, a transformational leadership style is seen as the most effective style of leading and includes motivating people, stimulating them intellectually, considering them individually and getting people to do more than is expected (Dumdum, Lowe, & Avolio, 2013). Transformational leadership has also been shown to impact business performance by increasing organisational learning and facilitating innovation within the company (Aragón-Correa, García-Morales, & Cordón-Pozo, 2007). Applying a transformational leadership style has also been proven to positively affect the financial performance of an organisation compared to just using a transactional style of leading (Barling, Weber, & Kelloway, 1996). In regard to personality, studies have shown that traits like agreeableness, enthusiasm, and assertiveness have been associated with it (Ghazal, Arshad, & Kamran, 2016). Thus, this study measures a transformational style of leading as a measurement for leadership skills and consequently a second indicator for successful entrepreneurship.

In an effort to guide future entrepreneurs and provide the best advice, the ultimate goal of this study is to identify what personality traits define entrepreneurs and what makes them influential and successful entrepreneurs. Thus, this study tries to investigate whether entrepreneurs differ on the 10 aspects of personality compared to the average in society. Secondly, it is investigated which personality aspects relate to business performance and whether this relationship is moderated by business start. Third, this study aims to find out, which personality aspects correlate with a transformational leadership style.

It is hypothesised, that the Big-Five Aspect Scale will produce a more clear and nuanced picture of how entrepreneurs differ in their personality compared to the normal population. Based on the personality domains that previous research has shown to be related to business success, it is hypothesised that the two personality aspects of openness to new experience and extraversion and conscientiousness will be positively related to business performance. It is also expected that the relationship between personality and business performance is less strong for entrepreneurs that have taken over the family business, since more other factors are responsible for business success. For the relationships between the

personality aspects and transformational leadership, it is hypothesised that both aspects of extraversion, namely enthusiasm and assertiveness and the compassion aspect of agreeableness positively relate to transformational leadership.

Method

Participants

A total of 89 participants were recruited online via social media and directly from the client pool of Vantisgo GmbH, of which two had to be excluded as they did not meet inclusion criteria. The remaining sample of 87 people consisted of 28 females ($M_{age} = 44.07$, $SD = 9.34$) and 59 males ($M_{age} = 41.92$, $SD = 9.78$) of which 61 started their own business, three started in an existing business and 25 took over their family's business. Participants did not receive a reimbursement for their participation. A preliminary a priori power analysis for a f-test ANCOVA analysis with a medium estimated effect size, significance level of 0.05, and a power of 0.80 had suggested 92 participants. A sensitivity power analysis with an sample size of 87 people suggested an effect size of 0.30.

Material

Personality questionnaire

The Big-Five Aspect Scale was used (DeYoung et al., 2007) to measure personality using a 100-item scale (10 items per aspect). Participants were asked how well each statement described themselves using a 5-point Likert scale (1 - *I strongly disagree*. 5 - *I strongly agree*). An example is: "I seldom feel blue" (see Appendix A). Several items were negatively worded and were reverse scored for statistical analysis. The scores were obtained by averaging the 10 scores of each aspect and the 20 scores for each broad domain, and then transformed into percentile scores. For the German translation, good reliabilities are reported with cronbach's alpha between .71 and .91 (Mussel & Paelecke, 2022).

Business performance

Business performance was measured with six items that have been used in previous studies (Farrington, 2012). The questions related to the perception of the company's success in terms of financial security, success and profitability, as well as the increase in profits and the number of employees (see Appendix A). On a 5-point Liberty-type scale (1 = *strongly disagree*. 5 = *strongly agree*) participants were asked to indicate to what extent they agreed or disagreed with the six statements.

Transformational leadership

Transformational leadership style was measured by the multifactor leadership questionnaire (MQL) by Bass and Avolio (1992). Participants were asked to rate on a 5-point Likert scale (1 - *Not at all*, 5 - *Frequently*) how well each statement described their leadership style. An example is "I talk optimistically about the future"(see Appendix A). The questionnaire consisted of 45-items, with different subscales for each individual leadership style.

Transformational style of leadership was measured with five different sub-scales, which were idealized influence (attributed), idealized influence (behaviour), inspirational motivation, intellectual stimulation and individual consideration. Each scale consisted of 4 items that were averaged in the end. The final score for transformational leadership was the average of all five sub-scores. Regarding the reliabilities for transformational leadership, a good cronbach's alpha of .93 is reported and for the sub-scales it is ranging from .72 to .82 (Franco & Matos, 2013).

All questionnaires were translated from English to German.

Procedure

The study used a non-experimental design and was designed and admitted using the Qualtrics XM platform (www.qualtrics.com). Participants received a link and were then informed about the study and the inclusion criteria and signed consent (see Appendix C). To participate, they had to be entrepreneurs (no discrimination between self-employed and own a company). First, they were asked whether, if available, they preferred their existing data of their personality questionnaire to be used that was acquired within the last twelve months. Then, they filled in the questionnaires, starting with the personality questionnaire, followed by the business performance questions and the MQL. In the end, they filled out some demographic questions like age and gender and were asked for their employment status (Entrepreneur, Self-employed, Employed) and how they started their business (own, existing business, family business). Finally, they were thanked for their participation.

Data analysis

The questionnaire data were transferred into SPSS (IBM, version 27) and then cleaned according to the exclusion criteria mentioned above. Then, items were reversed and the final variable scores were calculated. First, the descriptive statistics were calculated. To compare the personality scores of entrepreneurs to the normal population, a one-sample t-test was used to compare the mean of the personality aspects to the general population. As a reference value for the mean in the general population, this study used the mean percentile score of 50 from

the general population. These percentile scores were calculated from a sample of over 10,000 people and were taken from (Understand Myself, 2022).

As an estimator of effect size, Cohen's *d* was used with values between 0.2 and 0.4 showing a small effect, between 0.4 and 0.7 indicating a medium effect, and greater 0.7 representing a large effect size (Cohen, 1988).

Secondly, the data was checked for assumptions for linear regression. Then, a linear regression analysis was performed with all ten personality aspects as independent and business performance as dependent variable. Then, a moderation analysis using PROCESS v.3.5 in SPSS by Hayes (2017) was done for each personality aspect respectively, where the personality aspect served as independent variable, business performance as dependent and business start as moderating variable. Last, a second linear regression analysis was performed with the ten personality aspects as independent and transformational sum-scores as dependent variable.

Results

The descriptive statistics of the questionnaire data were shown in Table 1 (see Appendix B, Table 1). Table 2 (see Appendix B, Table 2) showed the different mean scores for the general personality domains and their specific aspects compared to the average mean. Statistically significant differences were found for neuroticism, conscientiousness, and extraversion in the general domain and for withdrawal, compassion, politeness, industriousness, intellect, enthusiasm, and assertiveness on the aspect level.

Subsequently, when checking for assumptions for linear regression, four scores were excluded as outliers and did not fulfil the assumptions for linear regression. The following linear regression analysis showed only a significant effect for industriousness on business performance when correcting for the other aspects ($b = 0.36$, $t = 3.01$, $p = .004$) (see Appendix B, Table 3). Afterwards, a moderation analysis with PROCESS (Hayes, 2017) was done in SPSS for each personality aspect respectively. Results only showed a significant effect for industriousness on business performance ($b = 0.14$, $SE = 0.03$, $p = .004$, 95% CI [-0.06, 0.21]) and only a significant negative interaction effect for the moderation between industriousness by business start ($b = -0.04$, $SE = 0.02$, $p = .024$, 95% CI [-0.08, -0.006]) (see Appendix B, Table 4).

Last, Table 5 (see Appendix B, Table 5) shows the results of the second linear regression analysis between the personality aspects and transformational leadership. Results

showed that only intellect has a significant positive effect on transformational leadership style ($b = 0.34, t = 2.43, p = .018$) and orderliness a significant negative effect ($b = -0.27, t = -2.33, p = .022$).

Discussion

The main objective of this study was to investigate whether entrepreneurs would differ in their personality from the average population. A further aim was to find out what personality traits are related to business performance, whether these relationships are less strong for entrepreneurs that inherited their family business, and what personality traits are related with transformational leadership. Personality was measured using the Big-Five Aspect Scale, business performance was measured in terms of financial and growth aspects and leadership style by using the multifactor leadership questionnaire. A sensitivity power analysis suggested a minimum effect size of 0.30 could be reliably concluded. Thus, results with a smaller effect size should be interpreted with caution.

Results showed that entrepreneurs differed significantly from the average population in several personality aspects. Specifically, they perceived themselves as more enthusiastic, assertive, industrious, compassionate, higher in intellect and less prone to withdrawal and politeness. Whereas they scored neutral in volatility, orderliness, and openness. Regarding the relationships between the personality aspects and business performance, only industriousness was found to be significantly positively related to business performance, with a relatively small effect size. However, this effect tends to get weaker when entrepreneurs did not start their business on their own but inherited it from their family since there was a negative significant moderation effect of business start on the relationship between industriousness and business success but not for the other personality aspects. Last, this study showed that entrepreneurs who scored higher on transformational leadership also perceived themselves to be more intellectual and less orderly.

Regarding the first research question, this study supports previous studies in its findings for the domains of conscientiousness and extraversion, but provides new perspectives for agreeableness, neuroticism, and openness to new experiences. Previous studies found a positive relation for extraversion and for conscientiousness (Brandstätter, 2011). Zhao and Seibert (2006) were the first that showed that within the traits of conscientiousness, only the achievement aspect correlated with entrepreneurial activity and not the dutifulness part. Present results provide further evidence for this point by showing that entrepreneurs only

scored higher on industriousness and scored neutral on orderliness. This also supports previous work of Collins, Hanges, and Locke (2004) that entrepreneurs tend to score higher on achievement motivation. Consequently, higher scores on industriousness could suggest that for an entrepreneur, it is useful to be and stay achievement focused with the ability to sustain prolonged, purposeful efforts. Enthusiasm and assertiveness may indicate that it is helpful to be enthusiastic about ideas and motivate people around you to also believe in them and to be assertive and have the ability and desire to dominate social situations to realise what you want.

Additionally, this study also adds knowledge to the existing literature for the personality domains neuroticism, agreeableness, and openness to new experiences, by providing a more nuanced picture. Regarding agreeableness, previous studies showed that entrepreneurs tend to be slightly less agreeable (Zhao et al., 2010) However, on the aspect level results of the present study show that entrepreneurs tend to be only lower on politeness and higher on compassion. This might be explained by looking at the specific roles of entrepreneurs. On the one hand, they need to break social norms in a constructive way to find new solutions for old problems that no one has tried before. On the other hand, they are leaders that empower employees to do a good job and put them in the right position. Previous research had also shown that empathy plays a role (a component of compassion) in being a transformational leader (Barbuto & Burbach, 2006). Thus, lower scores for politeness and higher scores for compassion could be an indicator of the different roles played by an entrepreneur.

Regarding openness for new experiences, previous research reported entrepreneurs to be more innovative and creative (Brandstätter, 2011; Zhao & Seibert, 2006). The results of this study suggest that intellectual skills are more important for entrepreneurship than the creative aspect of openness. While intellect includes traits like openness to ideas and quick thinking, openness includes traits like aesthetics, fantasy, and feelings (DeYoung et al., 2007). This could indicate that for entrepreneurs, intellectual skills such as strategic thinking, quick learning and understanding, and being open for creative ideas are very useful.

For neuroticism, results indicate that entrepreneurs should not be prone to withdrawal in the face of stress or uncertainty. These results are in line with previous findings showing entrepreneurs score higher on risk taking. Rather striking are the neutral scores on volatility, since research had suggested that entrepreneurs are more emotional stable (Kerr et al., 2018). It could indicate that a certain degree of volatility can also serve as a driver and could also be compatible with entrepreneurship. All in all, results of this study provide new insights into

personality traits of entrepreneurs and highlighting the importance of personality differences on an aspect level, to get a more specific picture. This makes it easier to relate it to specific traits and infer possible mechanisms from it.

For the relationships between personality aspects and business performance, results suggest that industriousness is the most important indicator of personality for success. Previous research has also identified conscientiousness as the most important personality trait for predicting job performances. However, regarding the personality aspects of extraversion and openness, results contradict previous research. Previous findings showed that conscientiousness, openness for new experiences and extraversion were all positively related with business performance for small-business owners (Farrington, 2012). One factor that could have influenced the results is the time this study has taken place. At the point when data was collected, the economy was still recovering from the long term consequences of the Covid-19 pandemic and the perception of someone's business performance was reflecting the last two years. Consequently, business performance could have been negatively affected by that. A second factor that may have influenced the relationship between personality and business success is that participants were acquired from the client pool and the network of Vantisgo consulting company. Consequently, many of the participants hired consultants for their business, which also positively impacts business performance. Therefore, consultation could have influenced the relationship between personality and business success in such a way that personality aspects were compensated and thus became less important.

Regarding the moderation effect, this study supports previous argumentation that for family business survival, more factors play a role. Research had suggested that additional factors play a role and make business survival of family business harder. In fact, only one out of three survives the next generation (Farrington, 2012). Considering this, it could mean that for business success, the personality of the entrepreneur is less important for business success. However, since results showed only a small effect size for this moderation effect, conclusions must be interpreted with caution and more research is needed in this area. An interesting point could be to distinguish between personality traits important for founding a business and those needed for continuing it over a longer period of time.

Regarding the last relationship between personality and transformational leadership, results reflected a different picture compared to previous literature. While previous studies showed a positive relationship with agreeableness and extraversion (Ghazal et al., 2016), this study suggests that being a transformational leader might be more of an intellectual task. Also, the negative relationship with orderliness provides an interesting perspective on

this connection. Other studies have shown that high scores on orderliness and low scores on openness to new experiences correlate with a more conservative world-view and being less open for change (Xu, Soto, & Plaks, 2021). This could be an indicator that entrepreneurs with high scores on orderliness might still be prone to lead in an old, rather conservative way.

A limiting factor that must generally be considered is the correlative nature of the study, from which no causal interpretations can be derived. Thus, this makes an reverse effect possible that entrepreneurship may have led to the changes in personality. Some studies do suggest that the job has an effect on someone's personality. For example, one study showed that entrepreneurs tend to get more conscientious after ten years compared to managers (Li et al., 2021). However, these changes in personality were rather small and were only found in some traits like achievement striving but not on emotional stability. Consequently, it is possible that a reverse relation may have influenced the results, but only to a small degree, which would not adequately explain the personality difference demonstrated in this study.

All in all, this study provides a new and promising way to study personality differences within the field of entrepreneurship. Regarding the relationship between personality and business performance, this study indicates that personality is less suitable for predicting overall business performance, especially for family businesses. Regarding leadership skills, results suggest that it is mainly an intellectual task to lead an organisation in a transformational style and may be less applied by more conservative entrepreneurs. However, most promising are the implications regarding the comparison between entrepreneurs and the normal population. The differences in the personality aspects in which entrepreneurs differ from the average population could be a good indication of the qualities and characteristics an entrepreneur needs to fulfil his or her various tasks and roles. This study indicates that entrepreneurs should be achievement focused and have the ability to work towards one's goals for a prolonged period of time. Their intellectual abilities help them in strategic thinking and create new ideas to solve the upcoming challenges, while their lower tendency to comply to social norms may help to be open for new, innovative ideas and solutions. However, they also need great leadership skills and the ability to not only manage social situations and lead people, but also to motivate people for their task and to work towards a common goal while considering their personal needs. Moreover, it makes sense to take risks to realize a vision for the future that will change the world for the better. In order to fully exploit the potential of entrepreneurs, personality can therefore be a good indicator that shows individual strengths, but also provides information on where entrepreneurs still need to develop their skills as leaders and entrepreneurs.

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Appendix A: Complete Study Material Overview

Table A1
Items assessed after the questionnaires

Content	Questionnaire
Demographics	Gender (Female, Male, Other), Age (Years, Numeric),
Entrepreneurship status	What describes you the best? (Entrepreneur, self-employed, leader in organisation, employee)
Business start	What describes you the best? (Started own business, started in existing business, Took over family business)

Five Factor Aspect Scale

Please indicate the degree to which each of these phrases accurately describes your personality. Do not think too long about your answers, as this will lead to you having a tendency to answer the questions more neutrally. Your first intuition is usually the best answer

1. I am rarely depressed. (R)
2. I am not interested in the problems of others. (R)
3. I carry out my plans.
4. It is easy for me to make new friends.
5. I have a good grasp of things.
6. I get angry easily.
7. I respect authority.
8. I leave my things lying around. (R)
9. I take responsibility.
10. It gives me pleasure to enjoy the beauty of nature.
11. I am often worried.
12. I am sensitive to the feelings of others.
13. I waste my time. (R)
14. Getting to know myself better is difficult. (R)
15. I have difficulty understanding abstract ideas. (R)
16. I am rarely irritated. (R)
17. I feel superior to others. (R)

18. I like order.
19. I have a strong personality.
20. Art is very important to me.
21. I am satisfied with myself.
22. I inquire about the well-being of others.
23. I find it difficult to get down to work. (R)
24. I keep others at a distance. (R)
25. I can handle a large amount of information.
26. I get upset easily.
27. I am uncomfortable appearing pushy.
28. I always tidy up my things.
29. I am not good at influencing others. (R)
30. It gives me pleasure to think about things.
31. I feel threatened easily.
32. Other people's concerns do not interest me. (R)
33. I make a mess (R)
34. I reveal little about myself. (R)
35. I enjoy solving complex problems.
36. I am good at controlling my emotions. (R)
37. I take advantage of others. (R)
38. I stick to schedules.
39. I can fascinate others.
40. Sometimes I get completely absorbed in the music I listen to.
41. It is rare for me to feel down. (R)
42. I can empathize with the feelings of others.
43. I finish what I start.
44. I get to know new people quickly.
45. I avoid philosophical discussions. (R)
46. My mood changes frequently.
47. I avoid imposing my will on others.
48. It doesn't bother me if other people are messy. (R)
49. I leave it to others to lead the way. (R)
50. Poetry makes little or no impression on me. (R)
51. I often worry about things.

52. I am indifferent to the feelings of others. (R)
53. I am not very attentive to ongoing tasks. (R)
54. I do not get carried away by the hustle and bustle of events.
55. I avoid difficult reading material. (R)
56. It is rare for me to lose my temper. (R)
57. I rarely put pressure on others.
58. I wish for everything to be perfect.
59. I am good at taking the lead.
60. Paintings or photographs do not touch me. (R)
61. I get discouraged easily.
62. I do not take time for others. (R)
63. I complete my tasks quickly.
64. I am not a very enthusiastic person. (R)
65. I have a rich vocabulary.
66. My mood changes easily.
67. Sometimes I offend other people. (R)
68. Disorder does not bother me. (R)
69. I can get others to do things I want.
70. I need a creative outlet.
71. I rarely feel embarrassed. (R)
72. I am interested in the lives of others.
73. I always know what I am doing.
74. When I am happy, I show it.
75. I understand things quickly.
76. I am not easily angered. (R)
77. I look for trouble. (R)
78. I don't like routine. (R)
79. I tend to keep my opinions to myself. (R)
80. I rarely get lost in thought. (R)
81. Sometimes everything is too much for me. (R)
82. I lack a soft side. (R)
83. I put off making decisions. (R)
84. I have a lot of fun.
85. It sometimes takes me longer to learn something new. (R)

86. I am easily agitated.
87. I like discussions and arguments.
88. I make sure that rules are followed.
89. I often take the initiative.
90. It is rare for me to daydream. (R)
91. I worry about many things.
92. It gives me pleasure to do something for others.
93. I am easily distracted.
94. I laugh a lot.
95. I can express my thoughts clearly.
96. I am quickly stirred.
97. I look at my personal advantage. (R)
98. I attach great importance to details.
99. I am not assertive. (R)
100. In some things I see something beautiful that is hidden from others.

Note: Items designated with an (R) are reverse scored.

Business success

The following statements refer to your business activity. Please, read each statement and decide how much you agree or disagree with it. It is very important that you give your honest opinion, not what you believe someone else would think best.

Financial performance:

My business is financially secure

My business is profitable

My business is regarded as successful

Growth performance:

My Business has experienced growth in turnover in the past two years

My Business has experienced growth in turnover in the past two years
My Business has experienced growth in employees in the past two years

My Business has experienced growth in profits in the past two years

Multifactor Leadership Questionnaire™

This questionnaire is to describe your leadership style as you perceive it. Please answer all items on this answer sheet. If an item is irrelevant, or if you are unsure or do not know the answer, leave the answer blank. Forty-five descriptive statements are listed on the following pages. Indicate how frequently each statement fits you. The word “others” may mean your peers, clients, direct reports, supervisors, and/or all of these individuals.

Three example items:

As a leader

I talk optimistically about the future.

I spend time teaching and coaching.

I avoid making decisions.

Appendix B: Tables

Table 1

Descriptive Statistics (N = 87)

	<i>m</i>	<i>md</i>	<i>sd</i>	<i>skewness</i>
Extraversion	79.37	85.50	19.23	-1.23
Enthusiasm	68.98	80.00	26.34	-0.74
Assertiveness	83.33	89.00	16.71	-1.67
Agreeableness	44.74	46.00	26.22	0.04
Compassion	59.41	63.00	27.42	-0.57
Politeness	31.23	24.00	27.05	0.75
Conscientiousness	62.64	69.50	23.94	-0.46
Industriousness	70.45	78.00	23.70	1.11
Orderliness	50.99	53.00	28.41	-0.03
Neuroticism	30.41	21.00	22.16	0.67
Withdrawal	20.51	14.00	20.37	1.38
Volatility	46.63	35.00	24.98	0.32
Openness for New Experience	54.29	54.00	30.18	-0.18
Intellect	64.49	75.00	27.96	-0.64
Openness	42.09	41.00	29.60	0.22
Age	42.61	43.00	9.64	-0.01
Business success	4.07	4.17	0.63	-0.46
Financial performance	4.25	4.33	0.69	-0.71
Growth performance	3.89	4.00	0.80	-0.86
Transformational leadership	3.89	3.95	0.47	-0.33

Note: m = mean; md = Median; sd = standard deviation.

Table 2
Personality scores of the one sample t-test

	<i>t</i>	<i>p</i>	<i>d</i>	α
Extraversion	14.17	< .001	1.52	.91
Enthusiasm	6.68	< .001	0.72	.92
Assertiveness	18.49	< .001	1.99	.90
Agreeableness	-1.86	.067	-0.20	.84
Compassion	3.18	.002	0.34	.82
Politeness	-6.43	< .001	-0.69	.81
Conscientiousness	4.90	< .001	0.53	.82
Industriousness	8.00	< .001	0.86	.86
Orderliness	0.32	.748	0.04	.71
Neuroticism	-8.10	< .001	-0.88	.88
Withdrawal	-13.42	< .001	-1.45	.86
Volatility	-1.25	.214	-0.14	.85
Openness for New Experience	1.319	.191	0.14	.87
Intellect	4.806	< .001	0.52	.79
Openness	-2.164	.033	-0.23	.85

Note: *t* = t-value; *p* = p value; *d* = effect size; α = cronbach's alpha

Table 3
Linear regression effects for personality on business performance

	<i>Standardized coefficients B</i>	<i>t</i>	<i>p</i>
Enthusiasm	-0.19	-1.45	.153
Assertiveness	0.16	1.25	.216
Compassion	0.17	1.29	.201
Politeness	-0.17	-1.26	.212
Industriousness	0.36	3.01	.004
Orderliness	0.10	0.84	.405
Withdrawal	0.01	0.06	.949
Volatility	0.14	1.11	.271
Intellect	0.09	0.65	.515
Openness	-0.09	-0.76	.448

Table 4

Interaction effects of the moderation between personality and business performance

	<i>b</i>	<i>t</i>	<i>se</i>	<i>p</i>
Enthusiasm	0.01	0.72	0.02	.473
Assertiveness	-0.02	-0.60	0.03	.548
Compassion	-0.02	-1.36	0.02	.179
Politeness	-0.01	-0.54	0.02	.594
Industriousness	-0.04	3.01	0.02	.024
Orderliness inter.	-0.02	-1.16	0.02	.248
Withdrawal	0.01	0.14	0.02	.886
Volatility	0.01	0.69	0.02	.492
Intellect	-0.01	-0.88	0.02	.383
Openness	-0.01	-0.31	0.012	.908

Note: *b* = standardized coefficients; *se* = standard error

Table 5

Linear regression effects for personality and transformational leadership

	<i>b</i>	<i>t</i>	<i>p</i>
Enthusiasm	0,06	0.44	.663
Assertiveness	-0,04	-0.34	.734
Compassion	0.08	0.57	.570
Politeness	0.05	0.38	.704
Industriousness	0.05	0.38	.703
Orderliness	-0.27	-2.33	.022
Withdrawal	-0.09	-0.73	.468
Volatility	0.01	0.09	.932
Intellect	0.34	2.43	.018
Openness	0.02	0.16	.876

Appendix C: Information letter & consent form

Information letter

This study investigates entrepreneurial activity and personality. This means in order to participate, you should consider yourself as an entrepreneur.

This study is conducted by a student on a psychological topic under the supervision of a teacher within the master psychology programme of the Radboud University.

In the study you will receive some instructions and some questionnaires, which take in total 25 to 30 minutes. You have the chance to use your existing Deep Ocean scores if you want to. In this case, it only takes 10-15 min to fill out the questionnaires.

During the study, you can quit participating at any moment in time, without you having to explain why you want to quit. Quitting during the study has no consequences whatsoever.

The information that I collect will be anonymously processed. This means that later on the results cannot be traced back to you. The consequence of this is that I cannot inform you about your personal results after the study has been completed.

However, I can inform you about the results of the study. If you wish to be informed about the results of this study, then please let me know in the end.

Did this study unintentionally prompted unpleasant feelings, thoughts or insecurities for you? Then, please contact the study advisor Ruddy Faure with this email: ruddy.faure@ru.nl

Now, I ask you to think about whether you want to participate in our study.

You are of course free to decide that you do not want to participate in this study. In that case, I thank you for the time. If you indicate that you want to participate in this study, I will ask you to sign an informed consent form. By signing this form, you indicate that you are sufficiently informed about the study and that you want to participate in the study and that you voluntarily do so.

Kind regards,
Leon Sickenberg

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Consent form

Participation in a study for the Master Project:
Personality and entrepreneurship

This part should be filled out by the participant prior to the start of the study.

- I was satisfactorily informed about the study and I have read and understood the written information on the study.
- I was informed that the current study is conducted by a Psychology student as part of the Master Project.
- I have had the opportunity to ask questions regarding the study and my questions have been answered satisfactorily
- I was allowed sufficient time to consider whether to give my consent.
- I participate in my own free will.
- I am 18 years old or older.

I understand that

- I have the right to withdraw my consent at any time without having to give a reason and that withdrawing my participation has no further consequences. [L]
[SEP]
- my information will be processed anonymously.
- the outcomes of the study cannot be considered as a diagnostic test.
- I will not be informed about my individual results.

- I hereby consent to participate in the study referred to above.