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# Influential Factors for Young Entrepreneurial Success: A Delphi Study on High School Entrepreneurs

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While previous literature has shown how certain internal and external factors have contributed to the accomplishments of adult entrepreneurs, there is little research that focuses on young entrepreneurs. Along with a growing entrepreneurial interest among adolescents, this study examines what factors have contributed to the success of high school entrepreneurs in Ontario, Canada. Employing a Delphi study, experts and non-experts in the field were invited to participate in this study. Three categories of experts include current high school entrepreneurs, high school teachers of entrepreneurship, and successful adult entrepreneurs. One category of non-experts consists of seven students who aim to become future entrepreneurs while in high school. In the first stage, a contextual survey was used to collect subjects' information about personality, family background, and financial support in terms of their entrepreneurship. In the second stage, a three-round Delphi study was conducted among the group of experts. In the third stage, an interview was constructed among the group of non-experts. Then, their responses were compared with the experts'. As a result, the identifiable factors influencing the success of high school entrepreneurship were summarized as the PITF model – Personality, Institutional support, Timing perception, and Family background (ranked by the subjects in the order of importance). Notably, two results stand out from the previous studies: 1) it is found that Open to Experience defined by the “Big-5 model” is the most dominant personality trait that determines entrepreneurial success. 2) Significant differences of perceptions were shown between experts and non-experts in terms of the amount of timing and financial support needed for establishing a business.

*Keywords:* youth entrepreneurship, high school students, Big-5 model, Delphi Study

## 1. Introduction

With increased globalization and market fragmentation, entrepreneurship has been more crucial for economic growth in modern economies than it has ever been before (Mueller, 2007). Along with the growing demand for new types of businesses, interest in entrepreneurship has also arisen, especially among high school students across America, as 72% intend to start a business someday (Schawbel, 2014). Despite their optimistic attitudes towards start-ups, the number of adolescents engaged in the entrepreneurial landscape remains low. A survey by Junior Achieve-

ment and Ernst & Young LLP (EY) shows that only 13% of American entrepreneurs today started their first business at the age of 18 or younger (Grocholski, 2018). The gap between the percentage of adolescents having entrepreneurial objectives and the percentage of those who took actions emphasizes the significance of the exploration of youth entrepreneurship.

This study defines entrepreneurs as individuals who establish and manage new businesses and addresses “successful business as one which creates profit” and sustains profitability for at least one year (Merriam-Webster, n.d.; Mongan, 2017). The purpose of this mainly qualitative research is to determine the criti-

cal factors that might contribute to high school students' (14 to 18 years old) entrepreneurial successes in Ontario, Canada. By analyzing the personality, family, funding, and timing factors with entrepreneurial success, this study provides valuable insight for high school students who are considering starting a business and venture capitalists who hope to promote the new generation's entrepreneurship for an innovative and inclusive economy.

## 2. Literature Review

With the idea of youth entrepreneurship being a relatively new focus of academic research, it is essential to review and synthesize research findings from a wide range of credible sources, including academic studies, internal company-specific research, psychological theories, and regional studies. According to Robert H. Brockhaus, the Coleman Chairholder in Entrepreneurship at Saint Louis University, in determining the traits of successful entrepreneurs, there are two main categories: one focuses on the psychological factors (internal indicators), and the other focuses on the environmental "push" factors (external indicators) (Brockhaus, 1980; Wyld, 2011). This section explains both perspectives yet shows little communication between the two and the lack of similar research in the context of youth entrepreneurship, which lead to the reason why a model that evaluates both internal and external factors towards adolescent entrepreneurs' success is developed.

### 2.1 Internal Factors

In the mid-twentieth century, sociologists started to focus on psychological factors of being an entrepreneur to answer three major questions: "Who is an entrepreneur? What drives them? What traits define them?" (Kerr et al., 2017). However, with the lack of a consensus, some researchers concluded that the approaches towards personality traits and characteristics "have been unfruitful and that behavioral approaches will be a more productive perspective for future research in entrepreneurship" (Gartner, 1989;

Brockhaus, 1982).

A few decades later, driven by growing attention to the start-up culture<sup>1</sup>, research about the entrepreneurial personality resurged with "an increasingly consistent set of theoretical frameworks" (Kerr et al., 2017, p.7). Amy Boren, Assistant Professor at Texas Tech University, suggests that traits of emotional intelligence (EI), "the ability to monitor one's own and other's feelings," is related to the entrepreneur's success and growth (Boren, 2010, p.57). Moreover, several studies have reached a consensus of categorizing the "Big-5 model," five dominant EI traits of successful entrepreneurs: 1. *Neuroticism*, 2. *Extraversion*, 3. *Openness to Experience*, 4. *Agreeableness*, and 5. *Conscientiousness* (Antoncic et al., 2013; Judge et al., 2002, p.766). According to Scott E. Seibert, Professor of Human Resource Management at Rutgers University, the Big Five traits are defined as below:

- **Neuroticism:** "individual differences in adjustment [of uncertainty] and emotional stability."
- **Extraversion:** "the extent to which people are assertive, dominant, energetic, active, talkative, and enthusiastic."
- **Openness to Experience:** "a personality dimension that characterizes someone who is intellectually curious and tends to seek new experiences and explore novel ideas."
- **Agreeableness:** "one's interpersonal orientation. Individuals high on Agreeableness [are] trusting, forgiving, caring, [generous], and gullible."
- **Conscientiousness:** "an individual's degree of organization, persistence, hard work, and motivation in the pursuit of goal accomplishment" (Zhao & Seibert, 2006, p. 260).

The consistency in which these studies hypothesize certain personality traits of successful entrepreneurs has laid the cornerstones of predicting success in business ventures. Hence, applying these psychological theories in the context of high school entrepreneurs is relevant for this study.

While there has been a general focus of entrepreneurial study on personal determinants, controversies exist as to whether the identification of only the Big

1 Startup culture: a business environment that values creativity, clear vision, open communication, and flat hierarchy.

Five traits presents a comprehensive analysis of what personality traits make entrepreneurs successful. In agreement, David Wyld, Professor of Management at Southeastern Louisiana University, illustrates the “importance of studying entrepreneurship by focusing on the development of the person as a whole, rather than on personality traits in isolation” (p. 101). This study addresses Wyld’s concern by not only asking experts to rank the importance of the Big Five traits on their success, but also their supporting arguments based on their entire entrepreneurial career.

**2.2 External Factors**

Although the assessment of psychological factors shows relevancy to entrepreneurial success, it does not confirm an absolute cause-and-effect relationship. Aspiring adolescent entrepreneurs may have dreams of being the next Bill Gates or Mark Zuckerberg, but they cannot get there without a supportive environment and financing (Schwartz, 2014, p. 521). Consequently, there exists another body of thought regarding nature versus nurture. The researchers from the latter perspective believe that nurturing plays a more dominant role as a predictor of success (Bergmann et al., 2016; Politis et al., 2011, p.17; Luthje & Franke, 2003, p. 143). Dr. Bergmann, Professor of Entrepreneurship at the University of St. Gallen, questions the growing literature that has so far primarily ignored contextual influences and examines personality-wise determinants solely. Especially in the context of students who typically “have no or little industry experience, the university and regional context and their family background can be assumed to be more important for their entrepreneurial propensity than

for people at a later stage of their professional career” (p. 6). Similarly, based on Vroom’s expectancy theory (See Figure 1), Professor Renko (2012) conducted a study on young entrepreneurs, concluding that their “motivation is largely based on financial reasons” (external factors) regardless of “whether they believe that their hard work will lead to establishing a [business]” (internal factors) (Renko et al., 2012, p. 681). Hence, the consideration of external factors is equally important for this research.

**2.3 Gap Analysis**

Previous studies that identify elements that contribute to start-ups’ success rates are primarily centered around adult entrepreneurship, including university entrepreneurship as one of the youngest sample groups (Luthje & Franke, 2003). In terms of adult entrepreneurship, studies analyze the external (Sarasvathy et al., 2013), gender-based (Sirec & Mocnik, 2012), industry-specific, i.e., engineering (Luthje & Franke, 2003), and psychological factors contributing to the success of some adult entrepreneurs (Khosla & Gupta, 2017; Boren, 2010). In terms of university entrepreneurship, studies connect the political (Schwartz, 2014), identity-building (Nielsen & Garner, 2017), resourcing (Politis et al., 2011), and environmental (Wright et al., 2017) factors regarding the success of multiple entrepreneurs who are university students. However, high school entrepreneurship (fourteen to eighteen-years-old) has been a subject of little theoretical and empirical research. The results obtained from youth entrepreneurship can be differentiated from adult entrepreneurship because (1) high school students have a dual identity of operating

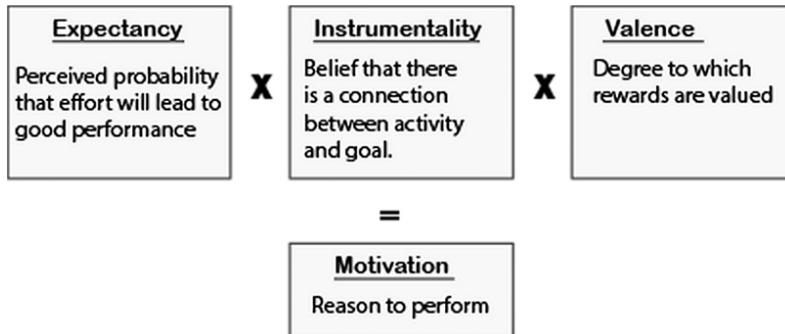


Figure 1: Expectancy Theory Model

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a business alongside studying at school; both demand time, effort, and commitment, and (2) a student entrepreneur with no prior knowledge in the field is different from an adult entrepreneur who might have extensive education and experience in other businesses before establishing his/her own.

Furthermore, while there is much research devoted to the internal and external traits of successful entrepreneurs, it is apparent that the communication between these sources has been minimal, as most studies assess either the internal or the external factors. Thus, using the Delphi Method, this study explores the perspectives and experiences of various experts to examine the contribution of both internal and external factors (personality and timing perception, family background, and institutional support) in the field of youth entrepreneurship and the model is developed below.

## 3. Methodology

This study uses a qualitative Delphi study approach to explore the extent to which there exists a correlation between the four factors introduced in the gap analysis and high school entrepreneurial success in Ontario, Canada. In previous literature, several groups of

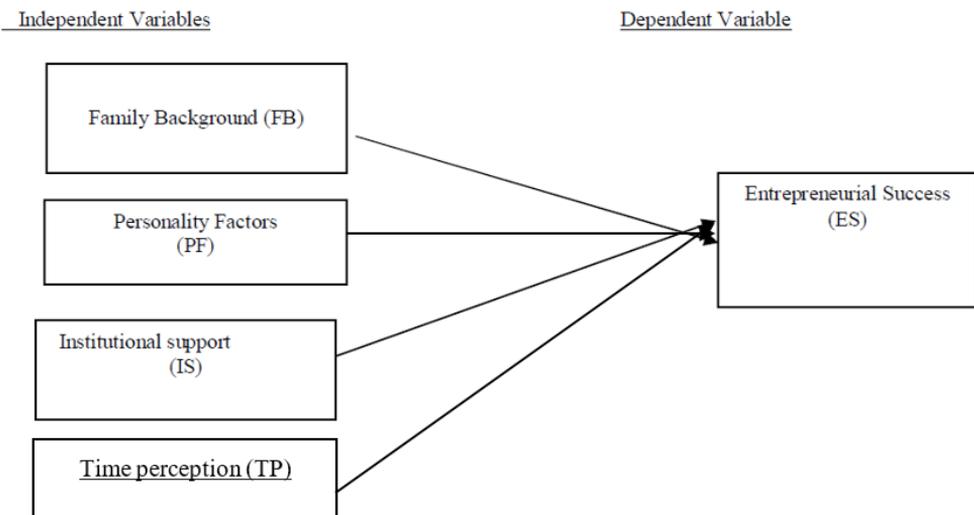
researchers have tried to analyze this question within distinct contexts. Dr. S. Gunapalan, the Head of the Management Department at the South Eastern University of Sri Lanka, for example, conducted a study on factors that influence entrepreneurial success for women in Sri Lanka. Referring to Dr. S. Gunapalan's design, the following shows a conceptual model (See Figure 2) of this study which exhibits the general hypothesis that high school entrepreneurial success is determined by particular internal factors (personality and timing perception) and external factors (family background and institutional support):

In adapting parts of Dr. S. Gunapalan's methodology in the context of high school entrepreneurs while adding the new factor Time perception, a four-factor model PITF is established, which stands for: Personality, Institutional support, Timing perception, and Family background. In this study, it is hypothesized that PIT factors are required more so than I factor to guarantee high school entrepreneurial success (Ummah & Gunapalan, 2012).

### 3.1 Approach

The Delphi study approach, developed by Dalkey and Helmer (1963), tries to "obtain the most reliable consensus of a group of experts ... by a series of

Figure 2: Conceptual Model adapted from Ummah & Gunapalan (2012)



questionnaires interspersed with controlled opinion feedback” (Dalkey & Helmer, 1963, p. 5). The Delphi study is well-suited for social and economic research where “only little well-established knowledge is available” and “such knowledge is dispersed across a wide range of experts whose subjective evaluation[s] can enrich the understanding and [analyses] of the research subject” (Jandl et al., 2009, p. 66). In this study, the Delphi method is appropriate because (1) there is limited well-established research about this topic, and (2) reaching a consensus among a group of current experts with both practical experience and theoretical knowledge can help explore the complexity of youth entrepreneurship.

According to Clinical Psychologist Dr. Linda Carr, most quantitative methodologies “test theory deductively from existing knowledge, though developing hypothesized relationships and proposed outcomes for study” (Carr, 1994, p. 718). Thus, it might appear well-matched for this research to employ a quantitative experimental design, for example, primarily focusing on comparison between entrepreneurs and high school students. However, the experimental design often fails to determine nuanced relationships, meanings, and explanations in research that consist of cognitive, affective, behavioral factors, which is needed for this study (Amaratunga et al., 2002, p. 17). Moreover, with little pre-knowledge of high school entrepreneurs’ sample, the statistical results from an experimental design might “lead to conclusions that are of questionable value” (Cliff, 1983). On the contrary, with “flexibility,” a “holistic focus,” and a “deeper understanding of social phenomena,” a primarily qualitative methodology yields more valid data with context (Haq, 2014, p. 4; Carr, 1994, p. 718).

Lastly, according to Dr. Brian Sandford, Professor of Construction at Pittsburg State University, the unique characteristic of the Delphi study is its “ability to provide anonymity [of] respondents, a controlled feedback process, and the suitability of a variety of statistical [analyses’] techniques to interpret the data” (Hsu & Sandford, 2007, p. 2). This provides two advantages: first, it counters the disadvantages of “conventional means of pooling opinions obtained from a group interaction (i.e., influences of dominant individuals, noise, and group pressure for conformity)” (p. 2). To derive a consensus from different lenses and perspectives about the correlation between PITF and

successful youth entrepreneurship, this particular strength of the Delphi method has crucial applications for this project’s data collection. Second, many statistical techniques apply to this Delphi study, such as mean value, standard deviation, bar graphs, etc.

### 3.2 Sampling and recruitment

In terms of sampling, a panel of experts from different fields and backgrounds can produce credible results, notably including participants who might provide a different or minority point of view (Iqbal & Pison-Young, 2009, p. 599; Turoff, 2002, p. 96). Thus, after receiving approval from my school’s Internal Ethics Review Board, three categories of experts were recruited to represent different perspectives about the field of young entrepreneurship: four current high school entrepreneurs from the LaunchX program, two high school teachers of business education from Ontario, Canada, and one previous high school entrepreneur who has eight years of experience in establishing and operating start-ups (see Table 1). Moreover, there is one category of non-experts, namely potential high school entrepreneurs. The participants were contacted through emails, social media accounts, and start-ups’ websites.

The first category of experts consists of four high school entrepreneurs from LaunchX, a Young Entrepreneurs Program that has more than 1000 high school entrepreneurs, including more than 250 participants who have launched their start-ups across North America (Kilkeel). Three participants from this category have been operating their businesses for one to twelve months, while one has been running her business for one to five years. They were purposely chosen to represent high school students who are currently operating a business at the infant stage of entrepreneurial success.

The second category of experts consists of two teachers who have over fifteen years of experience teaching high school courses in business, economics, and management in Ontario, Canada. Particularly, they each ran a special International Business program which led students to create their student-oriented businesses at school for several years. Hence, they can provide insightful knowledge and experience concerning entrepreneurship as they have experiences with the challenges and successes of youth entrepreneurs.

*Table 1: Business Information of the Subjects*

Subject #	Profession	Business (pseudonyms)	Description	Years of Experience
Subject 1	Student	S	Sell snacks to fundraise for boarding yearbook	2 – 5 years
Subject 2	Student	Q	Make wearable bands that records melodies	1 – 2 years
Subject 3	Student	P	Connect immigrants to the services they need	1 – 2 years
Subject 4	Student	W	Medical communications device alerting caregivers instantly of senior health emergencies	1 – 2 years
Subject 5	Teacher	/	/	30 years
Subject 6	Teacher	/	/	15 years
Subject 7	CEO	T	simplify fan engagement with a tool that's built for the social era of marketing.	1 – 5 years
Subject 8 - 14	Ontario high school students who intend to become entrepreneurs			

The third category consists of one extraordinary entrepreneur, subject 7. His entrepreneurial career started at the age of 13 when he created his first business and became the youngest social entrepreneur to receive venture capital funding from CBC's Dragons' Den<sup>2</sup> at the age of 15. Today, he is the co-founder of a data analytics company with annual revenue of more than one million CAD. With abundant experience, subject 7 can present valuable knowledge regarding factors that have contributed to his success at such a young age.

The last category, subjects 8 – 14, are seven high school students from Ontario, Canada, who are potential high school entrepreneurs. They represent high

school students who aim to become entrepreneurs yet have zero expertise in the field. To explore the reasons why there is only a small group of adolescent entrepreneurs in the society, the non-experts' perceptions toward PITF are crucial while comparing with the experts' perceptions.

### 3.3 Data collection methods

A survey with five distinct sections was used. Sections one to four were contextual questions, while the fifth section was the Delphi survey with questions reoccurring throughout three rounds. With a survey that included both closed-ended and open-ended

<sup>2</sup> Dragons' Den: a reality tv show where aspiring entrepreneurs pitch their business concepts and products to a panel of Canadian venture capitalists in the hope of securing investment finance from them (CBC, 2020).

questions, quantitative probability and purposeful qualitative sampling are combined to produce more generalizable results (Creswell, 2009).

### 3.3.1 Contextual survey

The first section of the survey includes questions about the students and their businesses (see Appendix A). The second section of the survey involved a pre-Delphi personality test for each participant in which the questions that are centered around the Big Five traits: 1. *Neuroticism*, 2. *Extraversion*, 3. *Openness to Experience*, 4. *Agreeableness*, 5. *Conscientiousness* (Zhao & Seibert, 2006, p. 260) (see Appendix B for the survey and how the test is structured). A Likert scale was used for the statements collected ranging from 1 (strongly disagree) to 5 (strongly agree). The purpose of the third part of the survey was to gain a general understanding of each respondent’s family background: 1) family of entrepreneurs and 2) attitude and support of entrepreneurship (see Appendix C). In the fourth section, the information on whether they have used any funding resources was collected (see Appendix D).

### 3.3.2 Three-Rounds Delphi study

The Delphi study was constructed in the fifth section of the survey (see Appendix E). By combining closed questions (i.e., multiple-choice) and open questions (i.e., short answers) relating to PITF, the Delphi method produced both quantitative and qualitative results. Theoretically, this section, the Delphi study, can be continuously repeated until consensus has been achieved, but three rounds are often enough to reach a consensus (Hsu & Sandford, 2007, p.2).

In the first round (see Appendixes A to E), the participants completed all five sections of the survey. After responses were collected, a summary of the results was compiled and sent back to the participants (see Appendix F). In the second round (see Appendix E), participants received the second survey consisting of the same questions from the fifth section: the Delphi method in the first survey. They were asked to review and assess the summarized results (see Appendix G) from the first round before completing the new survey, which led to responses closer to a consensus (Hsu & Sandford, 2007, p.2). After the second round, the third round again invited participants to “consider their scores in light of the group response and decide whether they want to change any of their responses” (Iqbal & Pipon-Young, 2009, p. 600).

*Table 2: Statements of Characteristics*

Rank	Statement	f <sup>1</sup>	M <sup>2</sup>	SD <sup>3</sup>	Big-5 Category
1	I find myself thinking about ways to improve products to meet the changes in our culture.	7	4.71	0.49	Openness to Experience
2	When I need to concentrate, I can tune out my environment.	7	4.71	0.49	Extraversion
3	I offer quick responses to my employees and my customers.	7	4.57	0.53	Extraversion
4	I am willing to fail for the sake of innovation.	7	4.43	0.79	Neuroticism
6	I have detailed short-term plans for my company.	7	3.57	1.27	Conscientiousness
7	I have a vision of my company five years from now.	7	3.00	1.00	Conscientiousness
8	Most of the time, I would instead delegate than be entirely responsible for all aspects of the task.	7	2.57	1.27	Agreeableness
9	I feel uncomfortable making decisions with uncertainty.	7	2.14	0.90	Neuroticism

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*Table 3: Personality Factor Comparison Prior and After the Delphi Study*

Rank	Category	Pre-Delphi personality test (M)	Round 3 Delphi Ranking: Most Important Characteristics (%)
1	Openness to Experience (1)	4.71	50.0
2	Extraversion (2)	4.64	16.7
3	Neuroticism (2)	3.64	16.7
4	Conscientiousness (2)	3.29	16.7
5	Agreeableness (1)	2.57	16.7

*Table 4: Questions Around Family Background*

Statements	Yes (%)	No (%)
I have family members who are entrepreneurs.	57.1	42.9
My family highly supports my entrepreneurial endeavors, along with my education.	100.0	0.0
My family financed the grassroots of my business.	72.4	28.6
My parents pay for my education (elementary school, high school, university).	100.0	0.0
I have a part-time job alongside my business.	66.7	33.3

### 3.3.3 Comparative analysis

After the Delphi study, seven high school students (subjects 8 - 14) from Ontario, Canada, were interviewed about their perception in terms of entrepreneurial budget, timing, and whether that affects their action of becoming entrepreneurs. This was a new and essential part of this Delphi design as comparing their perceptions with the experts' perceptions (subjects 1 - 7) would provide insights about obstacles and misconceptions that hindered them from becoming adolescent entrepreneurs.

### 3.4 Ethics Memorandum:

This study was approved by my institution's Internal Ethics Review Board (see Appendix H).

## 4. Findings

### 4.1 Personality Traits

The responses to the Delphi study demonstrated that all subjects strongly believed personality traits

play the most dominant role as a predictor of success in entrepreneurship.

During the fifth section of the survey, the Delphi study, subjects were asked to choose the most critical characteristics in becoming an entrepreneur. At the end of the third round, the most prevalent one to be selected was *Openness to Experience* among the five characteristics in the "Big-5 model" (see Table 3). This result is consistent with the Pre-Delphi personality test (see Table 2), which identified that *Openness to Experience* as the most outstanding characteristic that most subjects possess to a high extent ( $M = 4.71$ ).

### 4.2 Family Background

Overall, it was an unexpected finding that family background was considered by the subjects to play an insignificant role in promoting their ventures. Most subjects' businesses were not directly financed by their families (71.4%). However, the subjects acknowledged that they had 100% emotional support from their family in the form of encouraging them to be creative, take responsibilities and risks, and improve their communication skills. Indirect financial

3 <sup>1</sup>Statistics highlighted in blue: round 3 Delphi study results with subjects 1-7 (experts in the field of high school entrepreneurship).

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*Table 5: Funding Estimation for High School Entrepreneurs (CAD)*

	Round I	Rationale	Round II	Rationale	Round III	Rationale
subject 1	\$1000	N/A	\$500	it depends on the type of business	\$500	same reason as last round
subject 2	\$2000	N/A		N/A		N/A
subject 3	\$100	all you need is a website or an app. In high school, we are dependents, so we do not have to worry about food on the table.	\$100	just server costs, realistically no money is needed to get a business off the ground	\$100	same reason as last round
subject 4	\$3000	high school students most likely will not need salaries. If it is a hardware company, then funding would depend	\$0	income not needed (unless it is a hardware company that needs funding for production)	\$0	same reason as last round
subject 5	\$250	N/A	\$250	studies show that "bootstrapping" is just as important as the product or service.	\$250	The shoestring approach is always the best approach to establish whether your product or service is viable.
subject 6	\$150	\$10 cost per unit x 10 units should get you started on sales; use the profit to purchase more product	\$300	the product should not retail for more than \$20, so per unit cost of the product should be 50% of \$20, which is \$10. Estimate that one purchases 20 units, totals \$200 + shipping, some marketing materials = \$300 approx.	\$200	allows for the purchase of enough product + several months online presence to build resources
subject 7	\$0	so many amazing tools out there for free that can help you make a reliable product	\$0	same reason as last round	\$500	same reason as last round
Range	0-2000		0-500		0-500	
M	\$928.6		\$191.7		\$258.3	
SD	1159.0		196.0		206.0	

assistance through the fact that the subjects are not paying rent, utilities, and other expenses, made them more likely to take financial risks in entrepreneurship due to their financial safety blankets. Furthermore, it is essential to note that 100% of the subjects' families will pay for their education, and most of the subjects do not have a part-time job along with their businesses (see Table 4).

### 4.3 Institutional support

During the three rounds, the subjects were asked to estimate how much funding does a high school student need to open a new business and why (see Table 5).

In the first round, the calculation of funding to open a new business was a range of 0 to 2000 CAD with high variation. The general rationale is that if entrepreneurship is computer-based, it requires less funding. At the same time, if it is a hardware company, then a higher budget is needed because of the additional costs required for land, manufacturing, other assets, etc. However, after the subjects re-evaluated their answers based on the Round 1 summary (see Appendix F), the range narrowed to 0 to 500 CAD. Furthermore, in Round 3, the subjects maintained the same scale, yet there were more subjects than previously that expressed 200 to 300 CAD to be the norm (M=258.3).

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Table 6: Preparation Time Perception for High School Entrepreneurs (Days)

	Round I	Rationale	Round II	Rationale	Round III	Rationale
subject 1	30.0	for market research and producing the MVP	30.0	same reason	30.0	same reason
subject 2	60.0	N/A		N/A		N/A
subject 3	0.8	it is less about the idea and more about the execution and how much time you put into it.	0.8	time is needed to talk with people and understand the problem that you are trying to solve.	0.8	same reason as last round
subject 4	5.0	market research, planning	180.0	same reason as last round	180.0	same reason as last round
subject 5	1.0		7.0	A week at most with proper support.	0.4	idea/concept, discussion, simple prototype, market research, early cost projections, execution.
subject 6	0.8	4-5 hours devising Business Plan, 10 hours to research and source product, 5+ hours marketing strategy	0.8	5 hours researching product/market/environment; 5 hours sourcing suppliers; 5 hours marketing strategy; 5 hours designing a business plan	0.8	same reasons as before! (research, sourcing product, strategic plan, marketing)
subject 7		A lot or a little depending on the industry.		Lots of time at the start to make sure you are on the right path	30.0	One month to get it right with solid MVP
Range	20h - 2 months		20 h - half-year		10 h - half-year	
M	16.3		43.7		40.3	
SD	24.2		77.1		69.9	

4.4 Timing

During the three rounds, the subjects were asked to estimate how much preparation time does a high school student need to open a new business and why (see Table 6).

In the first round, the subjects' estimations ranged from 20 hours to 2 months in terms of a business' preparation time. For example, the subject who answered 20 hours stated that the high school entrepreneur needs "4 to 5 hours devising a business plan, 10 hours to research and source the product, 5 or more hours marketing strategy." While the purpose of a Delphi study is to reach a consensus, after reviewing the others' responses, it was surprising that the range had expanded from 10 hours to half a year in the third round, while the means have decreased to 40.3 days.

To synthesize the implications of the collected data, it is essential first to determine whether there are different perceptions between successful high school en-

trepreneurs (subjects 1 - 7) and potential high school entrepreneurs (subjects 8 - 14). After interviewing seven high school students who have the aim to become entrepreneurs, the results have shown that the perceptions gaps between the two groups are surprisingly large (see Table 7).

5. Discussion

The implications of the findings contribute to young entrepreneurial research in two significant ways. Firstly, personality is argued to be the most critical factor of the PITF model. The study identified some consistent Big-5 characteristics of successful high school entrepreneurs, especially *Openness to Experience*, which has reached a consensus with the "Big-5 model" theories (Zhao & Seibert, 2006, p. 260; Antoncic et al., 2013; Judge et al., 2002, p.766). Secondly, this study exhibits valuable qualitative insights

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*Table 7: Comparison of Perspectives between Entrepreneurs and Non-entrepreneurs*

subject #	Please estimate how much funding does a high school student need to open a new business (CAD):	The amount of funding is a crucial determinant of why I did not open my business. (1: Strongly Disagree 5: Strongly Agree)	Please estimate how much preparation time does a high school student need to open a new business (days):	The amount of preparation time is a crucial determinant of why I did not open my business. (1: Strongly Disagree 5: Strongly Agree)
subject 8	\$30,000	5	240	5
subject 9	\$1,000,000	3	730	4
subject 10	\$100,000	4	365	3
subject 11	\$1,000	3	150	2
subject 12	\$10,000	4	1460	3
subject 13	\$15,000	5	1825	5
subject 14	\$1,000	4	730	5
Range	\$1000-1,000,000 \$0 - 500 <sup>1</sup>		Half-year - 5 years 10 h – half-year	
Mean	\$165,286 \$258.3	4.0	785.7 40.3	3.86
SD	369682.6 206.0	0.8	635.1 69.9	1.2

Statistics highlighted in blue: round 3 Delphi study results with subjects 1-7 (experts in the field of high school entrepreneurship).

on funding and timing of start-ups, which can be used to guide potential high school entrepreneurs and venture capitalists. This section consists of the explanation of the results relating to the subjects' perceptions of the importance of Personality Traits, Institutional Support, and Timing about entrepreneurial success. The order of PTI is organized according to the ranking of priority by the subjects.

### 5.1 Personality Traits

Over three rounds of the Delphi surveys, 100% of the subjects reached the consensus that the personality factor is the most crucial predictor of entrepreneurial success. This finding supports theories that argue personality is an influential factor of entrepreneurial success as it appears that young entrepreneurs inherently possess personality traits that promote innovative business ventures (Bergmann et al., 2016;

Politis et al., 2011, p.17; Luthje & Franke, 2003, p. 143). Of the five characteristics included within the Delphi study, the subjects prior and past administration of the posed questions identified *Openness to Experience*: flexibility in response to market needs to be rated the highest in terms of significance. Before the Delphi study, the results of the personality test (Table 2) showed that *Openness to Experience* is a required trait. At the same time, the consensus of the Delphi Study rated *Openness to Experience* to be the most valued trait out of the “Big-5 model”. In the context of adolescents, this finding indicates the importance of emphasizing flexible thinking and decision making in young entrepreneurial education. Business-related education programs, simulation exercises (e.g., Cap-sim), exposure to business practices, and comparative analysis of businesses would prove to be beneficial in fostering this trait (Bedawy, 2017).

On the contrary, there are also traits in the “Big-5

## INFLUENTIAL FACTORS FOR YOUNG ENTREPRENEURIAL SUCCESS

model” that are least identifiable as predictors of success in the context of high school entrepreneurs. An evident example is *Agreeableness: people management with the right balance of delegation*, which has the lowest means and highest standard deviation ( $M= 2.57$ ,  $SD=1.27$ ). With expertise and success in the field, subjects 1 – 7 suggested that there is not an ideal type of leadership. Different types of leadership can become useful in various industries. For example, while autocratic leadership often has a negative connotation as the leader controls all significant decision makings. Subject 7, an “authority-obedience manager,” believed “this type of leadership trait can be quite effective for the success of [his] business products which requires time efficiency and quick execution.” Thus, it is essential for high school entrepreneurial educators understand that they do not have to reinforce the knowledge of one type of leadership on students, but explain to them the advantages and disadvantages of each type of leadership and support them to find the type of leadership that best suits their personalities and their businesses.

### 5.2 Institutional Support

The results of the findings demonstrate that the business practices of young entrepreneurs are highly interdependent upon technology, i.e., social media platforms; therefore, the start-up funding from the subjects’ perspective was remarkably less than expected. Later, seven high school students with zero entrepreneurial experience (subjects 8 - 14) were interviewed about start-up funding estimation. Their perception of the minimal amount of funding was significantly higher than the experts’ (subjects 1-7) in the study (see Figure 3).

Furthermore, the potential entrepreneurs strongly agree ( $M=4$ ) that the amount of funding is a crucial determinant of why they did not open their business while not acknowledging that their forecast could be wrong due to the accessibility of “free apps and online tools” mentioned by subject seven whose company has an annual revenue of more than one million CAD and believed a \$0 budget is required to start a business. Hence, if venture capitalists assign more budget into campaigns that teach the use of inexpensive tools to students to build up their businesses via the internet, then it is hypothesized that more young individu-

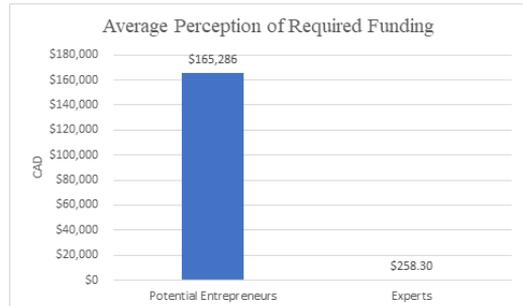


Figure 3: Average Perception of Required Funding (CAD)

als may consider embarking upon developing their business pursuits. For example, the LaunchX campaign in the U.S. is an educational business program that teaches students how to create their businesses primarily through the use of technology as most of the students from the LaunchX campaign set up their businesses online (Kilkeel).

### 5.3 Timing

The range of time that is required to develop and implement business practices varied throughout the three rounds of the Delphi study with no agreement which serves as an indicator that there is not a specific amount of time that is required to open a business; whereas the actual entrepreneurship is more focus oriented as entrepreneurs set goals and achieve them.

Despite the variation of opinions among the first category of subjects (1 – 7), their estimation of required preparation time is still significantly lower than what the second category of subjects (8 – 14) have predicted (5% of their prediction) (see Figure 4). Again, this implies that potential high school entrepreneurs might not have conducted extensive research or obtained accurate information about preparation time for opening a business in high school. Although their predictions could be valid in a professional business setting, they lack the hands-on experience to plan and operate a business at their age, which caused this perception gap. Thus, this finding inspires potential entrepreneurs not to be intimidated by the stereotypes of expensive funding and long preparation time for start-ups as these might be incorrect perceptions, according to experts who have experience in the field. While timing perception is not proven to be an out-

# INFLUENTIAL FACTORS FOR YOUNG ENTREPRENEURIAL SUCCESS

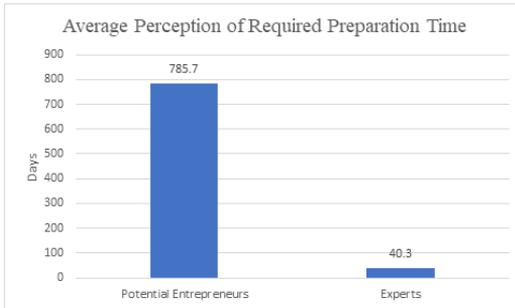


Figure 4: Average Perception of Required Preparation Time (days)

standing factor contributing to entrepreneurial success, the implication of the responses shows having a more optimistic attitude of financial support and preparation time might encourage more adolescents to become potential entrepreneurs.

## 6. Limitations

First, because this is not a longitudinal, multi-year study, several students' businesses may be profitable and thriving in the status quo, but the sustainability of future success cannot be predicted. To counter this, subjects other than current high school entrepreneurs, such as teachers and university entrepreneurs whose businesses have been operating for a few years, were recruited to produce a more reliable consensus. Moreover, the definition of success for this research, to reach and sustain profitability for at least one year, could be too generalizable as different models of entrepreneurship may rely on different factors for their success (e.g., userbase, ability to attract investors, social impact, etc.). Future researches could also use the PITF model – Personality, Institutional support, Timing perception, and Family background (in the order of importance) – to explore further factors that support youth entrepreneurial success with the focus of a specific type of entrepreneurship.

Second, after reviewing the summary of each Delphi round, it is a limitation that subjects might abandon their initial responses to conform to popular opinions. Thus, the study protects the anonymity of all subjects and encourages them only to change their

responses if they are genuinely convinced by others' rationales.

Another limitation is that all the subjects are from the same geographical area: Ontario, Canada, where individuals have an annual middle-to-high average income of \$49,000 in 2018 (Statistics Canada). Thus, the conclusion from this study is limited to a narrow socioeconomic demographic. This leaves the opportunity for future researchers to explore the direct and indirect financial factors that contribute to high school entrepreneurial success, with greater emphasis.

## 7. Conclusion

Through this Delphi study, the influential factors that might contribute to adolescent entrepreneurial success were examined, and the PITF model was evaluated. It was found that Personality is the most important factor, while Family background is deemed to be the least important factor. After comparing the responses between the experts (subjects 1-7) and non-experts (subject 8-14), results have shown apparent differences between their perceptions. Non-experts responded significantly higher in terms of cash (Institutional support) and Time needed to establish a start-up due to the lack of acknowledgment of inexpensive technical tools for entrepreneurship and experience in business operation. However, the opinions of the experts and non-experts provide a narrow representation of all adolescents. In the future, there are two types of studies that can enhance the validity of this study's results: 1) quantitative studies on PITF that is generalizable to a larger population and 2) case studies that show a more extended time of the growth of the adolescent entrepreneurs and their business development.

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## Appendix A: Basic Information

1. Your name: \_\_\_\_\_
2. Your company's name (answer "/" if you are/were not a high school entrepreneur):  
\_\_\_\_\_
3. Describe your business in 5-10 words (answer "/" if you are/were not a high school entrepreneur):  
\_\_\_\_\_
4. How long have you been operating your business?
  - less than a month
  - 1 - 12 months
  - 1 - 5 years
  - more than five years
  - I am/was not a high school entrepreneur
5. Annual revenue (CAD) (answer "/" if you are/were not a high school entrepreneur):  
\_\_\_\_\_

## Appendix B: Personality Factors

Questions		1 = strongly disagree	2	3	4	5 = strongly agree
1.	I am willing to fail for the sake of innovation.					
2.	I feel uncomfortable making decisions with uncertainty.					
3.	When I need to concentrate, I can tune out my environment.					
4.	I offer quick responses to my employees and my customers.					
5.	I find myself thinking about ways to improve products to meet the changes in our culture.					
6.	I have a vision of my company five years from now.					
7.	I have detailed short-term plans for my company.					
8.	Most of the time, I would instead delegate than be entirely responsible for all aspects of the task.					

## Personality Test Explanation

Questions	Big-5 Category	Explanation	
1.	I am willing to fail for the sake of innovation.	Neuroticism: emotional stability and comfort with uncertainty	
	The two statements test whether subjects are willing to take innovative risks with potential failure and comfortable with uncertainty.		
2.	I feel uncomfortable making decisions with uncertainty.		
3.	When I need to concentrate, I can tune out my environment.	Extraversion: confidence and laser-like execution	The two statements test whether subjects are focused, quick-to-act, and confident with decision-making.
4.	I offer quick responses to my employees and my customers.		
5.	I find myself thinking about ways to improve products to meet the changes in our culture.	Openness to Experience: flexibility in response to market needs	The statement test whether subjects plan to improve/renovate their products aligning with the changes in market needs.
6.	I have a vision of my company five years from now.	Conscientiousness: big picture focus coupled with detail orientation	The two statements test whether subjects have long-term and short-term plans for their company.
7.	I have detailed short-term plans for my company.		
8.	Most of the time, I would instead delegate than be entirely responsible for all aspects of the task.	Agreeableness: people management with the right balance of delegation	The statement tests the extent of how much the subjects delegate their responsibilities.

## Appendix C: Family Background

1. I have family members who are entrepreneurs.  
oYes  
oNo
2. My family highly supports my entrepreneurial endeavors, along with my education.  
oYes  
oNo
3. My family financed the grassroots of my business.  
oYes  
oNo
4. Did your parents pay for your education (elementary school, high school, university)?  
oYes  
oNo
5. Do you have a part-time job alongside your business?  
oYes  
oNo

## Appendix D: Institutional Support

1. What support have you used for your business' initial funding?  
oFamily  
oGovernment funding  
oAngel Investors  
oVenture Capitalist  
oCrowdfunding  
oOther: \_\_\_\_\_ (please indicate)  
oI am/was not a high school entrepreneur

## Appendix E: the Delphi Method

1. If you must choose, what do you think is the most important personality to be a high school entrepreneur?  
oNeuroticism: emotional stability and comfort with uncertainty  
oExtraversion: confidence and laser-like execution  
oOpenness to Experience: flexibility in response to market needs  
oConscientiousness: big picture focus coupled with detail orientation  
oAgreeableness: people management with the right balance of delegation
2. If you must choose, which one – personality factors, family background, or institutional support – is most important for becoming a successful high school entrepreneur?  
opersonality factors  
ofamily background  
oinstitutional support

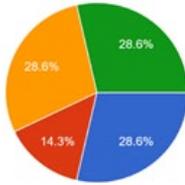
3. Please estimate how much funding does a high school student need to open a new business (CAD) and why:  
\_\_\_\_\_  
\_\_\_\_\_

4. Please estimate how much preparation time does a high school student need to open a new business and why:  
\_\_\_\_\_  
\_\_\_\_\_

# INFLUENTIAL FACTORS FOR YOUNG ENTREPRENEURIAL SUCCESS

If you must choose, what do you think is the most important personality to be a high school entrepreneur?

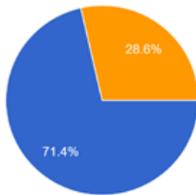
7 responses



- Comfort with uncertainty
- Laser-like focus and execution
- Flexibility in response to market needs
- Big picture focus coupled with detail orientation
- People management with the right balance of delegation

If you must choose, which one – personality factors, family background, or institutional support – is most important for becoming a successful high school entrepreneur?

7 responses



- personality factors
- family background
- institutional support

## Appendix F: Summary of Round 1 Results

Summary: the Delphi Study (First Round)

Hi participants, thank you so much for participating in the first round of the Delphi Study! Your participation means a lot for this research as you are one of the seven participants who came from various backgrounds with expertise in young entrepreneurship.

In the second round, participants receive the second survey consisting of the same questions from the fifth section: the Delphi method in the first survey. You are asked to review and assess the following results from the first round, and you will, most likely, revise your answers based on what others have responded in the second survey.

Please estimate how much funding does a high school student need to open a new business (CAD) and why:

7 responses

\$250.00

1000

2k

\$100, all you need is a website or an app. In high school, we are dependants so we don't have to worry about food on the table.

None, so many amazing tools out there for free that can help you make a solid product

3000; high school students most likely won't need salaries, if it's a hardware company then funding would depend

\$100-200 - \$10 cost per unit x 10 units should get you started on sales; use profit to purchase more product

Please estimate how much preparation time does a high school student need to open a new business and why:

7 responses

One Day

At least one month - for market research and producing the MVP

Two months

20 hours, it is less about the idea and more about the execution and how much time you put into it.

A lot or a little depending on the industry.

5; market research, planning

20 hours - 4-5 hours devising Business Plan, 10 hours to research and source product, 5+ hours marketing strategy

## Appendix G: Summary of Round 2 Results

If you must choose, which one – personality factors, family background, or institutional support – is most important for becoming a successful high school entrepreneur?

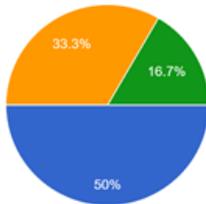
6 responses



- personality factors
- family background
- institutional support

If you must choose, what do you think is the most important personality to be a high school entrepreneur?

6 responses



- Neuroticism: emotional stability and comfort with uncertainty
- Extraversion: confidence and laser-like execution
- Openness to Experience: flexibility in response to market needs
- Conscientiousness: big picture focus coupled with detail orientation
- Agreeableness: people management with the right balance of delegation

Please estimate how much funding does a high school student need to open a new business (CAD) and why:

6 responses

\$100, just server costs, realistically no money is needed to get a business off the ground

\$300; product should not retail for more than \$20, so per unit cost of product should be 50% of \$20, which is \$10. Estimate that one purchases 20 units, totals \$200 + shipping, some marketing materials = \$300 approx.

0 - same as before. So many tools

\$250 - studies show that "bootstrapping" is just as important as the product or service.

\$500; it really depends on the type of business

0; income not needed (unless it's a hardware company that needs funding for production)

Please estimate how much preparation time does a high school student need to open a new business and why:

6 responses

20 hours, time is needed to talk with people and understand the problem that you are trying to solve.

15-20 hours; 5 hours researching product/market/environment; 5 hrs sourcing suppliers; 5 hours marketing strategy; 5 hours designing business plan

Lots of time at the start to make sure you're on the right path

A week at most with proper support.

At least one month - for market research, planning, producing the MVP..

half year

## Appendix H: Consent to Participate Form

### Informed Consent

AP Capstone Research Study

Appleby College | Oakville, ON, Canada L6K 3P1

### Introduction

- You are being asked to be in this research study for the AP Capstone Research course.
- You were selected through LinkedIn or personal connections as you are/was a young entrepreneur.
- Please read this form before providing your consent.

### Description of the Study Procedures

- If you agree to be in this study, you will be asked to do the following things:
  1. Fill in a personal survey
  2. You might be asked to participate in a follow-up interview

### Risks/Discomforts of Being in this Study

- There are no reasonably foreseeable (or expected) risks. There may be unknown risks.

### Benefits of Being in the Study

- The benefits of participation are:
  1. A background understanding of my selected topic of research
  2. A reflection and a better understanding of yourself from the personal survey

### Confidentiality

- The records of this study will be kept strictly confidential. My teacher and I will be the only ones looking at the data.
- Your identity will be disclosed in the material that is submitted. However, you will be given the opportunity to review and approve any content that is provided about you.

### Right to Refuse or Withdraw

- The decision to participate in this study is entirely up to you. You may refuse to take part in the study at any time without affecting your relationship with the investigators of this study or Appleby College. Your decision will not result in any loss of benefits to which

you are otherwise entitled. You have the right not to answer any single question, as well as to withdraw entirely from the interview at any point during the process; additionally, you have the right to request that the interviewer not use any of your interview material.

### Right to Ask Questions and Report Concerns

- You have the right to ask questions about this research study and to have those questions answered by me before, during, or after the research. If you have any further questions about the study at any time, feel free to contact me. If you like, a summary of the results of the survey will be sent to you.
- If you have any problems or concerns that occur as a result of your participation, you can report them to guidance and/or myself.

### Consent

- Your signature below indicates that you have decided to volunteer as a research participant for this study and that you have read and understood the information provided above. You will be given a signed and dated copy of this form to keep, along with any other printed materials deemed necessary by the study investigators.

Subject's Name (print):

Subject's Signature:

Date:

Investigator's Signature:

Date: