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# Identifying entrepreneurial potential in students

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## **Abstract**

**Purpose:** *Entrepreneurship education can contribute to the development of entrepreneurial skills and potential for business start-up (e.g., Kolvereid and Moen, 1997; Galloway and Brown, 2002). There are limitations to the impact education alone can have, however. There is much acknowledgement that experience in the 'real world' of business is also essential (Gibb, 1996; Jack and Anderson, 1999). This is consistent with established theories of learning, where it is understood that conceptual learning, as that which best facilitates application and reconceptualisation, is achieved only through experience and participation (Laurillard, 1993; Mayes, 1995). This is not normally within the scope of formal educational practices. Moreover, it is well established that other influences, such as personality and family role models, are correlated positively with increased entrepreneurship propensity (McClelland, 1971; Dunn and Holtz-Eakin, 2000). The paper seeks to identify latent entrepreneurial activity within the student body at one university, and investigate the factors contributing to those identified as most likely to become, specifically entrepreneurial, firm owners.*

**Design/Methodology/Approach:** *The research involves analysis of data gathered over three years at Heriot-Watt University, where it is observed that some students intend to start firms as soon as practicable (a few have already started firms while studying). This sub-sample will be investigated further using both quantitative and qualitative methods, and using the specialisms of education, entrepreneurship theory and psychology represented by the three authors, will contribute to understanding of the psychological and exogenous influences that contribute to entrepreneurial ambition.*

**Findings:** *Findings involve both external (environmental, experiential) influences, and internal (psychological, personality-based) influences on entrepreneurial propensity. Development will involve comparative examination of students who have been identified by prior research as least likely to have ambitions for entrepreneurship. While the study is limited by being based on ambitions rather than actualities (though writers such as Autio, et al. 1997 note that ambition can be a reliable indicator of outcome), the longitudinal nature of the original research instrument, from which respondents and data for the current study will be drawn, will allow for follow-up to compare current results with actual outcomes.*

**Implications:** *The research has implications for educators and policy-makers in terms of affording a means of identifying the contributory factors affecting entrepreneurial orientation.*

**Originality/Value:** *The research will be valuable in terms of entrepreneurship pedagogy and potentials for policy intervention. It will also contribute to*

*understanding of ambition-related personality features including self-efficacy, and entrepreneurial development of individuals.*

**Key Words:** *entrepreneurship education, ambition, self-efficacy, entrepreneurial propensity*

## **Identifying entrepreneurial potential in students**

### **Introduction and Background**

The current paper reports initial data from an ongoing study of the extent to which entrepreneurship education is likely to increase graduate business start-ups, and particularly entrepreneurship<sup>i</sup> (Galloway, et al., 2005a). Within Galloway, et al. (ibid) varying degrees of entrepreneurial potential could be identified within a sample of Heriot-Watt students who had completed a module on entrepreneurship and enterprise (e.g., Galloway and Keogh, 2005). Based on ongoing debate and empirical evidence concerning the main factors affecting entrepreneurial propensity (e.g., Bolton and Thompson, 2004) the current authors were able to identify students within the sample who exhibit high entrepreneurial tendencies. The aim of the current paper is to compare the characteristics, traits and ambitions of these students with those of students who have reported low levels of entrepreneurial propensity. The current study draws on personality-based and background-based theory and research on indications of entrepreneurship found empirically within practicing entrepreneurs (ibid). Using both quantitative and qualitative methodology the study investigates these characteristics, traits and ambitions in students who appear to exhibit entrepreneurial indications, with the aim of identifying entrepreneurial potential within the study population.

### **Identifying entrepreneurship**

Various circumstantial and characteristic-based signals of entrepreneurial propensity have been identified in the literature. While the aim of the current paper does not include a critique of these, as much work has been done in this area elsewhere (e.g., Atherton, 2004), the authors do draw on a number of factors commonly reported as corresponding with entrepreneurial behaviour and action.

In his study of entrepreneurial intent, Davidsson (1995) includes background, attitudes, and social context and provides a general model of influences that may drive entrepreneurial individuals. Features differentiating the entrepreneur from the non-entrepreneur include their entrepreneurial values, attitudes and needs (Koh, 1996). The need to achieve is also identified as a strong driving force amongst entrepreneurs (McClelland, 1961; Littunen, 2000).

Bolton and Thompson (2004) cite three circumstances or traits commonly found amongst entrepreneurs. They claim that entrepreneurs most often have:

*Access to entrepreneurial role models*  
*Urgency of entrepreneurial intent*  
*Desire for economic autonomy*

This is corroborated throughout the literature. For example, Scott and Twomey (1988) note that students whose parents own a small business claim to want to start a firm or become self-employed more often than those who do not come from a business-ownership background. Similarly, Hout and Rosen (2000) and Dunn and Holtz-Eakin (2000) found that people who are in business themselves often act as role models and influence their offspring's decision to become an entrepreneur.

In terms of urgency of intent, many high profile entrepreneurs became involved in the commercial process (in one form or another) at a very young age (Steiner, 1998). Bolton and Thompson (2004:26) cite the example of Bill Gates, who exhibited urgency of intent to pursue his commercial ideas to the extent that he left his university studies – resulting in non-completion – to start Microsoft. Bolton and Thompson (ibid) claim that while entrepreneurship is possible at any age, “the true entrepreneur is likely to do it sooner rather than later”.

The desire of economic autonomy varies from individual to individual and between the genders as a motivational factor. Locus of control (Rotter, 1966) is the degree to which individuals feel in control of their own destinies, and can be affected by internal (psychological) and external (social, environmental) circumstances. While debate about the applicability of the theory of locus of control to entrepreneurship continues (Chell, et al., 1991), several researches have found high locus of control to be a common personality trait of entrepreneurs (e.g., Llewellyn and Wilson, 2003). Further, other studies such as Collins, et al. (2004) have shown that items which suggest high locus of control, e.g. “desire to be my own boss”, correlate with entrepreneurial propensity.

### **The implications for entrepreneurship education**

Education provision is important in that it can affect all three of these summarised entrepreneurship generalisations: role models can be provided by education, directly via guest speakers and case studies and indirectly via abstract study; entrepreneurship education can inspire urgency in entrepreneurial intent; and education can contribute to knowledge about, and skills development that affect, perceptions of control and self-efficacy such as confidence, initiative, and problem-solving ability (Galloway, et al., 2005b). We also have to consider the balance between education and entrepreneurial needs of students in the light of changing business environments, policy focus

from governments and the effect that key drivers such as the knowledge economy may have on students (Collins et al, 2004; Klapper, 2004). Educators, including universities, “have an obligation to meet students’ expectations with regard to preparation for the economy in which they will operate” (Galloway, et al., 2005b). Authors, for example Gibb (1996), Chell and Allman (2003) and Kirby (2004) have raised issues about the provision of entrepreneurship education and the pedagogical and delivery developments required to meet appropriately the needs of an entrepreneurial society.

## Methodology

### Sample creation and quantitative method

The sample upon which the current study is based comprises Heriot-Watt students who have completed an entrepreneurship module as part of their university studies. Based on responses to various questions (outlined below) each student was given a score to measure their entrepreneurial potential. This measure is based on entrepreneurial propensity indicators, as informed by the literature. These were investigated, specifically via the questions:

1. Do you know someone who owns a business? If so who?
2. Do you aim to start a business or become self-employed at some point in your career? If so when?
3. Have you had a business idea and to what extent did you pursue it?
4. Have you always wanted to be your own boss?

Within the questionnaire these research items were phrased in such a way as to allow student respondents to give as detailed an explanation as is practicable within quantitative research limitations. As a result, the original questionnaire afforded the ability to place all responses to these items on continua ranging from ‘weak entrepreneurial signal’ to ‘strong entrepreneurial signal’ in order to measure variation in entrepreneurial signals amongst students sampled. A score was accorded to each variation within each item, and cumulatively the four research items created a measure of entrepreneurship potential. The scoring mechanism for each item is detailed below, and overall a cumulative lowest entrepreneurial score of 0 and a highest entrepreneurial score of 15 are possible. Specifically, entrepreneurial potential scores were calculated in the following way:

### **A) Access to entrepreneurial role models**

- |   |              |
|---|--------------|
| 1. Do you know someone who owns a business? If so who?                | <b>Score</b> |
| I have a close family member (parent, spouse) with their own business | 4            |
| I have another relative with their own business                       | 3            |
| I have a friend with their own business                               | 2            |
| I have a colleague with their own business                            | 1            |

I do not know anyone personally who has their own business 0

## B) Urgency of entrepreneurial intent

2. Do you aim to start a business or become self-employed at some point in your career? If so when?

I aim to become a business owner; I aim to become self-employed:  
 within 5 years of graduation  
 between 5 and 10 years of graduation  
 after 10 years

I aim never to become a business owner; I aim never to become self-employed

Business Owner Aim		Self employed Aim	Score
Within 5 years	+	Within 5 years	4
Within 5 years	+	After 5 years	3
5-10 years	+	Within 5 years	3
5-10 years	+	After 5 years	2
After 10 years	+	Any time	1
Never	+	Any time	0

3. Have you had a business idea and to what extent did you pursue it?

	Score
I have started a business	4
I have had an idea and conducted detailed research (items included preparation of business plan, patent application, market research)	3
I have had an idea and made preliminary enquiries (to friends, colleagues)	2
I have had an idea and not pursued it	1
I have never had an idea	0

## C) Desire for economic autonomy

4. Have you always wanted to be your own boss?

I have always wanted to be my own boss:	Score
Strongly agree	3
Agree	2
Neutral	1
Disagree or strongly disagree	0

The sample from which scores were calculated comprised 257 Heriot-Watt respondents. A useable sample of 128 was extracted from this (including only those respondents who had answered all the questions appropriate to calculating a score). These respondents comprised various demographic features, some of which are described in Table 1.

**Table 1: Sample features**

<b>Faculty (N=127)</b>			
Engineering	Science	Business/Management	Other
35.5% (48)	9.4% (12)	49.2% (63)	3.1% (4)
<b>Gender (N=122)</b>			
Male	Female		
71.3% (87)	28.7% (35)		

When the measure was applied to responses contained within the sample, very few student respondents scored highly (in fact no Heriot-Watt student in the sample scored 15, suggesting theoretically that even using this measure, which embodies only a selection of factors known to affect entrepreneurial propensity, the study has not found any student who is certainly entrepreneurially motivated). However, there were sufficient numbers of student respondents who scored highly (i.e., above 12) to make quantitative analysis viable. Quantitative analysis was conducted using SPSS.

#### Qualitative method

The primary aims of qualitative methodology include the intent to “describe and analyse the culture and behaviour of humans and their groups from the point of view of those being studied” (Bryman: 1988:46), and to collect and analyse data which is “uncountable” (Cassell and Symon 1994:4). For the current paper, case study interviews were used as it was believed that this method would be most conducive to understanding uncountable, process data peculiar to individuals. Interviews were conducted by an experienced qualitative interviewer using an informal, semi-structured technique in order to facilitate rapport and conversation. While this method is arbitrarily subjective in that generalisations from individual cases cannot be made, it is “the uniqueness of individual cases and contexts [that] is important to understanding” (Stake 1995:39). Issues discussed via interviews were drawn from suggested methodology described in Bolton and Thompson (2004:298-299) whereupon they claim that entrepreneurial potential can be identified by qualitative analysis of various factors. These factors are:

1. early childhood motivation and extension into adult-hood
2. work ethic and approach to obstacles
3. dealing with failure
4. creativity
5. what they enjoy (are best at)

Investigative, conversational queries were used for the items:

1. early childhood motivation and extension into adult-hood
4. creativity

## 5. what they enjoy doing

The rationale here is that these are comprised of background or circumstantial factors which, although will undoubtedly be affected by personality-based traits, could be investigated by way of description of self and perceptions of self.

The other two factors identified by Bolton and Thompson:

2. work ethic and approach to obstacles; and
3. dealing with failure

were regarded by the current authors to be more directly related to personality-based traits (though in turn, these will be affected to some extent by circumstances and background). In order to investigate these, the interviewer asked respondents to relate critical incidents and how they were dealt with (including what was learnt from them). These critical incidents could then be analysed for some indications of work ethic and attitude to failure.

The Critical Incident Technique is a “qualitative research methodology that has been used successfully to identify job requirements, recommendations for effective practice, and competencies for a wide variety of professionals in many disciplines” (NATRI, 2003). It was developed by Flanagan (1954) for flight analysis for pilots, and has been applied subsequently in many other areas including human resourcing (Bernardin & Brownas, 1988), marketing (Bitner, et al., 1990), and education (Wright, et al., 1994, Christie, 1998). The rationale behind its use for the current study is that it can be an effective means of determining how and why decision and actions are chosen and what effect the incident and ensuing decisions and actions have had on future behaviour. For the current study, specific critical incident questioning included:

- A description of the incident
- What the respondent did that was effective or ineffective
- What the outcome was
- Why was the action effective or what more effective action could have been taken
- In what way(s) has this experience informed the respondent

Triangulation was achieved (in a limited sense) by the potential of the reported critical incident to corroborate discussion about the influence of childhood experience, and creativity. Further abstract questioning on how respondents react when circumstances/situations do not go to plan, or when barriers are met also afforded corroboration of analysis of the reported critical incident.

### *The cases*

Three student respondents scored 14 out of 15 on the entrepreneurial propensity measurement. For this pilot study, all were contacted and interviewed. According to Yin (1994) understanding of process can be afforded by only a



few in-depth studies, in that a corresponding depth of analysis is possible when focus is concentrated.

The three respondents used for the case studies are summarised:

#### Respondent A

Respondent A is a student from overseas who originated from a Muslim country where various legalities prohibit full Capitalist activity (in the modern Western sense). That is not to say that there is no commercial activity, but rather that means of realising entrepreneurial opportunities must be tailored to fit into a strict legal framework. Respondent A claims that this affords more opportunity rather than less as with greater barriers to the types of economic activity one can participate in, fewer people are motivated to perceive and realise opportunities, thus leaving much scope for activity for those who are entrepreneurially motivated. Respondent A came to Heriot-Watt to study, in part because of the currency a UK degree can afford in the country of origin, and also because he claims he wanted “see other cultures and how they work”. He intends to return to his home country upon completion of his studies and has started the process required for a substantial entrepreneurial endeavour, using Western finance, for realisation upon his return home.

#### Respondent B

Respondent B was brought up in a Communist state, and emigrated upon the fall of Communism to a European country when he was seventeen. In the new country he became interested in business ownership as a result of what he perceived to be economic discrimination as a result of immigrant status. After several years of working and owning firms, he came as a mature, overseas student to Heriot-Watt to study. Various commercial ventures have developed since being in the UK, and he runs these alongside his studies. Respondent B intends to stay in the UK, and create and continue to run various Internet businesses that are based on opportunities prevalent in his country of origin (now a transitional economy), as well as Europe.

#### Respondent C

Respondent C is a UK citizen of typical background for a British university student. He was brought up in relatively comfortable circumstances in Scotland and came to Heriot-Watt because “he liked learning” and chose his degree based on a lack of knowing what else to do. During recent years Respondent C has been running a firm based on an opportunity he perceived while at university. His intentions are to complete his degree and grow his business. His plans to expand his firm include enrolling with a Further Education Institution to learn more about the industry he currently trades in, in order that he can offer more services and thus expand his venture to the national and international markets.

## Hypothesis generation

Previous research, using the study from which this pilot is drawn has shown that entrepreneurial ambition and potential varies by degree subject of student. For example, Galloway and Keogh (2005) shows that there is little variation in entrepreneurial ambitions between students of different disciplines, but Galloway, et al. (2005a) show that the time expected to start a firm is longer for those studying within Science and Engineering disciplines than in Business/Management. As immediacy of intent to realise entrepreneurial ambition forms part of the measurement of entrepreneurial (as opposed to venture start-up) potential, this affords the hypothesis:

*H1. There will be variation of entrepreneurial potential by subject discipline of the student.*

Similarly, Wilson, et al. (2003) found that females and males have similar rates of ambition for entrepreneurship, but again, that females tend to claim to want to wait longer to realise these than males. Alternatively, Levie, et al. (2004) found that amongst alumni who had not received entrepreneurship education at university, actual rates of female business start-up or self-employment were half those of males. As entrepreneurship education does appear to have a levelling effect on business start-up ambition as implied by Wilson, et al. (2003), a second hypothesis in terms of entrepreneurial potential comprises:

*H2. Females who have studied entrepreneurship during their university studies are as likely to exhibit entrepreneurial potential as males.*

The aim of the qualitative part of the study is to investigate any similarities in those who are measured as having high entrepreneurial potential, and any commonalities they share with established entrepreneurs. Using Bolton and Thompson's (2004: 298-299) suggested indicators of entrepreneurship, four further hypotheses were generated. These are:

*Those identified as having high entrepreneurial potential based on their access to role models, urgency of entrepreneurial intent, and strong desire for economic autonomy will have:*

*H3. experience of independent value/money generation already (e.g., during childhood).*

*H4. similarities in terms of attitude to work and to obstacles*

*H5. common means of dealing with failure*

*H6. several creative outputs (i.e., ideas for business) and will be motivated/excited by their prospect.*

## Results

Using the methodology described above, from the sample of 128 student respondents, four categories of entrepreneurial potential were assigned. These are shown in Table 2.

**Table 2: Groupings by ‘Entrepreneurial Potential’ score.**

Score	Range label	Number of students	Proportion of sample
14-15	“Very high potential for entrepreneurship”	3	2.3
10-13	“High potential for entrepreneurship”	17	13.3
7-9	“Potential but less likelihood for entrepreneurship”	54	42.2
1-6	“Least likely to be entrepreneurs”	54	42.2

While it is acknowledged that the groupings shown in Table 2 are somewhat arbitrary, the general trend is clear. Relatively few students in the sample exhibit the characteristics used to determine the measure of entrepreneurial potential to any great degree. This is consistent with the idea that those who have high entrepreneurial drive are “special” (Bolton and Thompson, 2004: 4), in that they are not consistent with the norm, even when that norm comprises those who have studied entrepreneurship.

In order to investigate quantitative variation amongst the groups, the two highest scoring groups were calculated together into the merged “Likelihood for entrepreneurship” group, i.e., including all those who scored 10 and above. This was because those who scored very highly were so few in number, and indeed, the creation of the original “Very High Potential” group identified in Table 2 was intended to inform the qualitative aspect of the study, rather than lend itself to quantitative analysis.

While this pilot study affords us some suggestion and implications for development of the research, the overall sample size (128) and subsequent small sample sizes generated when data is split by additional variables does not lend itself to robust statistical analysis. Therefore, implications and suggestion are included in this results section, and further depth of analysis will be conducted upon development of the instrument, method and sampling frame in light of the strong suggestions afforded.

Further, in terms of the qualitative part of the current study, it is not possible to view results for the latter four hypotheses as more than suggestion upon which to

inform developed future research. The qualitative results are based on only three case studies, and while this is plausible within the context of stringent qualitative methods, in order to claim uniqueness to those with entrepreneurial potential (as defined by this study), it is intended that a comparative analysis of those with little or no measurable entrepreneurial potential will also be undertaken in the near future.

### Quantitative Results

*H1. There will be variation of entrepreneurial potential by subject discipline of the student.*

Results for H1 show suggestion that there is variation in entrepreneurial potential based on subject discipline, as illustrated in Table 3.

**Table 3: Variation in entrepreneurial propensity by subject discipline: proportion of each faculty categorised by “entrepreneurial potential” measurement**

	Engineering (N=48)	Science (N=12)	Business/ Management (N=63)	Other (N=4)
Likelihood for entrepreneurship	10.4*	16.7	20.6*	0
Potential but less likelihood for entrepreneurship	31.3*	50	49.2*	25
Least likely to be entrepreneur	58.3*	33.3	30.2*	75

\* variation between entrepreneurial potential scores of Engineering and Business/Management students is significant at  $\pm 95\%$ .

Table 3 suggests that students of Engineering are less likely than students of Business/Management to fall into the higher “likelihood for entrepreneurship” category, and accordingly, more likely to fall into the “least likely” category. This is consistent with findings in Galloway, et al. (2005a) which showed that where Engineering (and Science) students did claim to want to start a firm, they tended to claim that they would do so after a substantial time period to a greater extent than Business/Management students. Business/Management students tended, correspondingly, to claim to want to realise firm ownership in the shorter term to a greater extent than their non-Business/Management peers. As the current study, in measuring entrepreneurial propensity (as opposed to business start-up propensity), uses urgency of start-up intent as an indicator, the current result is consistent with previous research, and suggests that while business start-up may well be on the career agendas of Engineering (and Science) students, it would appear that their intentions are less entrepreneurial than Business/Management students. Alternatively, this could be concerned with

relatively long lead times to start-up opportunities within these disciplines' professions (Keogh and Galloway, 2004).

*H2. Females who have studied entrepreneurship during their university studies are as likely to exhibit entrepreneurial potential as males.*

Results for H2 suggest that females are least likely to exhibit entrepreneurial potential. This is illustrated in Table 4.

**Table 4: variation in entrepreneurial propensity by gender: proportion of each gender categorised by "entrepreneurial potential" measurement**

	Male (N=87)	Female (N=35)
Likelihood for entrepreneurship	20.6*	5.7*
Potential but less likelihood for entrepreneurship	42.5	42.9
Least likely to be entrepreneur	36.8*	51.4*

\* variation between the entrepreneurial potential scores of the two genders is significant at  $\pm$  95%.

Table 4 suggests that females are less likely than males, to fall into the higher "likelihood for entrepreneurship" category, and most likely to fall into the "least likely" category. In fact, within the "very high potential for entrepreneurship" category (Table 1), no respondent was female (i.e., no female student received a score of 14 or 15). Wilson, et al. (2003) found that business start-up ambitions amongst those who have studied entrepreneurship at university do not vary by gender, but that females claim to want to wait longer than males to realise these ambitions. Again, as the measurement used for the current study on entrepreneurial intention uses urgency of intent as an indicator, the current method and study suggest that while it may be the case, as argued in Wilson, et al. (2003) that entrepreneurship education may be having a levelling effect on business start-up propensity for the two genders, it appears that entrepreneurial potential is less likely to be found within the cohort of female entrepreneurship students than male ones. Further, this might suggest that females are less likely than males to start entrepreneurial ventures: indeed, Verheul, et al. (2002) found that female business owners are less likely to consider themselves entrepreneurs than male business owners. Perception bias, inherent in studies of gender variation, and reported throughout the social sciences (Steele, 1997) might explain this, however, it could also be the case that there is some factual basis for variation in entrepreneurship rates between the genders.

### *Qualitative Results*

Those identified as having high entrepreneurial potential based on their access to role models, urgency of entrepreneurial intent, and strong desire for economic autonomy will have:

*H3. experience of independent value/money generation already (e.g., during childhood).*

*H4. similarities in terms of attitude to work and to obstacles*

*H5. common means of dealing with failure*

*H6. several creative outputs (i.e., ideas for business) and will be motivated/excited by their prospect.*

Results for H3 include that there does appear to be some variation in terms of the extent to which those identified as having highest entrepreneurial potential have experience of independent value/money generation. Of the three high scoring qualitative respondents Respondent A claimed to have had his first business experience at the age of 5 or 6, whereupon he acted on the opportunity to sell Disney stickers at profit to friends. Similarly, while commercial opportunities were not possible within the confines of Communism for Respondent B, upon entering a Capitalist nation, he had set up a food retail concern within 5 years. In part Respondent B claims that this was down to economic discrimination in the new country, but also that within the immigrant population it was uncommon to 'go it alone', particularly since that immigrant population had originated from a Communist state and thus had no experience of the commercial process. Alternatively, Respondent C reported no previous experience of autonomous economic activity. It would appear that to investigate the extent to which experience throughout life of independent money generation affects entrepreneurial potential a more homogenous group of case studies may be required. Each of the respondents used for the current study have very different backgrounds. It could be argued, however, that variation amongst their entrepreneurial experiences has been shaped by their backgrounds, but that the outcome has been the same. For example, one could argue that the motivation to entrepreneurial activity and propensity has been shaped by very different backgrounds: one based on opportunities created by the limited version of Capitalism available; one created by 'push' factors and a self-confessed "need to succeed, to achieve something"; and one created by the same, but with less urgency based on the availability of a comfortable lifestyle afforded by a relatively wealthy background.

Results for H4 suggest that there are some strong similarities amongst the three cases in terms of their attitudes to work and to dealing with obstacles. To

illustrate, all respondents were asked to relate a critical incident that had shaped their current circumstances, and through this similarities in approach to work and to obstacles became observable. The critical incidents of the respondents are given:

#### Respondent A

"I had to do a work placement and I had trouble getting one. I had one interview and I didn't get it. I had just joined British Gas though, as an office worker, so I went to them and I asked them if they could give me placement since I had qualifications. They gave me one as an analyst. I looked for a solution you see. It was based on projects and new projects came up so they kept me on till now – and I got my placement done."

#### Respondent B

"I was talking to a friend about this idea I had for a business and he bought me a book about starting a business. It seemed easy. I needed customers so I sent out CV's. Nothing happened for six months, but then I get this job for £4k for a week's project – I didn't get it, but I realised the potential of the market and started to get organised. I sent out 1800 CV's and started to project a better image by asking for reactions – positive or negative – you can learn from. I adapted and learnt how to make the business look better, lower prices depending on the location of the customer, and who to avoid."

#### Respondent C

"I hated school and I was dysfunctional. I left and went to college and I was much more suited to it...everything was more relaxed. I like learning, it was the school atmosphere that was the problem, the rules. I went to college for a specific course and that suited better in terms of learning and enjoying learning. I got the NC, HNC and HND in three years and got into the second year of uni."

The three critical incidents, while all very different, have various similarities. For example, all evidence independence of attitude to work – i.e., all suggest perseverance in order to achieve. Similarly, all are based on the identification of a problem and an independent, proactive approach to solving it. This infers a strong degree of perceived control over (or at least responsibility for) each individual's outcomes. Further research is required to investigate this, but the suggestion that there is consistency with theories of locus of control (Rotter, 1966) and need for achievement (McClelland (1961) is clear.

Following on from H4, investigation of H5 showed similarities between the respondents in terms of dealing with failure. As well as that noted within the critical incident scenarios above, respondents were asked directly about their means of coping with failure. Their responses were fairly consistent, as given:

Respondent A: “whatever the situation you always have opportunities and always have options.”

Respondent B “if you know the final objective you will find a way round it.”

Respondent C: I go with it when things go wrong, but I try to minimise the loss. I talk to people, reason with them. I work on a fairness principle and usually there’s a way”.

Thus, each respondent did not actually acknowledge failure, instead referring to problem solution. This may suggest commonality in that failure is regarded as merely a problem to which there must therefore be a solution, or failure is just an obstacle to be overcome. In the case of Respondent B, his food retail venture essentially failed. It generated income, but less than was available within the employment market, so the business was closed. In this sense, the venture failed to meet the objectives of the founder. However, Respondent B’s perception of that business failure was that it was not a failure, it was a series of problems from which he has learnt – for example, the location was not good and advertising was poor. In his subsequent commercial endeavours he claims that he has not made the same mistakes.

The idea that failure is perceived as either a problem with potential solutions, or as a learning experience from which to inform further means of reaching objectives is consistent with the literature on entrepreneurial personality.

In terms of H6, some variation in approach was observed amongst the three case studies. Respondents A and B cited half a dozen business ideas each during the course of their interviews, some of which appeared to have been articulated for the first time. In fact, Respondent B admitted that he had too many ideas in his mind and needed to focus better. While both Respondents A and B claimed they had many ideas, they also stated that most of them would not be acted on, but were there “festering” (as Respondent A noted) if circumstances and opportunity afforded them further development. Respondent C was focussed entirely on his one (current) business endeavour. However, during the course of discussions with him, Respondent C also cited various ideas to increase the range of products and services he offers within his current venture, and the means by which he might be able to provide these.

The overall impression during interviews and particularly discussion about idea generation was that the process of idea generation was something that respondents liked to discuss, and in articulating various ideas throughout the course of interviews there was a general sense of excitement. These observations are by definition subjective and speculative, as only one researcher’s account is offered in the current paper. However, as all interviews



were tape recorded, further analysis by other researchers is intended for the developed study to provide greater objectivity of interpretation. Additionally, during the course of the future developed study, along with additional cases, these original three will be interviewed by a second researcher in order to investigate consistency of interpretation and impression. The suggestion for the current paper is, however, that consistent with the literature, those with high entrepreneurial potential are likely to have many ideas and are likely to enjoy the creative process.

### **Implications for entrepreneurship pedagogy**

There are implications for pedagogy in terms of gender variation. Female entrepreneurs may be hindered by social factors such as their perceived role in society, a lack of support, and dependents that prevent their equal participation in entrepreneurship (Sarri and Trihopoulou, 2005). These can, to some extent, be addressed by education and, in particular, entrepreneurship pedagogy. Additionally, the provision of female entrepreneurial role models, as opposed to female business ownership role models, may be a key inclusion in entrepreneurship education delivery. A role model can often comprise an ideal that potential entrepreneurs wish to emulate. For example, Bolton and Thompson (2004) give examples of successful entrepreneurs from the world of business (such as Richard Branson and Bill Gates), the arts and even historical figures. By focussing on who they are, what they have achieved, and the impact they have made, the picture emerges that there are many ways to make a success of entrepreneurial flair. For females, access to particularly entrepreneurial role models and examples might be a key element in improving rates of ambitions through identification for entrepreneurship.

Similarly, there may be implications for entrepreneurship education pedagogy in terms of arming students of different disciplines with the skills and knowledge relevant to start-up within their future profession. This is consistent with much entrepreneurship education literature, and various methods of tailoring entrepreneurship education to disciplines based on students' needs and circumstances and the requirements of their future professions within the context of an emerging enterprise economy have been reported (e.g., Keogh and Galloway, 2004). Over and above this, however, there may be a role for entrepreneurship education to facilitate entrepreneurship (as defined by this study) and opportunity realisation for those who may show greater leanings than others in that direction.

### **Conclusions**

Results generally suggest corroboration with the literature in terms of entrepreneurial characteristics and drivers. Females, and those who study vocational disciplines appear least likely to be entrepreneurial (though not necessarily less likely to start firms during their careers). Qualitative results show

consistency between those who are measured as having entrepreneurial potential and studies of actual entrepreneurs. It would appear that the circumstances and traits that have driven and continue to drive 'real life' entrepreneurs can be observed in students who have scored highly in terms of entrepreneurial potential. Suggestion from results in the current paper includes that those measured as having "very high potential for entrepreneurship" share identifiers such as strong locus of control, high need for achievement, positive attitudes to failure and obstacles, and high levels of creativity with those who have achieved entrepreneurship. For the current authors, results appear sound enough to justify further application of the research instrument and analysis based on it, in order to investigate more fully if it is possible to predict entrepreneurship prior to its realisation throughout the course of an individual's career.

## References

- Atherton, A. (2004) 'Unbundling enterprise and entrepreneurship: from perceptions and preconceptions to concept and practice' *International Journal of Entrepreneurship and Innovation*, Vol.5, No.2, pp.121-128.
- Bernardin, H.J. & Brownas, D. (1988) 'Critical Incident Technique' in Gael (ed.) *Handbook of Job Analysis*, Vol.2, pp.1120-1137, John Wiley & Sons, New York.
- Bitner, M.J., Booms, B.H. & Tetrault, M.S. (1990) 'The Service Encounter: Diagnosing favourable and unfavourable incidents' *Journal of Marketing*, Vol.54, pp.71-84.
- Bolton, B. & Thompson, J. (2004) *Entrepreneurs: Talent, temperament, technique*, 2<sup>nd</sup> edition, Butterworth-Heinemann, Oxford.
- Bryman, A.(1988) *Quantity and Quality in Research*, Unwin Hyman, London.
- Cassell, C. and Symon, C. (1994) "Qualitative research in work contexts" in Cassell and Symon (eds) *Qualitative Methods in Organizational Research: A Practical Guide* pp.1-13, Sage Publications, London.
- Chell, E. and Allman, K. (2003) 'Mapping the Motivations and Intentions of Technology Orientated Entrepreneurs' *R&D Management* Vol.33, No.2.
- Chell, E., Haworth, J. & Brearley, S. (1991) *The Entrepreneurial Personality*, Routledge, London.
- Christie, M. (1998) 'The use of critical incidents in teaching and learning' *Teaching and Learning Conference*, Darwin.
- Collins, L., Hannon, P. D. and Smith, A. (2004) 'Enacting Entrepreneurial Intent: the gaps between student needs and higher education capability' *Education and Training*, Vol.46, No.8/9, pp.454-463.
- Davidsson, P. (1995) 'Determinants of Entrepreneurial Intentions' *Rent IX Conference*, Piacenza.
- Dunn, T.A. & Holtz-Eakin, D.J. (2000) 'Financial capital, human capital and the transition to self-employment: Evidence from intergenerational links', *Journal of Labor Economics*, Vol.18, No.2, pp.282-305.

- Flanagan, J.C. (1954) 'The Critical Incident Technique' *Psychological Bulletin*, Vol.1, pp.327-358.
- Galloway, L. & Keogh, W. (2005) 'Developing the entrepreneurial spirit in student education to meet professional needs' presented at *Conference on Fostering Entrepreneurship: The role of higher education*, Trento, Italy.
- Galloway, L., Anderson, M., Brown, W. & Whittam, G. (2005a) *The Impact of Entrepreneurship Education in HE*, Report for Business Education Support Team.
- Galloway, L., Anderson, M., Brown, W. & Wilson, L. (2005) 'Enterprise skills for the economy' *Education and Training*, Vol.47, No.1, pp.7-17.
- Gibb, A.A. (1996) 'Entrepreneurship and Small Business Management: Can we Afford to Neglect Them in the Twenty-First Century Business School?' *British Journal of Management* Vol.7, No.4, pp.309-324.
- Hout, M. & Rosen, H.S. (2000) 'Self-employment, family background and race', *Journal of Human Resources*, Vol.35, No.4, pp.670-692.
- Keogh, W. & Galloway, L. (2004) 'Teaching enterprise in vocational disciplines: reflecting on positive experience' *Management Decision*, Vol.42, No.3/4, pp.531-541.
- Kirby, D.A. (2004) 'Entrepreneurship Education: Can Business Schools Meet the Challenge' *Education and Training*, Vol.46, No.8/9, pp.510-519.
- Klapper, R. (2004) 'Government goals and entrepreneurship education – an investigation at a Grande Ecole in France' *Education and Training*, Vol.46, No.3, pp.127-137.
- Koh, H. C. (1996) 'Testing Hypotheses of Entrepreneurial Characteristics – a study of Hong Kong MBA students' *Journal of Management Psychology* Vol.11, No.3, pp. 12-25.
- Levie, J., Brown, W., & Galloway, L. (2004) 'How entrepreneurial are alumni? A national and international comparison' in Jones, M.V., & Dimitratos, P., *Emerging Paradigms in International Entrepreneurship*, Edward Elgar, Cheltenham, pp.342-265.
- Littunen, H. (2000) 'Entrepreneurship and the characteristics of the Entrepreneurial Personality' *International Journal of Entrepreneurial Behaviour and Research*, Vol.6, No.6, pp.295-309.
- Llewellyn, D. J. and Wilson, K. M. (2003) 'The Controversial Role of Personality Traits in Entrepreneurial Psychology' *Education and Training* Vol.45, No.6, pp.341-345.
- McClelland, D.C. (1961) *The Achieving Society*, Collier-Macmillan, New York.
- NATRI (2003) *Critical Incident Study*, National Assistive Technology Research Institute.
- Rotter, J.B. (1966) 'Generalised expectations for internal versus external control of reinforcement' *Psychological Monographs: General and Applied*, Vol.80, No.1, pp.1-27.
- Sarri, K. and Trihopoulou, A. (2005) 'Female Entrepreneurs' Personal Characteristics and Motivation: A Review of the Greek Situation' *Women in Management Review* Vol.20, No.1, pp.24-36.

- Scott, H.G. & Twomey, D.F. (1988) 'The long-term supply of entrepreneurs: Students' career aspirations in relation to entrepreneurship', *Journal of Small Business Management*, Vol.26, No.4, pp.5-13.
- Stake, R.E. (1995) *The Art of Case Study Research*, Sage Publications, London.
- Steele, C. (1997) 'A threat in the air: How stereotypes shape intellectual identity and performance' *American Psychologist*, Vol.52, No.6, pp.613-629.
- Steiner, R. (1998) *My First Break*, News International.
- Verheul, I, Uhlaner, L. & Thurik, AR. (2002) *Entrepreneurial self perception and gender*, Erasmus Research Institute of Management Report.
- Wilson, L., Brown, W., Anderson, M. & Galloway, L. (2003) 'Entrepreneurial ambition amongst male and female entrepreneurship students in Scotland' presented at *International Council for Small Business 48<sup>th</sup> World Conference*, Belfast.
- Wright, L.K., Bitner, M.J. & Zeithaml, V.A. (1994) 'Paradigm Shifts in Business Education: Using active learning to deliver services marketing content' *Journal of Marketing Education*, No.16, pp.20-31.
- Yin, R.K. (1994) *Case Study Research: Design and Methods* (2<sup>nd</sup> ed), Sage Publications, London.

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<sup>i</sup> The current study defines entrepreneurship as entrepreneurial business ownership, i.e., that involving growth, innovation, risk, etc., or as applying to "a person who habitually creates and innovates to build something of recognisable value around perceived opportunities" (Bolton and Thompson 2004:16). As the current study generally is concerned with prediction, business creation (or potential for it) is taken as a measure of entrepreneurial potential. Self-employment, while connected, is not regarded as an indicator of entrepreneurial potential to the same extent as business ownership in the current paper.