Using Social Cognitive Career Theory to Predict Self-Employment Goals

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Social Cognitive Career Theory (SCCT; Lent, Brown, and Hallack 1994, 1996) proposes that career interests, goals, and choices are related to self-efficacy beliefs and outcome expectations. It suggests that people's self-efficacy beliefs and outcome expectations with regard to self-employment would predict their goals to become self-employed. This study explores the ability of SCCT to predict goals for self-employment in a sample of 115 undergraduate business students. Results indicated that students with higher entrepreneurial self-efficacy and higher self-employment outcome expectations had higher intentions to become self-employed. These findings imply that educators and policy-makers may boost student entrepreneurial intentions by (1) enhancing students' confidence to succeed in an entrepreneurial career and (2) enhancing students' expectations of strong positive outcomes resulting from an entrepreneurial career.

Being an entrepreneur, one who is self-employed and who starts, organizes, manages, and assumes responsibility for a business, offers a personal challenge that many individuals pursue over being an employee working for someone else. Entrepreneurs accept the personal financial risks that go with owning a business but also benefit directly from the success of the business. As career choices go, becoming an entrepreneur is one of the most risky and unstructured choices an individual can make (Campbell 1992). Being an entrepreneur is often viewed as an averse career choice where one is faced with everyday life and work situations that are fraught with increased uncertainty, impediments, failures, and frustrations associated with the process of new firm creation. It seems, therefore, unlikely that an individual would make a goal for an entrepreneurial career if he or she did not feel confident to perform the necessary tasks associated with forming and developing his or her own business. What is it about certain people that drives them to take on the risk, uncertainty and independent structure of business ownership?

Stevenson and Jarillo (1990) suggested that research exploring entrepreneurial behavior could be divided into three categories: (1) how entrepreneurs act (i.e., what they do), (2) what happens when entrepreneurs act (i.e., what are the outcomes of their actions), and (3) why people choose to act as entrepreneurs (i.e., what motivates them). The research presented in this article focuses on the third category, and explores the use of a well-accepted model from the careers literature, Social Cognitive Career Theory (SCCT), to shed light on the motivation to become an entrepreneur.

Although many studies of entrepreneurial motivation have examined personality traits of entrepreneurs, the results of these studies are mixed and inconclusive (Herron and Sapienza 1992; Shaver and Scott 1991; Kreiser, Marino, and Weaver 2002). Recent research (Roy and Elango 2000) has begun to focus on other characteristics of entrepreneurs, such as cognitive make-up as a potential indicator of success. Entrepreneurship research has also attempted to identify the situational and environmental factors that predict entrepreneurial activity, such as job displacement, previous work experience, availability of various resources, and governmental influences. However, these empirical studies of contextual factors have also found low explanatory power and predictive ability (Krueger, Reilly, and Carsrud 2000).

Most of the entrepreneurship motivation models advanced in recent years are process-oriented models, based on either economic or social psychological theory. Several researchers (Campbell 1992; Levesque, Shepherd, and Douglas 2002; Praag and Cramer 2001) have proposed models using economic perspectives to predict self-employment. These economic models suggest that the decision to become self-employed is based on maximizing the net usefulness, utility, or desirability of an entrepreneurial career.

In a theoretical discussion of the psychology of new venture creation, Shaver and Scott (1991) emphasized that new ventures emerge because of deliberate choices made by individuals. They then examined the immediate antecedents of choice: (1) Can I make a difference? (i.e., feasibility) and (2) Do I want to? (i.e., desirability). Research (Krueger and Carsrud 1993; Krueger et al. 2000) has continued on models using perceived feasibility and perceived desirability to predict entrepreneurial career. This research found support for models developed by Alpern (1991, 1985) and Shapiro (1982), which used perceived feasibility and desirability to predict entrepreneurial intentions. While these process-oriented models of motivation to become an entrepreneur have some promise, one area of potential beneficial research that is ripe to be applied to the field of entrepreneurship is the careers literature and models of career choice.

SCCT (Lent, Brown, and Hallack 1994) is one of the most accepted and validated models discussed in the careers literature to understand career interests and goals.
The SCCT Model of Career Choice

The career development process is affected by a variety of personal, environmental, and situational factors that interact and change over the course of time. A number of researchers have studied career development and selection process; however, the empirical evidence remains sketchy. Hackett and Lent (1992) suggested that the career choice task can be best defined as a multiphase activity that combines the building efforts that (a) bring together conceptually related constructs (e.g., self-concept, self-efficacy), (b) more fully explain outcomes that are related to career theories (e.g., motivation, self-efficacy beliefs, ability, objective indices of ability or skills, self-efficacy), and (c) account for the relations among seemingly diverse constructs (e.g., self-efficacy, interests, abilities, need for achievement). Bandura (1986) suggested a social cognitive theory framework that emphasized three social cognitive mechanisms that particularly relevant for entrepreneurs. Krueger et al. (2000) compared models of entrepreneurial intentions to the ultimate choice of becoming an entrepreneur. They found that only two variables are consistently significant predictors of entrepreneurial intentions (e.g., relationship with self-efficacy beliefs strongly (R² = 0.52) predicted career development: (1) self-efficacy beliefs, (2) outcome expectations, and (3) goal. This career development theory may lead to the most desirable outcome. Outcome expectancies play an important role in motivating individuals to engage in entrepreneurial activities and careers and will develop goals to enter careers in which they anticipate desirable outcomes. The decision between a career of self-employment or working for others may be viewed as a cognitive process in which individuals compare the relative desirability of each career option. As noted by Bandura (1989), this process also encompasses important affective reflections when making an employment decision. If an individual believes self-employment will produce more valuable outcomes than working for others, then he or she is more likely to be drawn to self-employment.

Figure 1. SCCT model

Career selection literature looks at different motivating factors and influences involved in the basic career selection and development process. Much of the research on social cognitive career selection is based on the earlier works of social cognitive theory (Bandura 1986). Bandura advocated a model of triadic reciprocalism, which illustrates the interacting influences between people and their behavior and environment. Bandura posited that a person's behavior results from the interaction of that person and his or her environment, [B = F (PO E)]. Lent et al. (1994) extrapolated a model of social cognitive theory and proposed a framework that emphasized three social cognitive mechanisms that particularly relevant for entrepreneurs. Krueger et al. (2000) compared models of entrepreneurial intentions to the ultimate choice of becoming an entrepreneur. They found that only two variables are consistently significant predictors of entrepreneurial intentions (e.g., relationship with self-efficacy beliefs strongly (R² = 0.52) predicted career development: (1) self-efficacy beliefs, (2) outcome expectations, and (3) goal. This career development theory may lead to the most desirable outcome. Outcome expectancies play an important role in motivating individuals to engage in entrepreneurial activities and careers and will develop goals to enter careers in which they anticipate desirable outcomes. The decision between a career of self-employment or working for others may be viewed as a cognitive process in which individuals compare the relative desirability of each career option. As noted by Bandura (1989), this process also encompasses important affective reflections when making an employment decision. If an individual believes self-employment will produce more valuable outcomes than working for others, then he or she is more likely to be drawn to self-employment.

Goals

Baggozi, Baumgartner, and Yf (1989) found that goals are the single best predictor of planned behavior. While environmental factors and personal experiences help to shape one’s goals, it is often these goals that drive the individual to organize and direct their behavior in a sustained manner and increase the likelihood that desired intentions will be achieved. Bandura's (1986) theory of planned behavior suggests that self-efficacy is an important element of many career choice and decision-making theories although many variables have been utilized including career plans, career decisions, and career aspirations. Bandura (1986) suggested several different classificational methods of outcome expectations, such as the anticipation of physical (e.g., financial gains), social (e.g., status), and self-evaluative (e.g., pride) outcomes, that may affect career selection. Lent and Brown (1994) found that the effects of self-efficacy to have an impact on the individual as well as how they are able to do it and if they value the perceived outcomes resulting from their actions. SCCT suggests that outcome expectations are important determinants of career interests and goals (Gore and Lewin 1985). The entrepreneurship literature has explored a wide variety of theories and models to answer: “What motivates individuals to become entrepreneurs?” Outcome expectations play an important role in motivating individuals to engage in entrepreneurial careers and activities and will develop goals to enter careers in which they anticipate desirable outcomes. The decision between a career of self-employment or working for others may be viewed as a cognitive process in which individuals compare the relative desirability of each career option. As noted by Bandura (1989), this process also encompasses important affective reflections when making an employment decision. If an individual believes self-employment will produce more valuable outcomes than working for others, then he or she is more likely to be drawn to self-employment.
(2000) compared the predictive ability of two entrepreneur-
ial intention models to predict entrepreneurial activity. They
report that entrepreneurship is planned; therefore, it is
intentional behavior. Planned behavior may be best pre-
dicted by observing goals toward that behavior, not by ob-
serving and measuring attitudes, beliefs, personality
characteristics, or demographic variables.

Based on the preceding discussion, the following
hypotheses are drawn:

Hypothesis 1: There is a positive relationship between
an individual’s entrepreneurial self-efficacy and his or
her outcome expectations for entrepreneurial activity.

Hypothesis 2: There is a positive relationship between
an individual’s entrepreneurial self-efficacy and his or
her goals to become entrepreneurs.

Hypothesis 3: There is a positive relationship between
an individual’s outcome expectations for entrepre-
narial activity and his or her goals to become entre-
preneurs.

Methodology

This section examines the sample data and variables
employed in this study.

Sample Data

The study surveyed 115 junior
and senior undergraduate
business students at an
AACSB (American Assembly
of Collegiate Schools of
Business) accredited south-
eastern university in January
2001. Surveys were complet-
ed anonymously during
regular class time, with a
response rate of 100 percent.

Dependent Variables

(A detailed listing of the questions and potential responses
used to develop the variables for this study can be found in
Figure 2). As previously discussed, the primary depend-
ent variable for the SCCT model is entrepreneurial goals.

The SCCT model includes two independent variables. The
dependent variable is entrepreneurial self-efficacy, which
was measured by one question designed to assess an
individual’s self-confidence in his or her ability to per-
form the tasks and activities necessary to become an
entrepreneur. The second independent variable was the
outcome expectations index, which as mentioned above,
also functions as a dependent variable.

Research Design. After identifying and computing vari-
ables necessary for evaluating the efficacy of the SCCT
model, the researchers tested the model, as previously
described in Figure 1. They used regression analysis to assess the ability of the
SCCT model to explain self-employment goals, the

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Impact on Reliability (Alpha) of Removing Outcome Measures for Inclusion in Constructing the Outcome Expectations Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance if Item Deleted</td>
<td>Scale Mean</td>
</tr>
<tr>
<td>Money</td>
<td>63.2174</td>
</tr>
<tr>
<td>Security</td>
<td>61.6696</td>
</tr>
<tr>
<td>Independence</td>
<td>59.4435</td>
</tr>
<tr>
<td>Achievement</td>
<td>58.5826</td>
</tr>
<tr>
<td>Bureaucracy</td>
<td>63.9351</td>
</tr>
</tbody>
</table>

Independent Variables

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preneurs.

Figure 2. Survey instrument measures

Goals:

1. How likely are you to become an entrepreneur?
   1. O—20% 2. 21—40% 3. 41—60% 4. 61—80% 5. 81—100%

Entrepreneurial Self-Efficacy:

1. How confident are you that you have all the necessary knowledge, skills, and abilities to perform the tasks and
activities necessary to become an entrepreneur?
   1. O—20% 2. 21—40% 3. 41—60% 4. 61—80% 5. 81—100%

Global Outcome Expectations: Sum the products of the following two questions in each of the four areas.

1. Earning Lots of Money
   1. O—20% 2. 21—40% 3. 41—60% 4. 61—80% 5. 81—100%

2. Financial Security
   1. O—20% 2. 21—40% 3. 41—60% 4. 61—80% 5. 81—100%

3. Independence
   1. O—20% 2. 21—40% 3. 41—60% 4. 61—80% 5. 81—100%

4. Need for Achievement
   1. O—20% 2. 21—40% 3. 41—60% 4. 61—80% 5. 81—100%

Figure 2. Survey instrument measures
dependent variable. The model predicts that outcome expectations are related to goals. Furthermore, the model predicts that self-efficacy affects goals both directly and also indirectly through their effect on outcome expectations.

Model Results

The SCCT model results are presented in Figure 3 and Table 2. Figure 3 shows significant and complete support for the SCCT model. The Adjusted $R^2$ for the regression was .509 (p < .001), demonstrating that the findings of each of the three model hypotheses follows. 

| Hypothesis 1: There is a positive relationship between an individual’s entrepreneurial self-efficacy and his or her outcome expectations for entrepreneurial activity. 

It is apparent from Table 2 that the dependent variable outcome expectations was significantly positively correlated with the independent variable self-efficacy with a significant (.001) correlation coefficient of 0.509. Higher entrepreneurial self-efficacy was associated with higher expected outcomes resulting from entrepreneurial activity. In addition, the model’s link between self-efficacy and outcome expectations possessed significant explanatory power, with a t-statistic of 4.533 (p < .001), demonstrating that higher self-efficacy led to higher aspirations toward entrepreneurial activity.

Hypothesis 3: There is a positive relationship between an individual’s outcome expectations for entrepreneurial activity and his or her goals to become an entrepreneur.

An individual’s goals to become an entrepreneur were significantly positively correlated with the independent variable self-efficacy. Higher entrepreneurial self-efficacy was associated with a higher likelihood to become an entrepreneur with a significant Pearson correlation coefficient of 0.669 (p < .001). Higher entrepreneurial self-efficacy was associated with the independent variable self-efficacy with a significant (.001) Pearson correlation coefficient of 0.532. Higher entrepreneurial self-efficacy was associated with higher expected outcomes resulting from entrepreneurial activity. In addition, the model’s link between self-efficacy and outcome expectations possessed significant explanatory power, with a t-statistic of 4.533 (p < .001), demonstrating that higher self-efficacy led to higher aspirations toward entrepreneurial activity.

Hypothesis 2: There is a positive relationship between an individual’s entrepreneurial self-efficacy and his or her goals to become an entrepreneur.

An individual’s goals to become an entrepreneur were significantly positively correlated with the independent variable self-efficacy. Higher entrepreneurial self-efficacy was associated with a higher likelihood to become an entrepreneur with a significant Pearson correlation coefficient of 0.506 (p < .001). In addition, the model’s link between outcome expectations and goals possessed significant explanatory power, with a t-statistic of 4.027 (p < .001), demonstrating that higher outcome expectations led to higher aspirations toward entrepreneurial activity.

Discussion

The four positive outcomes pulling people toward entrepreneurship are (1) monetary rewards, (2) financial security, (3) independence, and (4) sense of achievement. On the other hand, the negative outcome, escape from corporate bureaucracy, did not correlate with the others. Perhaps this is an indication that people become entrepreneurs because they are attracted by the positive outcomes of entrepreneurship, rather than because they are repelled by the negative outcomes of working for others. Another possibility is that these students have not yet had enough direct experience dealing with corporate bureaucracy to perceive that it is something they wish to avoid.

As hypothesized, respondents in this study formed entrepreneurial goals if they considered themselves to be efficacious and they anticipated positive outcomes from entrepreneurship. As posited, outcome expectations were partly explained by self-efficacy. As Bandura (1986) suggested, respondents expected to attain desired outcomes in activities in which they saw themselves to be efficacious. 

Table 2 Model Results

<table>
<thead>
<tr>
<th>Self-efficacy</th>
<th>Outcome Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goals</td>
<td>669**</td>
</tr>
<tr>
<td>a. p = 0.001.</td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>506**</td>
</tr>
<tr>
<td>a. p = 0.001.</td>
<td></td>
</tr>
</tbody>
</table>

Overall regression statistics: Goals Adjusted R-squared = .509 (P<.001)

Figure 3. Results for the SCCT model

Limitations

The sample consisted entirely of undergraduate business students. However, other research (Audet 2000; Krueger et al. 2000) has also relied on student surveys to measure entrepreneurial intentions. The primary goal of the current research was to better understand these students’ decisions to become self-employed or work for others. This study was not a simulation using students to predict the behavior of managers or other nonstudent populations. Rather, it was a study of people actually beginning to face career decisions. However, there are students whose intentions are not durable and clear. Also, the findings may not be generalizable to nonstudent populations.

Although cross-sectional research designs are frequently used and considered acceptable in this type of research (Ajzen 1987), the cross-sectional rather than longitudinal design of the study raises the usual caveats regarding lack of causal evidence.

Finally, the use of single-item measures of intentions and self-efficacy raises issues of measurement accuracy. Future research will use multiple-item measures of key constructs to increase validity.

Implications

This research addressed only a portion of the SCCT model. SCCT goes on to predict that intentions/goals will lead to career-related behaviors, such as activity selection and performance attainments. According to Timmons (1999), America has created more than 30 million jobs since 1980. While the majority of Fortune 500 lost more than 5 million jobs, Timmons further reported that, since 1980, entrepreneurs have created over 95 percent of the wealth that exists in America today. The success of entrepreneurial activities has resulted in many large firms placing greater emphasis on establishing structures and systems that foster entrepreneurial orientation among managers as a response to declining competitiveness.

Lewin, Goodman, and Fandt (2001) has also relied on student surveys to measure entrepreneurial intentions of such groups are related to their levels of perceived entrepreneurial self-efficacy and outcome expectations. Enhancing their perceptions of entrepreneurial self-efficacy and outcome expectations may strengthen the entrepreneurial intentions of women and minorities.

Further research is planned to recommend specific pedagogical methods and interventions, based on SCCT, that entrepreneurship educators may use to stimulate entrepreneurial goals. A number of educational practices may be modified to increase entrepreneurial self-efficacy, outcome expectations, and goals. Further research is planned to recommend specific pedagogical methods and interventions, based on SCCT, that entrepreneurship educators may use to stimulate entrepreneurial goals. One topic of interest to researchers has been the participation of women (Gundy, Ben-Yoseph, and Piosig 2002) and minorities (Masurel, Nijikamp, and Vindigni 2002) in entrepreneurial activities. This research implies that levels of entrepreneurial intentions of such groups are related to their levels of perceived entrepreneurial self-efficacy and outcome expectations. Enhancing their perceptions of entrepreneurial self-efficacy and outcome expectations may strengthen the entrepreneurial intentions of women and minorities.

If an individual does not wish to become an entrepreneur, it is likely that he or she (1) does not feel efficacious or (2) does not see the outcomes resulting from entrepreneurship as desirable or obtainable. If an individual has low self-efficacy but views entrepreneurship as desirable or obtainable, he or she might apply some of Bandura’s interventions listed above to increase his or her self-efficacy. Enactive mastery, one of Bandura’s four interventions, may be obtained through successful accomplishment of small-scale entrepreneurial activities involving low levels of risk and challenge. If an individual decides not to become an entrepreneur due to low outcome expectations, then it would not be appropriate for him or her to pursue an entrepreneurial career. Even in this instance, it would be wise for that person to determine the accuracy of his or her perceptions. For example, perhaps the failure rate for the proposed new business is not as high as he or she imagines.
References


Encouraging Technology-Based Ventures: Entrepreneurship Education and Engineering Graduates

Teresa V. Menzies
Joseph C. Paradi

This article examines entrepreneurship courses offered by engineering faculties in Canada. The venturing rate of engineering students, whether the venturing rate increases if students have taken a course in entrepreneurship, and the type of ventures created are also explored. A recent census and an empirical study of two groups of engineering graduates from a Canadian university were utilized. Findings have implications for educators and administrators and for policy-makers interested in encouraging economic growth.

G raduates from universities with engineering programs are perhaps the most promising cohort of students for which we would expect high-technology start-ups. Apart from their exceptional academic skills, these graduates have an in-depth knowledge of technology in a specific area and have worked on practical projects throughout their degree studies. They may also, on graduation, work for a technology-related company and thus be accumulating the skills, knowledge, and personal readiness (e.g., financial, networking) for launching their own business. In addition, some of these engineering graduates may have taken courses in entrepreneurship during their engineering degree studies. Entrepreneurship education has been touted as valuable in encouraging venturing and with increasing the success of ventures (Gillen and Powe 1994; Gormon and Hanlon 1997; Hood and Young 1993; McMullan and Vesper 1987; Timmons 1999; Wyckham and Wedley 1990; Young 1997). Specifically, in relation to engineers, Blais (1997) cites multiple advantages for providing engineering students with courses in entrepreneurship. These include nurturing a sociological perspective within engineering students including teamwork and joint initiatives, creativity, innovation, and practical applications as well as teaching them the specifics of new venture creation. Entrepreneurship education is also valuable for graduates who pursue a position within a larger corporation (Hood and Young 1993).

Because technology-based start-ups and ventures have considerable payoff at the personal, regional, and national level, it is appropriate to study how they are nurtured. This article looks at what faculties of engineering are doing to encourage students to pursue a career as an entrepreneur. It also explores the venturing rate and type of ventures started by graduates of one faculty of engineering. The research questions posed in this article are:

1. Do faculties of engineering provide entrepreneurship education? What is the breadth and depth of these offerings?
2. Do engineering graduates venture at a rate above the population in general?
3. Is there a difference in venturing rates according to whether graduates have taken an entrepreneurship course during their undergraduate degree?
4. Do engineering graduates start technology-related ventures?

Previous Literature
Surveys of the incidence and type of entrepreneurship courses have been conducted (Blais 1997; Duke 1996; Gartner and Vesper 1994; McMullan and Vesper 1987; Menzies and Gasse 1999; Vesper 1985, 1993; Vesper and Gartner 1997, 1999; Vesper and McMullan, 1988), Vesper and Gartner are the most well known for their surveys of entrepreneurship education worldwide. As would be expected, their surveys show a tremendous growth over the last 20 years in entrepreneurship education at universities. Looking at Canada in particular, a Canadian Academy of Engineering 1996 survey showed 33 (79%) engineering schools in Canada that either offered, or were intending to offer, undergraduate courses on entrepreneurship and closely related subjects (Blais 1997). In their census of entrepreneurship education offered by universities in Canada, Menzies and Gasse (1999) found that 52 (98%) universities offer entrepreneurship education, most of which within their faculties of business, and that undergraduate entrepreneurship courses were offered in only 16 (48%) faculties of engineering (see Table 1). In some universities, engineering students can take entrepreneurship courses offered by the faculty of business, however, unless there is a formalized program, this may not be easy for students to schedule into their course load. Very few entrepreneurship courses are offered to engineering students at the graduate level.

Range of Entrepreneurship Courses
Table 2 shows the types of courses offered in the engineering schools. The norm is to offer one or two courses. These courses are most commonly an introduction to the field of entrepreneurship, with some orientation toward technology start-ups. The second most common type of course deals with business planning and start-up activities. Additional courses are offered on management of a...