



Graduate Entrepreneurship, ADHD and the Creation of Young Entrepreneurs: Is There a Need to Rethink?

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Abstract. Around the world education institutions are being charged with the creation of more student entrepreneurs. One group of young people whom, like many successful entrepreneurs, do not normally succeed in the formal education system are those with Attention Deficiency and Hyperactivity Disorder (ADHD). Often regarded as problem cases and/or nuisances, such young people frequently display many of the characteristics traditionally associated with entrepreneurs. The study uses the Durham University General Entrepreneurial Tendency (GET) Test and Crane's Alert Scale of Cognitive Style Test to determine the entrepreneurial tendencies and brain preferences, respectively, of 30 young people with ADHD and 30 students of Management. It discovers that they are more entrepreneurial than the traditional university student and, like successful entrepreneurs, have a right-brain learning preference. The implications of the findings are considered for the creation of student entrepreneurs and entrepreneurship education.

Keywords: graduate, ADHD, entrepreneurship development.

1. Introduction

Both anecdotal evidence and research demonstrate that many successful entrepreneurs have not excelled in the education system. Yet, not unsurprisingly perhaps in the modern, knowledge economy, education institutions around the world are attempting to stimulate the creation and development of graduate entrepreneurs. This is not something new. One of the first courses in entrepreneurship was offered at Harvard Business School in 1947 and in 1953 Peter Drucker taught another at New York University (Brockhaus 2001). Subsequently, and particularly in recent years, there has been a global proliferation of courses (Vesper and Gartner, 1998), and an ongoing debate has emerged on whether and how entrepreneurship can and should be taught.

In the UK, for example, the first courses were launched in the 1980s and were intended to encourage students to start their own businesses on graduation (Brown, 1990; Kirby, 1992). These were followed in the late 1980s by the Enterprise Initiative in Higher Education, which was intended to develop

enterprising teaching environments where students developed and applied a range of personal transferable skills. The distinction between the two programmes raises the issue of what Graduate Enterprise is intended to do. Is it intended to increase the number of Graduate start-ups or equip students with a set of enterprise skills, a way of thinking and behaving that will enable them to meet the challenges of the entrepreneurial – driven business climate of the 21st century? If it is the former, then the exercise is relatively simple. If it is the latter, then it is more difficult, probably requiring a change in the purpose, focus, content and process of learning (Kirby, 2004). The successful entrepreneur has a set of personal skills, attributes and behaviours that go beyond the purely commercial. It is these attributes, this way of thinking and behaving, that needs to be developed in students if their entrepreneurial capabilities are to be enhanced and they are to meet the entrepreneurial challenges of the 21st century knowledge economy – whether that is launching a new venture or securing employment. As Ray (1997, 199) has observed “*the skills traditionally taught in business schools are essential but not sufficient to make a successful entrepreneur*”.

Whilst there is no clear, standardised definition of entrepreneurship, increasingly it is being recognised that it is not just about new venture creation or small business management. Entrepreneurs are people who see opportunities and have the ability to harness the resources to bring them to fruition. In the process they take risk and bring about change. Accordingly, they can be found in all walks of life – in large and small organisations, new and established ventures, and the public as well as the private sector. In order to create such individuals, therefore, it is contended that a transformation is needed in the system of education in most countries (Kirby, 2004; 2007). As Chia (1996) has suggested, it would seem necessary to weaken the thought processes so as to encourage and stimulate the entrepreneurial imagination. Whilst this transformation is not impossible, and much is currently being done in many parts of the world to effect it, it will not be easy and will not occur over night. However, there is a group of young people, those with Attention Deficiency and Hyperactivity Disorder (ADHD), who appear to display many of the characteristics and ways of behaving traditionally associated with the entrepreneur. ADHD is a neurobiological disorder the cause of which is unknown. It is believed to be genetically transmitted, however, and the result of a chemical imbalance or deficiency in certain neurotransmitters in the brain (NICHEY, 2005). An estimated one out of 25-30 children are believed to have ADHD (Cooper and Bilton, 1999) with boys outnumbering girls by 3:1. Essentially young people with ADHD, mainly boys, are perceived at school as a nuisance, as they disturb others and are frequently in trouble (Bailey, 2006). Like entrepreneurs, they tend to under-achieve in the formal education system (DuPaul and Stoner, 2002) and there is a considerable difference between what might be termed the “model” student and the student with ADHD. According to research undertaken by Durham County Council (2006) whereas the model student sits still in class, attends, obeys requests, is co-

operative, organised and aware of others, the ADHD student fidgets, is easily distracted, disregards rules, is disruptive, disorganised and has problems relating to his/her peers.

Apart from being very different from the “normal” students, young people with ADHD display many of the characteristics traditionally associated with the entrepreneur as mentioned above. Thus, if a link were to be found with entrepreneurship, it might go some way towards explaining why so many successful entrepreneurs have not been successful in the education system. Perhaps more importantly, it might also identify a potential source of entrepreneurial talent, amongst a sizeable group in the population, who are currently not just regarded as something of a problem, but are all too frequently not using their entrepreneurial tendencies for the benefit of society. Indeed, rather than attempting to make the young person with ADHD more like the “normal” student, through medication, it could be that they are a natural source of entrepreneurial talent whose behaviour needs to be harnessed and developed. Hence, the aim of this research is to explore the entrepreneurial tendencies of those with ADHD compared with other sectors of society, and particularly the “normal” student.

2. Testing for Entrepreneurial Tendency

Although the traits approach to entrepreneurship is now somewhat dated, much attention has been focused on the entrepreneurial personality and over the years numerous measures have been developed in an attempt to identify entrepreneurial tendency. The most common of these are based on responses to a series of statements about the attribute being measured (Rotter, 1966; Lynn, 1969; Levenson, 1973; Smith, 1973; Steers and Braunstein, 1976; Tziner and Elizur, 1985).

Whilst some of these instruments are simple to complete, others are complex and their reliability and validity is questionable. However, according to Cromie (2000) one of the most useful, comprehensive, accessible and easy to administer and score is the General Enterprising Tendency (GET) Test, developed by staff at Durham University Business School (Caird, 1991). This is a 54-item questionnaire designed to assess five dimensions traditionally believed to be indicative of entrepreneurial personality – Need for Achievement (12 items), Autonomy (6 items), Drive and Determination (12 items), Risk Taking (12 items) and Creativity (6 items). Each item is a statement and participants are required either to agree or disagree with it. Each dimension receives a score of 0-12 (0-6 for the Autonomy dimension) with a composite score for the test of 0-54. The test takes about 10 minutes to complete and although Cromie believes it requires further work to verify its psychometric properties, it would appear to have “*criterion and convergent validity and good internal consistency*”. Also, as

Stormer (1999) has demonstrated, the Cronbach alphas for the GET Test yield an overall rating of 0.86, suggesting that the results of its application are reliable and credible.

There have been numerous applications of the test and the studies by Caird (1991), Cromie (2002) and Cromie and O'Donaghue (1992), have identified differences in the entrepreneurial tendencies of different occupational groups, including students. The results of their research suggest that undergraduate students (score 33.20) are one of the least entrepreneurial groups in society, apparently much less entrepreneurial than Business Owners/owner managers (score 41.04) or lecturers and trainers, even (score 38.28).

3. Research Aims and Methodology

The research sets out to explore, therefore, whether young people with ADHD display greater or lesser entrepreneurial tendencies than the more “normal” or traditional university student. To do this it administers the GET test to a sample of young people with ADHD drawn from The Studio ADHD Centre (www.addtherapy.net) in Surrey, England. The studio has 256 students, ranging from 7-25 years in age. Whilst the results of the earlier research conducted by Cromie (2000) and Cromie and O'Donaghue (1992) with “normal” undergraduates may be used for comparative purposes, the questionnaire was also administered to a randomly selected sample of Business Management undergraduates at the University of Surrey in England. Both surveys were conducted between February and April 2006. In total they yielded responses from 30 young people with ADHD and 30 randomly selected undergraduate management students. Analysis of the responses (Table 1) indicates that the samples were not “matched” identically in that the student sample was predominantly female whereas the ADHD sample was mainly male and there were relatively fewer 18-21 year olds in the ADHD sample compared with the student cohort. In terms of nationality, however, the two samples were more comparable with the majority in both cases being largely of British origin.

Table 1: Profile Data of Respondents

	Undergraduate		ADHD	
	No.	%	No.	%
GENDER				
Male	7	23	26	87
Female	23	76	4	13
AGE				
14-17	0	0	8	27
18-21	26	87	15	50
22-25	4	13	7	23
NATIONALITY				
British	25	84	28	94
European	1	3	1	3
Other	4	13	1	3

4. Findings and Discussion

The findings (Table 2) reveal that the ADHD students in the sample have a higher mean GET test score (35.27) than either the Surrey undergraduate management students (28.0) or the undergraduates (33.20) studied by Cromie and O'Donaghue (1992). However, neither cohort scored more than the average for the population as a whole (37) as calculated by Caird (1988), though the ADHD group exceeded the average population score in 3 out of 5 of the sections in the test (Need for Autonomy, Creative tendency and Calculated risk-taking). Where they “underperformed” was with respect to their “need for achievement” and their “drive and determination”. In part, this may reflect the very nature of ADHD as those with the condition do have difficulty, as NICHEY (2005) has recognised, focusing (i.e. picking something on which to pay attention), sustaining the focus (i.e. paying attention for as long as is needed) and shifting focus (i.e. moving attention from one thing to another). However, it could also be a reflection of the way they are often viewed and treated by Society, namely as a problem and a nuisance, thereby reinforcing their low self-esteem and self-worth.

Table 2: Means and Standard Deviations on Categories of the GET Test

Group	Means and Standard Deviations	Need for Achievement (Max Score = 12)	Need for Autonomy (Max Score = 6)	Creative Tendency (Max Score = 12)	Calculated Risk Taking (Max Score = 12)	Drive and Determination (Max Score = 12)	Enterprising Tendency (Max Score = 54)	n
ADHD Students	X SD	7.07 1.48	4.23 1.17	8.27 1.86	8.00 1.91	7.70 2.19	35.27 5.32	30
Undergraduate (Business Management) Students	X SD	7.07 2.14	2.17 1.15	6.03 2.22	5.27 2.17	7.47 1.85	28.00 6.24	30
Entrepreneurs	X SD	9.92 1.56	4.14 1.38	8.77 1.88	8.75 2.00	9.51 1.68	41.00 5.40	73
Under- Graduates	X SD	7.85 1.99	3.24 1.30	7.48 2.21	7.01 2.24	7.61 2.12	33.20 6.29	66 1

X = Mean, SD = Standard Deviation, n = sample size)

Source: Survey plus Cromie & O'Donoghue (1992) from Cromie (2000), p.49

In comparison, though, the “normal” undergraduates, in both the Surrey and the Cromie and O'Donoghue samples, failed to achieve the average scores for any of the categories, even though they have a track record of academic success and might be expected to have, for example, a high need for achievement and the drive and determination to succeed. This suggests that attempts to create graduate entrepreneurs are going to be more challenging than might have been first thought, possibly explaining why the 14 Country International Survey of Collegiate Entrepreneurship conducted in 2006 concluded that *“the relationship between entrepreneurial intentions and participation in entrepreneurship courses was weaker than expected”* (Miettinen, 2007, 3). While there has been a proliferation in the number and type of educational programmes intended to develop graduate entrepreneurs, it would seem that *“the vast majority of the teaching of entrepreneurial skills tends to be technical, with insufficient attention being paid to the cognition and belief systems of the entrepreneur”* (Kickul, et. al, 2007, 19). Clearly the situation is changing (Fayolle, 2007) but only slowly and in a somewhat piecemeal fashion. As a consequence, the traditional educational pedagogy pertains in many contexts and, as argued elsewhere, (Kirby, 2002) this actually constrains the development of enterprise and entrepreneurial tendencies in students by programming their left-brain capabilities. From a neuropsychological perspective (Sperry, 1968, Ornstein, 1975), it would appear that the brain is divided into 2 hemispheres:

- the left side handles language, logic and symbols. It processes information in a step-by step fashion. Left-brain thinking is narrowly focused and systematic, proceeding in a highly logical fashion from one point to the next;

- the right side takes care of the body's emotional, intuitive and spatial functions. It processes information intuitively, relying heavily on images. Right-brained thinking is lateral, unconventional, unsystematic and unstructured. It is this right brained lateral thinking that is at the heart of the creative process.

According to Lewis (1987, 38-39):

..while the left brain requires hard facts before reaching a conclusion, the right is happier dealing with uncertainties and elusive knowledge. It favours open-ended questions, problems for which there are many answers rather than a single, correct solution. The left specializes in precise descriptions and exact explanations; the right enjoys analogies, similes and metaphors. The left demands structure and certainty; the right thrives on spontaneity and ambiguity.

Thus, those who have learned to develop their right-brained thinking skills tend to:

- ask if there is a better way of doing things
- challenge custom, routine and tradition
- be reflective – often deep in thought
- play mental games, trying to see an issue from a different perspective
- realise that there may be more than one “right” answer
- see mistakes and failures as pit stops on the route to success
- relate seemingly unrelated ideas to a problem to generate a solution
- see an issue from a broader perspective, but have the ability to focus on an area in need of change.

Although the two halves normally complement each other, on occasions they compete or one half may choose not to participate. Importantly, also, most formal education systems since the time of the ancient Greeks have tended to develop the left brain capabilities in their students. As Lewis (op. cit. 41) has recognized:

In class, students are expected to acquire knowledge one step at a time, adding methodically to their storehouse of facts until they have sufficient to pass an examination. This demands left-brain skills. The problems students are given to solve more often demand an analytical than an intuitive approach. This, too is a task for the left hemisphere. Written work, by which ability is chiefly

evaluated, must be organized, well argued and logically structured...all left-brain skills. The students considered most intelligent and successful are those who strive after academic goals, can control their emotions in class, follow instructions, do not ask awkward questions, are punctual and hand in class assignments on time. Goal-setting, emotional restraint, time-keeping and matching your behaviour to other people's expectations are all left-brain skills. Children are meant to learn by listening, keeping notes and reading books. All these, too, of course, are tasks in which the left hemisphere specializes.

This may well explain why those with ADHD, and so many successful entrepreneurs, appear not to have succeeded in the formal education system, especially as recent research by Nieuwenhuizen and Groenwald (2004) in South Africa has shown that successful entrepreneurs demonstrate a preference for right brain thinking. Accordingly, the research also explored the brain dominance of the two cohorts (i.e. those with ADHD and the Surrey Management students). To do this, it administered the Alert Scale of Cognitive Style Test developed by Crane (1989) at the Western Michigan University. The test comprises 21-questions, in which the participant has to pick one statement out of two, statement A or statement B, with which they agree most, without leaving any blanks. The categories in which this test score determines whether an individual is predominantly left or right brain are shown below:

- 0-4: Strong Left Brain
- 5-8: Moderate Left Brain
- 9-13: Middle Brain
- 14-16: Moderate Right Brain
- 17-21: Strong Right Brain

The results (Table 3) reveal that the majority of the Surrey Business Management students have Moderate Left Brain (37%) dominance, whilst 47% of the ADHD students were Strong Right Brain. None of the ADHD students were Strong Left Brain, compared with 13% of the Business Management students. Overall, 80% of the ADHD students had a right-brain learning preference, compared with only 27% of Business Management students. Alternatively, 50% of the Business Management students had a left-brain learning preference, with the ADHD students scoring 3% in these categories combined.

Table 3: Alert Scale of Cognitive Style Test Results

BRAIN HEMISPHERE DOMINANCE	BUSINESS MANAGEMENT STUDENTS		ADHD STUDENTS	
	Result	Percentage (%)	Result	Percentage (%)
Strong Left Brain	4	13	0	0
Moderate Left Brain	11	37	1	3
Middle Brain	7	23	5	17
Moderate Right Brain	6	20	10	33
Strong Right Brain	2	7	14	47
Average Result	MIDDLE BRAIN		MODERATE RIGHT BRAIN	

Thus, the results suggest that there is a difference in the brain dominance of the two groups and that, like the successful entrepreneur, those with ADHD have a right brain learning preference. This could explain why both entrepreneurs and students with ADHD fail to succeed in an educational system that is predominantly left brain in its orientation. However, it might also suggest ways in which:

- the educational system needs to be changed if more entrepreneurial graduate students are to be developed, and a fairer system is to be created that meets the needs of those students with right-brain learning preferences, as well as those whose preferred learning is left-brain oriented.
- the attributes of those with ADHD might be perceived in the future and not just harnessed to create more entrepreneurs but used constructively to change perceptions and give “sufferers” a sense of self worth – instead of them being seen as a nuisance and a problem, they are regarded as possessing attributes that are much needed in contemporary society.

5. Conclusion

The research set out to explore whether there is a link between entrepreneurial behaviour and ADHD. As Bailey (2006) has observed a large proportion of entrepreneurs have ADHD. Bill Gates, Oprah Winfrey, Donald Trump and Martha Stewart are all reputed to have ADHD and research from the University of Southern California is reported to “*show that there is a genetic link between Entrepreneurship and ADD/ADHD*” (Frank, 2006). In the article, Daniel G. Amen M.D states that individuals with ADHD “*are people who take risks, need*

people to help them stay organised, don't like working for other people, have a lot of energy and are good at multitasking". This suggests that there is emerging evidence that recognises, for example, *"the connections between ADD and creativity"* (Marshack, 2005) and that ADHD need not hinder success and can lead to entrepreneurial achievement. In societies that are concerned to increase the number of young entrepreneurs, particularly graduates, this could be important.

The research has found that young people with ADHD possess greater entrepreneurial tendencies than undergraduate students and that they, like successful entrepreneurs, are more likely to have a right brain dominance. Clearly such findings have implications for the creation of student entrepreneurs, for education and for those with ADHD. First, for the creation of entrepreneurs, the findings would suggest that if the entrepreneurial tendencies of those with ADHD could be harnessed successfully, then it should be possible to increase the number of young entrepreneurs. Whilst early research (Brown, 19990, Kirby, 1992) on entrepreneurship education suggested that graduate entrepreneurship programmes had a positive impact on the creation of entrepreneurs (i.e. the creation of new venture by students and graduates), more recent research is tending to suggest that such programmes are having *"only modest success in promoting entrepreneurial intentions and activities among students in universities and polytechnics"* (Miettinen, 2007, 11), though the situation is far from clear. This would seem to suggest, though, that if the education system is to succeed in creating more entrepreneurial students and graduates, then it needs to develop the right-brain capabilities of its students, not just the left as has been traditional. Such a shift needs to be experienced by all students, irrespective of their predisposed learning preference. As Kickul, et. al, (2007) have argued *"programs must encourage the potential entrepreneur to develop his/her 'other side' and use multiple opportunities at both the individual level and team level."* If this could be effected, and ways in which this may occur are outlined elsewhere (Kirby, 2007), then the reforms would not just help create a more entrepreneurial student population, but would help create a more equitable education system that would benefit those it currently disadvantages.

Finally, for those with ADHD, it is important that their entrepreneurial tendencies are recognised and harnessed, not least to change perceptions of them, helping them develop their self-esteem and self-worth and bringing them into "mainstream" society. In order to do this, it would seem necessary, though, to introduce them into entrepreneurial teams whereby their positive attributes (creativity, energy, determination, etc) can contribute to the success of the team and their negative attributes (poor organisation, inattention, weak inter-personal skills, etc) can be compensated for by their more traditional colleagues. In Belbin's (1981) terms, the typical ADHD individual is probably a "plant" – the team's chief source of new ideas. Plants are creative, imaginative and frequently unorthodox people whose ideas may seem impractical and who may seem distant

and uncommunicative. They are usually dominant, introvert and creative, normally with a high Intelligence Quotient (IQ) and can be prickly and not good at accepting criticism.

Clearly these findings are only tentative and there are a number of limitations. The sample is small and the “control” sample is not matched exactly. Also, it only includes management students. Similarly it does not look at the different aspects of ADHD and their likely impact on performance. However, the findings do seem to point to a line of research that could be potentially fruitful and could play an important part not just in the task of creating more entrepreneurial students but in helping develop an education system that is fairer and more inclusive. Not only is there a clear need for a larger investigation, involving a bigger sample and a multi-disciplinary research team, but the control sample(s) need(s) to be matched more precisely. This is important, as it could be that other types of students (e.g. those studying Arts and the more creative disciplines for example) display more entrepreneurial tendencies and learn differently from those that are studying management. Hence it would seem that there is a need, at the very least, for a much larger investigation with “control” samples for different types of students. Again, future research might recognize that there are different types of entrepreneurship and examine the most appropriate type for young people with ADHD. Similarly, it might assess how the traits of ADHD impact on subsequent performance.

Whatever, this preliminary investigation does appear to confirm that the similarities between entrepreneurs and those with ADHD are not just coincidental – that there is, indeed, an associational link and that it is this link that might explain why so many successful entrepreneurs have not succeeded in the traditional education system and why, to date, the education system has produced so relatively few successful entrepreneurs. It suggests that if more entrepreneurial students are to be produced, then the education system needs to change. There are signs that this is occurring (Fayolle and Klandt, 2006, Fayolle 2007) though it is unclear how successful the changes have been and inevitably the process of change is slow and not uniform. If society is to create more young entrepreneurs through the education system, then perhaps it ought to be looking to harness more effectively the latent entrepreneurial tendencies of those young people with ADHD, many of whom traditionally have been regarded as educational “failures”, rejects and misfits.

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