



ADHD-like behaviour and entrepreneurial intentions – A follow up study

Many entrepreneurs we see of the present and the past, have been subject to psychiatric symptoms. One of these symptoms, has recently attracted researchers' attention and is known as Attention Deficit Hyperactivity Disorder (ADHD), a developmental disorder, associated with ample energy, in the form of severe and persistent hyperactivity and distractibility. Despite been categorized as a disorder, this condition is associated with traits that are of crucial importance for the success of a prospective entrepreneur, such as the ability to identify and take risks. In line with the Person-Environment fit theory, this study examines whether individuals exhibiting ADHD-like behaviour, are more likely to become entrepreneurs, compared to their peers, by using a dataset of 9,907 students of higher education. Despite the initial expectations, the

analysis did not provide significant results on the relationship between ADHD and entrepreneurial intentions. On the other hand, the study was able to verify that individuals exhibiting ADHD-like behaviour are more likely to undertake risky decisions and that individuals exhibiting risk taking behaviour are more likely to become entrepreneurs. As a follow up study of Verheul et al. (2015), this study focuses on the importance to indirectly measure conditions that are perceived as disadvantageous in our society, in order to increase the response rate, and be able to produce more accurate results.

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ENTREPRENEURSHIP AND STRATEGY ECONOMICS

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INTRODUCTION

When an entrepreneur makes the decision to start a business, the high uncertainty level of such an action is translated into a risky decision (Eckhardt & Shane, 2003; Kahneman & Tversky, 1979), compared to the decision of pursuing an occupational choice within wage employment. It is considered to be a risky decision, because of two reasons. First of all, the entrepreneur endangers a number of elements such as obtained capital, personal time, alternative foregone opportunities and personal reputation. Secondly, the entrepreneur or else self-employed, will only profit if the undertaken action results in revenues that exceed the costs related to the entrepreneurial decision, something that cannot be known and predicted ahead of time (Kihlstrom & Laffont, 1979).

Regardless of these risky activities and the uncertainty involved, many people decide to follow this path of uncertainty, and eventually many of them end up accomplishing their targets and visions, while there is still another percentage that fails to succeed. However, the list of successful entrepreneurs, who decided to chase the unknown, is vast and expanding and among others includes Henry Ford, founder of Ford Motors Company, Ingvar Kamprad, founder of IKEA, Sir Richard Branson founder of Virgin Airlines and many other popular and less popular personalities (Dunlop, 2009; Halfpenny & Halfpenny, 2012). What is interesting is that these successful personalities share a common characteristic. Except for being successful and rich, they were all diagnosed with a condition that is currently treated as a disadvantage, because it leads to a number of deficiencies. These deficiencies are responsible for difficulties in conforming and fitting in with co-workers, substandard work performance, short attention span, lack of persistence when facing routine tasks, lack of memory and limited decision making capacity. This condition is known as ADHD or else Attention Deficit Hyperactivity Disorder. But is this really a

disorder with solely negative implications, or can it be considered as an asset in certain contexts, for those who possess it?

According to American Psychiatric Association (2013), ADHD is a developmental disorder, associated with ample energy, in the form of severe and persistent hyperactivity and distractibility, that is essentially driven by behavioural “disinhibition” or a lack of restraint (Barkley, 1997; Meraldi, Lukas, Fry, Bartek, & Nigg, 1999). These dysfunctional traits lead to underperformance, compared to individuals who do not experience the ADHD condition and some examples of the associated negative consequences are academic underperformance, inability to maintain focus, act on impulse and several other effects (Nicolaou, Shane, Adi, Mangino, & Harris, 2011; Pratt, Cullen, Blevins, Daigle & Unnever, 2002). In addition, studies provide consistent evidences proving the neurobiological origin and the genetical development of the disorder (Cortese, 2012; Faraone et al., 2005; Mathis et al., 2014; Thapar, Holmes, Poulton & Harrington, 1999). At a global scale, the prevalence of ADHD for children is estimated at approximately 5% and for adults at approximately 2.5% (Polanczyk, de Lima, Horta, Biederman & Rohde, 2007; Simon, Czobor, Bálint, Mészáros & Bitter, 2009).

Regardless the fact that ADHD is treated as a condition that has only negative effects, there is limited but still rising number of studies, suggesting that the traits associated with ADHD can stimulate entrepreneurial behaviour and lead to success. Using the Person-Environment fit theory (Cable & Edwards, 2004; Dawda & Martin, 2001; Dawis & Lofquist, 1984; Edwards, Cable, Williamson, Lambert & Shipp, 2006; Kristof-Brown, Zimmerman & Johnson, 2005), which explains to what degree a person and their environment fit together, and how much stress comes along with the poor fit (Edwards, Caplan & Van Harrison, 1998), this study wants to examine the likelihood of person-entrepreneurship career fit, for these individuals who have been diagnosed

with the ADHD condition. In general, according to the Person-Environment fit theory, it is expected that certain personalities fit better to certain jobs. In the case of ADHD, literature shows that the strengths associated to this condition are risk taking, creativity, communication and delegation skills (Baumbach & Mancuso, 1975; Halfpenny & Halfpenny, 2012; Lockwood, Teasley, Carland; & Carland, 2006; Mahan, 2012; Timmons, 1978; Verheul et al., 2015)¹. Because these strengths fit well with the challenges an entrepreneur faces, individuals experiencing ADHD-like behaviour might be more suited to be involved in an entrepreneurial environment.

In order to further back up this statement, risk taking propensity is also investigated, as a possible mediator on the relationship between ADHD and entrepreneurship. Literature suggests that individuals experiencing ADHD are more likely to have entrepreneurial intentions, and that these intentions are positively mediated by risk propensity (Delmar & Davidsson, 2000; Kahneman & Tversky, 1979; Verheul et al., 2015).

Based on Verheul et al. (2015), which uses a dataset from 2011, consisting of 10,104 observations, this research intends replicate the above mentioned study, with the use of a consecutive dataset from 2013, consisting of 9,907 observations. The objective is to determine the generalizability of Verheul et al. (2015) findings. The practical and scientific importance of this research is that, as a follow up study it can verify the conducted research and assure that the results are reliable and valid. Similar approaches have not yet been attempted, in this particular field.

¹ Genetic testing on children with ADHD, proved that dyslexia and ADHD share the same genetic background. Both conditions also have been found to share some of the same chromosome differences making the two conditions more likely to accompany each other. In other words if a child is diagnosed with either ADHD or dyslexia there is a very good chance the child has both conditions and should be tested for the condition that has not already been diagnosed (Mahan, 2012)

Such an attempt will provide several contributions in the research on entrepreneurship and ADHD. The first contribution is that it will be a consecutive large scale quantitative study which examines the possible relationship between behaviours associated with ADHD and entrepreneurial intentions. Based on the current literature, most of the conducted research on the topic relies on small scale studies, with small datasets. Nevertheless, these small scale quantitative studies provide suggestions that ADHD might be the general cause influencing the entrepreneurial behaviour (Kirby & Honeywood, 2007; Logan, 2009). In addition, the results of these studies have not yet been verified by a follow up study, in order to verify the evidence. Being able to establish that ADHD-like behaviour predicts entrepreneurial intentions, it is possible to contribute to the existing literature on determinants of entrepreneurial intentions, which relies only on the psychological perspectives and lacks the psychiatric symptom perspective (Douglas & Fitzsimmons, 2013; Ilouga, Mouloungni & Sahut, 2014).

Secondly, the conducted research on ADHD-like behaviour and the working environment has so far solely focused on large and heavily organized and regulated enterprises (Kessler, Lane, Stang & Van Brunt, 2009), while other researchers point the literature gap concerning “person-organization fit in the context of a new venture formation” (Markman & Baron, 2003). By applying the person-environment fit theory, we are able to examine and verify the fit between an individual experiencing the ADHD condition and a career within an entrepreneurial environment, and the findings of Verheul et al. (2015).

In addition, since literature points that individuals who exhibit ADHD-like behaviour face significant difficulties choosing an appropriate career path and that when they do they are likely to perform (substantially) below average, compared to their non-ADHD colleagues (Nadeau, 2005; Painter, Prevatt & Welles, 2008). As a result, this research can help in raising awareness,

regarding the career prospects for the ADHD individuals and help them realize which decisions are more likely to generate higher utility, according to their preferences.

The rest of the study is crafted as follows. In the next section, which will be the literature review, the study will extensively elaborate on the Person-Environment fit theory, along with the entrepreneurial intentions. Furthermore, details will be provided on the implications of ADHD on the working environment, and then evidence will be presented on how risk is mediating the relationship between ADHD-like behaviour and entrepreneurial intentions. Following the literature review, in the method and data section, the sample, variables and analysis will be presented and the study will conclude with the results interpretation, comparison to Verheul et al. (2015), and then conclusions will be drawn, along with the study's limitations.

LITERATURE REVIEW & HYPOTHESES

Entrepreneurship

It is commonly found within the literature that entrepreneurship is subject to a variety of different, un-unified definitions, causing there to be little clarity about what entrepreneurship actually is and how it should be interpreted (Bull & Willard, 1993; Bygrave & Hofer, 1991; Cunningham & Lischeron, 1991; Gartner, 1989; Gartner, 1990; Gedeon, 2010; Mitton, 1989; Sexton & Smilor, 1986; Shane & Venkataraman, 2000). According to historical references, entrepreneurship, was directly associated to the nature and sources of profit, which was generated when the intrinsic cost of a good was lower than the market value of the good (Smith, 1776). As a result, entrepreneurship was associated to the activities that generated these residual profits (Glancey & McQuaid, 2000; Mises, 1949; Moschandreas, 1997; Schumpeter, 1934; Schumpeter, 1961). Consequently two alternative theories were developed on how entrepreneurs were able to achieve this. The first theory is referred as the risk theory of profit

and the second was the dynamic theory of profit (Knigh, 1964), and they are the reason for the definition inconsistency of entrepreneurship. Regardless the variety of definitions, entrepreneurship is most commonly thought as the process of new business creation (Gartner, 1990), and this definition is also adopted by the largest cross-national institution that assesses the world entrepreneurship performance, the Global Entrepreneurship Monitor or else GEM.

One way to understand entrepreneurship, is by the perspective of the occupational notion and behavioural notion (Sternberg & Wennekers, 2005). The occupational notion of entrepreneurship, suggests that somebody is an entrepreneur because that person owns and manages a business for his own account and risk. On the other hand, the behavioural notion of entrepreneurship, suggests that somebody is an entrepreneur because he shows entrepreneurial behaviour, in the sense of seizing an economic opportunity. The difference between occupational and behavioural notion, is owning a business. Somebody who is an entrepreneur in the behavioural sense, does not have to own a business entity. On the contrary, this person could be a normal employee, who exhibits entrepreneurial behaviour. The problem with an entrepreneur in the occupational notion, is that he is mainly just a business owner. This is an easy measure for entrepreneurship, but not a very interesting or new one for research. Therefore, the focus of this study is mainly on the behavioural notion of entrepreneurship.

Some of the most influential ideas about defining entrepreneurship in the behavioural notion, came from past economic thinkers like Kirzner, Cooper, Knight and Schumpeter. An entrepreneur is somebody that can deal with uncertainty (Knight, 1921), is confident and thus willing to undertake risky decisions (Cooper, Woo, & Dunkelberg, 1988), is alert to opportunities (Kirzner, 1973) and is an innovator (Schumpeter, 1961). These definitions of entrepreneurship are

in line with the behavioural notion or traits of an entrepreneur. Therefore, a person showing these traits would be more likely to pursue an entrepreneurial career.

Occupational Choice theory

But what are the driving forces that influence the decision of becoming an entrepreneur? In order to comprehend the decision behind the occupational choice of entrepreneurship, this study will rely on two theories. The occupational choice theory and the Person-Environment fit theory. There is a number of studies examining pecuniary and non-pecuniary factors, which might influence a person's preference for employment or entrepreneurship (Parker, 2009). A prevalent opinion in the literature, is that individuals become entrepreneurs, because they can receive higher income if employed in entrepreneurship, compared to working as paid-employees (Parker, 2009; Poschke, 2013). Then again, there are studies arguing that being self-employed² does not imply higher earnings, compared to paid employment. In fact, it appears that earnings from self-employment are often lower than the alternative employment wage (Hamilton, 2000). Nevertheless, people enter and remain to entrepreneurship due to the non-pecuniary advantages, such as autonomy or independence, which self-employment entails (Benz & Frey, 2008; Benz, 2009).

There are also research results, showing that a person's choice depends on both monetary and nonmonetary factors. For example, an individual's independence propensity, can increase the probability of wanting to start a business, but this alone is not sufficient. The final choice depends on the total utility derived from the current occupational situation. For example,

² Based on Blanchflower and Oswald (1990, 1998), who noted that "The simplest kind of entrepreneurship is self-employment", this research study uses the definitions "entrepreneurship" and "self-employment" in the same way, with the same meaning.

if the individual is a wage employee with entrepreneurial skills and his employer improves the working conditions and provides incentives that compensate the expected utility from self-employment, it is possible that the individual will prefer the wage employment over self-employment (Douglas & Shepherd, 2002).

Person-Environment fit theory

Another theory that relates to the occupational choice theory and useful for this study, is the person environment fit theory which suggests that certain people fit certain jobs better. More specifically, the person-environment fit theory tries to explain to what degree a person and his environment fit together, and how much stress comes along with a poor fit (Edwards, Caplan, & Van Harrison, 1998). This stress could be constructed by for example, being in an environment with stressful life events (Rabkin & Struening, 1976), from daily hassles (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982), job demands and decision latitude (Karasek & Theorell, 1990), role overload or under load (French & Caplan, 1972) and chronic stressors such as role conflict ambiguity (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Jackson & Schuler, 1985). In addition, Harrison (1978, 1985) states that stress arises when the environment does not provide adequate supplies to meet person's needs, or the abilities of the person fall short of demand that are prerequisite to receiving supplies.

In the case of misfit there are two possible set of outcomes that can be expected. The first is the production of psychological symptoms that negatively affect the normal functionality. These symptoms could be dissatisfaction, anxiety or complains (Harrison, 1978; Kaplan, Landa, Weinhold, & Shenker, 1984). On the other hand, the alternative outcome could be the engagement in efforts in order to resolve the misfit. These efforts could entail the attendance of additional training or negotiations, in order to resolve the balance.

Therefore, this theory states that the utility of a person is at the highest point, when there is a good fit between the person and his environment - the occupation reflects individual's preferences to a high degree. In order to better comprehend the entrepreneurial intentions, it is essential that both organizational or else environmental and individual factors are taken into account, in order to determine the satisfaction level (Cable & Edwards, 2004; Kristof-Brown, Zimmerman, & Johnson, 2005; Kristof-Brown & Jansen, 2007; Kristof, 1996; Lee, Wong, Der Foo, & Leung, 2011; Lewin, 1951; Oh et al. 2014). If this environment within the current occupational choice is supportive, provides incentives such as opportunities and rewards (Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001; Niehoff, Enz, & Grover, 1990), then much of the employee's stress is relieved and consequently leads to an increased levels job satisfaction (Lee, Wong, Der Foo, & Leung, 2011). Lack of these incentives, could lead to a lower organizational support and to a further extent, significant reduce satisfaction (Coff, 1997; Mak & Sockel, 2001). In combination with the individual factors, if the overall job satisfaction is not as expected, then this situation could trigger the search for an alternative career, possibly an entrepreneurial career (Brockhaus, 1980; Eisenhauer, 1995; Watson, Hogarth-Scott, & Wilson, 1998).

ADHD, diagnosis and implications

Attention-deficit/hyperactivity disorder (ADHD) is a developmental disorder, characterized by a pattern of severe inattention–disorganization and/or hyperactivity–impulsivity beyond that observed in individuals at a comparable level of development (American Psychiatric Association, 2000). According to the literature, the average estimated prevalence globally is estimated at 5% for children and 2.5% for adults (Barkley & Murphy, 1998; Faraone et al., 1993; Jaffe, 1995; Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007; Simon, Czobor, Balint, Meszaros, & Bitter, 2009). Though, scientist suggest that this is not a valid prediction, since they

speculate that many people have ADHD without being aware of it or without having an official diagnosis. The finding, therefore, implies that the overall performance cost of ADHD may be substantially higher (Bozionelos & Bozionelos, 2013).

Although scientists are not sure what causes ADHD, studies refer to the genes significant role. Like many other illnesses, ADHD probably results from a variety of different elements. Except for the genetic factors, researchers are also investigating to what extent other environmental factors, such as brain injuries or social environment, affect the condition of ADHD. In addition to these challenges, the evaluation procedure of ADHD symptoms need to be updated, since the current evaluation on adults, is based on criteria developed for children (Adler, Shaw, Sitt, Maya, & Morrill, 2009).

The psychological difficulties associated with ADHD are not easily discernible or as apparent as the overt symptoms of inattention, impulsivity, and distractibility are (Adler & Chua, 2002; Barkley, Murphy, & Fischer, 2008; Gallagher & Blader, 2001; Ratey, Hallowell, & Miller, 1997). Deficiencies in psychological functioning often lead to self-incrimination and despair and range from shyness, caused by cognitive and emotional over arousal, to overt hostility (Hallowell & Ratey, 2011). These impairments can interfere with the adult's ability to succeed in relationship development (Anastopoulos et al. 2011; Barkley & Fischer, 2010; Barkley & Murphy, 2010), to perform satisfactorily in occupational environment, or to achieve a positive self-image (Hallowell & Ratey, 2011; Hechtman, 1991). In addition, literature describes other sets of deficiencies, which include difficulties in planning, sequencing, coordination and memory (Everatt et al., 1997; McLoughlin, Fitzgibbon & Young 1994; Plaza & Guitton, 1997; Wolff, Michel, Ovrut, & Drake, 1990). The core issue for these deficiencies relies in the individual's inability to remain focused, pay attention, and control their behaviour and hyperactivity (over-activity) (Swanson et al., 1998).

ADHD and working environment

Although literature points these deficiencies and suggests the suboptimal job performance for individuals exhibiting ADHD-like behaviour, systematic evidence linking ADHD to lower job performance has been lacking so far. Likewise, we know little about the mechanisms that could explain why ADHD influences employees' good performance. Filling this gap, was the goal of a recent study by Jonathan Halbesleben (University of Alabama), Anthony Wheeler (University of Rhode Island), and Kristen Shanine (University of Alabama). These researchers, focused on the difficulties encountered by individuals exhibiting ADHD-like behaviour and concluded that ADHD reduces people's capacity to concentrate their resources in performing job-related activities, because their energy is directed towards job-irrelevant events that seem to require immediate attention. This inevitably leads to lower job performance (Halbesleben, Wheeler, & Shanine, 2013) and this attention inability is based on their lower inhibitory control (Barkley, 1997; Clark et al. 2007).

Other studies have found that up to 80 % of people with ADHD have difficulties with executive functions (Attention Deficit Hyperactivity Disorder (ADHD), 2008; Willcutt, Doyle, Nigg, Faraone, & Pennington, 2005). This includes problems with organization, causing occupational performance issues in several different types of environments, such school and work. In addition, literature points that ADHD is associated with substantially higher rates of job termination and reduced performance and productivity (Barkley, Fischer, Smallish, & Fletcher, 2002; 2006) and points that when adults with ADHD assume full-time jobs, their deficits are often problematic (Wender, 1998), and they perform poorly compared to their non-ADHD colleagues (Barkley & Murphy, 1998; Dawis, 1996). Employers describe adults with ADHD as less adequate at fulfilling work demands, less likely to work independently and to complete tasks, and less likely to get along

with supervisors (Murphy & Barkley, 1996). They are promoted less often, fired at a higher rate, and are less likely to rise into senior management or positions of authority. In general, adults with ADHD seem to have poorer work record than adults without ADHD (Faigel, 1995).

This overall situation can lead to two possible set of outcomes. The first is that the negative public belief that associates individuals experiencing ADHD-like behaviour with laziness, aggressiveness and in general unpleasant situations, (Canu, Newman, Morrow, & Pope, 2008; Martin, Pescosolido, Olafsdottir & McLeod, 2007; Norvilitis, Scime, & Lee, 2002; Pescosolido, Fettes, Martin, Monahan & McLeod, 2007; Walker, Coleman, Lee, Squire, & Friesen, 2008). Halbesleben and his colleagues do well to warn against automatically categorizing those with ADHD as low performers, who must be subjected to “corrective” training or shown the door. Indeed, certain symptoms of ADHD—such as impulsiveness or sensitivity to environmental stimuli—may actually offer performance advantages in different contexts compared to the heavily organised and regulated organizations. Such a different context could be the entrepreneurial environment or in professions where fast decision making or creativity is required (Halbesleben, Wheeler, & Shanine, 2013).

On the other hand, the alternative outcome is that these individuals could follow an occupational choice that they are passionate about, where they can work independently and use their high rates of creativity and originality in accomplishing tasks (Abraham, Windmann, Siefen, Daum, & Güntürkün, 2006; American Psychiatric Association, 2000; Carson, Peterson, & Higgins, 2003; Shaw & Brown, 1991; White & Shah, 2011), while they can avoid reporting to hierarchy and they can complete these tasks at their own pace. All these elements represent freedom and autonomy, which according to research are the main driving reason for a decision for self-

employment over wage employment (Carter, Gartner, Shaver, & Gatewood, 2003; Cassar, 2007; Douglas & Shepherd, 2002; Kolvereid, 1996; Shane, Kolvereid, & Westhead, 1991).

Except for freedom and autonomy, there is another substantial element playing a significant role in succeeding as an entrepreneur and is also apparent in people exhibiting ADHD-like behaviour. Confronting the ADHD condition since young age, these individuals learnt to deal with their “disadvantage” and develop coping strategies, in order to succeed in an early competitive environment like school. Those who succeeded, were able to develop resilience to disappointment, and the ability to constantly assess situations and adapt accordingly (Burden, 2008; Young, 2005). This is a fundamental ability in the field of entrepreneurship, due to the fact that entrepreneurs are active in a very volatile, uncertain and with multiple limitations environment. Being able to exploit such an ability effectively (resilience to disappointments and adaptability) can lead to better decision making and thus reduce the involved risk. Summing up and according to the literature, it becomes possible to support the statement that a career in entrepreneurship would be a good fit for people exhibiting ADHD-like behaviour, since these individuals would be able to derive higher utility from such an occupational choice. Based on these arguments, it is expected that the ADHD-like behaviour individuals are more likely to follow a career in entrepreneurship compared to their counterparts, and therefore the following hypothesis is formed:

H1: *ADHD-like behaviour is positively related to entrepreneurial intentions.*

The relationship between ADHD and risk taking propensity

Research has associated ADHD with risk taking propensity (Bechara, Damasio, Tranel, & Damasio, 1997; DiScala, Lescohier, Barthel, & Li, 1998; Jensen, Shervette, Xenakis, & Bain, 1988; Mäntylä, Still, Gullberg, & Del Missier, 2010; Toplak, Jain, & Tannock, 2005), which is the stable

tendency to choose options with a lower probability of success, but greater rewards (Abad, Sánchez-Iglesias, & de Tella, 2011). ADHD individuals have to confront problems and overcome obstacles from an early stage of their lives. As a result, they are more prone to develop alternative ways regarding failure and they might have to perceive more in order to gain the desired knowledge (Everatt, Steffert, & Smythe, 1999; Halfpenny & Halfpenny, 2012; Logan, 2009). Therefore, this different perception and attitude towards difficult situations and failure, is what makes these individuals less risk-averse when facing uncertainty (Halfpenny & Halfpenny, 2012; Knight, 1921). In order to identify and measure the relationship between ADHD and risk propensity, studies used different methods such as the Iowa Gambling Task (IGT) and the Balloon Analogue Risk Task (BART) (Bechara, Damasio, Damasio, & Anderson, 1994; Bechara, Damasio, Tranel, & Damasio, 1997; Maia, & McClelland, 2005). According to the IGT, individuals have to select cards from four different deck of cards, which are divided into two different decks, one good and one bad. The good deck of cards is associated with small level of gain but higher probability of overall positive value in the long term. On the contrary, the so called bad deck of cards, is associated with large level of gains but higher probability of negative overall value in the long term. Based on this experiment, individuals who did not exhibit any kind of disorder would select cards from the good deck, while individuals with disorders preferred the bad deck of cards.

In addition to the IGT, the BART is also another computerized measure of risk taking behaviour and it models real-world risk behaviour through the conceptual frame of balancing the potential for reward versus loss (Lejuez, n.d.). Through this method, it has been measured that individuals exhibiting ADHD-like behaviour, have a higher risk taking propensity compared to the non-ADHD individuals (Mäntylä et al., 2012) and such results are also suggested by additional research conducted on this field (Faigel, Sznajderman, Tishby, Turel, & Pinus, 1995; Olazagasti et al., 2013; Shaw and Brown, 1999; Shaw & Giambra, 1993). Furthermore, Damasio (1996)

formulated the Somatic Marker Hypothesis (SMH), which basically says that when individuals face tests like the IGT, they quickly develop somatic markers based on the results of the test. A positive outcome will lead to positive reactions, while a negative outcome is related with negative reactions. Based on the SMH, it is observed that individuals exhibiting ADHD-like behavior tend to develop weaker somatic markers, and thus they are more likely to be less risk averse (Bechara, Damasio, Tranel, & Damasio, 1997; Mäntylä, Still, Gullberg, & Del Missier, 2010; Toplak, Jain, & Tannock, 2005), compared to their peers. Thus, the following hypothesis is formulated:

H2: *ADHD-like behavior is positively related to risk taking propensity.*

The relationship between entrepreneurship and risk taking propensity

Past and recent literature, has been interested in finding the driving powers that lie behind an individual's occupational choice and what the connection is with risk taking propensity. Kihlstrom and Laffont (1979), noted the different risk attitude levels, making a significant contribution to the occupational choice models. According to them, only the least risk-averse individuals become entrepreneurs, since only they aspire to exploit opportunities that are available to everyone. In addition, their ability to succeed in uncertainty, relies on their entrepreneurial abilities. Research on this notion has provided both significant (Franks & Frederick, 2013; Lévesque, Douglas, & Shepherd, 2002) and insignificant results on the relationship between entrepreneurship and risk taking propensity (Brockhaus, 1980; Brachert, Hyll & Titze, 2014). For this reason the following hypothesis is formulated:

H3: *Risk taking propensity is positively related to entrepreneurial intentions.*

The mediating role of risk taking propensity

Based on the fact that ADHD-like behaviour individuals are more prone to pursue riskier occupational choices, such as self-employment, and based on the fact that entrepreneurship involves high levels of risk and uncertainty, it can be expected, that risk taking propensity can mediate the relationship between ADHD-like behaviour and the occupational choice of entrepreneurship. In fact, according to Verheul et al. (2013), the examined relationship is significantly mediated by risk taking propensity, and thus this research intention is to verify the existence of such relation, under a new dataset. Thus, the following hypothesis is formulated:

H4: *The relationship between ADHD-like behaviour and entrepreneurial intentions is mediated by risk taking propensity*

METHOD

Data Collection

In order to test the set hypotheses, the primary source of data used for the analysis is from the “Global University Entrepreneurial Spirit Students’ Survey” (GUESSS). GUESSS is an international research project in the context of Entrepreneurship, which is conducted every two years. Its purpose is to grasp the entrepreneurial intent and activity of students, using geographical and temporal comparison (GUESSS, 2015). The project was founded in 2003, by the Swiss Research Institute of Small Business and Entrepreneurship of St. Gallen University (KMU-HSG), and since then 34 countries in total have joined the research project, with the Netherlands joining in 2011/2012.

In the latest GUESSS report, 34 countries participated and more than 1.9 million students from 759 universities were approached. For the Netherlands, the GUESSS National Team,

distributed a questionnaire to 28 educational institutions, including Universities (WO)³ and Universities of Applied Sciences (HBO)⁴, from October 2013 until March 2014. During this period, the majority of the participating educational institutions sent the link to the survey directly to their students, while others placed the link on their intranet page or published it in a newsletter. To further stimulate the effort of collecting responses, a reminder was sent out two weeks after the initial email, and two Mini iPads were awarded after lottery to two students who completed the survey.

In total 264,124 students were approached, and 9,907 students successfully completed the questionnaire, resulting in a response rate of 3.75%. In order to avoid biased results by attracting only students who are or intend to become self-employed, the questionnaire was introduced as a research on the future career path, including self-employment among a variety of choices.

Measures

Dependent variable

In order to measure the entrepreneurial intentions, participants replied in the following question; “Which career path do you intend to pursue right after completion of your studies, and which career path 5 years after completion of studies?” The following set of possible responses, that best depicted their future occupational preferences were provided; i) an employee in a small firm (1-49 employees); ii) an employee in a medium-sized firm (50-249 employees); iii) an

³ Delft University, Eindhoven University of Technology, Erasmus University Rotterdam, Maastricht University, Leiden University, Tilburg University, University of Groningen, University of Twente and Utrecht University

⁴ Fontys University of Applied Sciences, The Hague University of Applied Sciences, Hanze University of Applied Sciences, INHolland University of Applied Sciences, Rotterdam University of Applied Sciences, NHTV Breda University of Applied Sciences, University of Applied Sciences Leiden, University of Applied Sciences Utrecht, Albeda

employee in a large firm (250 or more employees); iv) an employee in a non-profit organization; v) an employee in Academia (academic career path); vi) an employee in public service; vii) a founder (entrepreneur) working in my own firm; iix) a successor in my parents'/family's firm; ix) a successor in a firm currently not controlled by my family; x) Other/do not know yet. A binary variable is created which takes the value 1 when the response vii (entrepreneur) is selected, and 0 otherwise.

Independent variable

The main independent variable in this analysis is a measure for ADHD. The following question "Have you ever been diagnosed with ADHD?" was included in the questionnaire, and respondents could identify their status by replying with a "Yes" or "No". As a result, the ADHD variable, is a binary dummy which takes on the value 1 if the respondent is positively diagnosed with ADHD, and 0 in any other case. As a duplication study, there is a major difference with the original study of Verheul et al. (2015), where the level of ADHD-like behaviour was measured based on the six-item ADHD Self-Report Screener (ASRS-6), developed by the World Health Organizations (WHO). The ASRS-6 provides an indirect way to measure ADHD, based on the individuals' exhibiting symptoms, and consists of the following six questions:

- 1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?*
- 2. How often do you have difficulty getting things in order when you have to do a task that requires organization?*
- 3. How often do you have problems remembering appointments or obligations?*
- 4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?*
- 5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?*

6. *How often do you feel overly active and compelled to do things, like you were driven by a motor?*

Responses rated on a scale from 1 to 7, where 1 represented the statement “Never”, while 7 represented the statement “Very often”. By calculating the average score of the above mentioned responses, Verheul et al. (2015) measured the level of ADHD-like behaviour. In contrast with Verheul et al. (2015), the ASRS-6 was not included in the dataset used for the current analysis and this is why this analysis uses only the diagnosis variable (“Have you ever been diagnosed with ADHD?”) in order to measure ADHD.

Mediator

In order to efficiently measure the level of risk taking propensity, this study is using a single item scale, which was introduced by Dohmen et al. (2011) and was also the mediator at Verheul et al. (2015) research paper. Participants were directly asked to assess their willingness to take risks, through the following statement; “I am generally a person who is fully prepared to take risks”. Responses rated on a scale from 1 to 7, where 1 represents “strong disagreement” and 7 represents “strong agreement”. By computing the average of the responses a continuous variable is created.

Control variables

Next to these main variables the study uses a number of control variables that are essential to the analysis, in order to further specify the examined relationship and come to much more accurate conclusions. In line with previous research on entrepreneurship, this study controls for age (Birley, 2002; Matthews & Moser, 1996; Verheul et al., 2015), gender (Carter, Gartner, Shaver, & Gatewood, 2003; Verheul et al., 2015), marital status (single) (Amit, Muller, & Cockburn, 1995; Verheul et al., 2015) and nationality (Bosma, Acs, Autio, Coduras, & Levie, 2008; Verheul et

al., 2015), as these general demographic variables can have a possible influence on the likelihood of becoming an entrepreneur. In addition, study level and study field are also included, since studies have shown that education influences the likelihood of becoming an entrepreneur (Laspita, Breugst, Heblich, & Patzelt, 2012; Robinson & Sexton, 1994; Stewart, Watson, Carland, & Carland, 1999; Verheul et al., 2015; Zellweger, Sieger, & Halter, 2011).

Furthermore, the study controls for the 19 educational institutions participating in the research, which provided more than 20 responses, and the self-reported study performance, since students who exhibit ADHD-like behaviour may be subject to inferior performance and thus less occupational possibilities may be available, compared to their peers. The study also controls for the existence of self-employed parents. This dummy variable takes on the value 1 when the respondents' parents are actively involved in entrepreneurship (separately or together), and it takes on the value 0 otherwise. The possibility of growing next to an entrepreneur can increase the probability of perceiving entrepreneurship as an attractive alternative to wage employment (Laspita, Breugst, Heblich, & Patzelt, 2012; Sullivan, 2000; Verheul et al., 2015; Zellweger, Sieger, & Halter, 2011).

The study also controls for the attitude toward entrepreneurship, because a positive entrepreneurial attitude, increases the probability of involving with entrepreneurship, and for additional social norms such as the perception of close family, friends and fellow student. Last but not least, entrepreneurs tend to be less risk averse (Kihlstrom & Laffont, 1979). Therefore, if a person would have such an attitude towards risk, it would increase the likelihood of him preferring an entrepreneurial career. Thus the study controls for the risk perception of starting own business.

RESULTS

Descriptive and correlation analysis

The sample consists of 9,907 students from which 7,930 (80.04%) want to follow a career as employees, while 474 (4.78%) are interested in pursuing an entrepreneurial career (see Table 1). Among these students, 413 (4.17%) students are positively diagnosed with ADHD (see Table 1), and among the positively diagnosed respondents with ADHD, 6.96% is interested in pursuing an entrepreneurial career (see Table 2) while approximately 75.20% has a positive attitude towards risk taking propensity (see Table 3).

The percentage of female students is 61.47%, and 82.08% have the Dutch nationality. Regarding the level of studies, 80.39% of the students are following Bachelor studies, 16.98% are following Master studies and the students who are following PHD or postdoc MBA studies account for 2,19% of the total sample population. The two most prevailing field of studies are Business/Management (17.82%) and Medicine and health sciences (14.42%), while other social sciences account for 10% and Economics for 9%, approximately. Mathematics and natural sciences account for 5.08%, Linguistics and cultural studies account for 5.03%, while Law accounts for 4.8% and Engineering and architecture accounts for 4.42%. The rest of the study fields that account for less than 4% are Information science/IT (3.61%), Art (2.26%) and Agricultural sciences (0.37%).

Pearson correlation is examined in order to define a possible multicollinearity in the set model. The results indicate that the used predictors for the regression are highly related to each other and thus they provide unique information to the regression (see Table 4).

Hypothesis testing

Hypothesis 1

In order to examine the first hypothesis, a logit regression of ADHD-like behaviour and entrepreneurial intentions is performed, with the set of control variables and mediator (risk taking propensity) that are mentioned above. The regression's results indicate that ADHD-like behaviour does not seem to have a significant effect on entrepreneurial intentions (see Table 2, Model 1). Therefore H1 is not supported by the analysis. On the other hand when the same analysis is performed without the set of control variables, the logit regression provides significant results on the relationship between ADHD-like behaviour and entrepreneurial intentions, at a 1% level; of significance (see Table 2, Model 1.1). Overall, despite of trying different combinations and numbers of the additional variables, the analysis failed to provide significant results, except for the case presented above, where no additional variables were included in the regression between the dependent and independent variable.

Hypothesis 2

The second hypothesis states that ADHD-like behaviour is positively related to risk taking propensity. Since risk taking propensity is an ordinal variable consisting of 7 categories, varying from strongly disagree (category 1) to strongly agree (category 7), an ordered logit regression is required. The regression provides statistically significant results on the relationship between the dependent (risk taking propensity) and independent variable (ADHD-like behaviour), at a 1% level of significance (see Table 5). Thus it can be concluded that individuals who are positively related to ADHD-like behaviour are more likely to be in the higher categories of risk taking propensity, and consequently more prone to take riskier decisions compared to their non-ADHD peers. This provides support for H2.

In order to interpret the magnitude of the effect of the above mentioned regression, the average marginal effect needs to be computed (see Table 6). The results show that ADHD-like behaviour has a significant positive effect of 35 percentage points on risk taking propensity. This means that individuals who exhibit ADHD-like behaviour will be 35 percentage points more likely to belong in the higher categories of risk taking propensity, when compared to their peers, *ceteris paribus*.

Hypothesis 3

In order to examine the third hypothesis, which states that risk taking propensity is positively related to entrepreneurial intentions, a logit regression of risk taking propensity and entrepreneurial intentions is performed, with the same set of control variables that are mentioned above. The regression provided statistically significant results on the relationship between the dependent variable (entrepreneurial intentions) and the independent variable (risk taking propensity), at a 5% level of significance (see Table 7). Thus it can be concluded that individuals who exhibit higher levels of risk taking propensity are more likely to have entrepreneurial intentions, compared to their peers who belong to the lower categories of risk taking propensity. As a result, these individuals are more likely to start their own business, because they are able to translate riskier situations into opportunities. This provides support for H3.

In order to interpret the magnitude of the effect of the above mentioned regression, the average marginal effect needs to be computed (see Table 8). The results show that risk taking propensity has a significant positive effect of 16 percentage points on entrepreneurial intentions. This means that individuals who belong in the higher categories of risk taking propensity will be

16 percentage points more likely to become entrepreneurs, when compared to their peers, ceteris paribus.

Hypothesis 4

With respect to the H4, which states that the relationship between ADHD-like behaviour and entrepreneurial intentions is mediated by risk taking propensity, the following schema is provided in order to easily visualize the situation.

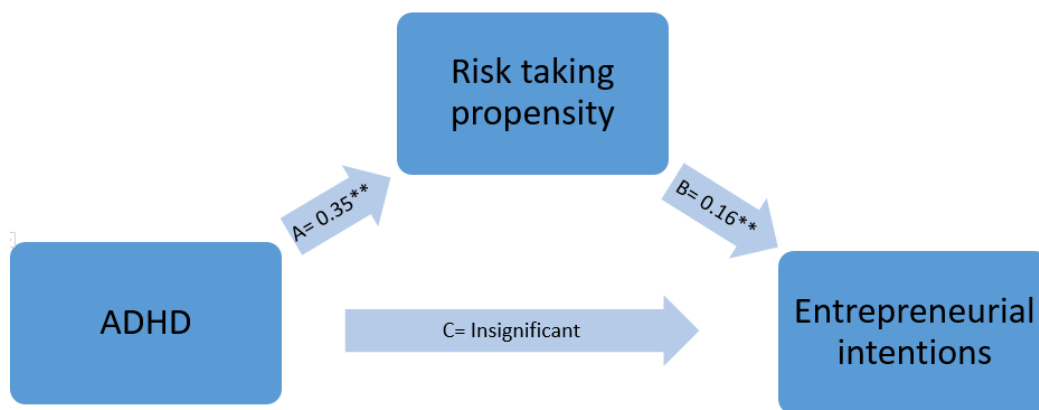


Figure 1: Mediation design with one mediator

The performed analysis is able to capture the indirect relationship between ADHD-like behaviour and entrepreneurial intentions, which goes through risk taking propensity. ADHD-like behaviour is statistically significantly related to risk taking propensity ($A= 0.35^{**}$). Risk taking propensity is statistically significantly related to entrepreneurial intentions ($B= 0.16^{**}$). Thus it can be concluded that there is an indirect relationship between ADHD-like behaviour and entrepreneurial intentions which is mediated by risk taking propensity, even though the direct relationship cannot be established by the current performed analysis.

DISCUSSION

This paper is a follow up study of Verheul et al. (2015). The contribution of this study is that it investigates and confirms or raises questions on the relationship between ADHD-like behaviour and entrepreneurial intentions. In order to examine this research question, the following four hypotheses were formulated:

H1: *ADHD-like behaviour is positively related to entrepreneurial intentions.*

H2: *ADHD-like behaviour is positively related to risk taking propensity.*

H3: *Risk taking propensity is positively related to entrepreneurial intentions.*

H4: *The relationship between ADHD-like behaviour and entrepreneurial intentions is mediated by risk taking propensity.*

According to the conducted analysis and in contrast to expectations and the original paper (Verheul et al., 2013), there does not seem to be a significant relationship between ADHD-like behaviour and entrepreneurial intentions which is not in line with the initial expectations. Overall, despite of trying different combinations and numbers of the additional variables (control variables and mediator), the analysis failed to provide statistically significant results, except for the case where no additional variables were included in the regression between the dependent and independent variable. To a further extent, the mediating role of risk taking propensity as presented in Figure 1 cannot be established by the model in use. This is not in line with the expectations, since past research has been able to establish this relationship (Carter, Gartner, Shaver, & Gatewood, 2003; Cassar, 2007; Douglas & Shepherd, 2002; Kolvereid, 1996; Shane, Kolvereid, & Westhead, 1991; Verheul et al. 2013). In addition, there are studies showing that individuals exhibiting ADHD-like behaviour possess certain entrepreneurial strengths like

creativity, communication and delegation (Halfpenny & Halfpenny, 2012; Everatt, Steffert, & Smythe, 1999). Based on the literature and due to logical reasoning (Figure 1), it was to be expected that a positive relationship between ADHD-like behaviour and entrepreneurial intentions exists and that this relationship is mediated by risk taking propensity. This possibility of biased responses, can both explain the relatively small number of respondents, who were positively diagnosed with ADHD (approximately 4.2% of the population), and the insignificant results.

One possible explanation for the different results lies in the inconsistent questionnaires used by this analysis and Verheul et al. (2015) analysis. Compared to Verheul et al. (2015), where the level of ADHD-like behaviour was measured based on the symptoms that individuals exhibit (asrs-6), this study measures ADHD by directly addressing the following question to the participants "Have you ever been diagnosed with ADHD?". By addressing this type of question there is a great possibility for encountering self-reported data that can lead to biased results. In case of ADHD-like behaviour, many respondents could have provided false responses, because they might not want to reveal personal information about a condition that is regarded as a disadvantage in our society.

Furthermore, the factor of risk taking propensity is also taken into account. The literature suggests that individuals who exhibit higher levels of ADHD-like behaviour are associated with higher levels of risk taking propensity, compared to their peers (Bechara, Damasio, Tranel, & Damasio, 1997; DiScala, Lescohier, Barthel, & Li, 1998; Jensen, Shervette, Xenakis, & Bain, 1988; Mäntylä, Still, Gullberg, & Del Missier, 2010; Toplak, Jain, & Tannock, 2005). This difference in perception and attitude towards difficult situations and failure, is what makes these individuals more prone to undertake riskier decisions when facing uncertainty (Halfpenny & Halfpenny, 2012;

Knight, 1921). The performed analysis provided evidence that support the literature and thus the formed hypothesis.

Last, the relationship between risk taking propensity and entrepreneurial intentions is also examined since the literature provides conflicting results on the relationship between these two factors. The performed analysis provided evidences of a significant relationship between risk taking propensity and entrepreneurial intentions, supporting the results provided by Verheul et al. (2013) and the formulated third hypothesis of the current paper.

LIMITATIONS AND FUTURE RESEARCH

The major limitations faced by this analysis can be found on the inconsistent way of measuring ADHD-like behaviour and the self-reported data on the main ADHD variable, which can lead to biased results. As explained above, participants were directly asked whether they are diagnosed with the ADHD condition, which commonly perceived as a handicap. Participants have valid reasons to avoid responding honestly, which can explain the relatively low amount of responses positive with ADHD-like behaviour (4.17% in a dataset of approximately 10,000 observations). Thus it is recommended that future research should try to indirectly identify the level of ADHD-like behaviour, as performed by Verheul et al. (2015), by combining different likert scale variables, which meet the Cronbach's α criteria. These likert variables are included in the Diagnostic and Statistical Manual of mental disorders (DSM-5).

In addition, future literature should also focus on the use of non-student samples, in order to obtain an overall image of the examined relationship, since many students who think of becoming entrepreneurs lack the experience, financial and network resources, and thus they turn into wage employment. Once such resources are obtained, an entrepreneurial career might seem

again attractive. Furthermore, the use of panel data that can reveal that entrepreneurial intentions are actually translated in active entrepreneurship is strongly recommended.

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ANEX

Table 1: Number of observation and percentage of the independent, dependent and mediating variable (n=9,907)

<i>Variable</i>	<i>Percent (Freq.)</i>
<i>ADHD</i>	4.14% (413)
<i>Entrepreneurial intention</i>	4.78% (474)
<i>Risk taking propensity</i>	
<i>Strongly disagree</i>	3.76% (349)
<i>Pretty disagree</i>	9.66% (898)
<i>Rather disagree</i>	18.83 (1,750)
<i>Equal</i>	24.69% (2,294)
<i>Rather agree</i>	23.75% (2,207)
<i>Pretty agree</i>	14.30% (1,329)
<i>Strongly agree</i>	5.00% (465)

Source: GUESS Survey 2013

Table 2: Percentage and Frequencies on ADHD and Entrepreneurial intentions

	<i>Negative Entrepreneurial intentions</i>	<i>Positive entrepreneurial intentions</i>	<i>Total</i>
<i>Negatively diagnosed with ADHD</i>	95.97% (9,053)	93.04 (441)	95.83% (9,494)
<i>Positively diagnosed with ADHD</i>	4.03% (380)	6.96% (33)	4.17% (413)
<i>Total</i>	100% (9,433)	100% (474)	100% (9,907)

Source: GUESS Survey 2013

Table 3: Percentage and Frequencies on ADHD and Risk taking propensity

	<i>Strongly Disagree</i>	<i>Pretty Disagree</i>	<i>Rather Disagree</i>	<i>Equal</i>	<i>Rather Agree</i>	<i>Pretty Agree</i>	<i>Strongly Agree</i>	<i>Total</i>
<i>Negatively diagnosed with ADHD</i>	3.85% (347)	9.89% (891)	19.25% (1,734)	24.96% (2,249)	23.74% (2,139)	13.78% (1,241)	4.53% (408)	100% (9,009)
<i>Positively diagnosed with ADHD</i>	0.71% (2)	2.47% (7)	5.65% (16)	15.90% (45)	24.03% (68)	31.10% (88)	20.04% (57)	100% (238)
<i>Total</i>	3.76% (349)	9.66% (898)	18.83% (1,750)	24.69% (2,249)	23.75% (2,207)	14.30% (1,329)	5.00% (465)	100% (9,292)

Source: GUESS Survey 2013

Table 4: Correlation table

	MEAN	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Entrepreneurial intentions	0.03	0.2	1														
2 ADHD-like behaviour	0.04	0.2	0.02	1													
3 Risk taking propensity	4.16	1.5	0.13**	0.04**	1												
4 Risk perception	5.16	1.4	-0.07**	0	-0.1**	1											
5 Female	0.63	0.5	-0.05**	-0.03**	-0.14**	0.02**	1										
6 Age (years)	22.45	3.8	0.02*	0.05**	-0.03**	0	-0.09**	1									
7 Single	0.79	0.4	-0.01	-0.03**	0.03**	0.01	-0.06**	-0.4**	1								
8 Self-employed parents	0.32	0.5	0.03**	0.02*	0.12**	-0.08**	0.02*	-0.07**	0.03**	1							
9 Nationality: Dutch	0.85	0.4	0.01	0.04**	-0.1**	0.03**	0	-0.08**	0	-0.07**	1						
10 Attitude	3.84	1.7	0.19**	0.01	0.48**	-0.11**	-0.18**	-0.05**	0.04**	0.15**	-0.16**	1					
11 Social norms	5.5	1.1	0.09**	-0.01	0.29**	-0.08**	-0.04**	-0.07**	0.03**	0.14**	-0.02	0.44**	1				
12 Study performance	4.92	0.9	0	-0.04**	0.02	-0.01	0.01	0.02**	-0.04**	0.03**	-0.06**	0	0.03**	1			
13 Self-efficacy	4.56	1.1	0.13**	0.02*	0.47**	-0.09**	-0.1**	-0.04**	0.03**	0.12**	-0.1**	0.56**	0.43**	0.11**	1		
14 Study field: Management	0.18	0.4	0.03**	-0.01	0.09**	0.01**	-0.1**	-0.05**	0.04**	0.05**	-0.15**	0.19**	0.11**	0.03**	0.21**	1	
15 Study level: Bachelor	0.82	0.4	0.03**	0.04**	0.04**	0.03**	0.03**	-0.33**	0.15**	-0.01	0.21**	0.04**	0.08**	-0.08**	0.05**	0	1

Source: GUESS Survey 2013

** denotes significance at 5%; * denotes significance at 10%.

Table 5: Logit (Model 1, Model 1.1) and Ordered Logit (Model 2) regression of ADHD-like behavior on entrepreneurial intentions and risk taking propensity, with added controls.

	Model 1 Entrepreneurial intentions	Model 1.1 Entrepreneurial intentions	Model 2 Risk taking propensity
ADHD	-0.11 (0.37)	0.58** (0.19)	0.35** (0.12)
Risk taking propensity	0.16* (0.07)	Excluded	
Risk perception	-0.23*** (0.05)	Excluded	-0.07*** (0.02)
Female	-0.41* (0.18)	Excluded	-0.32*** (0.05)
Age (years)	0.05* (0.02)	Excluded	0.00 (0.01)
Single	-0.11 (0.22)	Excluded	0.05 (0.06)
Self-employed parents	0.09 (0.17)	Excluded	0.16*** (0.05)
Nationality (6 dummies)	Included	Excluded	Included
Attitude	0.79*** (0.10)	Excluded	0.37*** (0.02)
Social norms	0.04 (0.10)	Excluded	0.08** (0.03)
Study performance	-0.10 (0.09)	Excluded	-0.05 (0.03)
Self-efficacy	0.20 (0.13)	Excluded	0.62*** (0.03)
Study field (12 dummies)	Included	Excluded	Included
Study level (5 dummies)	Included	Excluded	Included
Universities (19 dummies)	Included	Excluded	Included
Constant	-8.84*** (1.37)	-3.02*** (0.05)	
Cutting point 1 constant			0.54 (0.37)
Cutting point 2 constant			2.23*** (0.37)
Cutting point 3 constant			3.65*** (0.37)
Cutting point 4 constant			4.97*** (0.37)
Cutting point 5 constant			6.48*** (0.38)
Cutting point 6 constant			8.17*** (0.38)
<i>N (observations)</i>	6,477	9,907	6,791
<i>R</i> ²	0.25	0.0022	0.11

Source: GUESS Survey 2013 (standard errors in parentheses)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: Average marginal effects of ADHD-like behavior on risk taking propensity, with added controls.

	Model 2 Risk taking propensity
ADHD	0.35** (0.12)
Risk perception	-0.07*** (0.02)
Female	-0.32*** (0.05)
Age (years)	0.00 (0.01)
Single	0.05 (0.06)
Self-employed parents	0.16*** (0.05)
Nationality (6 dummies)	Included
Attitude	0.37*** (0.02)
Social norms	0.08** (0.03)
Study performance	-0.05 (0.03)
Self-efficacy	0.62*** (0.03)
Study field (12 dummies)	Included
Study level (5 dummies)	Included
Universities (19 dummies)	Included
Cutting point 1 constant	0.54 (0.37)
Cutting point 2 constant	2.23*** (0.37)
Cutting point 3 constant	3.65*** (0.37)
Cutting point 4 constant	4.97*** (0.37)
Cutting point 5 constant	6.48*** (0.38)
Cutting point 6 constant	8.17*** (0.38)
<i>N</i>	6,791

Source: GUESS Survey 2013 (standard errors in parentheses)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Logit regression of risk taking propensity on entrepreneurial intentions, with added controls.

	Entrepreneurial intentions
Risk taking propensity	0.16* (0.07)
Risk perception	-0.23*** (0.05)
Female	-0.41* (0.17)
Age (years)	0.05* (0.02)
Single	-0.11 (0.22)
Self-employed parents	0.09 (0.17)
Nationality (6 dummies)	Included
Attitude	0.79*** (0.10)
Social norms	0.04 (0.10)
Study performance	-0.09 (0.09)
Self-efficacy	0.20 (0.12)
Study field (12 dummies)	Included
Study level (5 dummies)	Included
Universities (19 dummies)	Included
Constant	-8.84*** (1.37)
<i>N</i>	6,477
<i>R</i> ²	0.25

Source: GUESS Survey 2013 (standard errors in parentheses)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Average marginal effects of risk taking propensity on entrepreneurial intentions, with added controls.

	Entrepreneurial intentions
Risk taking propensity	0.16* (0.07)
Risk perception	-0.23*** (0.05)
Female	-0.41* (0.17)
Age (years)	0.05* (0.02)
Single	-0.11 (0.22)
Self-employed parents	0.09 (0.17)
Nationality (6 dummies)	Included
Attitude	0.79*** (0.10)
Social norms	0.04 (0.10)
Study performance	-0.09 (0.09)
Self-efficacy	0.20 (0.12)
Study field (12 dummies)	Included
Study level (5 dummies)	Included
Universities (19 dummies)	Included
Constant	-8.84*** (1.37)
<i>N</i>	6,477

Source: GUESS 2013 (standard errors in parentheses)

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$