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THEORY DEVELOPMENT OF HOW STUDENT ENTREPRENEURS THINK, LEARN AND WORK: UNCOVERING DEEP INSIGHTS INTO THE COGNITIVE PROCESSES OF STUDENT ENTREPRENEUR LIVED EXPERIENCES TO DEVELOP A CUE INVENTORY OF STUDENT ENTREPRENEURSHIP

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Theory Development of How Student Entrepreneurs Think, Learn and Work: Uncovering Deep Insights into the Cognitive Processes of Student Entrepreneur Lived Experiences to Develop a Cue Inventory of Student Entrepreneurship

ABSTRACT

Principal Topic: The concept of the true student entrepreneur is relatively new and attracting societal and academic attention. A paucity of research exists on the cognitive processes student entrepreneurs use to think, learn and work. Student entrepreneurs operate within a challenging environment balancing entrepreneurial work activities and study life. Normally, the archetypal entrepreneur of last century drops out of university. This research explores the student entrepreneur not just as a student attending entrepreneurial classes but conducting business on/near campus or leading a campus enterprise (voluntary association) while simultaneously attending formal university award courses.

Methodology: This preliminary study centres on the lived experiences of student entrepreneurs not as most previous studies the intentionality of students to become entrepreneurs. As such, in-depth interviews take place with student entrepreneurs based on the Critical Incident Technique (Flanagan 1954) focusing on storytelling by student entrepreneurs in natural campus settings.

Results and Implications: A cue inventory of student entrepreneurship is sourced from the lived experiences of student entrepreneurs and informs the generation of a cognitive framework. Findings point to the university environment providing leverage to help innovatively solve entrepreneurial problems in real time. Student entrepreneurs are "luck ready" always open for potential opportunities. As a consequence universities interested in fostering true entrepreneurship beyond classroom teaching are able to facilitate and manage various sources of opportunities.

INTRODUCTION:

Today, "the study of entrepreneurship is still in its "infancy" (Brazeal & Herbert 1999) with the same said of the student entrepreneur nearly fifteen years later. While a plethora of academic and popular literature exists on entrepreneurs and their success/failure, a paucity of research exists on the cognitive processes student entrepreneurs use to think, learn and work in a challenging environment requiring balancing work and study life. This is particularly important as in writing about own entrepreneurial experiences, several famous entrepreneurs have included the period of time as students. This includes the archetypal successful entrepreneur Richard Branson (Branson 2009).

In the 21st century uncertainty about economic stability is rising. As a result, students are "now faced with a wider variety of employment options, the probability of ending up with a portfolio of jobs, more responsibility at work and more stress" (Henry, Hill & Leitch 2005) making entrepreneurship a more appealing options for future graduates. Governments recognise the importance of Student Entrepreneurs in the economy with the French government making official the status of Student Entrepreneur. This includes providing financial support for students with ideas as well as students considering setting up a business (Lomas 2013) with an ultimate goal of creating 20,000 jobs in 2014 (*Un nouveau statut pour les etudiants-entrepreneurs*, 2013)

Entrepreneurs are defined in a multitude of ways in the literature. However, the same is not true for student entrepreneurs. For Entrepreneurs they see themselves as "dream merchants" (Purewal 2001) or they "build emerging businesses rather than extending and defending existing businesses" (Baghai and Coley 2000). A broader definition contends: "He isn't only interested in building businesses. He's also the political science major who starts a political organization, using it as a platform to connect thinkers from other disciplines" (Torenberg 2012). However, this study departs from much of the previous work by exploring the student entrepreneur not just as a student attending entrepreneurial classes but conducting business on/near campus or leading a campus enterprise (voluntary association) while simultaneously attending formal university award courses.

The key focus of this study is researching the lived experience of the student entrepreneur. Furthermore, the nature of the lived experience allows an exploration of the cognitive processes student entrepreneurs undertaking study at university use to learn new skills, generate innovative solutions and balance study work life.

COMMON TRAITS AND COGNITIVE PROCESSES OF ENTREPRENEURS

In order to identify student entrepreneurs and to inform the investigation regarding the cognitive processes of student entrepreneurs, a short review of the common traits or characteristics of the entrepreneur follows:

- o According to Kets de Vries (1985) "entrepreneurs somehow know how to lead an organization and give it momentum". They infuse a great enthusiasm in start-up organisations. Their leadership capability derives from their "seductiveness, gamesmanship, or charisma" (Kets de Vries 1985; Pink 2009). They use their passion to transform their purpose into reality that others follow (Tjan, Harrington & Hsieh 2012; Stewart 1996)Busenitz focuses on over (self-)confidence and autonomy (Schmitt-Rodermund 2004) while Kets de Vries adds that entrepreneurs have a difficult time to work for someone else (1985), for which a later psychological approach by Stuart seems to corroborate (Stewart 1996).

- o Locus of control and high Need for Achievement, or NAch, (Essers & Benschop 2007; Begley & Boyd 1988; Schmitt-Rodermund 2004; McClelland 1965; Hornaday & Aboud 1971) are now widely recognised as traits of entrepreneurs and have been commonly used in entrepreneurship studies as noted by Davidsson in the latest ACE research vignette (2013). Caveats needs to be taken into account as other researchers demonstrated no significant results for the need for achievement (Hansemark 2003) for instance.

- o Moreover, risk taking-propensity is one of the mainly recognised traits of entrepreneur (Kets de Vries 1985; Nicolaou et al. 2008; Schmitt-Rodermund 2004; Stewart Jr et al. 1999; Stewart Jr & Roth 2001), but there is no agreement on the level of risk: moderate, calculated or simply a gut feeling. In addition to the uncertainty of level of risk Tjan, Harrington and Hsieh (2012) note that the line between risk takers and risks tolerators is blurry.

- o More rarely cited is the fact that a significant amount of entrepreneurs go through ups and downs (Kets de Vries 1985).

o   Creative entrepreneurs demonstrate great degrees of energy (Kets de Vries 1985; Schmitt-Rodermund 2004), a high level of perseverance (Brockhaus & Horwitz 1986) and imagination (Essers & Benschop 2007), coupled with an aversion for "repetitive, routine" activities.

o   Common as well is the notion of following a dream for which some archetypical entrepreneurs such as Bill Gates and Mark Zuckerberg are ready to sacrifice their Harvard degree (Tjan, Harrington & Hsieh 2012)

o   Luck or serendipity is studied by a few academics. However, in more common terms it is about "making your own luck happen" (Tjan, Harrington & Hsieh 2012)when entrepreneurs build themselves a network of people and opportunities that they are ready to act on when they come to fruition.

PREDICTING ENTREPRENEURSHIP AND PSYCHOLOGICAL TESTING

Even though these traits are still contested, they constitute a starting point in the identification of entrepreneurs. The next logical step to predict entrepreneurship is the use of psychological tests. Attempts for testing for entrepreneurship go back as far as 1965 (McClelland), leveraging or not the previous traits and characteristics identified. There are several issues in applying psychological tests to entrepreneurs as Caird (1993) encapsulates it. The first issue is that the population of entrepreneurs is heterogeneous, they vastly differ by the type of business they are running, their motivation, their use of technology and the list goes on. It naturally links to the second issue that it exists multitudes of definitions of entrepreneurs along with the various characteristics that they are labelled with. The latter, according to Caird, justifies why some tests look at the traits and characteristics while others focus on "the nature of the entrepreneurs."

One of the earliest tests on the nature of the entrepreneur is Edwards' Personal Preference Schedule (Edwards 1954). This personality test requires the respondent to rank needs. Edwards demonstrates that entrepreneurs have "high Need for Achievement, autonomy, change and a low need for affiliation". However, as demonstrated by Watkins, results can be manipulated by changing the content and the range of the needs (1976).

Another personality test is McClelland's use of the Thematic Apperception Test (TAT). It uses projective measures where the subject responds to pictures with stories. McClelland's research also focuses on measuring NAch and additionally power and affiliation. He designed a specific setting (or set of pictures) of the TAT to assess them (1965).   He found that entrepreneurs have "high NAch, high needs for power and low affiliations needs". However other studies such as Roberts' (1989) showed that the results varied according to the type of entrepreneur.

Other tests emphasis on learning preferences such as the Honey and Mumford Measure of Learning Style where entrepreneurs score higher at learning by doing instead of learning through theory and reflection (Thorpe & Dyson 1988)The Jackson's Personality Inventory (JPI), an objective test, entrepreneurs have a high level of energy, risk taking propensity, and autonomy (Sexton & Bowman 1986)There is not lack of types of tests being developed and used by practitioners. As an example, recently the Commonwealth Bank of Australia developed their own psychometric test called "What kind of entrepreneur are you? (Bucknell

2013). This test sets apart seven types of entrepreneurs: achiever, individualist, learner, competitor, innovator, risk-taker, and self-starter.

Comparative studies have been demonstrated different results with different types of entrepreneurs, but there seems to be a commonality on thinking and intuition (Roberts 1989). If existing tests relate to generic types of people, only a paucity of tests (Abraham 2011) for types of entrepreneurs appears to exist in spite of "the fact that entrepreneurship is affected by numerous factors" (Kalkan & Kaygusuz 2012)

METHODOLOGY

Using depth interviews and long interviews (McCracken 1988) with student entrepreneurs based on the Critical Incident Technique (Flanagan 1954), this study centres on the student entrepreneur and lived experiences. An exploration of how student entrepreneurs undertaking study at university learn new skills, generate innovative solutions and balance study work life. Eight informants are selected using a snowball sampling technique from the faculties of Business, Law and Information Technology at the University of Technology, Sydney (UTS). The in-depth interviews involve storytelling in natural settings and are based on campus. A cue inventory (list of signals) of student entrepreneurship (CISE) develops from the lived experiences of student entrepreneurs and informs the generation of a cognitive framework.

The long qualitative interview (McCracken 1988) with student entrepreneurs derives indicators and signals from the case studies (Woodside 2010; *The Alchemy of Student Entrepreneurship* 2014) of archetypical entrepreneurs (including but not limited to) the founder of the Virgin group Richard Branson (2009; 2011; 2010), the American business magnate Donald Trump (2009; 2011; 2006), his English counterpart Alan Sugar (Sugar 2011), the founder of TIBCO and Indian businessman Vivek Ranadive (1999; 2011), the iconic new technology American entrepreneur Steve Jobs (Isaacson 2011) and the social media magnate Mark Zuckerberg (Mezrich 2009).

In order to make sure that the interviews are centred on the elicitation of tacit knowledge and the unintentional and unconscious stimulus driving the entrepreneur, the Critical Incident Technique (Flanagan 1954) is used to drive the interview. The objective is for the interviewees to use their own words when they are discussing the key moments, or incidents in their lives that lead them to their current entrepreneurial activities. Examples of such critical incidents are found on or off campus including attendance at an inspirational lecture or speech. Even, when the speech is not part of the curriculum. Also, the incidents take the form of internship experience, a discussion with a peer, or even the need to generate another source of revenue. By gathering the narrative around these decision-making moments, information is obtained on not only how learning takes place but also how student entrepreneurs adopt to new mental models (Klein 2006).

Extensive preliminary unpublished work includes a depth review and testing of the instrument and interview guidelines (*The Alchemy of Student Entrepreneurship* 2014). The data set comprises various sources from archetypical entrepreneur biographies, blog entries in own words of entrepreneur interviews, documentaries, biographic motion pictures such as The Social Network (Fincher 2010) or Jobs (Stern 2013), magazines such as Entrepreneur (Wang 2012) and storytelling by entrepreneurs on podcasts from Stanford University's Entrepreneurship Corner (O'Reilly 2013; Systrom 2011; Hoffman 2012). A cognitive map is derived from the previously cited sources and a mixture of interview transcripts for the

archetypical entrepreneurs (Fig. 1) with the focus on key activities performed when they were student themselves. Finally, an interview via Skype with a French student entrepreneur assists with overcoming ambiguities arising from the long interview and furthers the validation process in advance of the interviews.
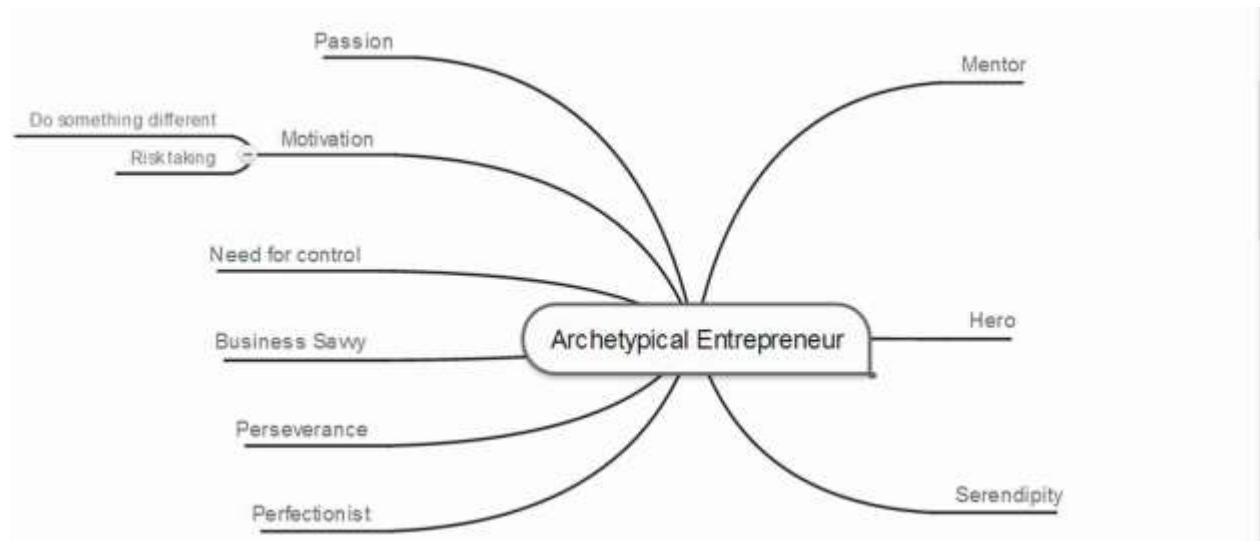

Fig. 1: Cognitive Map of Archetypical Entrepreneurs

The data set contains 20 interviews from 8 students with academic majors spread across Business (50%), Information Technology or Computer Science (30%) and Business and Law double major (20%). Face-to-face meet-ups (Pleshakova 2012) occur in natural settings for the interviewees, away from the office of their voluntary associations, cafes on campus, or "hackathons" (Hunsinger 2011) or entrepreneurship weekends where they compete. For optimum comfort during face-to-face with the students, interviews are recorded with a smartphone application Smart Voice Recorder and archived in secure local academic cloud storage Oxygen Cloud for later archival research.

The interviews range from 30 minutes to 90 minutes in one sitting to get as complete as possible information on how the perspective of the student entrepreneur on her/his critical incidents, thoughts and actual behaviour. The interviewer, a former student entrepreneur and serial entrepreneur is familiar with the interviewees and displays empathy and interest in the content of the interview.

A member-check is completed within 7 days recalling the critical incidents as understood by the interviewer as well as questions about the learning preferences of the student entrepreneurs interviewed. The member check provides an opportunity for the informant to provide any additional thoughts triggered by subsequent introspection. The post treatment of the interview data requires the interviewer to listen to the responses and seek patterns or themes of particular interest and relevance to the theory of student entrepreneurship.

RESULTS AND IMPLICATIONS:

For this conference, the analysis is based on two student entrepreneurs running a business (SE 104 and SE 105) as a preliminary analysis shows their cognitive map closest to the archetypical entrepreneurs versus students running a student association. However, some of the narrative from other informants help inform the thinking and theory building.

1)   How do student entrepreneurs work, think and learn

a.   WORK

When looking how the student entrepreneurs describe the way they work, at first there seems to be multitudes of behaviours, or ways to tackle work. For instance, some mention the fact that they are working for or toward a dream: "So my dream was to have my own agency' (Student Entrepreneur or SE 105). Others are clearly afraid of boredom, or the lack of use of creativity at work: "I went to XYZ Pty, I didn't want to [but it was part of the scholarship]. I was doing dead range security admissions and was like 'People get paid for this?!' And there were like 30 year olds getting paid to click this button. I was freaking out, hating life; it was really hard for me. I wasn't doing anything creative" (SE104). Another way is to leverage studies and work and vice versa: "I had another one [business] called AAA Photo which was like editing photos […] for people. But it was like I did it for a project at Uni and then got some business out of that (SE105).

However, after further analysis, two key behaviours emerge; the way student entrepreneurs work hard for their venture and the need for control when they work on it.

The notion of working hard, giving a lot of effort and energy is palpable amongst the student entrepreneurs interviewed. Sometimes it is displayed as a very high intensity within a short time, even overlapping their studies: "It took me like six sleepless nights, and I would go to Uni late" (SE 104). For some young entrepreneurs, this high amount of effort can go for a longer time: "I built 3 new websites [one of them] was really complex, on the train to work, after work, at lunch, at work, took days off, for 3 months. [I] got really sick". The last remark shows that some student entrepreneurs are even pushing the limits of their body to work on their venture.

Another common behaviour across the young entrepreneurs interviewed was the clear need of total control in the way they work. Student Entrepreneur 105 recalls: "I got my first client at thirteen; […] it was my family friend. So I built this entire site, html, coded it myself, designed it myself, did an e-commerce integrated with PayPal flash kind of thing, all by myself." Another one describes how he manages his business: "By myself. Well, I am the only one running it. I have people doing stuff [contractors], but I am the one running it!"

b.   THINK

Even when removing the analysis lenses of WORK from the ones of THINK, the need for control among the subjects is still present. For one of them, it even seems to trigger some sort of anxiety if control is missing: "[At Uni] I have less control with exams, assignments you have so much control I could put everything into it, put 100%. Exams, you never know until the day" (SE 104) or another one is very clear about it: "I have to control my environment, , my equity..." (SE105).

A different behaviour surfaces when analysing the way student entrepreneurs think. They have a need for recognition from the people around them. "Wowing people was awesome to be different I guess. And then I just kept doing it" (104 SE). Another one admits that, after a while, he tries hard to do it on purpose: "I would use those techniques on people and on girls and sort of like party situations to see how different people would react and I kind of like [it] (SE105). For some, it even seems to be their source of energy for keeping up or justifying the

hard work: "I kind of got addicted to that feeling [of people being impressed], I guess of showing off" (104).

A third aspect is not as clear as the previous ones as it is worded differently by the student entrepreneurs in our study. Some call it simply *God giving opportunities*: "I am a Christian, so I really believe that I need to claim every moment of my life. I believe God has presented me with these opportunities and I've just taken full advantage of it" (SE 104). He states later in his ways that he is looking and asking for opportunities: "it might be like psychological values that Jesus presents and stuff that helps. But I believe it's my natural relationship with God. […] I was like 'Lord, if you are there, Do this this this and this." Another one calls it *luck* and stresses how he opens himself to it: "I know kids say everything happens for a reason, but I've definitely said yes to just about every opportunity I can get at [Uni], that's just my attitude to life in general, so call it luck, but I guess I just stepped it up a little bit" (SE102). The other term used was *serendipity*: "I think at the start there was a lot of luck, but I think by the end, it became serendipity. It became a culmination of my own making, but at the start it was definitely all luck" (SE 107).

<p style="text-align:center">c.   LEARN</p>

In analysing how the student entrepreneurs in our study LEARN, four behaviours are shared by a few of them.

Our student entrepreneurs reveal that they learn greatly by trying new things from the earlier age: "[when I was 8] my dad gave me a computer. I started playing around with the wallpaper and the sounds and showing everyone [then when I was 10] my dad installed Photoshop onto my computer and I saw the back cover, and it was this beautiful image, and I was like 'Well if they can do it, I can do it". This behaviour includes adding other subjects of interest into the curriculum: "At uni [on top of my Computer Science course] I started studying psychology and started studying how to interact with people" (SE 104).

Some also enjoy learning by challenging themselves with activities that are not expected from them: "[at 12] I tried to recreate all of these webpages. I looked at the templates and I tried to recreate them" and [at 14] instead of doing a PowerPoint assignment, I would create a fully interactive website, which for each section of the assignment was an animated movie" (SE 105). They do not seem to see a limit to these challenges, asking even for them while doing internships: "At XYZ Pty.Pty I was so bored that I asked for my own project […] which I really enjoyed, […] I just got asked 'Create this system' I learned how to do it, and I did it" (SE 104).

This attitude of challenging oneself is also accompanied with the capability to learn by doing. It starts by making more and more decisions as points out one of our student entrepreneur (SE 101): "You just have to make decisions, try to make educated decisions, try to test something new sometimes, to get it there, and you learn a lot. I just learned a lot". Even if the outcomes seem negative, they learn from their mistakes: "I did some bad stuff, because I just wanted a lot of control over everything, but that's what I learned" (SE 101). Even when doing their internship they were learning skills to implement in their own ventures: "[with ZZZ Pty.] I learned so much. I learned process, I learned customer service, I learned structure, I...actually focusing the nitty gritty details. I could go on endlessly about how much I learned" (SE 104). Some of the serial student entrepreneurs also appreciate the benefits of experience: "after the catering business, I can see the difference between a great team and a terrible team" (SE 104). There is a focus on the importance of learning from the real life as opposed to in class: "I knew I wanted to be part of them, because it's something different, it's

something more business-like than the class" (SE 101). They have a capacity to analyse what they learn, even from the least exciting activities from their student association: "we learned that you can actually go into a grocery store and have a negotiation with them, and so really, really learned a lot in terms of negotiation, in terms of organisation, and in terms of, also, motivating people" (SE 101). In times where others see difficulties, they see the opportunity to learn: "He is the toughest client I have ever had. It is because of him I realized I need to learn so much. My customer service was terrible" (SE 104).

Finally, we find that the student entrepreneurs from our study learn because they are willing to learn.

They are open to the world, to new experiences: "we went travelling around America, Europe. And we saw, I saw the whole world. My bubble just burst. I had people challenging me, I was challenged by the food I was eating, everything I was seeing" (SE 105). They want to learn from everything, by doing as much as possible: "why do just one thing when you can do ten? There comes a time when you need to do two and focus, but when you are this [young] age it's important to meet as many people as you can, have as many experiences as you can, absorb as much wisdom as you can" (SE 104).

They also look to learn from networking endlessly from experts in their fields: "it was a great experience meeting them [advertising gurus] and having that awesome time, and learning from them" (SE 104) or from family members "My cousin over there was one of the founding team of a number of businesses. So I was learning from him as well" (SE 105). The more they are passionate about learning a topic, the more they want to contact people: "learning from them, absorbing everything because it's what I was passionate about, just absorbing. [That's why] contacted a lot of different people trying to learn from them" (SE 104).

This concludes the first step of the analysis. Table 1 below summarises the findings on how Student Entrepreneurs in our preliminary study Work, Think and Learn.

Table 1: How do Student Entrepreneurs Work, Think and Learn?

Area	Behaviour	Sub themes
WORK	Hard Work/Effort	
	Need for Control	
THINK	Need for Control	
	Need for Recognition	
	Believe/Ask for Opportunities/Luck	
LEARN	By Trying New Things	
	By Doing Things	Business /Real life activities
		Work Experience / Internship
	By Willing to Learn	Open Minded attitude
		Networking
	By Challenging Oneself Continuously	

2)   How do Student Entrepreneurs compare to Archetypical Entrepreneurs?

A previous unpublished work (*The Alchemy of Student Entrepreneurship* 2014) determines the common set of cognitive behaviour of Archetypical Entrepreneurs as follow: Passion, Motivation, Need for Control, Business Savvy, Perseverance, Perfectionist, Have a Mentor, Have a Hero, Believe in Serendipity. The work (ibid) is based on the same set of student entrepreneurs as this current research find the student entrepreneurs share several of these cognitive behaviours with the archetypical entrepreneur.

By understanding in the current study how student entrepreneurs work, think, and learn we develop an overall cognitive map /table (Table 2) of the student entrepreneur closely resembling the archetypical Entrepreneur (figure 1).

Table 2: Summary of Cognitive Behaviours shared by Student Entrepreneurs and Archetypical Entrepreneurs

Archetypical Entrepreneurs		Student Entrepreneurs
Passion		✓
Motivation	Do something Different	✓
	Risk Taking Propensity	
Need For Control		✓
Business Savvy		✓
Perseverance		✓
Perfectionist		
Have a Mentor		
Have a Hero		
Believe in Serendipity		✓

We come to the conclusion that Student Entrepreneurs already share with the Archetypical Entrepreneurs their Passion, Motivation (Doing something different), Need for Control, Business savvy, Perseverance and believing in Serendipity.

3) Cues and Tests relevant for these cognitive behaviours

The last step of our research is to analyse the life stories told by our student entrepreneurs for a list of signals or cues. The signals are considered to be the outputs of the cognitive behaviours described by the young entrepreneurs themselves. The analysis of the narrative of student lived experiences with some preliminary findings is listed in the table 3, below.

Table 3: Preliminary findings: list of cues for student entrepreneurship

Cognitive Behaviours	Cues
Passion	High level of energy, high number of working hours, convince others to join the venture
Motivation / Wants to do something different	Verbalise it repetitively online and offline
Need for Control	Micro manage, do not give equity, set the framework for the interview
Business Savvy	Use of business lexical, understanding of cash flow, ROI, business plan, customer service, customer validation...
Perseverance	History of failures but does not give up.
Believe in Serendipity	Narrative of "by luck, by chance, it happens to be..."

These cues are an indication of similar cognitive behaviours to student entrepreneurs. A choice of relevant tests helps the process of predicting student entrepreneurs. At this stage, we recall from the psychological tests covered at the beginning of this paper, the tests focusing on one or more of the 6 cognitive behaviours identified are:

- The Honey and Mumford Measure of Learning Style
- The Jackson's Personality Inventory (JPI)

Further research is required to identify additional existing psychometric tests highlighting the cognitive behaviours from our findings.

Several limitations needs to be highlighted

1) The Need for achievement might provide insight into "Wanting to do something different" or in the Need for Recognition. If that is the case then more tests such as TAT could be included

2) The cues come from the long interviews and in depth analysis of student entrepreneurs. Further research is needed to establish if the cues hold for a to a larger population of student entrepreneurs with lived experiences as opposed to desires to become entrepreneurs.

CONCLUSION

Student entrepreneurs follow the cognitive scripts of archetypal entrepreneurs "learning by doing", "following one's own instincts", and enact "you don't have it to get it right, you have to get it going" (Corcoran 2012). The university environment provides leverage to solve entrepreneurial problems in an innovative fashion and in real time. Guest lecturers, student association events, university networking, access to scholarship and internship programs are sought out. Student entrepreneurs avail themselves of luck being open and ready for as many opportunities as possible. Students Entrepreneurs proactively leverage opportunities available on campus scanning their environment for opportunities. As a consequence universities interested in fostering entrepreneurship should facilitate and manage these various sources of opportunities. In the 21st century the next Bill Gates, Steve Jobs or Mark Zuckerberg might just not have to drop out of a university course to think, work and learn. To quote student entrepreneur 105: "why do just one thing when you can do ten?"

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