ENTREPRENEURSHIP AS A MEANS OF IMPROVING THE SOCIAL AND ECONOMIC CONDITIONS OF PERSONS WITH DISABILITIES

By

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ABSTRACT

Government efforts to improve the self-employment prospects of persons with disabilities are increasing, yet there is a dearth of information about the outcomes of these initiatives. Further, methodological limitations in the entrepreneurship literature make it difficult to determine the effectiveness of entrepreneurship education more generally. This three-wave, quasi-experimental study (N = 109 at Time 3) provides the first quantitative examination of the outcomes of entrepreneurship education programs for persons with disabilities, indicating that the programs are effective in helping participants to create their own businesses. Contributions are also made to entrepreneurship pedagogy via the first quantitative assessment of the place-train model applied to entrepreneurship development, showing that this approach when combined with financial incentives yields significantly better results than the more traditional train-place approach without financial incentives. The study contributes to theory building in entrepreneurship by investigating relationships posited by the theory of planned behaviour, which have not been adequately assessed to-date, showing significant and diminishing relationships between intentions and nascent gestation behaviours over three, nine and twelve month periods. The relationship between nascent gestation behaviours and actual business creation is also shown, thus helping to demonstrate the value of utilizing the theory of planned behaviour in examining entrepreneurship education interventions designed to promote business creation. Equally important, the study assesses whether those persons with disabilities who are successful at creating their own businesses have an associated increase in self-esteem, and thus the potential to reap both economic and social psychological rewards, with results indicating it is the activity of trying to start a business, rather than actual business creation, that best predicts increases in self-esteem. Contributions to public policy and pedagogy are also discussed.

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CHAPTER 1: INTRODUCTION

1.1 Background

Adults with disabilities have a great deal more to offer our society than their current contributions suggest (Human Resources and Social Development Canada [HRSDC], 2009). This underutilization of their talents and abilities has negative social and economic consequences both for this large and growing segment of our population (Statistics Canada, 2006), and for society as a whole. Nearly a third of Canadian working age persons with disabilities who are capable of working are unemployed, and those who do work often have incomes well below that of persons without disabilities (HRSDC, 2009). Although barriers to employment for persons with disabilities have been reduced over the past several decades, many are still precluded from participating in the workforce, either because of continued physical or psychological barriers, such as stigmatization, or because their disability makes many organizational employment options infeasible (Shier, Graham, & Jones, 2009). Thus, the opportunity to start one's own business represents an important option for improving the plight of this disadvantaged group.

Recognizing this, public policy shifts over the past decade have made self-employment training available for many of those persons with disabilities who seek vocational rehabilitation, as an alternative to organizational employment training. Accordingly, a variety of entrepreneurship training programs for persons with disabilities are now available in Canada. Unfortunately, there is little research to inform us about the nature of these programs and their outcomes. Further, the literature on entrepreneurship education in general is underdeveloped (Peterman & Kennedy, 2003; Weaver, Dickson, & Solomon, 2006; Martin, McNally, & Kay,

forthcoming), providing little consistent guidance as to what policies and pedagogy are most appropriate for the general population, and still less for those with special needs.

This research study examines the outcomes of training programs designed for persons with disabilities in order to inform future initiatives in this area, and contributes to theory development in the relatively underdeveloped entrepreneurship education assessment literature.

1.2 Purpose and Contributions of the Study

Overall, the purpose of this study is to help address a broad research question for which the entrepreneurship education assessment literature has so far provided only tentative insight: whether and to what extent entrepreneurship training programs help to create either additional or more successful entrepreneurs. The study has four specific objectives: The first objective is to examine whether and to what extent entrepreneurship training programs designed for persons with disabilities are successful in helping them to create their own businesses. Fulfilling this objective will contribute to both the entrepreneurship education and vocational rehabilitation literatures, as this will provide the first quantitative assessment of such programs. In addition, fulfilling this first objective will answer a call by entrepreneurship researchers (e.g. Gorman et al., 1997; Weaver, Dickson, & Solomon, 2006) for more methodologically rigorous studies, employing experimental or quasi-experimental, longitudinal methods to address the broad question of whether entrepreneurship education helps to create additional or more successful entrepreneurs. Although there have been over 42 studies conducted that address this question (Martin, McNally & Kay, forthcoming), conclusions may be drawn only tentatively, as little of this work incorporates program and control, and pre- and post-training comparisons, and even fewer use longitudinal surveying that extends beyond a short time after the educational

intervention is completed (Peterman & Kennedy, 2003; Gorman et al., 1997; Weaver, Dickson, & Solomon, 2006;). This study will address both of these concerns.

The second objective is to contribute to theory building in the literature on entrepreneurship education assessment, by investigating relationships posited by the theory of planned behaviour (Ajzen, 1991), between intentions and behaviours, that have not been adequately assessed in the entrepreneurship education assessment literature to-date (Souitaris, Zerbinati & Al-Laham, 2007). These relationships may be more appropriately studied in the context of the practice-oriented training programs used for helping persons with disabilities develop entrepreneurship skills, because participants are able to begin applying their learning immediately following or even during training. This is not the case with extant research examining entrepreneurship education in the context of theory of planned behaviour, which uses formal education settings, such as university courses (e.g. Souitaris, 2007; Oosterbeek, van Praag, and Ysselstein, 2010) or high school courses (e.g. Kourilsky, & Esfandiari, 1997; Athayde, 2009). This stage-of-life concern, combined with a lack of longitudinal examination may explain why no peer-review published studies have shown a relationship between the development of entrepreneurship intentions and either nascent behaviours or actual business creation. The present study addresses both of these weaknesses.

The third objective is to contribute to learning in entrepreneurship pedagogy by examining the differential impact of program types on actual business creation; specifically, whether an alternative approach to vocational training program structure—the place-train approach—provides better outcomes than the more traditional train-place approach when applied to entrepreneurship training. The traditional train-place model provides in-class or workshop training to develop certain skills, knowledge and abilities that are understood to be important to a

particular vocation and then introduces the person to the vocation. In contrast, a place-train approach introduces the person into the vocation and then provides the training and support necessary to help the person succeed in the position. Extensive research (Corrigan and McCracken, 2005; Bond, Drake, Mueser, Becker, 1997; Drake, Becker, Clark & Mueser, 1999) has shown that the place-train model increases organizational employment success rates.

Although designed and tested for persons with developmental and mental health disabilities in organizational employment contexts, there is reason to expect that the place-train model may help to improve outcomes for persons with other types of disabilities as well, who are pursuing training in entrepreneurship. Many entrepreneurship scholars have suggested that the best way to develop entrepreneurial skills and to determine if a business idea has merit is to simply begin to implement the idea (e.g. Carter et al. 1996; Honig and Karlsson, 2004; Sarasvathy, 2001, 2008), yet there is little empirical evidence supporting this contention in the entrepreneurship literature.

Four of the five training programs that have agreed to participate in the present research study operate programs that follow an approach similar to the traditional train-place model, in that participants attend training sessions for some period of time where they are taught a variety of entrepreneurship-relevant knowledge and skills, and then launch their business, usually with some coaching or mentoring support. However, one training program uses an approach that follows the place-train model, in that participants are encouraged to begin developing their business immediately upon entry into the program and are supported by a coach who provides regular training and mentoring throughout their entrepreneurship exploration and development. By comparing results across these two types of programs, this study will extend learning from the vocational rehabilitation literature by providing insight into the relative impact of a place-

train versus train-place approach for helping persons with a variety of disabilities develop their own businesses. At the same time this learning will be of interest to entrepreneurship education scholars and practitioners for its potential applicability to entrepreneurship education more generally.

The fourth objective is to contribute to the social psychological literature related to the entrepreneurship area of vocational rehabilitation by examining whether success in developing an owned business is associated with social psychological improvement, in addition to the expected economic improvement. One factor that provides a valuable representation of how people evaluate the quality of their lives is self-esteem, which plays an important role in the evaluation of an individual's sense of worthiness as a person, and can be considered an indicator of how much value an individual places on herself/himself (Baumeister, 1993; Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). High self-esteem has been shown to have strong positive relationships with happiness, life satisfaction and quality of life (Baumeister et al. 2003; Van Dongen, 1998), while low self-esteem has been linked to a variety of negative consequences such as depression (Shahar & Davidson, 2003) and poor social functioning (Bradshaw & Brekke, 1999).

There is reason to expect that many people with disabilities, and especially those who have not been successful in a vocation, may have lower levels of self-esteem than the general population (Daniels, 2008, Link et al., 2001; Minskoff, 1989; Ritsher and Phelan, 2004). Further, evidence that success in academic and vocational endeavours may positively impact self-esteem levels, suggests that programs that help persons with disabilities to develop their own businesses—if successful—may not only improve their economic conditions, but may also improve their social psychological conditions by enhancing self-esteem. A review of the

literature indicates that there is little empirical evidence showing the extent to which self-esteem is impacted by successful attainment of self-employment generally and among persons with disabilities specifically. The present research study will help fill this gap in our knowledge and provide further insight into the merits of promoting entrepreneurship training and development as a means of improving both the social and economic conditions of persons with disabilities.

1.3 Organization of the Thesis

The thesis proceeds as follows. Chapter 2 provides a review of the needs of persons with disabilities, and learning to-date on the potential for entrepreneurship to help this disadvantaged group, followed by a review of the literature on entrepreneurship education and training, the theory of planned behaviour and self-esteem, as a social psychological factor that may be relevant to outcomes of entrepreneurship training for disadvantaged groups such as persons with disabilities. Chapter 3 provides theoretical development and hypotheses. Chapter 4 provides a detailed discussion of research methods, including sampling and data collection techniques, measurement instruments and analyses. Chapter 5 provides results of the data collection and hypothesis testing. Finally, Chapter 6 provides interpretation of the results and discusses the theoretical and practical implications of the study's findings.

CHAPTER 2: LITERATURE REVIEW

2.1 Persons with Disabilities and Entrepreneurship

Persons with disabilities are an important group to study, as many of the world's more than 500 million persons with disabilities are disadvantaged both socially and economically (United Nations, 2004), and persons with disabilities represent a large and growing segment of the adult population in many developed countries, in part because populations are aging within these countries and the incidence of disabilities increases with age (Hurn et al., 2006). Although there are many definitions in use for the term disability, in this thesis "disability" will be defined as:

> [A]n umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations.
>
> World Health Organization, 2010

In Canada, 4.4 million, or 14.3% of the population, reported some level of disability relating to mobility, agility, sight, hearing or speaking (Statistics Canada, 2006). Further, there are approximately 2.5 million working age (15-64) persons with disabilities, representing 11.3% of the working age population (Statistics Canada, 2006). Of those, 13.2% might reasonably be considered unable to fulfill any sort of employment responsibilities. These are persons whose disabilities are categorized as very severe. The disabilities of the remaining adult population of persons with disabilities in Canada are categorized as either mild (34.8%), moderate (25.4%), or severe (25.5%) (Statistics Canada, 2006). This suggests, that approximately 87% of persons with disabilities could be gainfully employed, 33% more than are currently employed (Human Resources and Social Development Canada (HRSDC), 2009). The fact that 28% of those persons with disabilities who are unemployed report seeking employment, but are unsuccessful

due to environmental barriers, rather than their own functional limitations (Statistics Canada, 2006), provides additional support for this assertion. Further, 33% of those persons with disabilities who are employed, and 71% of those who are not employed, earn less than $20,000 annually, well below the poverty line in most jurisdictions (HRSDC, 2009).

The weak employment and income figures for persons with disabilities in Canada highlight the plight of this disadvantaged group, and also point to a problem for society more generally; one of under-utilized human capital. Although persons with disabilities have lower education levels than persons without disabilities, the majority (74.6%) of working age adults have completed high school and 50.3% have completed a trade certification, college diploma or university degree (HRSDC, 2009). Thus, the low employment figures and low income among those who are employed suggest that persons with disabilities possess considerable human capital that is not being put to productive use for society. It would appear that at least part of this underutilization of human capital is a function of discrimination in the traditional workplaces, something that entrepreneurship may avoid

Barriers to organizational employment for persons with disabilities have been reduced over the past several decades, but many are still precluded from participating in regular employment, either because of continued physical or psychological barriers, such as stigmatization, or because their disability may make organizational employment options infeasible. Other serious barriers "include negative attitudes, inaccessible infrastructure, and the lack of various supports." (HRSDC, 2006, page 43). Especially concerning is the fact that even with the same level of education many people with disabilities do not achieve the same employment outcomes as those without disabilities (Williams, 2006).

Canadian public policy appears to be in the forefront in some aspects of improving the socio-economic conditions of persons with disabilities. Among other initiatives, recent Canadian public policy directives have put increased emphasis on employment and self-employment skill development and support. Although various forms of employment training have been in place for many years, the delivery of self-employment training and support is relatively new. In fact, until recently, self-employment was considered by many to be inappropriate for persons with disabilities, as it was viewed by policy and vocational rehabilitation specialists as lacking the stability and stature that organizational employment offered (Ipsen, Arnold & Colling, 2005). Importantly, over the past five years Canadian national, provincial and municipal policies have been aligned in promoting both organizational employment and self-employment skill development for persons with disabilities. As a result, self-employment training and support is now available to the many persons with disabilities across the country (HRSDC, 2006). However, Canadians with disabilities still face numerous barriers, including increased costs for education, and the need for specialized support and equipment that might not always be available (Kirby, 2008)

The use of self-employment as a means of improving the living standards of persons with disabilities is promising for at least three reasons. First, ongoing efforts to promote organizational employment through reducing barriers and providing training and support have been only modestly successful, as evidenced by the statistics outlined above. While further improvements in organizational employment can be expected, entrepreneurship education offers a new, relatively untapped avenue of potential. Second, there is some reason to expect that persons with disabilities who become entrepreneurs will be more likely to hire persons with disabilities, than will entrepreneurs who do not have a disability or other traditional employers.

This has been shown with other disadvantaged groups, such as African Americans in the United States (Singh, Knox & Crump, 2008). As such, resources expended promoting persons with disabilities to enter into entrepreneurship may have greater benefits to the entire persons with disabilities population than those expended promoting regular employment. Third, widespread use of the internet for a variety of business models increases the number of new business opportunities available to those persons with disabilities who have significant mobility problems (Ghormley, 2001) and may also benefit those whose disabilities make regular social interaction difficult. The anonymous nature of the Internet also minimizes the potential for negative bias where such sentiments continue to exist. At over 80% Internet penetration in Canada (Statistics Canada, 2011), the potential for internet-based enterprise development may be considerable for persons with disabilities who wish to pursue this area. Thus, the opportunity to start one's own business represents an important and potentially viable option for improving the plight of persons with disabilities in Canada.

Unfortunately, the literature on entrepreneurship for person with disabilities is sparse and a comprehensive search of the relevant journal indices did not identify any studies that provide systematic evaluations of the outcomes of entrepreneurship training programs for persons with disabilities. However, there are many useful studies available that can help to highlight the issues and opportunities for those seeking to maximize the outcomes of initiatives designed to assist persons with disabilities through entrepreneurship development.

A number of studies (e.g. Pagan, 2009; Boylan and Burchardt, 2002; United States Office of Disability Employment Policy, 2001) indicate that persons with disabilities may have a greater tendency to be self-employed than persons without disabilities. Although a lack of access to organizational employment may partially explain this phenomenon, there is learning which

suggests that entrepreneurship for persons with disabilities provides a number of important personal, social and financial advantages over regular employment, making it a possible first vocational choice rather than simply a necessary fall back when organizational employment is inaccessible. If this is the case, then promoting, and ensuring the effectiveness of initiatives designed to help more persons with disabilities become entrepreneurs may help to improve both the social and economic conditions of this disadvantaged group.

In a large scale survey of vocational rehabilitation agencies in the United States, Revella, Smith, and Inge (2009) report that, among those persons with disabilities seeking and completing vocational rehabilitation services, earnings for those who chose to pursue entrepreneurship were 13% higher than for those who chose to pursue regular employment. Supportive of this advantage, Ghormley (2001) found that persons with disabilities working as self-employed contractors in Internet-related businesses were more productive than their counterparts who did not have disabilities. Although based on only a small sample qualitative study, Ghormley's findings provide some evidence of the potential value of self-employment to persons with disabilities. Given the appropriate environment and the ability to choose desirable and challenging tasks, Ghormley's findings suggest that many persons with disabilities are likely to produce greater income for themselves and make the sort of meaningful economic contributions to society that many appear to seek, but are often unable to fulfill.

As for the personal and social implications of entrepreneurship, European Community Household Panel data for 13 European countries indicates that entrepreneurs with disabilities often found that their self-employment allowed them to better accommodate their disabilities than organizational employment and reported higher levels of satisfaction with their work than persons with disabilities who were employed by others (Pagan, 2009). McNaughton, Symons,

Light, and Parsons' (2006) focus group research suggests that some of the benefits that persons with disabilities may derive from entrepreneurship are a sense of control over their environment, independence, and the satisfaction that comes from being a contributing member of society. Further, they found that those limited employment opportunities that may be available to persons with disabilities often were seen to underutilize their skills and abilities, and were thereby unsatisfying.

In line with these indications that entrepreneurship may bring a number of positive personal, social and financial benefits to persons with disabilities, researchers (e.g. Callahan, Schumpert, and Mast, 2002; Doyle, 2002; Krupa, 1998) highlight the need for vocational rehabilitation agencies, and public policy more generally, to make entrepreneurship development for persons with disabilities a greater priority and commit more specialized resources to this area. Early indications suggested that this call was being answered, with Arnold and Ipsen (2005) reporting that vocational rehabilitation agencies adopted polices more favourable to self-employment over the eleven year period from 1991 to 2002 and that many agencies were offering self-employment services as an option to their clients by the end of that period. But there is some indication that the growth in entrepreneurial initiatives for persons with disabilities may be waning.

A more recent comprehensive study of the federal and state vocational rehabilitation system in the United States (Revella, Smith, & Inge, 2009) shows that self-employment activity among persons with disabilities actually diminished slightly relative to organizational employment activity in vocational rehabilitation agencies, from 2% in 2003 to 1.7% in 2007. This is difficult to explain, especially in light of data showing that earnings for those who chose to pursue entrepreneurship and were successful in starting a business were 13% higher than for

those who chose to pursue organizational employment and were successful in finding such employment (Ravella, et al., 2009). It may be that some vocational rehabilitation agencies attempted to offer self-employment as an option to regular employment, but found they were lacking the capacity necessary to provide a viable ongoing service. If so, this would be consistent with research suggesting that supporting persons with disabilities who wish to pursue entrepreneurship is not an easy task. Pavey (2006) notes that while entrepreneurship may hold promise for persons with disabilities, greater investments in human capital development are needed, and further that the definition of human capital may need to be adjusted to account for the notion of disabilities.

Kendall, Buys, Charkera, and MacMillan (2006) reported that vocational rehabilitation counsellors in Australia working with persons with disabilities found entrepreneurship to be a viable option for many of their clients, but their organizations lacked the knowledge, resources and general operational support required to fully assist in this area. Van Niekerk, Lorenzo, and Mdlokolo's (2006) participatory action research noted challenges related to a lack of both financial and human capital among a sample of persons with disabilities who were attempting to start their own businesses in South Africa, and posited that additional services designed to build group identity and group capacity may be required to help persons with disabilities to better cope with the challenges of pursuing entrepreneurship. Further, Rizzo's (2002) review of the challenges and the suitability of self-employment as a work option for persons with disabilities suggests that combining business support systems with personal social support systems more typical for people with severe disabilities may improve the success of these initiatives. Ipsen, Arnold, and Colling (2005) suggest that the needs of persons with disabilities who opt for self-employment rather than organizational employment should be addressed via collaborations

between traditional vocational rehabilitation agencies and small business development centres, who are already experienced in training people to become entrepreneurs.

The literature discussed so far provides some valuable insight into the potential impact of entrepreneurship as a means of improving the lives of persons with disabilities and highlights some of the structural challenges to providing services that support this goal. Unfortunately, there is almost no research that examines the impact and the outcomes of specific entrepreneurial training for persons with disabilities. One very recent study that begins to address this gap (Haynie & Shepherd, 2011) examines a comprehensive and intensive training program designed for American soldiers who have been wounded in battle so severely that they can no longer continue their career in the armed forces. This grounded theory study proposes a model for successful entrepreneurship development for those who have suffered severe trauma requiring a change of career. Using identity theory, Haynie and Shepherd posit that such individuals need to recreate a career-identity foundation before they can adopt the behaviour required to become successful entrepreneurs, given that their previous career-identity as a soldier has been shattered.

Further development of the Haynie and Shepherd model promises to provide valuable insight into an important cognitive process relevant for this group. The value of this model for explaining the process of entrepreneurial behaviour adoption among the wider population of persons with disabilities is not clear, however, as people who become disabled as a result of trauma after they have established a career represent only a portion of the total population of persons with disabilities, many of whom experience the onset of a disability as children or young adults (Loprest and Maag, 2003). Beyond this one recent article, there are, to my knowledge, no other studies that examine entrepreneurship education programs designed for person with disabilities.

To summarize the literature on persons with disabilities' needs and entrepreneurship-related possibilities, there is ample evidence that this is a disadvantaged segment of our population and that many persons with disabilities have the potential to lead more productive and more fulfilling lives than they do currently. There is also some evidence suggesting that entrepreneurship can have positive personal, social and financial outcomes for persons with disabilities. Unfortunately, there is little empirical evidence to inform the development of programs designed to help persons with disabilities attain the goal of becoming an entrepreneur, if they wish to pursue this vocation. This is one of the research gaps that this dissertation attempts to fill.

2.2 Entrepreneurship Education and Training

Entrepreneurship has increased in importance over the past three decades in line with the shift to a more knowledge-based economy (Audretsch, Thurik, Verheul, and Wennekers, 2002), one that allows for greater and more dispersed innovation. According to Klaus Schwab, founder and executive chairman of the World Economic Forum, entrepreneurship is now widely seen as "the engine fuelling innovation, employment generation, and economic growth" (Tranchet & Rienstra, 2009 p.6). Thus, entrepreneurship has become a popular subject at universities and colleges (Katz, 2003), growing rapidly around the world. In the United States, for instance, the number of courses offered at the college and university level increased from approximately 250 in 1985 to over 5,000 by 2008 (Kaufman, 2008).

This dramatic growth in the resources devoted to teaching entrepreneurship is so far not supported by consistent empirical evidence showing that entrepreneurship education helps to create more and/or more successful entrepreneurs. Although the empirical literature has now reached a considerable size, with at least 42 quantitative studies examining the outcomes of

entrepreneurship education (Martin et al., forthcoming), there are a number of weaknesses in this body of work that make it difficult to interpret the literature.

Several recent narrative reviews of the extant literature on the impact of entrepreneurship education have claimed that there is sufficient evidence to confirm that entrepreneurship can be taught (e.g. Henry, Hill, & Leitch, 2005) and that entrepreneurship education is significantly and positively correlated with a variety of entrepreneurial outcomes (e.g., Gorman, Hanlon, & King, 1997; Katz, 2007; Pittaway & Cope, 2007). In their review of the literature, Weaver et al. (2006) echoed these claims, but noted that the entrepreneurship education assessment literature has suffered from a wide range of methodological limitations that may hamper efforts to draw definitive conclusions. A more recent meta-analysis on the topic (Martin et al., forthcoming) shows that while small positive correlations are found when the results of these individual studies are meta-analyzed, the findings need to be interpreted with caution, as the literature suffers from many weaknesses, such as a lack of consistency in variable measures and an absence or inconsistency in theoretical grounding, making it difficult to compare findings from one study to another. Methodological rigour is also an issue, with many studies omitting the use of control group sampling to compare the effects of entrepreneurship course-takers and non-course-takers and omitting the administration of pre-program measures that would allow comparisons of outcome variables before and after taking an entrepreneurship course.

Further complicating learning in the field is the fact that many studies provide conflicting results. Most studies have shown positive relationships between entrepreneurship education interventions and entrepreneurial outcomes, such as attitudes toward entrepreneurship as a career choice (e.g. Liñán, 2004; Souitaris et al., 2007), perceived desirability (e.g. Peterman & Kennedy, 2003), feasibility of becoming an entrepreneur (e.g., Zhao, Seibert & Hills, 2005;

Hanke, Kisenwether, & Warren, 2010), intentions to become an entrepreneur (e.g., Lee, Chang, & Lim, 2005), nascent behaviour, such as writing business plans and seeking funding (Charney & Libecap, 2000), likelihood of starting a business (e.g., Menzies & Paradi, 2002; Athayde, 2009), duration of maintaining a business (Chrisman & McMullan, 2004), and financial performance (e.g., Miron & McLelland, 1979; Kolvereid & Moen, 1997). However, a number of studies have shown negative relationships between entrepreneurship education interventions and outcomes such as the desirability of entrepreneurship as a career choice (Hanke et al., 2010), the feasibility of becoming an entrepreneur (Oosterbeek, van Praag, & Ijsselstein, 2010), attitudes toward entrepreneurship (Mentoor and Friedrich, 2007), intentions to become an entrepreneur (e.g. Von Graevenitz, Harhoff, &Weber 2010), and financial success in running one's own business (Gine & Mansuri, 2009). Honig (2004) offers one explanation for some of these negative findings, suggesting that the recipe approach often found in formal entrepreneurship education may restrict students' adaptability and ability to recognize opportunities—an important element of entrepreneurial success—and thereby weaken entrepreneurial outcomes for entrepreneurship students. This does not account for the many positive findings in the literature, however.

It is interesting to note that although studies showing positive results cover a roughly thirty year time span (e.g. Miron & McClelland, 1979; Harris, Gibson, & Taylor, 2008), all of the studies finding negative results were conducted very recently (e.g. Mentoor and Friederich, 2007; Oosterbeek et al., 2010) and none of this work was included in the qualitative reviews mentioned earlier, as they were not available at the time. Given the inconsistency in the literature and issues identified with methodological rigour, it would be premature to interpret these

findings as suggesting a trend to less efficacious entrepreneurship education, but it is worth noting at this point.

In summary, the entrepreneurship education assessment literature has a number of weaknesses that make it difficult to establish clear building blocks upon which future research should be constructed. There are, however, two findings of value to the study of entrepreneurship education for persons with disabilities at this point. First, there is some indication that the training-focused education programs, which are often used to help persons with disabilities become entrepreneurs, are likely to provide knowledge, skills and attitudinal changes related to getting started in entrepreneurship, but the more conceptual and theoretical aspects of academic-focused interventions may also need to be employed in order to ensure that these benefits extend to lasting entrepreneurial success (Martin et al., forthcoming). Second, all new studies in this field should consider following a full experimental or quasi-experimental study design that examines both program and comparison group samples prior to and at several points after the completion of training interventions.

2.3 Theory of Planned Behaviour

The entrepreneurship education assessment literature follows little theoretical consistency, as noted in the previous section. One theory that has been applied in a number of cases (e.g. Kolvereid, 1996; Krueger et al., 2000; Luthje and Franke, 2003; Souitaris et al., 2007) is the theory of planned behaviour (Ajzen, 1991). This theory of motivation argues that, for behaviours that are planned, attitudes lead to intentions, which in turn lead to behaviours. In the context of entrepreneurship, attitudes are represented by three elements: 1) attitudes toward self-employment, which are affected by traits, demographics, skills and social, cultural, or financial support (Shapero and Sokol, 1982); 2) subjective norms, which are perceptions that important

others have towards self-employment (Krueger, Reilly & Carsrud, 2000); and 3) perceived behavioural control, which is the perception one has of her/his own ability to become self-employed (Kolvereid, 1996). Intentions, in the entrepreneurship literature, are defined as a state of mind directing a person's attention and action towards self-employment, as opposed to organizational employment (Bird, 1988; Souitaris et al., 2007). As for behaviour, the most proximal measure is that of nascent gestation behaviours, such as writing a business plan, organizing a start up team, and conducting market research (Alsos & Kolvereid, 1998; Carter, Gartner, and Reynolds 1996; Reynolds & Miller, 1992), but other more distal outcomes, such as actually starting a business have also been used (Kolvereid & Moen, 1997).

The theory of planned behaviour relationships have been supported in a variety of business and health contexts (e.g. Bansal & Taylor, 2002; Blue, Marrero, & Black, 2008) and a meta-analysis (Armitage & Conner, 2001) of 185 studies indicates strong support for the predictive value of the theory, with weighted R^2 = .39 for the relationship between the three attitudinal variables and intentions, and weighted R^2 = .27 for intentions to behaviours. Both of these relationships represent large effects, according to Cohen (1998). Among the three attitudinal variables, the first two—attitudes and perceived behavioural control—were found to have consistent positive relationships with intentions (R^2 = .24 and .19 respectively), while the relationship between subjective norms and intentions was less consistent, with a smaller effect size (R^2 = .09).

In the entrepreneurship domain, six studies provide some evidence of the validity of the theory of planned behaviour's first stage—the relationship between attitudinal variables and intentions to become an entrepreneur (Fayolle Gailly, 2009; Kolvereid 1997; Kolvereid & Isaksen, 2006; Krueger et al., 2000; Luthje & Franke, 2003; Souitaris et al., 2007). Two of these

studies (Krueger et al., 2000; Souitaris et al., 2007) measured the relationship between all three attitudinal variables and intentions, finding positive relationships, with R^2 ranging from .32 to .41. These results are in line with those found in Armitage and Conner's (2001) large sample meta-analysis, suggesting that this aspect of the theory of planned behaviour—the relationship between the three attitudinal variables combined and intentions—may have predictive validity in the entrepreneurship domain. As for the individual relationships between the attitudinal variables and intentions, all six of the studies (Fayolle Gailly, 2009; Kolvereid 1997; Kolvereid & Isaksen, 2006; Krueger et al., 2000; Luthje & Franke, 2003; Souitaris et al., 2007) tested the relationship between attitudes toward entrepreneurship and intentions to become an entrepreneur, and found significant relationships, with R^2 ranging from .05 to .26. Among the five studies (Fayolle Gailly, 2009; Kolvereid 1997; Kolvereid & Isaksen, 2006; Krueger et al., 2000; Souitaris et al., 2007) that tested the relationship between perceived behavioural control and intentions to become an entrepreneur, one study (Kolvereid & Isaksen, 2006) showed a non-significant relationship, while the other four showed significant relationships, with R^2 ranging from .06 to .17. Among the same five studies testing the relationship between subjective norms and intentions to become an entrepreneur, one study (Krueger et al., 2000) showed a non-significant relationship, while the other four showed significant relationships, with R^2 ranging from .13 to .28. Although not directly comparable, the effect sizes indicated by the entrepreneurship studies for the relationships between both the attitudes toward entrepreneurship and perceived behavioural control variables and intentions are broadly in line with those reported by Armitage and Conner (2001) in their sample of theory of planned behaviour studies covering a wide range of contexts. The results for subjective norms suggest that it may have greater predictive value in entrepreneurial contexts, although with only five studies, one of which

reported a non-significant relationship, this is only a general indication. Overall, the findings from this body of research suggest that the theory of planned behaviour may have value for entrepreneurship scholars and entrepreneurship education practitioners in terms of predicting intentions to become an entrepreneur.

Unfortunately, few entrepreneurship studies have examined the second stage of the theory of planned behaviour relationships—between entrepreneurial intentions and entrepreneurial behaviours. A search of the literature revealed only two studies that provide some support for a link between entrepreneurial intentions and entrepreneurial behaviour—Kolvereid & Isaksen (2006) and Van Gelderen, Kautonen, Tornikoski (2010). There are concerns with interpreting the results for both of these studies, however, so caution needs to be taken when using their findings. Kolvereid and Isaksen (2006) studied the relationship between entrepreneurial intentions among those who have already registered a business and then compared this to the number of hours per week they devoted to their business at a later point (19 months). They found that intentions explained 40% of the variance in behaviour, which is a large effect size according to Cohen (1988). The concern with using findings of this study as an indicator of the relationship between entrepreneurial intentions and entrepreneurial behaviour is that the study sample had already exhibited significant entrepreneurial behaviour—by registering their own business—when the entrepreneurial intentions were first measured. As such, the study may provide valid and valuable insight into the relationship between intentions to continue to pursue a business and behaviours related to that end, but it does not provide a valid indicator of intentions to become an entrepreneur and subsequent behaviours that may lead to starting a business. In the second study, Van Gelderen et al. (2010) assessed the entrepreneurial intentions of a random sample of adults at one point and then related these intention levels to an assessment of their

entrepreneurial behaviours three years later. The authors found that entrepreneurial intentions explained 12% of the variance in entrepreneurial behaviour, which is considered a small effect size according to Cohen (1988). These results also need to be qualified, however, as the study appears to have a number of methodological weaknesses, such as use of single-item measures that are not validated, no pre-measurement of behaviours, and further, the study has not been published in a peer-reviewed journal.

Two studies have attempted to measure entrepreneurial intention and behaviour changes related to entrepreneurship education specifically: Kolvereid and Moen (1997) and Souitaris et al. (2007). Kolvereid and Moen (1997) purport to show that entrepreneurship education leads to higher entrepreneurial intentions and higher entrepreneurial behaviours, but their study does not incorporate the necessary pre- and post-educational intervention assessments (Cook and Campbell, 1979) to support such a claim. Further, they do not test the relationship between intentions and behaviours specifically. In the second study, Souitaris and his colleagues conducted a quasi-experimental field study involving students enrolled in university entrepreneurship courses and a matched control group who did not take entrepreneurship courses. Thus, it provides one of the few methodologically rigorous examinations of the impact of entrepreneurship education using theory of planned behaviour variables, although it does not include a longitudinal component beyond the completion of the entrepreneurship course. They found that students' entrepreneurial intentions increased significantly after taking entrepreneurship courses, but their nascent entrepreneurial behaviour did not. This lack of support for the intentions to behaviour relationship may be due, in part, to the use of full-time university students, who are often not in a position to fully engage in starting a business until many years after taking entrepreneurship courses (Luthje and Franke, 2003; Souitaris et al.,

2007). In contrast, the entrepreneurship training programs for persons with disabilities studied in the present research study are designed for people who are able to begin the start-up phase of their business immediately following the training program. Hence, these interventions may provide a more appropriate context to examine the link between intentions and behaviours in an entrepreneurial education setting.

2.4 Social Psychological Impact

Much of the focus of entrepreneurship training and development is placed, quite understandably, on the economic impact that successfully establishing a new business can have for the entrepreneurs involved, and for the economy more generally. Given that the focus of this study is on persons with disabilities, a group that is disadvantaged socially and economically in society, it is also important to understand the potential social psychological impact that successfully establishing a new business may have on this group.

Learning from the European Community Household Panel for 13 European countries indicates that entrepreneurs with disabilities often find that their self-employment allows them to accommodate their disabilities better than organizational employment and in many cases report higher levels of satisfaction with their work than persons with disabilities who were employed by others (Pagan, 2009; Pagan-Rodriguez, 2011). McNaughton, Symons, Light, and Parsons' (2006) focus group research suggests that some of the benefits that persons with disabilities may derive from entrepreneurship are a sense of control over their environment, independence, and the satisfaction that comes from being a contributing member of society. Further, they found that those limited employment opportunities that may be available to persons with disabilities often were seen to underutilize their skills and abilities, and were thereby unsatisfying.

Many of the studies that examine the impact of vocational success on those who are unemployed measure changes in self-esteem, among other social psychological constructs (e.g. Audhoe et al., 2010; Drake et al., 1999; Ensminger and Celentano, 1988). Self-esteem plays an important role in the evaluation of an individual's sense of worthiness as a person, and can be considered an indicator of how much value an individual places on herself/himself (Baumeister, 1993; Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). High self-esteem has been shown to have strong positive relationships with happiness, life satisfaction and quality of life (Baumeister et al. 2003; Van Dongen, 1998.), while low self-esteem has been linked to a variety of negative consequences such as depression (Shahar & Davidson, 2003) and poor social functioning (Bradshaw & Brekke, 1999).

Given that high self-esteem appears to be desirable, the question arises as to whether or not we can influence one's self esteem level, and if so, what impact that might have on a variety of desirable outcomes. There has been much debate and investigation as to whether self-esteem is a trait or a state, with many self-esteem scholars now agreeing that it is a relatively stable self-concept that can fluctuate based on contextual factors, such as traumatic or highly stressful life events or experiencing major cultural changes (Baumeister et al., 2003; Lecomte, Corbiere, Laisne, 2006; Heine, Lehman, Markus, & Kitayama, 1999). Our ability to cause changes in self-esteem is unclear, however. Some research has shown causal relationships between improvements in self-esteem and interventions such as cognitive remediation, vocational development, and specific self-esteem development programs (e.g. Lecomte et al., 2006), but Baumeister et al. (2003) caution that the findings are mixed and overall do not support the promotion of interventions designed to boost self-esteem. Further, they point out that very little research supports the assertion that self-esteem is a cause of the academic or vocational

outcomes with which it is often theoretically associated. Rather, most studies tend to indicate that self-esteem may increase as a *result* of an accomplishment, such as success in academic or vocational endeavours, rather than as a causal influence.

There is reason to expect that many people with disabilities, and especially those who have not been successful in establishing a vocation, may have lower levels of self-esteem than the general population (Daniels, 2008, Link et al., 2001; Minskoff, 1989; Ritsher and Phelan, 2004). As self-esteem is strongly correlated to happiness and people's satisfaction with their life (Baumeister et al., 2003), increasing self-esteem levels should represent a valuable social psychological improvement for those who experience low levels. Further, evidence that successes in academic and vocational endeavours may positively impact self-esteem levels, suggest that programs designed to help persons with disabilities to develop their own businesses—if successful—may not only improve their economic conditions, but may also improve their social psychological conditions by enhancing self-esteem. A great deal of research has shown strong links between self-esteem and employment status (Audhoe, Hoving, Sluiter, Frings-Dresen, 2010; Ensminger and Celentano, 1988; Jones 1993) with Drake, McHugo, Bebout, Becker, Harris, Bond, & Quimby's (1999) randomized experiment showing direct causal links between attaining employment and increases in self-esteem. The extent to which self-esteem is impacted by successful attainment of self-employment generally and among persons with a variety disabilities is not clear, although given the similarities there is reason to expect a relationship similar to that of regular employment. The present research study seeks to fill this gap.

CHAPTER 3: THEORETICAL DEVELOPMENT AND HYPOTHESES

3.1 Hypotheses

3.1.1 Theory of Planned Behaviour Relationships

In this section I argue that the theory of planned behaviour relationships applied to an entrepreneurship context should follow those proposed by Ajzen (1991) and supported in the theory of planned behaviour literature more generally (Armitage & Conner, 2001). This claim is not particularly controversial for the relationships outlined in the first stage of the theory; the relationships between the three attitudinal variables (attitudes toward entrepreneurship, perceived behavioural control and subjective norms) and intentions to become an entrepreneur. As discussed in detail in the previous chapter (section 2.3 Theory of Planned Behaviour) a number of studies (Fayolle Gailly, 2009; Kolvereid 1997; Kolvereid & Isaksen, 2006; Krueger et al., 2000; Luthje & Franke, 2003; Souitaris et al., 2007) have examined these relationships in the entrepreneurship domain and found broadly similar results to those reported by Armitage & Conner's (2001) large-scale meta-analysis of theory of planned behaviour relationships across a variety of domains. There were two cases of non-significant relationships in the entrepreneurship studies, however, with Kolvereid & Isaksen (2006) finding no relationship between perceived behavioural control and intentions to become an entrepreneur, and Krueger et al. (2000) reporting a non-significant relationship between subjective norms and intentions to become an entrepreneur. Nevertheless, the overall findings from this body of research suggest that the relationships in the first stage of the theory of planned behaviour, between the three attitudinal variables and intentions, should obtain in an entrepreneurial context, and there does not appear to be any reason to expect this to differ for persons with disabilities. Thus Hypothesis 1:

***Hypothesis 1a**. The higher the attitudes towards entrepreneurship, the stronger the intention to become an entrepreneur.*

***Hypothesis 1b**. The higher perceived behavioural control, the stronger the intention to become an entrepreneur.*

***Hypothesis 1c**. The higher the subjective norm, the stronger the intention to become an entrepreneur.*

Support for the relationships in the second stage of the theory of planned behaviour, between intentions to become an entrepreneur and entrepreneurship behaviours, is much less clear than for the first stage. Measures of entrepreneurial behaviour include nascent gestation behaviours, such as writing a business plan, organizing a start up team, and conducting market research. Of the four studies that have examined relationships between intentions and behaviours in the entrepreneurship domain (Kolvereid and Moen, 1997; Kolvereid & Isaksen, 2006; Souitaris et al., 2007; Van Gelderen et al., 2010) only Souitaris and his colleagues employ the appropriate methodology and relevant, validated measures necessary to provide valid insight into this relationship for the purposes of entrepreneurship education learning. Unfortunately, their study does not find a statistically significant relationship between intentions to become an entrepreneur and nascent gestation behaviours. However, two aspects of the Souitaris et al. study—one methodological and one contextual—mitigate the finding of no relationship between intentions and behaviours. The methodological concern stems from Souitaris et al.'s comparison of intentions to become an entrepreneur and nascent gestation behaviours at the same point in time (immediately following the entrepreneurship education intervention). This specific comparison does not actually follow the theory of planned behaviour, as the intentions variable is asking participants to indicate what they intend to do in the future and the behavioural variable is asking participants to indicate what entrepreneurial behaviours they have exhibited already (i.e. in the

past). For this reason alone it may be inappropriate to use the Souitaris et al. finding of no relationship between intentions and behaviours as an indicator of the predictive validity of this second stage of the theory of planned behaviour. The second, more contextual concern, which is common to many studies in the entrepreneurship education literature, stems from the use of university students. Although a valid and appropriate sample in general, sampling university students is problematic when examining entrepreneurship behaviours unless a longitudinal methodology is employed (Luthje and Franke, 2003; Souitaris et al., 2007). This is due to the fact that university students are often not in a position to fully engage in starting a business until many years after taking entrepreneurship courses, especially if those courses occur in the first few years of their university program. As stand-alone vocational programs, the entrepreneurship training courses for persons with disabilities examined in this study avoid this potential inhibitor of near-term entrepreneurial behaviour. Given this, it can be expected that the positive relationship predicted by the theory of planned behaviour, between intentions to become an entrepreneur and nascent gestation behaviours will obtain. Thus Hypothesis 2:

> ***Hypothesis 2****. The higher the intention to become an entrepreneur, the greater the number of nascent gestation behaviours.*

Figure 1 depicts the theory of planned behaviour model represented by Hypotheses 1 and 2.

Developing a better understanding of the relationships between the two stages of the theory of planned behaviour will provide both theoretical and practical value to entrepreneurship education scholars and practitioners, but only if the link between nascent gestation behaviours and actual business creation is also understood. In many of the contexts that the theory of planned behaviour has been employed, the behaviours under study are essentially the ultimate outcome, such as in health practice studies examining smoking cessation interventions, for

instance (cf. Armitage & Conner, 2001). In entrepreneurship, however, the ultimate outcome is creating a business, although longer-term considerations for sustaining and growing a business may also be of interest. As such, for the theory of planned behaviour to be usefully employed in the entrepreneurship education field it is necessary to also demonstrate that the behaviours being studied are associated with increased likelihood of creating a business.

Carter et al (1996) examined the behaviours of nascent entrepreneurs and found that those who started a business were likely to display more nascent behaviours and more of the type of behaviour that would make their businesses appear to be tangible to others, such as searching for and actually buying equipment. Building on Carter et al. (1996), Alsos and Kolvereid (1998) developed a set of nascent gestation behaviours intended to reflect those activities that are most likely to lead to business creation. Their research showed that experienced entrepreneurs displayed a higher number of these behaviours than novice entrepreneurs. These findings provide some indication that nascent activity developed in an entrepreneurship education setting should relate to business creation. Thus Hypothesis 3:

> ***Hypothesis 3***. *The greater the number of nascent gestation behaviours, the higher the level of actual business creation.*

3.1.2 Social Psychological Impact

Although the focus of this research study is on the ability of entrepreneurship training programs designed for persons with disabilities to create their own businesses, the overarching interest is in determining whether entrepreneurship may help to improve both the social and economic aspects of life for this disadvantaged group. As such, it is important to examine social psychological factors that indicate whether and to what extent success in entrepreneurship improves the social

aspects related to quality of life. Self-esteem has been shown to have strong positive relationships with happiness, life satisfaction and quality of life (Baumeister et al. 2003; Van Dongen, 1998), and thus represents an ideal proxy measure for social psychological merits of encouraging persons with disabilities to pursue a career as an entrepreneur.

There is reason to expect that many people with disabilities, and especially those who have not been successful in a vocation, may have lower levels of self-esteem than the general population (Daniels, 2008, Link et al., 2001; Minskoff, 1989; Ritsher and Phelan, 2004). Further, evidence that success in academic and vocational endeavours may positively impact self-esteem levels, suggests that programs that help persons with disabilities to develop their own businesses—if successful—may not only improve their economic conditions, but may also improve their social psychological conditions by enhancing self-esteem. Thus Hypothesis 4:

> ***Hypothesis 4****. The higher the level of actual business creation, the higher the level of self-esteem.*

Figure 2 depicts the relationships represented by Hypotheses 1 through 4, as a model of theory of planned behaviour relationships leading to actual business creation, and the further relationship with self-esteem.

3.1.3 Entrepreneurship Education Outcomes

Although the entrepreneurship literature does not provide clear, consistent indications of positive relationships between entrepreneurship education interventions and entrepreneurship outcomes, there are two reasons to expect that these should occur when examining entrepreneurship education interventions for persons with disabilities studied in this research. First, it appears that the main reason for inconsistent results in the extant literature is inconsistent methodology and

often low methodological rigour (Weaver et al., 2006). This study will employ full quasi-experimental design elements, including program and comparison group measures, pre-and post-intervention measures, and a one-year longitudinal time span. Second, there is some indication that the training-focused education programs, which are often used to help persons with disabilities become entrepreneurs, are likely to provide knowledge, skills and attitudinal changes related to getting started in entrepreneurship (Martin et al., forthcoming). Third, the lack of support found for transfer of entrepreneurship learning to nascent gestation behaviours and actual business creation appears due at least in part to the use of university students who are often not in a position to begin pursuing entrepreneurial endeavours until many years after completing a course. The training programs studied in this research are designed to have participants begin creating their business during or soon after completing the program. Thus Hypotheses 5 and 6:

Hypothesis 5a. *Program participants will have higher attitudes towards entrepreneurship three months after commencing the program than prior to the program.*

Hypothesis 5b. *Program participants will have higher perceived behavioural control three months after commencing the program than prior to the program.*

Hypothesis 5c. *Program participants will have higher subjective norms three months after commencing the program than prior to the program.*

Hypothesis 5d. *Program participants will have higher intentions to become self-employed three months after commencing the program than prior to the program.*

Hypothesis 5e. *Program participants will have higher nascent gestation behaviour levels three months after commencing the program than prior to the program.*

Hypothesis 5f. *Program participants will have higher actual business creation levels twelve months after commencing the program than prior to the program.*

Hypothesis 6a. *Program participants' increases in attitude towards entrepreneurship will be greater than those of the comparison group.*

Hypothesis 6b. *Program participants' increases in perceived behavioural control will be greater than those of the comparison group.*

Hypothesis 6c. *Program participants' increases in subjective norms will be greater than those of the comparison group.*

Hypothesis 6d. *Program participants' increases in intention to become an entrepreneur will be greater than those of the comparison group.*

Hypothesis 6e. *Program group participants' increases in nascent gestation behaviour levels will be greater than those of the comparison group.*

Hypothesis 6f. *Program group participants' increases in the level of actual business creation will be greater than those of the comparison group.*

3.1.4 Program Comparisons

Entrepreneurship education outcomes are a relatively understudied area and as such the literature lacks empirical testing of alternative program content and pedagogy (Weaver et al., 2006; Souitaris et al., 2007). The current study examines five training programs designed to help persons with disabilities develop their own businesses. Although all five programs have very similar subject content, they vary in course structure and pedagogy, with four of the programs following what might be considered a traditional structure, starting with in-class sessions where students are taught a variety of entrepreneurship-relevant knowledge and skills, followed by mentor-supported practice. The fifth program uses a different approach, involving no in-class instruction. Rather, students are encouraged to begin developing their businesses immediately upon entry into the program and are supported by a coach who provides regular training and mentoring throughout their entrepreneurship exploration and development. This practice-focused approach is supported by a financial incentive of a one-time payment offered to participants who create a business and achieve a net profit of $800 while in the program.

The two models represented among this sample of programs align with theoretically relevant variations identified in both the entrepreneurship literature and the vocational rehabilitation literature. In the entrepreneurship literature, some scholars (e.g. Carter et al. 1996;

Honig and Karlsson, 2004; Sarasvathy, 2001, 2008) have suggested that the best way to develop entrepreneurial skills and to determine if a business idea has merit is to simply begin to implement the idea, an approach that aligns with the effectuation model of business development (Sarasvathy, 2001). This argument in favour of effectuation would suggest that the practice-focused, no-in-class training approach of the fifth program should lead to greater entrepreneurial success.

Similarly, vocational rehabilitation scholars have shown that a particular variation of vocational rehabilitation programs designed to help people who have mental health and developmental disabilities—the place-train approach—yields significantly better results than the more traditional, train-place model. The train-place model uses an in-class skill and knowledge development component followed by mentor-supported practical experience; whereas the place-train model introduces the person into the real-world of the vocation immediately, and then provides the training and support necessary to help the person succeed in the position based on the needs identified by the real-world experience, without the use of group-run classes or workshops (Corrigan and McCracken, 2005). Thus, the variations seen in the sample of training programs used for the present research study align well with theoretically relevant variations in both the entrepreneurship and vocational rehabilitation fields, although differences in financial incentives need to be considered.

There is little empirical evidence in the entrepreneurship education literature examining the merits of the effectuation approach to running entrepreneurship training programs, but there is considerable evidence in the vocational rehabilitation literature (e.g. Corrigan and McCracken, 2005; Bond et al., 1997; Drake et al., 1999) showing that the place-train model increases organizational employment success rates for people who have mental health and developmental

disabilities. Given the similarities, there is reason to expect that the place-train approach might also yield improved results for self-employment success among people with a variety of disability types. Thus, Hypothesis 7:

> ***Hypothesis 7a.*** *Place-train program participants' increases in attitude towards entrepreneurship will be greater than those of train-place program participants.*
>
> ***Hypothesis 7b.*** *Place-train program participants' increases in perceived behavioural control will be greater than those of train-place program participants.*
>
> ***Hypothesis 7c.*** *Place-train program participants' increases in subjective norms will be greater than those of train-place program participants.*
>
> ***Hypothesis 7d.*** *Place-train program participants' increases in intention to become an entrepreneur will be greater than those of train-place program participants.*
>
> ***Hypothesis 7e.*** *Place-train program group participants' increases in nascent gestation behaviour levels will be greater than those of train-place program participants.*
>
> ***Hypothesis 7f.*** *Place-train program group participants' increases in the level of actual business creation will be greater than those of train-place program participants.*

CHAPTER 4: METHODS

4.1 Participants and Procedures

Program group participants were recruited from among those persons with disabilities who expressed interest in participating in one of five self-employment training programs designed specifically for persons with disabilities in one Canadian province. All participants had a disability that was significant enough to warrant support in the form of income supplement and/or vocational rehabilitation from the provincial ministry responsible for assisting persons with disabilities. Comparison group participants were recruited from among the clients of vocational rehabilitation counselling services in the province and also through an online support group accessible only to persons with disabilities (in the same province), who were receiving income and/or vocational rehabilitation support from the provincial ministry responsible for assisting persons with disabilities. Participants were informed that the surveys are completely voluntary; that their participation would not impact their program standing (for program group); that all information would remain anonymous and be used for research purposes only; and that the study had been reviewed and approved by the research ethics board of a major Canadian university. A cash payment was provided in appreciation of participants' involvement.

Surveys were administered over a 30-month period, involving multiple waves of participants as each training program began a new session, with the last new participants starting in month 25. This length of total survey period was necessary to achieve sufficient sample size for quantitative analysis, as many of the program classes were small, consisting of as few as three participants. Further, one of the five training programs did not involve classes per se, and had a continuous intake process. Program group participants took their first survey before or shortly after the program's initial orientation session, the second survey approximately three

months after the first survey, and the third survey approximately 12 months after the first survey. Comparison group participants followed the same pattern.

Surveys were made available in three formats: paper and pencil, online, and group presentation with electronic response devices (also known as "clickers"). Providing alternative formats of the survey was judged important in order to address the diverse needs of persons with a variety of disabilities. The online version of the survey was created using a major online survey organization, whose survey formatting was designed to meet the 508 accessibility standards for online communications (*Section 508 of the Rehabilitation Act of the United States)*. In addition, the survey was reviewed by the consulting arm of a major Canadian non-profit organization that represents a large group of persons with disabilities. The consulting firm employed their panel of persons with various disabilities using a wide array of assistive technology to examine the survey in order to identify any accessibility issues. Using this input, the survey was then modified by an independent software firm to take it from the consultant's designated 90% accessible level to a 100% accessible level.

4.2 Training Programs

Training program participation was solicited via email and telephone communication with the program manager at each organization. Managers were told that including their program in the study would help to generate knowledge that might contribute to public policy related to persons with disabilities support and entrepreneurship training practice improvements, as well as help further develop social entrepreneurship and commercial entrepreneurship theory. They were also offered a report on the study outcomes related to their program specifically, which they could compare with the overall outcomes of the four other training programs. Anonymity of all individuals, programs and organizations was assured in all reporting.

To understand the content, structure and size of each program, managers were asked to provide relevant literature and were interviewed at the time of joining the research study and then again at the end of the study, to ensure that any changes in the program were properly recorded. In order to maintain the anonymity of each program, the program descriptions provided in this report do not include verbatim wording from their published literature or any other specific wording that would identify them, beyond that which is required to provide an understanding of the program structure and content. Table 1 provides a comparison of the major elements of the five training programs, showing a high degree of similarity related to entrance requirements and training topics covered, but a marked disparity for in-class/workshop training time, ranging from 0 to 135 hours, and for financial support for program participants.

Programs 1 through 4 were described in their literature and in interviews with the program managers in similar terms: as programs that provide a series of workshops designed to help clients evaluate their suitability for self employment, assess the viability of their business ideas, develop their business plans and launch their businesses. They also noted the opportunity for one-on-one coaching/mentoring after the workshops are completed. Further, these four programs were similar in that they did not offer financial support for program participants (Personal interviews with managers of programs 1 through 4, 2009 – 2012).

Program 5, which does not include in-class/workshop training, was described as a practice-focused immersion program, with no formal classes, but regular coaching and reporting, via internet, telephone and monthly in-person sessions. Clients are encouraged to explore their business ideas in practice, in the marketplace, from the start, and to build their business plans from this experience. Further, program participants are given an incentive in the form of a one-

time payment of $1,500 when the business they develop via the program generates $800 of net profit (Personal interviews with manager of Program 5, January 2010 and February 2012).

The variance in program structure was identified as an ideal contrast to test differential program effects. Given that the content of all five programs is very similar, but that the structure of Program 5 follows that outlined by Corrigan & McCracken (2005) as representing a place-train approach and the structure of Programs 1 through 4 represent the more traditional train-place approach, these programs were categorized for the purpose of testing Hypothesis 7. The difference in financial incentives between Programs 1 through 4 and Program 5 is also noted and acknowledged as a potentially important factor when examining differential program effects. Thus, the examination of these programs will not represent a pure place-train versus train-place comparison, but rather a place-train-with-financial-incentives versus a train-place-without financial-incentives comparison.

4.3 Measures

Theory of planned behaviour variables. Measures of theory of planned behaviour variables were adapted from Kolvereid (1996) and were constructed using a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). This includes a 30-item scale of attitudes toward entrepreneurship, with five reasons in favour of organizational employment, five reasons in favour of self-employment, and indices for each of these 10 employment choices. Items include: "Reasons for becoming organizationally employed? Job security." and "Reasons for becoming self-employed? To receive compensation based on merit." See Appendix A for the full list of scale items.

Perceived behavioural control was measured using Kolvereid's (1996) six-item scale, which includes items such as "The number of events outside my control which could prevent me from being self-employed are very few." and "If I become self-employed, the chances of success would be very high." See Appendix A for the full list of scale items.

Subjective norms were measured using Kolvereid's (1996) six-item scale, which includes items such as "I believe that my closest family think that I should not pursue a career as self-employed." and "To what extent do you care about what your closest family members think when you are to decide whether or not to start your own business." See Appendix A for the full list of scale items.

Intentions to become self-employed were measured using Kolvereid's (1996) 3-item measure of career intention, which captures the intention of an individual to start a business as opposed to pursuing a career employed by an organization. Sample items are "I will pursue a career as self-employed" and "I will pursue a career as employed in an organization". See Appendix A for the full list of scale items.

This study requires the examination of both the nature and extent of nascent behaviour, as well as actual business creation. Unfortunately, there is little agreement in the literature on the demarcation between a nascent business activity and the creation of an actual business (Carter et al., 1996; Davidson & Honig, 2003; Reynolds & Miller, 1992). Given that the purpose of this research is to examine the potential for persons with disabilities to improve their economic conditions by starting their own business, rather than working for others, establishing a benchmark of positive net income over some sustained period should be a necessary criterion for assigning venture creation status. This approach to delineating nascent activity and venture

creation is in line with previous research, such Reynolds and Miller (1992) and Lichtenstein, Carter, Dooley, and Gartner (2007).

In order to measure nascent gestation behaviour, and actual business creation, adaptations were made to measures used by Carter et al. (1996), Alsos and Kolvereid (1998), and Davidson and Honig (2003). Participants were deemed to be pursuing a new business opportunity as nascent gestation stage entrepreneurs if they answered yes to two items from Carter et al. (1996): 1) "Are you involved in evaluating a new business idea?" and 2) "Are you actively trying to start a business now", as opposed to "still thinking about it?". Alsos and Kolvereid's 19-item nascent behaviour scale was adapted with items regrouped in a manner similar to Davidson and Honig (2003). The regrouping was undertaken to create two separate variables: 1) nascent gestation behaviours (17 items) and 2) actual business creation (4 items). The 17-item, nascent gestation behaviour scale includes all items from Alsos and Kolvereid's scale (such as "Prepared business plan", "Conducted market research", "Applied for bank funding"), except two items ("Received first payment" and "Positive net income"), which might better reflect the achievement of an actual business creation. The actual business creation scale is comprised of the "Received first payment" item and a temporal expansion of the "Positive net income" item into three items stipulating whether positive net income was achieved in at least one month, in at least 3 of the past 6 months, and in at least 6 of the past 12 months. Thus a continuous variable is created that allows for measurement of the "degree" of start up, or business creation. This delineation is important for the range of business types that are likely to be encountered in entrepreneurship training programs for persons with disabilities, which may vary from small single-person endeavors to sizable businesses. In the case of small, single person enterprises it is possible to achieve first payment and positive net income, without considerable investment of time and

resources. For instance, in the case of a house cleaning service, it is possible for an individual to provide service to one customer on one occasion and legitimately claim that they have received first payment and achieved positive net income, yet without some sustained activity and income it would be inconsistent with the purposes of this research to simply designate such an event as success in the achievement of a business start up.

Self-esteem was measured using the Rosenberg self-esteem scale (Rosenberg, 1965), an explicit scale, which Buhrmester, Blanton, and Swann (2011) show provides better validity than a number of popular implicit measures (such as the implicit association test and the name-letter test). Specific scale items for this 10-item measure were adapted from Gray-Little, Williams, and Hancock (1997). Sample items include "I feel that I am a person of worth, at least on an equal plane with others" and "I wish that I could have more respect for myself". See Appendix A for the full list of scale items.

Control variables. Measures of gender (coded as a dichotomous variable; 1=male, 0=female), age (as a categorical variable; 1 = 16-20, 2 = 21-30, 3 = 31-40, 4 = 41-50, 5 = 51-60, 6 = 61+), education level (sampled as a categorical variable; elementary school, high school, college, university bachelor level, university masters level, university doctoral level; but then dummy coded for GLM procedures as a dichotomous variable; 1 = at least some college education, 0 = high school or less education), disability type (visual, hearing, mobility/agility, speech/language, learning, intellectual/developmental, mental health, medical), previous entrepreneurship experience (coded as a dichotomous variable; 1 = yes, 0 = no), and family entrepreneurship experience (Do you have close family members who are self-employed?) (coded as a dichotomous variable; 1 = yes, 0 = no) were administered to establish participant-related controls. To control for the potential impact of training program differences, program

managers were interviewed to obtain information about entrance requirements, course content, class/workshop hours, coaching/mentoring hours, availability of financial assistance for program participants, program enrolment, and outcome measures they collected themselves, such as the percentage of those who complete the training program who also start up and maintain a business after the training. This information was gathered when each training program joined the study and then again at the end of the study, in order to account for any changes in programs and to verify enrolment and program-measured outcomes. The program content information was used to categorize programs into two types via a dummy variable (1 = place-train, 0 = train-place), the enrolment information was used to determine response rates for study participation, and the program-measured outcomes information was used as a cross reference to the self-report findings of study participants.

4.4 Analyses

The overall approach to data analysis follows that of similar studies in the entrepreneurship literature (e.g. Souitaris et al., 2007; Kolvereid & Isaksen, 2006). All quantitative analyses were conducted using SPSS statistical software, version 20. The dataset was screened for code violations and missing data using SPSS descriptive statistics and frequencies program and visual inspection by the author. Equivalence of respondents and non-respondents, program and comparison group samples, and place-train and train-place group samples was examined by conducting an independent samples t-test of the control variable means for each group and then testing for the statistical significance of any differences using a chi-square test. Where statistically significant differences were found bivariate regressions were run using the two main outcomes variables as dependent variables to determine if the differences were biasing results. All variables were examined for normality and the reliability of all latent variables was tested via

Cronbach's α. For Hypotheses 1 and 2 multiple regression was used first to test the hypothesized relationships at different durations over the three survey times, controlling for gender, age, education, previous entrepreneurship experience, and family entrepreneurship experience. Use of these controls is consistent with previous studies examining the development of intentions and behaviours in entrepreneurship (e.g De Clercq, Honig, & Martin, forthcoming; Kolvereid & Isaksen, 2006). This was followed by a hierarchical regression of the theory of planned behaviour model, also including the five control variables, in order to examine the overall effect of the two stages of the theory of planned behaviour predictions. For Hypotheses 3 and 4 hierarchical regression was used, again controlling for all five control variables.

To test Hypothesis 5 a series of paired sample t-tests were conducted to examine changes over time, followed by a repeated measures analysis of covariance (ANCOVA), controlling for gender, age, education, previous entrepreneurship experience, and family entrepreneurship experience, in order to determine effect sizes. Finally, to test Hypothesis 6 and 7 a series of independent samples t-tests were conducted to examine changes over time and across groups, followed by a series of one-way ANCOVAs, controlling for gender, age, education, previous entrepreneurship experience, and family entrepreneurship experience, in order to determine effect sizes.

CHAPTER 5: RESULTS

5.1 Response rates

A time 1 sample of *N* = 304 was achieved, comprised of 155 program group participants and 149 comparison group participants. The initial program group response represents 64% of the total potential participants who enrolled in the five training programs over the survey period. At time 2 the sample size was N = 242, comprised of 100 program group participants who completed or were continuing in their training program, 30 of the initial program group participants who had not proceeded with training or had started and then stopped their training, and 112 comparison group participants. The program group response at time 2 represents 47% of the total potential participants who enrolled in the five training programs and who completed or were continuing their training at the time. At time 3 the sample size was N = 109, comprised of 63 program group participants who completed their training program, 15 of the initial program group participants who had not proceeded with training or had started and then stopped their training, and 31 comparison group participants. The program group response at time 3 represents 30% of the total potential participants who completed their training in the five training programs over the survey period.

The online survey was by far most popular, representing 513 (79%) of the total 653 completed surveys, followed by group presentation at 110 (17%) and paper and pencil at 30 (5%). Response times were recorded for the online survey instrument, with participants spending approximately 31 minutes on average. The instrument was designed to ensure that the average participant would not spend more than 30 minutes. Thus the actual was above the target, but not dramatically so. It should be noted that the response time for online surveys reflects the amount of time the survey link is open, from signing on to signing off and that this time may not

reflect actual time spent responding to the questionnaire, as some respondents may interrupt their survey response with other activities.

The group survey format (presentation with clickers) took much longer than the online format. Specific response times were not recorded, but the sessions averaged approximately one hour, including two short (approximately 5 minute) breaks. This long length was due to the fact that each question needed to be shown visually, via computer slide projector, and read out loudly, clearly and slowly in order to ensure clear communication for all those who may have specific needs related to communication. The group format was used predominantly at t1, and sessions were run just before the training programs' orientation/information sessions for potential participants. After t1 most respondents opted for the online survey. It should be noted that the group format was initially offered to comparison group respondents, but then dropped, such that they could choose between only online and paper versions after that point. This was due to the fact that no respondents opted for the group version in the first three months of the data collection period, and the logistical problems of setting up sessions in the many regions covered by the training programs being studied, without the use of the training programs' facilities, were too great. To determine if survey format may have biased results, bivariate regressions were run using survey format as the independent variable and the two main outcomes variables—nascent gestation behaviours and actual business creation—as dependent variables. Results indicated that survey format was not related to nascent gestation behaviours (R^2 = -.02, p = .951) or actual business creation (R^2 = -.02, p = .812), suggesting that differences in survey format did not bias study results.

5.2 Data Verification

The dataset was screened for code violations and missing data using SPSS descriptive statistics and frequencies program, and visual inspection by the author. There were 19 cases eliminated at the outset (12 program group, 7 comparison group) because less than 10% of the survey had been completed. In 11 of these cases only the consent form, at the beginning of the survey, had been completed. One additional case was removed after screening, because the answers were extreme and implausible. Beyond the elimination of the 20 cases just mentioned there were very few cases in which variables that are used for the main analyses of the study had missing data and they were scattered across cases and variables. This is not surprising, as most surveys were taken online (78%) or in a group session using clickers (17%). Online, the questions for main variables were setup to prompt participants if they missed an item, as they proceeded through each question. In the group presentation sessions the presenter waited for the system to show that all participants had answered. (The system did not identify who had answered.) Those who did not wish to answer a particular question, or item within a question, were informed at the outset that they could discreetly communicate to the presenter that they did not wish to answer, at which point the question was closed. There were no cases of this happening. Thus, it was unlikely that many of the main variable questions would be missing data. The variables missing the most data were control variables, such as age and disability type, both of which had five missing responses. It should also be noted that the self-esteem variable had 15 cases missing for all items in this construct in t1, due to the fact that these scale items were missing in the first two presentations of the survey. Listwise deletion was used for all analyses, as the number of cases with missing data was well below the 5% guideline established by Tabachnik and Fidell (2001).

5.3 Normality

Tests for normality indicated that all variables were within the +1.0 to -1.0 range of skewness and kurtosis indicated as a guideline by Meyers, Gamst, and Guarino (2006), with the exception of the nascent gestation behaviour and actual business creation variables. Transformations were carried out on the actual business creation variable for all three surveys. At time 3, only kurtosis was a concern, and use of a squared transformation was found to produce the best outcome, lowering the kurtosis result from -1.44 to -1.13. At time 2 skewness and kurtosis (3.11/10.47) results were both outside the range, and use of an inverse square transformation was found to provide the best outcome lowering results to -1.39/.01. When reporting results that indicate directional change for these two variables (actual business creation at t1 and t2), the results were converted to their proper direction. At time 1, skewness and kurtosis were very strong (4.75/25.77), and although use of an inverse square transformation was also found to provide the best outcome, this lowered the skewness and kurtosis results only to -3.11/7.89, which made it inappropriate to use this variable in any general linear model procedures. This did not create a serious concern for the intended analyses, however, as the time 1 actual business creation variable is most valuable as a base for creating difference variables, indicating changes in actual business creation levels over time. The actual business creation difference variables were within the skewness and kurtosis guidelines. Transformations were explored to reduce the kurtosis (1.29) of the nascent gestation behaviour difference variable at time 2, but none of the common transformation methods improved the outcome, so this variable was left without transformation, as it was only moderately outside the guidelines.

5.4 Reliability

Internal reliability was calculated for all latent variables for each survey time, using Cronbach's α, with results showing that all variables and their major factors exceeded the .80 guideline, with the exception of the three-item intentions scale which had an α of .79. For attitudes toward self-employment the results for the two major factors were: Factor 1: reasons for becoming self-employed (Cronbach's α: t1=.93, t2=.92 ,t3=.93) and Factor 2: reasons for becoming organizationally employed (Cronbach's α: t1=.82, t2=.84, t3=.84). Results for perceived behavioural control (Cronbach's α: t1=.83, t2=.80 t3=.81) and subjective norm (Cronbach's α: t1=.87, t2=.86 t3=.89) were also at or above the .80 guideline. The three item intentions to become self-employed scale (Cronbach's α: t1=.79, t2=.79 t3=.79) was slightly below the .80 guideline. For self-esteem, the ten-item scale was found to have acceptable reliability with all three measures well above the guideline (Cronbach's α: t1=.86, t2=.88 t3=.89). See Appendix A for scale item details with reliability scores.

5.5 Sample Equivalence

Sample equivalence of respondents versus non-respondents (Table 1), program versus comparison groups (Table 2), and place-train versus train-place groups (Table 3) was examined with a chi-square test using gender, age, education, past entrepreneurship experience, family entrepreneurship experience, and disability type. For respondents versus non-respondents the samples were found to be equivalent in all of the areas examined, with two exceptions: 1) Non-respondents exhibited a statistically significant skew ($\chi^2(1) = 5.99$, $p = .014$), to past entrepreneurship experience (51%) versus respondents (37%). To determine if this skew in past entrepreneurship experience may have impacted the results, regression analysis was used to examine the impact of past entrepreneurship experience on the change in nascent gestation

behaviours (R^2 = .001, p =.712) and actual business creation (R^2 = .001, p = .727) dependent variables from time 1 to time 3, indicating that gender did not significantly impact the results. 2) Although the samples were equivalent in seven of the eight disability types, the results for medical disability showed a significant difference ($\chi^2(1) = 9.56$, p = .002), with 44% of non-respondents, but only 27% of respondents indicating they had a medical disability. To determine if this skew in disability type may have impacted the results, regression analysis was used to examine the impact of disability type on the change in nascent gestation behaviours (R^2 = .041, p = .829) and actual business creation (R^2 = .077, p = .421) dependent variables from time 1 to time 3, indicating that disability type did not significantly impact the results.

For the program versus comparison group samples equivalence was found in all areas examined, with the same two exceptions found for respondents versus non-respondents: 1) There were significant differences found in past entrepreneurship experience ($\chi^2(1) = 4.12$, p = .042), with 48% of the treatment group, but only 36% of the control group indicating that they had previously owned their own business. Although the regression results noted above for respondents versus non-respondents indicate that past entrepreneurship did not have a significant impact on either of the two main outcome variables a further test, using only the program group sample, was undertaken to ensure that this difference in past entrepreneurship experience did not differentially affect the impact of an entrepreneurship training program. A regression analysis was run, using only the program group sample, to examine the impact of past entrepreneurship experience on the change in nascent gestation behaviours (R^2 =.002, p =.730) and actual business creation (R^2 = .006, p =.537) dependent variables from time 1 to time 3, indicating that past entrepreneurship experience did not impact participants' likelihood of benefiting from an entrepreneurship training program. 2) Although program and comparison group samples were

equivalent in seven of the eight disability types, the results for medical disability showed a significant difference ($\chi^2(1) = 11.71$, $p = .001$), with 42% of treatment group, but only 23% of control group participants indicating they had a medical disability. Although the regression results noted above for respondents versus non-respondents indicate that disability type did not have a significant impact on either of the two main outcome variables, a further test, using only the program group sample, was undertaken to ensure that this difference in disability type did not differentially affect the impact of an entrepreneurship training program. A regression analysis was run, using only the treatment group sample, to examine the impact of disability type on the change in nascent gestation behaviours ($R^2 = .036$, $p = .952$) and actual business creation ($R^2 = .088$, $p = .615$) dependent variables from time 1 to time 3, indicating that disability type did not impact participants' likelihood of benefiting from an entrepreneurship training program.

The place-train versus train-place comparison showed the samples to be equivalent in all of the areas examined, with one exception. The place-train grouped skewed female (75%), while the train-place group skewed male (55%) ($\chi^2(1) = 4.40$, $p = .036$). To determine if this skew in gender may have impacted the results, regression analysis was used to examine the impact of gender on the change in nascent gestation behaviours ($R^2 = .009$, $p = .333$) and actual business creation ($R^2 = .001$, $p = .745$) dependent variables, indicating that gender did not significantly impact the results.

5.6 Hypothesis Testing

Table 3 provides a matrix showing correlations between all of the main study variables at all three survey times. Overall, the hypothesis testing followed the same general approach taken by Souitaris et al. (2007), a study with a similar quasi-experimental design. All p-values for hypothesized relationships are one-tailed.

5.6.1 Hypothesis 1

To test Hypothesis 1 multiple regression was run on three models (Table 6), with the three attitudinal variables—attitude toward self-employment, perceived behavioural control, and subjective norms—as independent variables at time 1 in each case, and intentions to become self-employed as the dependent variable at time 1 in model 1, at time 2 in model 2, and at time 3 in model 3. Each model controlled for gender, age, education, previous entrepreneurship experience, and family entrepreneurship experience. Tolerance levels were well above the accepted guideline of 0.1 to 0.3, and the variance inflation factor (VIF) was well below the accepted guideline of 5 to 10 (Meyer et al., 2006), indicating that multicollinearity was not a concern. The five control variables were not significant predictors of intentions in any of the three models. Reported significance levels account for the use of the same independent variables in all three models by employing the Bonferoni correction. Thus significance at the $p < .05$ level requires $p < .017$, $p < .01$ level requires $p < .003$, $p < .001$ level requires $p < .0003$. Model 1 compared attitudinal variables at time 1 with intentions at time 1, resulting in a significant adjusted regression coefficient ($R^2 = 0.52$, $p < .01$) and significant standardized coefficients for attitude toward self-employment ($\beta = 0.28$, $p < .01$) and perceived behavioural control ($\beta = 0.54$, $p < .01$), but not for subjective norms ($\beta = 0.01$, ns). Model 2 compared attitudinal variables at time 1 with intentions at time 2 (approximately 3 months later), resulting in a significant adjusted regression coefficient ($R^2 = 0.35$, $p < .01$) and significant standardized coefficients for attitude toward self-employment ($\beta = 0.26$, $p < .01$) and perceived behavioural control ($\beta = 0.43$, $p < .01$), but not for subjective norms ($\beta = -0.01$, ns). Model 3 compared attitudinal variables at time 1 with intentions at time 3 (approximately 12 months later), resulting in a small but significant adjusted regression coefficient ($R^2 = 0.10$, $p < .01$), a significant standardized coefficient for

perceived behavioural control (β = 0.33, p < .01), and a non-significant standardized coefficient for attitude toward self-employment (β = 0.15, ns) and subjective norms (β = 0.10, ns). Thus, Hypothesis 1 is partially supported, with 1a supported for concurrent and three month time lags, 1b supported for concurrent, three and twelve month time lags, and 1c not supported.

5.6.2 Hypothesis 2

To test hypothesis 2 a series of multiple regressions (Table 7) were run comparing intentions to become self-employed as an independent variable and nascent gestation behaviours as a dependent variable, measured at varying time periods as follows. Each model controlled for gender, age, education, previous entrepreneurship experience, and family entrepreneurship experience. Tolerance levels were well above the accepted guideline of 0.1 to 0.3, and the variance inflation factor (VIF) was well below the accepted guideline of 5 to 10 (Meyer et al., 2006), indicating that multicollinearity was not a concern. None of the five control variables were significant in any of the three models. Reported significance levels account for the use of the same independent variable in two comparisons and the same dependent variable in another two comparisons, by employing the Bonferoni correction. Thus significance at the p < .05 level requires p < .025, p < .01 level requires p < .005, p < .001 level requires p < .0005. Regression 1 compared intentions at time 1 with nascent gestation behaviours at time 2 (approximately 3 months later), resulting in a significant adjusted regression coefficient (R^2 = 0.33, p < .001) for the model, and a significant standardized coefficient for intentions (β = 0.56, p < .001). Regression 2 compared intentions at time 1 with nascent gestation behaviours at time 3 (approximately 12 months later), resulting in a small but significant adjusted regression coefficient (R^2 = 0.11, p < .01) and a significant standardized coefficient for intentions (β = 0.33, p < .01). Regression 3 compared intentions at time 2 with nascent gestation behaviours at time 3

(approximately 9 months later), resulting in a significant adjusted regression coefficient (R^2 = 0.22, $p < .001$) and a significant standardized coefficient for intentions ($\beta = 0.46$, $p < .001$). Thus, Hypothesis 2 was supported at time intervals of three, nine, and twelve months.

The theory of planned behaviour model, represented by Hypotheses 1 and 2 together (Figure 1), was then examined using a hierarchical regression in order to determine the overall effect of the two stages of predictions (Table 8). Using nascent gestation behaviours as the dependent variable, the five control variables were entered first, as a block, followed by the three attitudinal variables, as a block, and then finally intentions to become self-employed was entered by itself. Tolerance levels were above the accepted guideline of 0.1 to 0.3 (Meyer et al., 2006), indicating that multicollinearity was not a concern.

Results show a significant adjusted regression coefficient ($R^2 = 0.22$, $p < .001$) for the full model, and a significant standardized coefficient for intentions ($\beta = 0.41$, $p < .001$) when all variables are loaded. None of the five control variables were significant predictors of nascent gestation behaviours in the three models. The addition of the three attitudinal variables in Model 2 produced a significant change in the standardized coefficient ($\Delta R^2 = 0.10$, $p < .01$), and a significant standardized coefficient for perceived behavioural control ($\beta = 0.30$, $p < .05$). With the addition of intentions to become self-employed in Model 3, perceived behavioural control was no longer a significant predictor of nascent gestation behaviours. This model produced a significant change in the standardized coefficient ($\Delta R^2 = 0.12$, $p < .001$), and a significant standardized coefficient for intentions to become self-employed ($\beta = 0.41$, $p < .001$). This provides further support for Hypothesis 2 and indicates that the attitudinal variables impact nascent gestation behaviours through intentions to become self-employed, as per Hypothesis 1.

5.6.3 Hypothesis 3

To test Hypothesis 3, hierarchical regression was employed, with actual business creation as the dependent variable (Table 9). The five control variables were entered first, as a block, followed by the three attitudinal variables, as a block, intentions to become self-employed by itself, and then finally nascent gestation behaviours was entered by itself. Tolerance levels were above the accepted guideline of 0.1 to 0.3 (Meyer et al., 2006), indicating that multicollinearity was not a concern. Results show a significant adjusted regression coefficient ($R^2 = 0.55$, $p < .001$) for the full model, and a significant standardized coefficient for nascent gestation behaviours ($\beta = 0.76$, $p < .001$) when all variables were loaded. None of the five control variables were significant predictors of actual business creation in the four models. The addition of the three attitudinal variables in Model 2 did not produce a significant change in the standardized coefficient ($\Delta R^2 = 0.05$, ns), although a significant standardized coefficient was found for attitudes towards self-employment ($\beta = 0.17$, $p < .05$). With the addition of intentions to become self-employed in Model 3, attitudes towards self-employment was no longer a significant predictor of actual business creation. This model produced a significant change in the standardized coefficient ($\Delta R^2 = 0.11$, $p < .001$), and a significant standardized coefficient for intentions to become self-employed ($\beta = 0.41$, $p < .001$). When nascent gestation behaviours was added, in Model 4, intentions to become self-employed was no longer a significant predictor of actual business creation. This model produced a significant change in the standardized coefficient ($\Delta R^2 = 0.40$, $p < .001$), and a significant standardized coefficient for nascent gestation behaviours ($\beta = 0.76$, $p < .001$). Thus, Hypothesis 3 was supported.

5.6.4 Hypothesis 4

To test Hypothesis 4, a further hierarchical regression was employed, using self-esteem as the dependent variable (Table 10). The five control variables were entered first, as a block, followed by the three attitudinal variables, as a block, intentions to become self-employed by itself, nascent gestation behaviours by itself, and then finally actual business creation was entered by itself. Tolerance levels were above the accepted guideline of 0.1 to 0.3 (Meyer et al., 2006), indicating that multicollinearity was not a concern. Results show a significant adjusted regression coefficient ($R^2 = 0.18$, $p < .001$) for the full model, but a non-significant standardized coefficient for actual business creation ($\beta = -0.14$, ns) when all variables were loaded. Instead, nascent gestation behaviours ($\beta = 0.44$, $p < .01$) was found to be the strongest predictor of self-esteem, and education was also a significant predictor ($\beta = 0.21$, $p < .05$). None of the other four control variables were significant predictors of self-esteem in the five models. The addition of the three attitudinal variables in Model 2 produced a significant change in the standardized coefficient ($\Delta R^2 = 0.09$, $p < .01$), and significant standardized coefficients for perceived behavioural control ($\beta = 0.25$, $p < .01$), and for education ($\beta = 0.24$, $p < .05$). The addition of intentions to become self-employed in Model 3 did not produce a significant change in the standardized coefficient. When nascent gestation behaviours were added in Model 4, a significant change in the standardized coefficient was found ($\Delta R^2 = 0.08$, $p < .01$), as well as significant standardized coefficients for nascent gestation behaviours ($\beta = 0.34$, $p < .01$) and education ($\beta = 0.21$, $p < .05$). Finally, the addition of actual business creation, in Model 5 did not produce a significant change in the standardized coefficient ($\Delta R^2 = 0.01$, ns). Thus Hypothesis 4 was not supported.

5.6.5 Hypothesis 5

To test Hypothesis 5 a series of paired sample t-tests were conducted followed by a repeated measures analysis of covariance (ANCOVA), using the program sample and controlling for gender, age, education, previous entrepreneurship experience, and family entrepreneurship experience. Overall, results for the paired sample t-tests (Table 11) indicate a lack of support for the hypotheses predicting a positive change in the independent variables (attitudes and intentions) and support for the hypotheses predicting a positive change in the dependent variables (nascent gestation behaviours and actual business creation). Perceived behavioural control and subjective norms did not change significantly from Time 1 to Time 3, while attitudes toward self-employment (t = -2.12, p < .01) and intentions to become self-employed (t = -3.62, p < .001) both decreased. The decrease in attitudes toward self-employment over the full Time 1 to Time 3 period is explained fully by a significant decrease (t = -2.51, p < .01) during the Time 2 to Time 3, while there was no significant change during the Time 1 to Time 2 period, whereas the decrease for intentions to become self-employed was found over both time periods. Significant increases were found from Time 1 to Time 3 for both nascent gestation behaviours (t = 3.41, p < .001) and actual business creation (t = 7.23, p < .001).

The repeated measures ANCOVA (Table 12) provided effect size estimates of the changes in the six variables tested and the ability to control for the five designated control variables (gender, age, education, previous entrepreneurship experience, and family entrepreneurship experience). None of the five control variables had a significant impact on the results for any of the six analysis variables. Overall, results show no significant changes in the three attitudinal variables and intentions, but significant increases in nascent gestation behaviours (F(1, 59) = 2.48, p = 0.045, η^2 = 0.05) and actual business creation (F(1, 59) = 5.43, p = 0.011, η^2 = 0.05).

Thus, Hypothesis 5 is partially supported with Hypotheses 5a, 5b, 5c, and 5d not supported, and Hypotheses 5e and 5f supported.

5.6.6 Hypothesis 6

To test Hypothesis 6 a series of independent samples t-tests were conducted followed by a between subjects ANCOVA, which controlled for gender, age, education, previous entrepreneurship experience, and family entrepreneurship experience. Overall, results for the independent samples t-tests (Table 13) indicate a lack of support for the hypotheses predicting a positive change in favour of the program group for the independent variables (attitudes and intentions) and support for the hypotheses predicting a positive change in favour of the program group for the dependent variables (nascent gestation behaviours and actual business creation). Attitudes toward self-employment and subjective norms did not change significantly between groups from Time 1 to Time 3, while perceived behavioural control (t = -2.43, p < .01) and intentions to become self-employed (t = -2.28, p < .05) both showed a significant negative difference for the program group versus the comparison group. The negative difference for perceived behavioural control stems from a significant increase among the comparison group from Time 1 to Time 2, which is surprising, and a non-significant decrease among the program group. For intentions to become self-employed, the negative difference stems from non-significant changes in both groups from Time 1 to Time 2 and from Time 2 to Time 3. Significant increases were found from Time 1 to Time 3 for both nascent gestation behaviours (t = 3.13, p < .01) and actual business creation (t = 6.00, p < .001).

The between subjects ANCOVA (Table 14) provided effect size estimates of the changes in the six variables tested and the ability to control for the five designated control variables (gender, age, education, previous entrepreneurship experience, and family entrepreneurship

experience). None of the five control variables had a significant impact on the results for any of the six analysis variables. Overall, results show no significant changes in the attitudes towards self-employment and subjective norms. Statistically significant changes were found for both perceived behavioural control ($F(1, 90) = 5.75$, $p = 0.010$, $\eta^2 = 0.06$) and intentions to become self-employed ($F(1, 90) = 6.43$, $p = 0.007$, $\eta^2 = 0.07$), which t-tests showed were in the opposite direction to that hypothesized. The significant changes found in the t-tests for nascent gestation behaviours ($F(1, 90) = 4.98$, $p = 0.014$, $\eta^2 = 0.06$) and actual business creation ($F(1, 90) = 27.04$, $p = 0.000$, $\eta^2 = 0.25$) were also confirmed. Thus, Hypothesis 6 is partially supported with Hypotheses 6a, 6b, 6c, and 6d not supported, and Hypotheses 6e and 6f supported.

For further perspective on the impact of the training program intervention on business creation, a dummy variable was created using the actual business creation variable (1 = business created, 0 = no business created). Table 15 provides a comparison of the number of businesses created from Time 1 to Time 3 by group, using the actual business creation dummy variable, showing 26 (54%) for the program group and 0 for the comparison group.

5.6.7 Hypothesis 7

To test Hypothesis 7 a series of independent samples t-tests were conducted using the place-train and train-place program group samples. It was not possible to run an ANCOVA with controls for this analysis, as the sample size was too small to detect the expected differences between two programs. Overall, results for the independent samples t-tests (Table 16) show support for four of the predicted changes, with significant differences in favour of the place-train group from Time 1 to Time 3 for attitudes toward self-employment ($t = 1.81$, $p < .05$), perceived behavioural control ($t = 1.81$, $p < .05$), nascent gestation behaviours ($t = 2.30$, $p < .05$), and actual business creation ($t = 1.94$, $p < .05$). There was no significant difference between the two groups for

subjective norms (t = -0.99, ns) and intentions to become self-employed (t = 1.59, ns). Thus, Hypothesis 7 was partially supported, with 7a and 7b supported, 7c and 7d not supported, and 7e and 7f supported.

For further perspective on the differential impact of the place-train and train-place programs on business creation, Table 15 provides a comparison of the number of businesses created from Time 1 to Time 3 by group, showing 11 (79%) for the place-train group and 15 (44%) for the train-place group.

CHAPTER 6: DISCUSSION

6.1 Contributions and Implications

Entrepreneurship education has been growing rapidly around the world for several decades, despite a lack of rigorous research showing consistent evidence of its effectiveness in creating more or better entrepreneurs. Recently, entrepreneurship has become a vocational training option for many persons with disabilities, who are often unemployed and generally disadvantaged in our society, and who were previously able to access vocational training only for organizational employment roles. The overarching purpose of this study is to contribute to the development of a rigorous body of research that addresses the question of entrepreneurship education and training effectiveness generally, and to provide specific learning on its merits for improving the social and economic conditions for persons with disabilities.

To meet this overarching purpose, four specific research objectives were set out: 1) to determine whether and to what extent entrepreneurship training programs designed for persons with disabilities are successful in helping them to create their own businesses; 2) to contribute to theory building in the literature on entrepreneurship education assessment, by investigating relationships posited by the theory of planned behaviour generally, and more specifically between intentions and behaviours, which have not been adequately assessed in the literature to-date; 3) to contribute to learning in entrepreneurship pedagogy by examining the differential impact of program types on actual business creation; and 4) to contribute to the social psychological literature related to the entrepreneurship area of vocational rehabilitation, by examining whether success in developing an owned business is associated with social psychological improvement, in addition to the expected economic improvement.

The first objective has been met, with results showing that the entrepreneurship training programs for persons with disabilities examined in this study were associated with significant increases in nascent gestation behaviour and actual business creation for program participants (Tables 11 & 12) and that these increases were significantly greater than those of the comparison group (Tables 13 & 14). This suggests that these programs are making a positive contribution toward enabling persons with disabilities who have not had vocational success to create their own businesses. Further, the magnitude of the program effect found here is supported in part by cross-references to the training program operators' own reports. This study shows that 54% of the program group participants, who did not have a business running at the start of the training program, created a business over the one-year period since starting the program (Table 15). This compares with a range of 50% to 60% reported by the three training managers who were able to provide their own statistics for this measure, thus providing some level of assurance that the results of this study are valid.

When compared with other entrepreneurship education assessment studies, however, the effect size found in this study, for the impact of an entrepreneurship educational intervention on actual business creation, relative to a control group (η^2 = .25) is much larger. Martin et al. (forthcoming) report a weighted r of .12 (which converts to η^2 = .02) for the six studies that examined some form of business start-up in their meta-analysis. These figures need to be used with caution, however, as the authors note that four of the six studies used to determine the correlation for start-up did not incorporate both of the most important elements of quasi-experimental methods (comparisons of both pre/post intervention and test/control groups) that are necessary to provide indications of causality (Cook & Campbell, 1979) and the two remaining studies that did incorporate both of these elements are unpublished technical reports.

Also, four of the six studies examine the effects of university courses, which may not be relevant to the current study context and sample. As such, it is difficult to provide an appropriate comparison in the literature to gauge the effect size obtained in this study, when controls are considered. Nevertheless, these findings represent an important step forward in the entrepreneurship education literature by providing an indication of the effect that entrepreneurship training programs have on actual business creation via a study that employs longitudinal quasi-experimental methods. This answers a call by entrepreneurship researchers (e.g. Gorman et al., 1997; Pittaway & Cope, 2007; Weaver, Dickson, & Solomon, 2006) for more methodologically rigorous studies, employing experimental or quasi-experimental, longitudinal methods to address the broad question of whether entrepreneurship education helps to create additional or more successful entrepreneurs. Further, the fact that the study samples persons with disabilities is valuable in at least two ways. For entrepreneurship researchers it will contribute to our ability to examine potential moderators of entrepreneurship education outcomes, such as individual characteristics of the students, which is lacking in the current literature (Pittaway & Cope, 2007). For those who develop and implement public policy, it provides the first quantitative evidence of the effects of an important recent initiative to expand the range of employment possibilities for persons with disabilities, a disadvantaged group that is large and growing in our society.

The second objective has also been met, with evidence of a statistically significant relationship between intentions and nascent gestation behaviours. These links had not been adequately assessed in the entrepreneurship education assessment literature previously. One reason, it was argued, is that they may be more appropriately studied in the context of the more practice-oriented training programs used in the present research study, than in the formal

university courses that have been used by other researchers (e.g. Souitaris, 2007; Oosterbeek et al., 2010). These results support that argument.

The study also provides further support to previous findings that show a relationship between attitudes and intentions in the entrepreneurship field. In this case, however, results are somewhat surprising, in that previous studies, such as Souitaris et al. (2007) have shown positive relationships between all three attitudinal variables (attitudes towards self-employment, perceived behavioural control, and subjective norms) and intentions, whereas the current study finds positive relationships between intentions and the first two attitudinal variables (attitudes towards self-employment and perceived behavioural control), but not subjective norms, which does not show a statistically significant relationship over any of the three time periods measured. It is not clear why subjective norms does not provide at least some predictive power in this study, but its relative weakness is consistent with evidence from Armitage and Conner's (2001) meta-analysis, which showed that the relationship between subjective norms and intentions was less consistent, with a smaller effect size (R^2 = .09) than that found for the relationship between both attitudes and perceived behavioural control and intentions (R^2 = .24 and .19 respectively).

Findings for the changes in theory of planned behaviour variables over time for the program and comparison groups (Tables 11 and 13) and the train-place and place-train groups (Table 16) were also not as anticipated. Following the theory of planned behaviour, it was expected that changes in attitudinal and intentions variables over time would align with changes in behaviours and, ultimately business creation. This was generally not the case, however, as the three attitudinal and intentions variables were either flat or declined over the study period, while the two outcome variables increased in almost all cases among the program group. This may be due to participants having artificially high levels of attitudes and intentions in the first survey

period, as they had committed to, or were about to commit to, undertake a training program in entrepreneurship and thus might have more positive and optimistic views than usual. It may also be that, regardless of elevated initial attitudinal and intentions levels, participation in the training program helped respondents to appreciate how challenging and uncertain the business creation process is. This might lower their attitudes toward self-employment, their perceived behavioural control and their intentions to become self-employed in the future, even though, as part of their training program, they continued to work at developing their business.

Contributions are also made to the further development of the theory of planned behaviour for use in entrepreneurship education contexts, by providing initial indications of the maintenance of relationships over time. Results show that the attitudinal variables explained 52% of the variance in intentions to become self-employed when both variables were measured at the same time, 35% when intentions were measured three months after the attitudinal variables, and 10% when intentions were measured one year after the attitudinal variables (Table 6). Similarly, intentions to become self-employed explained 33% of the variance in nascent gestation behaviours when measured three months apart, 22% when measured nine months apart, and 11% when measured twelve months apart.

Understanding the rate of decline in the two main theory of planned behaviour relationships may be helpful to both researchers and practitioners. With further support, this learning could be used by researchers to guide decisions on when to measure variables in future studies and what impact such decisions might have on effect sizes. For practitioners, this learning may help teachers, administrators and public policy planners to consider whether the outcomes they seek from running courses in entrepreneurship are likely to be achieved. For instance, if findings from this research are used, a university teacher or administrator who is setting up a

course designed to increase the number and ability of future entrepreneurs will want to ensure that students are able to begin to develop their businesses during, or soon after the end of the course in order to increase the likelihood that any improvements in attitudes and intentions created amongst their students during the course lead to the nascent gestation behaviours necessary to actually create a business. Further, by showing nascent gestation behaviours to be a significant predictor of actual business creation (Table 9), the study reinforces the value of using theory of planned behaviour as a theoretical grounding for entrepreneurship education more generally.

The third objective was not addressed as fully as initially planned, in that the comparison of place-train and train-place programs also incorporated a difference in financial incentives, with place-train participants offered a $1,500 one-time payment upon achieving a net profit of $800, while the train-place program participants were offered no financial incentive. This makes it difficult to read the impact of the pedagogical differences alone. Further the sample size for this comparison was quite small (N = 63), limiting the power to detect differences in relationships between the two types of programs and entrepreneurship outcomes. Nevertheless, the comparison still provides valuable learning, by showing initial indications that the place-train model, when coupled with a financial incentive, results in statistically significant increases in both nascent gestation behaviours and actual business creation versus the more traditional train-place approach without incentives (Table 16). The results further show that 79% of the place-train group and 44% of the train-place group participants, who did not have a business running at the start of the training program, created a business over the one-year period since starting the program (Table 15). This compares with a range of 50% to 60% reported by three of the four training managers of train-place programs, who were able to provide their own statistics for this

measure, which provides some indication of the validity of the results. It was not possible to obtain a comparable measure for the place-train program (Program 5), as the open nature of program entry and completion made direct comparisons inappropriate.

For additional perspective on the validity of the effect sizes shown in this study, comparisons were made with findings in the vocational rehabilitation literature. Bond et al.'s (1997) review of the literature shows a combined result for six experimental studies yielding an improvement for place-train programs over train-place programs, with 58% versus 21% of clients achieving employment respectively. This comparison provides little support for the current findings, as the success rates are higher for both programs in the entrepreneurship context, but the difference between the program types is lower. There are several factors that should be considered when comparing these results to those found in the present study. First, it may be argued that the complexity and the timeframe required to successfully obtain and succeed in organizational employment is not comparable to that required to develop a successful business, with its high level of uncertainty (Sarasvathy, 2001, 2008). This would suggest that the differential impact between program types should be lower in entrepreneurship settings, which is consistent with results from the current study. Second, most of the studies Bond et al. (1997) evaluate have only three-month follow ups and none have more than nine months, which may be appropriate for determining if someone is able to quickly gain organizational employment and then keep it for a reasonable length of time. This compares with a twelve-month time frame used to measure actual business creation in the current study. Lastly, it may be that the relative strengths of the place-train model are more advantageous in an organizational employment development context than in an entrepreneurship development context. Future research

replicating the comparison of train-place and place-train programs in entrepreneurship settings will help to confirm the validity of these initial findings.

Although further study is required in order to distinguish the impact of the financial and pedagogical differences in these results, and to confirm the effect sizes with larger samples, the current findings provide a number of valuable contributions to the entrepreneurship education literature and to practice.

Practitioners in public policy and education may wish to consider investigating the impact that a financial incentive tied to the student's achievement of a specific initial net profit target, may have on outcomes of their entrepreneurship education programs for persons with disabilities, or those receiving social assistance more generally. Financial incentives may not be attractive to public policy officials, as most of the persons with disabilities who enrol in these entrepreneurship training programs already receive financial support from government sources, whose funding of these programs is intended to reduce the need for financial support in the future. However, it may be beneficial to offer financial incentives tied to initial profit outcomes, if this increases the success rate of program participants in creating a business, which might then reduce the need to provide financial assistance over an extended period. Future research should examine the costs and benefits of offering such a financial incentive in these programs over the longer term.

Further, these findings suggest that entrepreneurship educators and trainers should consider adopting a place-train approach for at least some of their programs, in order to determine whether it helps to improve their business creation success rate. Learning from the vocational rehabilitation literature shows that place-train programs improve outcomes, and the present study

provides some initial support for its application in entrepreneurship training programs for persons with disabilities. Yet, it may have merit for use in the population more generally. Relative to the more traditional train-place approach, which uses an in-class skill and knowledge development component followed by mentor-supported practical experience, the place-train approach has an immediate, practice focus. Participants are introduced to the real world of their vocation at the outset, and then provided with the training and support necessary to help them succeed in the position, based on the specific needs identified by their real world experience. This is done without the use of group-run classes or workshops (Corrigan and McCracken, 2005). Although they do not identify themselves as such, the structure of the programs examined in this study aligned well with the train-place (Programs 1 to 4) and place-train (Program 5) categorization. Further, the differences represented by the train-place versus place-train approach were shown to align well with what might be considered the traditional entrepreneurship education approach versus an effectuation approach (Sarasvathy, 2001, 2008). Carter et al. (1996) found evidence that those who were successful in starting a business "put themselves into the day-to-day process of running an ongoing business as quickly as they could" (p. 151). Other entrepreneurship scholars have also argued that the best way to develop entrepreneurial skills is to simply begin to implement an idea (e.g. Honig and Karlsson, 2004; Sarasvathy, 2001, 2008). Yet, there is little empirical evidence in the entrepreneurship education literature examining the merits of the effectuation approach to running entrepreneurship education and training programs. The findings in this study represent an initial step toward filling that gap.

In addressing the fourth objective, regarding the potential positive social psychological impact for persons with disabilities who succeed in creating their own businesses, findings did

not support the hypothesised relationship, as actual business creation was not found to be a statistically significant predictor of self-esteem. Surprisingly, nascent gestation behaviours were found to best predict self-esteem, suggesting that it may be the successful completion of the activities involved in business creation rather than success in creating an actual business that drives improvements in self-esteem. Education level, studied as a control variable, was also shown to have a significant positive relationship with self-esteem, which is generally consistent with previous learning (Baumeister et al., 2003). The hypothesis predicting that actual business creation would relate positively to self-esteem was predicated on evidence that many people with disabilities, and especially those who have not been successful in establishing a vocation, may have low self-esteem (Daniels, 2008, Link et al., 2001; Minskoff, 1989; Ritsher and Phelan, 2004), and the expectation that the same causal links that have been demonstrated between attaining organizational employment and increases in self-esteem (e.g. Drake et al., 1999) would obtain for success in starting one's own business, which is attaining a form of employment. Given this, it is not clear why actual business creation does not predict self-esteem in the present study. However, on reflection, it should not be surprising to find that nascent gestation behaviours do predict self-esteem, given that self-esteem has been shown to increase as a result of a variety of significant accomplishments (Baumeister et al., 2003), and success in achieving a number of nascent gestation behaviours, such as developing a product or service and writing a business plan may well represent significant accomplishments.

Carter et al. 's (1996) study showed that those who approach nascent gestation activities as if they represent a full time job are more likely to succeed in creating a new business. Evidence from the current study supports that finding, showing that greater numbers of nascent gestation behaviours are strongly related to actual business creation. However, entrepreneurship entails

high levels of uncertainty and failure (Honig, 2004, Sarasvathy, 2001, 2008), causing many people to give up their pursuit and discontinue nascent gestation activity. But if nascent gestation behaviours or activities are seen as accomplishments with their own intrinsic rewards, this might help nascent entrepreneurs to continue their pursuit in spite of uncertainty and failure. In this context nascent gestation behaviours would be seen as both a desirable end and a means to an end. Evidence of a positive link between nascent gestation behaviours and self-esteem among persons with disabilities who are unemployed, a group that is likely to have low self-esteem, suggests that they may be experiencing this double benefit from their efforts. The question of whether entrepreneurship educators might be able to enhance this effect then arises. Although interventions designed to build self-esteem are unlikely to succeed (Baumeister et al., 2003), entrepreneurship trainers working with those who have lower self-esteem, such as persons with disabilities who have not been vocationally successful, could reinforce the importance of achieving nascent gestation behaviours and thus increase the likelihood of experiencing an intrinsic reward. If so, this might improve levels of persistence with nascent gestation behaviours, and thus increase the likelihood of achieving actual business creation. Future research could examine these effects through randomized experiments where one group of participants receives the nascent gestation behaviour reinforcements and the other does not. Such studies would also provide the replications necessary to confirm the relationship between nascent gestation behaviours and self-esteem more generally.

6.2 Limitations

The study incorporates the important quasi-experimental features of pre- and post-intervention and treatment and control comparisons required to make causal claims (Cook and Campbell, 1979), but it does not incorporate random assignment, which can improve validity further.

Although this is a weakness of the study it should be noted that a recent meta-analysis (Martin et al., forthcoming) shows no significant difference in the results between quasi-experimental and fully randomized experimental studies in the entrepreneurship education literature, whereas those that did not include the quasi-experimental features were found to significantly overstate the effect size (weighted r = .216 versus .142 respectively).

Although the initial sample of 304 participants is considerable, the drop off in response by time 3, to only 109 participants represents a small sample upon which to make inferences. This also made it difficult to achieve a number of the more detailed analyses that may have provided further learning. Nevertheless, the rigorous application of quasi-experimental techniques should ensure that the findings have a high level of validity.

The study does not measure income earned, and so does not provide a specific indication of improved economic conditions for the participants. It was decided that the survey instruments would not ask participants for their financial information, based on input from training managers, who suggested that this information is especially sensitive for the sample population because the majority of them receive government income supports that are geared specifically to how much they earn. Although the program managers and program funders are aware of the income generated by participants through their new businesses, this data was not available to us.

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APPENDIX A: Scale Items

Attitudes Toward Self-employment

Thirty items adapted from Kolvereid (1996)

Question: To what extent are the following factors important for your decision about your future career plans? (7 point scale, 1 = Not at all important, 7 = extremely important)

Factor 1: Reasons for becoming self-employed (Cronbach's α: t1=.93, t2= .92 ,t3=.93)

Economic opportunity: (Cronbach's α: t1=.69, t2= .73 ,t3=.79)
- Economic opportunity
- To receive compensation based on merit

Challenge: (Cronbach's α: t1=.87, t2= .86, t3=.86)
- To have a challenging job
- To have an exciting job
- To have an interesting job
- To have a motivating job

Autonomy: (Cronbach's α: t1=.87, t2=.88, t3=.84)
- Freedom
- Independence
- To be your own boss
- Be able to chose your own work tasks

Authority: (Cronbach's α: t1=.82, t2=.84, t3=.84)
- To have the power to make decisions
- To have authority

Self-realization: (Cronbach's α: t1=.88, t2=.87, t3=.85)
- Self realization
- To realize your dreams
- To create something
- To fulfill your creative needs

Factor 2: Reasons for becoming organizationally employed (Cronbach's α: t1=.82, t2= .84 ,t3=.84)

Security: (Cronbach's α: t1=.95, t2=.93, t3=.94)
- Job security
- Job stability

Work load: (Cronbach's α: t1=.77, t2=.82, t3=.77)
- Not having to work long hours

To have leisure time
To have fixed working hours
Not to have a stressful job
To have simple, uncomplicated work

Social environment: (Cronbach's α: t1=.77, t2= .79 ,t3=.83)
To participate in a social environment,
To be a member of a group

Avoid responsibility: (Cronbach's α: t1=.77, t2=.86, t3=.86)
To avoid responsibility
Not taking too much responsibility
To avoid commitment

Career: (Cronbach's α: t1=.80, t2=.81, t3=.73)
To have opportunity for career progress
Promotion possibilities

Perceived Behavioural Control (Cronbach's α: t1=.83, t2=.80 t3=.81)

Five items adapted from Kolvereid (1997)

Question: Please indicate to what extent you agree with the following statements regarding self-employment (7 point scale, 1 = strongly disagree, 7 = strongly agree)

1. For me, starting my own business would be very easy.
2. If I wanted to, I could easily make a living from starting my own business.
3. The number of events outside my control that could prevent me from starting my own business are very few.
4. If I started my own business the chances of success would be very high.
5. If I started my own business, the chances of failure would be very low.

Subjective Norm (Cronbach's α: t1=.87, t2=.86 t3=.89)

Six items adapted from Kolvereid (1997)

Question: To what extent are the following factors important for your decision about your future career plans? (7 point scale, 1 = Not at all important, 7 = extremely important)

1. My closest family members think that I should not start my own business.
2. My closest friends think that I should not start my own business.
3. People who are important to me think that I should not start my own business.
4. To what extent do you care about what your closest family members think when you are to decide whether or not to start your own business.

5. To what extent do you care about what your closest friends think when you are to decide whether or not to start your own business
6. To what extent do you care about what people who are important to you think when you are to decide whether or not to start your own business.

Intentions to Become Self-employed (Cronbach's α: t1=.79, t2=.79 t3=.79)

Three items adopted from Kolvereid (1997)

1. If you were to choose between running your own business and being employed by someone, what would you prefer?(1 = Would prefer to be employed by someone, 7 = Would prefer to be self-employed)
2. I will pursue a career as self-employed (1 = very unlikely, 7 = very likely)
3. I will pursue a career as employed in an organization (1 = very unlikely, 7 = very likely)

Nascent Gestation Behaviours & Actual Business Creation

Adapted from Alsos and Kolvereid (1998).

Nascent Gestation Behaviours

Business Planning

1. Prepared business plan
2. Organized start-up team
3. Looked for facilities/equipment
4. Acquired facilities/equipment
5. Developed product/service
6. Conducted market research
7. Devoted full time to the business

Financing the New Firm

8. Saved money to invest
9. Invested own money
10. Applied for bank funding
11. Received bank funding
12. Applied for government funding
13. Received government funding

Interaction with the External Environment

14. Applied for license patent, etc.
15. Hired employees
16. Sales promotion activities
17. Business registration

Actual Business Creation

1. Received first payment
2. Positive net income in at least one month
3. Positive net income in more than 3 of the past 6 months
4. Positive net income in more than 6 months of the past year

Self-esteem

Ten item Rosenberg Response Scale: Adapted from Gray-Little, Williams, & Hancock (1997). (Cronbach's α: t1=.86, t2=.88 t3=.89)

1. I feel that I am a person of worth, at least on an equal plane with others
2. I feel like a person who has a number of good qualities
3. All in all, I am inclined to feel like a failure (R)
4. I am able to do things as well as most other people
5. I feel I do not have much to be proud of (R)
6. I take a positive attitude toward myself
7. On the whole, I am satisfied with myself
8. I wish that I could have more respect for myself (R)
9. I certainly feel useless at times (R)
10. At times I think I am no good at all (R)

R = reverse coded

Table 1. Training program content and structure comparison

Program	1	2	3	4	5
Entrance requirements					
Have a disability significant enough to warrant support from provincial disability support organization or its equivalent	x	x	x	x	x
Demonstrated skills and abilities necessary for self-employment			x	x	
Demonstrated commitment to self-employment					x
Have a business idea already developed	x	x	x	x	
Have experience relevant to the proposed business idea			x		
Have an employment counselor-approved employment action plan				x	
Topics covered					
Entrepreneurial self assessment	x	x	x	x	
Business idea identification, development, assessment	x	x	x	x	x
Competitive analysis	x	x	x	x	x
Business organization, rules, regulations	x	x	x	x	x
Estimating start up and operating costs	x	x	x	x	x
Market research	x	x	x	x	x
Marketing / advertising	x	x	x	x	x
Sales / customer service	x	x	x	x	x
Financial forecasting	x	x	x	x	x
Business planning	x	x	x	x	x
Goal setting and time management	x	x		x	x
Operations management	x	x			x
Networking / social capital				x	
Product/service description analysis					x
Training hours/duration					
Total hours of in-class/workshop training	135	135	27	60	0
Total weeks of in-class/workshop training	8 - 9	8 - 9	10	10 - 12	0
Total hours of coaching/mentoring	32	32	AN	AN	AN
Total weeks of coaching/mentoring	32	32	8	42	156
Financial support for program participants	0	0	0	0	$1,500*
Reported success rate**	50%	50%	60%	na	na

AN = As much coaching as each client needs.

* One time payment upon achieving $800 net profit

** Percentage of students who complete program and create a business, according to program manager.

Table 2. Tests for sample equivalence of respondents versus non-respondents

	Respondents	Non-respondents	Chi-square
Gender			$\chi^2(1) = 0.00$, $p = .987$
Males	95 (49%)	53 (49%)	
Females	100 (51%)	56 (51%)	
Age			$\chi^2(5) = 9.89$, $p = .079$
16 - 20	2 (1%)	0	
21 - 30	24 (13%)	15 (14%)	
31 - 40	45 (23%)	29 (27%)	
41 - 50	72 (38%)	39 (36%)	
51 - 60	45 (23%)	23 (22%)	
Over 60	4 (2%)	1 (1%)	
Estimated mean age	43.1	42.3	
Education (highest degree)			$\chi^2(5) = 5.85$, $p = .321$
Elementary School	7 (4%)	3 (3%)	
High School	57 (29%)	16 (15%)	
College	78 (40%)	51 (47%)	
University – Bachelor level	40 (21%)	32 (29%)	
University – Masters level	1 (16%)	5 (5%)	
University – Doctoral level	2 (1%)	2 (2%)	
Family entrepreneurship experience			$\chi^2(1) = 2.61$, $p = .106$
Yes	98 (51%)	65 (60%)	
No	96 (49%)	43 (40%)	
Past entrepreneurship experience			$\chi^2(1) = 5.99$, $p = .014$
Yes	72 (37%)	56 (51%)	
No	123 (63%)	53 (49%)	
Disability type (more than one may apply)			
Visual	16 (8%)	7 (6%)	$\chi^2(1) = 0.32$, $p = .573$
Hearing	14 (7%)	6 (6%)	$\chi^2(1) = 0.32$, $p = .572$
Mobility / Agility	58 (30%)	32 (29%)	$\chi^2(1) = 0.01$, $p = .944$
Speech / Language	5 (3%)	1 (1%)	$\chi^2(1) = 0.98$, $p = .322$
Learning	40 (21%)	13 (12%)	$\chi^2(1) = 3.58$, $p = .058$
Intellectual / Developmental	9 (5%)	4 (4%)	$\chi^2(1) = 0.70$, $p = .153$
Mental Health	90 (46%)	41 (38%)	$\chi^2(1) = 2.07$, $p = .149$
Medical	52 (27%)	48 (44%)	$\chi^2(1) = 9.56$, $p = .002$

Table 3. Tests for sample equivalence of program versus comparison groups

	Program	Comparison	Chi-square
Gender			$\chi^2(1) = 3.84$, $p = .050$
Males	84 (54%)	64 (43%)	
Females	71 (46%)	85 (57%)	
Age			$\chi^2(5) = 6.43$, $p = .267$
16 - 20	1 (1%)	1 (1%)	
21 - 30	18 (12%)	21 (14%)	
31 - 40	40 (26%)	34 (23%)	
41 - 50	64 (41%)	47 (32%)	
51 - 60	29 (19%)	39 (27%)	
Over 60	1 (1%)	4 (3%)	
Estimated mean age	42.3	43.3	
Education (highest degree)			$\chi^2(5) = 5.85$, $p = .321$
Elementary School	7 (5%)	3 (2%)	
High School	32 (21%)	41 (28%)	
College	64 (41%)	65 (44%)	
University – Bachelor level	42 (27%)	30 (20%)	
University – Masters level	7 (5%)	9 (6%)	
University – Doctoral level	3 (2%)	1 (1%)	
Family entrepreneurship experience			$\chi^2(1) = 1.57$, $p = .211$
Yes	88 (58%)	75 (50%)	
No	65 (42%)	74 (50%)	
Past entrepreneurship experience			$\chi^2(1) = 4.12$, $p = .042$
Yes	74 (48%)	54 (36%)	
No	81 (52%)	95 (64%)	
Disability type (more than one may apply)			
Visual	12 (8%)	11 (7%)	$\chi^2(1) = 0.01$, $p = .906$
Hearing	9 (6%)	11 (7%)	$\chi^2(1) = 0.31$, $p = .579$
Mobility / Agility	40 (26%)	50 (34%)	$\chi^2(1) = 2.19$, $p = .139$
Speech / Language	1 (1%)	5 (3%)	$\chi^2(1) = 2.89$, $p = .089$
Learning	22 (14%)	31 (21%)	$\chi^2(1) = 2.31$, $p = .129$
Intellectual / Developmental	9 (6%)	4 (3%)	$\chi^2(1) = 1.81$, $p = .179$
Mental Health	63 (41%)	68 (46%)	$\chi^2(1) = 0.77$, $p = .380$
Medical	65 (42%)	35 (23%)	$\chi^2(1) = 11.71$, $p = .001$

Table 4. Tests for sample equivalence of place-train versus train-place groups

	Place-train	Train-place	Chi-square
Gender			$\chi^2(1) = 4.40$, $p = .036$
Males	4 (25%)	26 (55%)	
Females	12 (75%)	21 (45%)	
Age			$\chi^2(5) = 4.06$, $p = .255$
16 - 20	0	0	
21 - 30	3 (19%)	6 (13%)	
31 - 40	5 (31%)	9 (20%)	
41 - 50	7 (44%)	16 (36%)	
51 - 60	1 (6%)	14 (31%)	
Over 60	0	0	
Estimated mean age	34.9	40.4	
Education (highest degree)			$\chi^2(5) = 6.07$ $p = .299$
Elementary School	0	1 (2%)	
High School	2 (12%)	4 (9%)	
College	11 (69%)	18 (38%)	
University – Bachelor level	3 (19%)	21 (45%)	
University – Masters level	0	2 (4%)	
University – Doctoral level	0	1 (2%)	
Family entrepreneurship experience			$\chi^2(1) = 0.10$, $p = .750$
Yes	9 (60%)	26 (55%)	
No	6 (40%)	21 (45%)	
Past entrepreneurship experience			$\chi^2(1) = 0.14$, $p = .712$
Yes	8 (50%)	26 (55%)	
No	8 (50%)	21 (45%)	
Disability type (more than one may apply)			
Visual	0	4 (9%)	$\chi^2(1) = 1.45$, $p = .228$
Hearing	1 (6%)	2 (4%)	$\chi^2(1) = 0.11$, $p = .746$
Mobility / Agility	5 (31%)	11 (23%)	$\chi^2(1) = 0.39$, $p = .533$
Speech / Language	0	0	
Learning	0	5 (11%)	$\chi^2(1) = 1.85$, $p = .174$
Intellectual / Developmental	0	3 (6%)	$\chi^2(1) = 1.07$, $p = .300$
Mental Health	6 (38%)	20 (43%)	$\chi^2(1) = 0.13$, $p = .723$
Medical	11 (69%)	19 (40%)	$\chi^2(1) = 3.84$, $p = .050$

Table 5. Correlation matrix: full sample at time 3 ($N = 97$)

	M	SD	1	2	3	4	5	6	7	8
1. Attitudes (t1)	1.41	0.79								
2. Perc. Beh. Ctrl. (t1)	4.07	1.34	.289**							
3. Subjective norms (t1)	1.36	9.30	-0.109	-0.08						
4. Intentions (t1)	5.42	1.33	.419**	.599**	-0.097					
5. Nascent Gest. Beh. (t1)	3.00	3.14	.314**	.333**	-0.002	.440**				
6. Actual Bus. Creat. (t1)	0.10	0.27	0.055	-0.083	0.136	0.027	.527**			
7. Self-esteem (t1)	4.86	1.13	.273**	.316**	-.210*	.301**	.234*	0.09		
8. Attitudes (t2)	1.44	1.09	.516**	.292**	-0.197	.336**	.220*	-0.09	0.161	
9. Perc. Beh. Ctrl. (t2)	3.87	1.23	0.167	.592**	-0.071	.324**	.273**	0.083	.308**	0.112
10. Subjective norms (t2)	1.45	8.62	-0.155	-0.066	.563**	-0.036	0.093	0.135	0.092	-.227*
11. Intentions (t2)	5.27	1.35	.291**	.408**	-0.041	.536**	.307**	-0.027	.249*	.340**
12. Nascent Gest. Beh. (t2)	4.61	3.96	.237*	.413**	-0.076	.484**	.522**	.263**	0.199	.298**
13. Actual Bus. Creat. (t2)	0.25	0.38	.222*	.245*	0.012	.261**	.293**	0.18	.257*	0.169
14. Self-esteem (t2)	4.98	1.04	.212*	.273**	-0.175	.259*	.215*	0.084	.745**	0.119
15. Attitudes (t3)	1.22	1.36	.363**	.287**	-.205*	.401**	.273**	0.032	.312**	.620**
16. Perc. Beh. Ctrl. (t3)	3.99	1.22	0.133	.418**	-0.079	.293**	0.182	0.114	.455**	.204*
17. Subjective norms (t3)	0.73	9.73	0.015	-0.026	.459**	-0.014	0.085	0.094	-0.049	-0.167
18. Intentions (t3)	5.01	1.51	.232*	.363**	0.044	.374**	.201*	-0.094	.219*	0.102
19. Nascent Gest. Beh. (t3)	3.91	4.25	0.162	.296**	-0.017	.308**	.470**	.202*	.431**	.207*
20. Actual Bus. Creat. (t3)	8.15	9.96	0.101	.232*	0.098	0.184	.264**	0.132	.236*	0.162
21. Self-esteem (t3)	4.87	1.18	0.144	.306**	-.229*	0.18	.359**	0.178	.607**	0.16

* $p<0.05$, **$p<.01$ (2-tailed)

Listwise deletion

9	10	11	12	13	14	15	16	17	18	19	20
0.077											
.425**	-0.084										
.311**	-0.002	.529**									
0.133	0.029	.346**	.568**								
.266**	0.1	0.135	0.11	.202*							
0.101	-.201*	.288**	.308**	0.097	.274**						
.495**	0.02	.307**	.325**	.271**	.325**	.286**					
0.057	.614**	-0.023	-0.05	0.029	-0.056	-0.166	0.027				
.265**	-0.003	.576**	.350**	.276**	.205*	0.192	.289**	0.121			
.322**	0.094	.450**	.634**	.447**	.272**	.266**	.441**	0.095	.432**		
0.124	0.044	.361**	.463**	.578**	0.107	.207*	.363**	0.164	.300**	.698**	
.339**	0.112	.217*	0.166	0.189	.436**	.203*	.263**	-0.023	.246*	.417**	.250*

Table 6. Multiple regression models of attitudes on intentions over three time periods: Hypothesis 1

	B	*SE B*	*β*	*t*	*p*	Adjusted R^2	*F*	*p*
Model 1 (*N*=296)						0.520	40.885	.000
DV: Intentions to be self-employed t1								
IV: Three attitudinal variables t1								
Attitude toward self-employment	0.457	0.074	0.280	6.151	.000			
Perceived behavioural control	0.608	0.050	0.540	12.150	.000			
Subjective norms	0.002	0.007	0.009	0.228	.410			
Controls								
Gender	-0.086	0.137	-0.027	-0.627	.531			
Age	-0.027	0.069	-0.017	-0.398	.691			
Education	-0.015	0.149	-0.004	-0.101	.919			
Previous entrepreneurship experience	0.201	0.146	0.061	1.373	.171			
Family entrepreneurship experience	0.296	0.135	0.092	2.198	.029			
Model 2 (*N*=235)						0.347	16.611	.000
DV: Intentions to be self-employed t2								
IV: Three attitudinal variables t1								
Attitude toward self-employment	0.428	0.096	0.263	4.449	.000			
Perceived behavioural control	0.501	0.066	0.434	7.602	.000			
Subjective norms	-0.002	0.010	-0.012	-0.232	.409			
Controls								
Gender	0.197	0.176	0.061	1.115	.266			
Age	-0.104	0.092	-0.066	-1.137	.257			
Education	0.141	0.198	0.038	0.715	.475			
Previous entrepreneurship experience	-0.022	0.189	-0.007	-0.115	.909			
Family entrepreneurship experience	0.204	0.175	0.063	1.162	.246			
Model 3 (*N*=105)						0.104	2.530	.008
DV: Intentions to be self-employed t3								
IV: Three attitudinal variables t1								
Attitude toward self-employment	0.262	0.179	0.149	1.465	.073			
Perceived behavioural control	0.362	0.108	0.331	3.344	.001			
Subjective norms	0.017	0.015	0.104	1.090	.139			
Controls								

Gender	0.270	0.281	0.092	0.961	.339
Age	-0.002	0.146	-0.001	-0.012	.990
Education	0.164	0.366	0.043	0.449	.655
Previous entrepreneurship experience	-0.134	0.297	-0.046	-0.451	.653
Family entrepreneurship experience	-0.169	0.292	-0.056	-0.579	.564

DV = dependent variable, IV = independent variable; p is one-tailed for hypothesized relationships; Application of Bonferoni correction changes significance levels such that $p < .05$ level requires $p < .017$, $p < .01$ level requires $p < .003$, $p < .001$ level requires $p < .0003$

Table 7. Multiple regression models of intentions on nascent gestation behaviours over three time periods: Hypothesis 2

	B	*SE B*	*β*	*t*	*p*	Adjusted R^2	*F*	*p*
Model 1 (*N*=235)						0.330	20.291	.000
DV: Nascent gestation behaviours t2								
IV: Intentions to be self-employed t1	1.377	0.138	0.555	9.994	.000			
Controls								
Gender	0.793	0.439	0.100	1.807	.072			
Age	-0.302	0.224	-0.077	-1.351	.178			
Education	0.444	0.496	0.048	0.895	.371			
Previous entrepreneurship experience	0.388	0.472	0.048	0.822	.412			
Family entrepreneurship experience	0.130	0.441	0.016	0.294	.769			
Model 2 (*N*=104)						0.111	3.168	.004
DV: Nascent gestation behaviours t3								
IV: Intentions to be self-employed t1	1.068	0.311	0.325	3.438	.001			
Controls								
Gender	0.385	0.808	0.045	0.476	.635			
Age	-0.125	0.423	-0.029	-0.295	.768			
Education	1.609	1.040	0.145	1.547	.125			
Previous entrepreneurship experience	0.985	0.859	0.115	1.147	.254			
Family entrepreneurship experience	0.067	0.834	0.008	0.080	.937			
Model 3 (*N*=104)						0.222	5.943	.000
DV: Nascent gestation behaviours t3								
IV: Intentions to be self-employed t2	1.501	0.286	0.463	5.239	.000			
Controls								
Gender	-0.255	0.767	-0.030	-0.333	.740			
Age	-0.110	0.394	-0.026	-0.279	.781			
Education	1.491	0.973	0.134	1.532	.129			
Previous entrepreneurship experience	1.236	0.802	0.145	1.542	.126			
Family entrepreneurship experience	0.259	0.780	0.030	0.332	.740			

DV = dependent variable, IV = independent variable; *p* is one-tailed for hypothesized relationships; Application of Bonferoni correction changes significance levels such that $p < .05$ level requires reported $p < .025$, $p < .01$ level requires reported $p < .005$, $p < .001$ level requires reported $p < .0005$

Table 8. Hierarchical regression model of theory of planned behaviour relationships: Hypotheses 1 and 2

DV: Nascent gestation behaviours t3	Model 1	Model 2	Model 3
Controls			
Gender	0.050	0.080	-0.004
Age	0.017	0.015	-0.014
Education	0.169	0.125	0.125
Past entrepreneurship experience	0.139	0.109	0.135
Family entrepreneurship experience	0.014	0.029	0.045
Attitude toward self-employment t2		0.067	-0.031
Perceived behavioural control t2		0.299*	0.160
Subjective norms t2		0.011	-0.004
Intentions to be self-employed t2			0.407***
Adjusted R^2	0.014	0.093*	0.219***
ΔR^2	0.061	0.101**	0.124***
F	1.295	2.326	4.242

N = 104
Coefficients for individual factors are standardized β
* p<0.05, **p<.01, *** p<0.001 (1-tailed)

Table 9. Hierarchical regression model of theory of planned behaviour variables predicting actual business creation: Hypothesis 3

DV: Actual business creation t3	Model 1	Model 2	Model 3	Model 4
Controls				
Gender	-0.060	-0.081	-0.132	-0.113
Age	-0.070	-0.061	-0.106	-0.097
Education	0.152	0.140	0.116	0.039
Past entrepreneurship experience	0.031	-0.009	0.036	-0.044
Family entrepreneurship experience	0.033	0.038	0.045	0.015
Attitude toward self-employment t2		0.173*	0.052	-0.002
Perceived behavioural control t2		0.140	-0.019	-0.170
Subjective norms t2		0.024	0.052	-0.024
Intentions to be self-employed t2			0.405***	0.127
Nascent gestation behaviours t3				0.760***
Adjusted R^2	-0.019	0.006	0.119**	0.550***
ΔR^2	0.030	0.052	0.113***	0.398***
F	0.619	1.072	2.560	13.733

N = 104
Coefficients for individual factors are standardized β
* p<0.05, **p<.01, *** p<0.001 (1-tailed)

Table 10. Hierarchical regression model of theory of planned behaviour variables and actual business creation predicting self-esteem: Hypothesis 4

DV: Self-esteem t3	Model 1	Model 2	Model 3	Model 4	Model 5
Controls					
Gender	0.030	0.007	0.005	0.013	-0.003
Age	-0.038	-0.029	-0.031	-0.027	-0.041
Education	0.271**	0.241*	0.240*	0.206*	0.211*
Past entrepreneurship experience	0.108	0.052	0.054	0.019	0.013
Family entrepreneurship experience	-0.049	-0.035	-0.035	-0.048	-0.046
Attitude toward self-employment t2		0.149	0.144	0.120	0.120
Perceived behavioural control t2		0.245**	0.239*	0.172	0.148
Subjective norms t2		0.048	0.049	0.016	0.012
Intentions to be self-employed t2			0.017	-0.106	-0.089
Nascent gestation behaviours t3				0.335**	0.442**
Actual business creation t3					-0.141
Adjusted R^2	0.046	0.109**	0.100**	0.176***	0.176***
ΔR^2		0.086**	0.000	0.078**	0.008
F	1.999	2.586	2.278	3.218	3.018

N = 104
Coefficients for individual factors are standardized β
* p<0.05, **p<.01, *** p<0.001 (1-tailed)

Table 11: Paired sample t-tests of program effect on program group: Hypothesis 5

	Time 1		Time 2		Time 3		Time 2 – Time 1			Time 3 – Time 1			Time 3 – Time 2		
	M	SD	M	SD	M	SD	M	SD	t	M	SD	t	M	SD	t
Attitudes towards self-employment	1.69	0.82	1.71	0.99	1.38	1.20	0.02	0.76	0.16	-0.31*	1.17	-2.12	-0.33**	1.03	-2.51
Perceived behavioural control	4.65	1.04	4.24	1.05	4.48	1.12	-0.41**	1.13	-2.89	-0.17	1.30	-1.06	0.24	1.24	1.53
Subjective norms	2.23	9.38	1.71	8.56	1.38	9.56	-0.52	9.58	-0.43	-0.85	10.52	-0.64	-0.33	8.80	-0.30
Intentions to become self-employed	6.08	0.81	5.78	1.08	5.43	1.19	-0.31***	1.22	-2.00	-0.65***	1.43	-3.62	-0.34*	1.29	-2.11
Nascent gestation behaviours	4.03	3.38	6.90	3.39	5.90	4.49	2.87	3.85	5.92	1.92***	4.43	3.41	-0.92***	4.38	-1.65
Actual business creation	0.38	0.83	0.89	1.15	2.04	1.74	0.51***	1.04	3.86	1.66***	1.81	7.23	1.17	1.57	5.89

$N = 60$

*$p < 0.05$, **$p < .01$, ***$p < 0.001$ (1-tailed)

Table 12. Repeated measures ANCOVA for program effects on program group: Hypothesis 5

	Attitudes towards self-employment			Perceived behavioural control			Subjective norms			Intentions to become self-employed			Nascent gestation behaviours			Actual business creation		
	F	*p*	η^2	*F*	*p*	η^2	*F*	*p*	η^2	*F*	*p*	η^2	*F*	*p*	η^2	*F*	*p*	η^2
Time	0.511	0.301	0.010	0.706	0.248	0.013	0.527	0.296	0.010	1.357	0.262	0.025	2.479	0.045	0.045	5.428	0.011	0.052
Control variables																		
Time x gender	0.334	0.717	0.006	3.857	0.024	0.067	1.068	0.347	0.019	1.236	0.295	0.022	0.367	0.694	0.007	0.305	0.582	0.003
Time x age	1.126	0.328	0.020	0.864	0.424	0.016	0.808	0.449	0.015	1.923	0.151	0.034	0.531	0.590	0.010	0.401	0.528	0.004
Time x education	0.227	0.797	0.004	0.479	0.621	0.009	0.644	0.527	0.012	1.363	0.260	0.025	0.497	0.610	0.009	2.359	0.128	0.023
Time x previous entre.	2.338	0.101	0.041	1.979	0.143	0.035	0.775	0.463	0.014	0.333	0.718	0.006	0.484	0.618	0.009	0.091	0.763	0.001
Time x family entre.	0.203	0.816	0.004	0.108	0.898	0.002	0.211	0.810	0.004	0.312	0.732	0.006	0.511	0.602	0.010	0.088	0.768	0.001

$N = 60$

Hypothesized *p*-values are 1-tailed

Table 13. Independent samples t-tests of program group versus comparison group: Hypothesis 6

	Δ Time 2 – Time 1						Δ Time 3 – Time 1						Δ Time 3 – Time 2					
	Comparison		Program		Difference		Comparison		Program		Difference		Comparison		Program		Difference	
	M	SD	M	SD	M	t	M	SD	M	SD	M	t	M	SD	M	SD	M	t
Attitudes towards self-employment	-0.01	1.27	0.02	0.76	0.03	0.12	-0.38	1.70	-0.31	1.17	0.07	0.20	-0.36	1.32	-0.33	1.03	0.04	0.14
Perceived behavioural control	0.36*	1.05	-0.41	1.13	-0.77**	-3.19	0.51*	1.25	-0.17	1.30	-0.68**	-2.43	0.15	1.22	0.24	1.24	0.09	0.33
Subjective norms	0.20	4.02	-0.52	9.58	-0.72	-0.51	-1.68	5.87	-0.85	10.52	0.83	0.49	-1.88*	6.11	-0.33	8.80	1.55	0.88
Intentions to be self-employed	0.28	1.26	-0.31	1.22	-0.59*	-2.17	0.17	1.74	-0.65	1.43	-0.82*	-2.28	-0.11	1.43	-0.34	1.29	-0.24	-0.81
Nascent gestation behaviours	-0.13	2.09	2.87	3.85	3.00***	4.89	-0.23	2.17	1.92	4.43	2.15**	3.13	-0.10	1.22	-0.92	4.38	-0.82	-1.38
Actual business creation	-0.10	0.75	0.51	1.05	0.60**	3.22	-0.03	0.91	1.66	1.81	1.69***	6.00	0.06	0.57	1.18	1.57	1.11***	4.95

$N = 94$, comparison group = 31, program group = 63

* $p<0.05$, ** $p<.01$, *** $p<0.001$ (1-tailed)

Table 14. Between subjects ANCOVA of program group versus comparison group: Hypothesis 6

	Attitudes towards self-employment			Perceived behavioural control			Subjective norms			Intentions to become self-employed			Nascent gestation behaviours			Actual business creation		
	F	*p*	η^2	*F*	*p*	η^2	*F*	*p*	η^2	*F*	*p*	η^2	*F*	*p*	η^2	*F*	*p*	η^2
Group	0.020	0.444	0.000	5.753	0.010	0.064	0.311	0.289	0.004	6.426	0.007	0.071	4.976	0.014	0.057	27.038	0.000	0.246
Control variables																		
Gender	0.203	0.653	0.002	0.103	0.749	0.001	0.002	0.961	0.000	0.192	0.662	0.002	0.632	0.429	0.008	0.989	0.323	0.012
Age	2.300	0.133	0.027	0.079	0.779	0.001	0.668	0.416	0.008	1.056	0.307	0.012	0.290	0.592	0.003	0.266	0.607	0.003
Education	0.546	0.462	0.006	0.110	0.740	0.001	0.069	0.793	0.001	0.324	0.571	0.004	0.241	0.625	0.003	0.019	0.890	0.000
Previous entre.	1.299	0.258	0.015	2.448	0.121	0.028	0.034	0.853	0.000	0.271	0.604	0.003	0.073	0.788	0.001	0.027	0.870	0.000
Family entre.	0.630	0.429	0.007	0.002	0.962	0.000	0.108	0.743	0.001	1.321	0.254	0.015	0.643	0.425	0.008	0.488	0.487	0.006

$N = 91$

Hypothesized *p*-values are 1-tailed

Table 15. Business creation at Time 3 among those who did not have a business running at Time 1

	Program 1	Program 2	Program 3	Program 4	Program 5	Program Group		Comparison Group		Train-place Group		Place-train Group	
Business created	7	6	0	2	11	26	54%	0	0%	15	44%	11	79%
No business created	9	9	0	1	3	22	46%	29	100%	19	56%	3	21%
Total	16	15	0	3	14	48	100%	29	100%	34	100%	14	100%

Business created = participants reporting that they are currently running their own business and responding “yes” to at least one of the four actual business creation level questions (i.e. made first sale)
No business created = either one or both of the above conditions not met

Table 16. Independent samples t-tests of train-place group versus place-train group: Hypothesis 7

	Δ Time 2 – Time 1						Δ Time 3 – Time 1						Δ Time 3 – Time 2					
	Train-place		Place-train		Difference		Train-place		Place-train		Difference		Train-place		Place-train		Difference	
	M	SD	M	SD	M	t	M	SD	M	SD	M	t	M	SD	M	SD	M	t
Attitudes towards self-employment	-0.03	0.70	0.14	0.91	0.17	0.78	-0.46*	1.07	0.14	1.35	0.60*	1.81	-0.44**	0.97	-0.01	1.18	0.43	1.45
Perceived behavioural control	-0.36*	1.19	-0.58*	0.94	-0.22	-0.67	-0.31	1.40	0.23	0.86	0.53*	1.81	0.05	1.27	0.80*	0.95	0.75*	2.17
Subjective norms	0.90	9.42	-4.69*	9.08	-5.59*	-2.07	-0.09	10.30	-3.10	11.17	-3.02	-0.99	-0.99	9.71	1.58	5.05	2.57	1.35
Intentions to be self-employed	-0.33*	1.20	-0.25	1.30	0.08	0.22	-0.82***	1.34	-0.17	1.60	0.65	1.59	-0.49**	1.26	0.08	1.32	0.57	1.52
Nascent gestation behaviours	2.49***	3.72	4.00***	4.12	1.51	1.37	1.21*	4.04	4.13**	4.98	2.92*	2.30	-1.28*	4.57	0.20	3.65	1.48	1.14
Actual business creation	0.38*	1.05	0.88***	0.96	0.49	1.65	1.40***	1.73	2.47***	1.88	1.06*	1.94	1.02***	1.51	1.67***	1.72	0.65	1.39

$N = 63$, train-place = 47, place-train = 16
*$p < 0.05$, **$p < .01$, ***$p < 0.001$ (1-tailed)

Figure 1. Model of theory of planned behaviour relationships

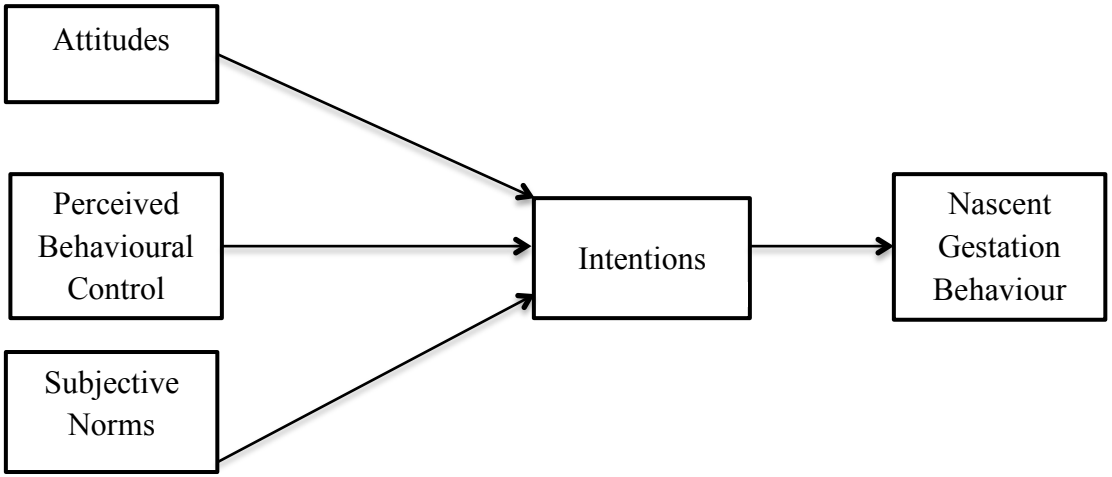

Figure 2. Model of theory of planned behaviour, actual business creation, and self-esteem relationships