

**Entrepreneurship Research, Using Students as Proxies  
For Actual Entrepreneurs**

**Massoud Hemmasi**

**And**

**Mark Hoelscher**

**Department of MQM 5580  
Illinois State University  
Normal, Illinois 69790-5580**

**Phone: 309-438-5985**

**Fax: 309-438-8201**

**Email**

**Mark Hoelscher: [mlhoels@ilstu.edu](mailto:mlhoels@ilstu.edu)**

**Masoud Hemmasi: [mehemmas@ilstu.edu](mailto:mehemmas@ilstu.edu)**

## *Abstract*

*This paper considers the practice of using university undergraduate as proxies for small business owners in entrepreneurship research. A data set was gathered from a sample of university undergraduate students at a major business school as well as from a sample of actual small business owners “actual entrepreneurs”. The university undergraduate respondents were divided into those with high nascent entrepreneurial inclinations and those low in nascent entrepreneurial inclinations. A discriminate analysis between the three groups was then done and results were then and examined for similarities or differences with regards to life aspirations, life goals, and work goals of each group. Unlike the undergraduate respondents with low entrepreneurial potential, undergraduate respondents with high entrepreneurial potential were found to be very similar to actual entrepreneurs. Results of this research suggest that, when using students as proxies in the study of entrepreneurship, one needs to separate nascent from non-nascent students and use only those students who are high in nascent entrepreneurial inclinations.*

## *Entrepreneurship Research, Using Students as Proxies For Actual Entrepreneurs*

This paper considers the practice of using students as proxies for small business owners in entrepreneurial research. Past research has been done using undergraduate students (Segal, Borgia, Schoenfeld, 2002), always with the assumption that results are generalizable to the overall population of practicing entrepreneurs, but, to date, no study has examined the validity for this assumption. This study begins the process of correcting that. A population of 815 undergraduate students at a major university located in the Midwest were sampled using a questionnaire method while, in a similar time frame, a population of practicing entrepreneurs were given the same set of questions. The data was analyzed and results are provided in the discussion section of this paper.

A common theme found in entrepreneurship research is that entrepreneurship plays a critical role in the US economy. Of the 25.5 million businesses in the United States today, approximately 25.1 million or 98.5 % are small businesses. These small businesses are largely entrepreneurial and are responsible for 75.8% of our nation's new jobs. (Scarborough & Zimmer , 2003). Potential entrepreneurs appear to be critical to the notion of a resilient "self renewing" economic environment (Shapiro, 1982). Entrepreneurial growth is a critical part of our nation's economic health. Past research has also noted that Entrepreneurial potential seem to provide the best predictive power when attempting to predict the movement of the populace in the practice of entrepreneurship ( Kureger & Brazeal, 1994; Bagozzi & Yi, 1989). Research into entrepreneurial potential, therefore, serves us well, both in improving our predictive abilities and in providing a fertile ground from which the seeds of entrepreneurship can sprout.

Attracting the interest and time from existing entrepreneurs, however, is a difficult proposition. Acting entrepreneurs are pressed for time, resource short, and suspicious of anyone asking sensitive questions which might give away their competitive edge. A proxy, if found, without the above mentioned constraints, would be a welcome resource for entrepreneurship researchers.

In the past, undergraduate students, in university business schools, have been considered to be these proxies and, as such, representative of actual entrepreneurs. Students are not as time constrained as actual entrepreneurs. They are more accessible to researchers, assumed to be representative of the overall population, and are at the headwaters of their career path. The purpose of this paper is to explore the suitability of undergraduate students to serve as proxies for actual entrepreneurs in entrepreneurial research.

### **Ways of predicting Entrepreneurial Behavior**

Research exploring entrepreneurial behavior can be divided into four categories, how entrepreneurs act, what happens when they act, why they choose to act as entrepreneurs (Stevenson & Jarillo, 1990), and research into the identification of environmental and situational factors that predict entrepreneurial activity (Segal, Borgia, & Schoenfeld ).

Because of the above mentioned difficulties of studying actual entrepreneurs, environmental and situational factors, if effective, would be excellent avenues from which to study entrepreneurial behavior. Environmental and situational factors include job displacement, previous work experience, availability of resources, and governmental influences, all of which can be gleaned from data available outside the internal entrepreneurial environment. However, while each of these factors are considered to be important to the development and

encouragement of budding entrepreneurs, empirical studies of these contextual factors have found low explanatory power and predictive ability (Krueger, Reilly, & Carsrud, 2000).

Levesque, Shepherd, & Douglas, 2002 and Praag & 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. Shapero's model of the entrepreneurial event (SEE) assumes that inertia guides human behavior until something interrupts or displaces that inertia. All of the above methods remain wedded to various ad hoc profiles of personality and demographic characteristics. They do not depend on intimate contact with the actual entrepreneur and get around the difficulties in acquiring the more difficult internal information of the actual entrepreneur. However, they also appear to have minimal predictive ability (Krueger & Brazeal 1994).

Within the context of how and why entrepreneurs act, two theories, Ajzen's theory of planned behavior (TPB), and Social Cognitive Career Theory (SCCT) seem to hold some promise on the front of prediction of entrepreneurial behavior (Segal, Borgia, & Schoenfeld; Krueger & Brazeal ). Ajzen's theory of planned behavior suggests that three key attitudes predict entrepreneurial inclinations; (1) Attitude towards the act, (2) Social norms, and (3) Perceived behavioral control. Social Cognitive Career Theory suggests that Career interests, goals, and choices are related to self-efficacy beliefs and outcome expectations (Lent, Brown, & Hackett, 1994,1996). Segal, Borgia, and Schoenfeld make the suggestion, then, that peoples self efficacy beliefs and outcome expectations with regard to self-employment can predict their goals to become self employed.

Therefore, if entrepreneurship is viewed through the lens as simply one of many career choices, SCCT becomes a good benchmark from which to operate. It is a good place to hang ones theoretical hat as it is one of the most accepted and validated models discussed in the careers literature regarding the understanding of career interests and goals (Segal, Borgia, & Schonefeld; Gore & Leuwerke, 2000; Smith & Fouad, 1999; Swanson & Gore, 2000).

### **Social Cognitive Career Theory**

SCCT is anchored in social cognitive theory and highlights the importance of self-beliefs and self-thought in fostering an individual's motivation and subsequently guiding their behavior (Segal, Borgia, & Schoenfeld). Core variables of the SCCT model are (1) self efficacy-- which affects an individual's expectations for outcomes as well as their intentions toward performance, (2) outcome expectations---which affects their future performance or goals, and (3) goals--- for entrepreneurs towards self employment.

This model bases much of its predictive powers on Vroom's (1964) work in expectancy theory. Expectancy theory states that in order for an outcome to be achieved, three things must be in place; (1) a person must believe that he or she can do it (expectancy), (2) accomplishment of the task must be clearly connected to an outcome (outcome expectations), and (3) the outcome must be desired by the individual (valence). according to Vroom, an individual will choose among alternative behaviors by considering which behavior will lead to the most desirable outcome. SCCT suggests that these outcome expectations are important determinants of career interests (Segal, Borgia, & Schoenfeld). Bandura (1986) noted that a person's behavior results from the interaction of that person and their environment but, as noted above, issues of the

environment contain low explanatory power and predictive ability when used alone (Krueger, Reilly, & Carsrud, 2000).

Therefore the researcher finds himself dealing with other methods of studying entrepreneurial behavior, expressed in general terms of how and why entrepreneurs act and what happens when they act. Past studies have shown these areas to be more fruitful in their predictive and exploratory powers to explain entrepreneurial behavior. However, the thorny issue of gaining access to actual entrepreneurs remains. Since the more easily gathered data (economic and demographic) appears to be ineffective, the obvious alternative is to use some form of a more accessible proxy for the ever busy and difficult to reach actual entrepreneur. This effort to locate proxies high in entrepreneurial potential is seen as a major stumbling block to a precise description of the entrepreneurial effort (Reynolds, 1995). One possible source for these nascent entrepreneurs is located in universities. However, results of past entrepreneurial research using students have been mixed at best.

### **Focus of This Paper**

This paper looks, in particular, at the issue of using students as proxies for actual entrepreneurs in entrepreneurial research. We suggest that an acceptable proxy will be one with high potential to become an actual entrepreneur.

Because recent research suggests promise for Social Cognitive Career Theory this paper concentrates on those traits and issues that best fit into the Social Cognitive Career Theory realm to provide discrimination between students exhibiting nascent entrepreneurial tendencies and students low in these nascent entrepreneurial tendencies (Segal, Borgia, & Schonefeld; Gore &

Leuwerke, 2000; Smith & Fouad, 1999; Swanson & Gore, 2000). In particular, we look at measures of life aspirations along with work and life goals within a sample of junior and senior level undergraduate students at a major Midwest university. We also look at the same measures within a sample of actual entrepreneurs who agreed to participate in our research.

Students high in nascent entrepreneurial inclinations, for the purposes of this research, are defined as those individuals who exhibit high potential to become actual entrepreneurs (Reynolds, 1995; Palit & Reynolds, 1993; Reynolds & White, 1993). Undergraduate respondents were divided into two categories. We develop a nascent entrepreneurship index and make a distinction between those who score high on this index and those who scored low. Our expectations were that students exhibiting high levels of nascent entrepreneurship, as evidenced by their score on the nascent entrepreneurship index will respond similarly to actual entrepreneurs in the administration of the questionnaire.

Our attempt is to validate the link between those undergraduate students with a high level of nascent entrepreneurial inclinations and actual entrepreneurs and as such validate their use as proxy's for the much more difficult to obtain data from actual entrepreneurs. Furthermore, we look at the lack of correlation between the answers given by those students who are low in nascent entrepreneurial inclinations and actual entrepreneurs and suggest that, in order to improve the reliability of using university students as proxies for actual entrepreneurs, one needs to separate out those students who exhibit low nascent entrepreneurial inclinations.

## **Methodology**

The study was done through the use of a nearly identical questionnaire administered to a group of approximately 500 university students as well as 286 actual entrepreneurs. The

questionnaire items are grouped into two main categories of work goals (Table 1) and life aspirations (Table 2). These items were derived from those used in current entrepreneurial research. The respondents were asked to rate the importance of (1=not at all important, 7=extremely important) seventeen job characteristics (work goals) in their ideal jobs. They were also asked to divide one hundred points among ten life goals/aspirations to indicate the relative importance of each in their lives.

**Table 1; Work Goals**

<p>To be able to use my skills and talents to the maximum</p> <p>To be able to achieve something that I personally value</p> <p>To work with others as members of a group</p> <p>To have the freedom/opportunity to make my own decisions</p> <p>To have job security</p> <p>To have the opportunity to learn new things</p> <p>To receive attractive pay and benefits</p> <p>To perform challenging and exciting work</p> <p>To be able to extend my range of abilities</p> <p>To have opportunity for advancement/promotions</p> <p>To be friends with, and be liked by my co-workers</p> <p>To have the authority to influence others</p> <p>To always know specifically and exactly what I am expected to do</p> <p>To have fixed working hours</p> <p>To be able to set my own working hours</p> <p>To have control over the pace of my work</p> <p>To be ultimately involved in the entire operation (i.e. the whole enterprise)</p>
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**Table 2; Life Goals and Aspirations**

<p>Accumulate wealth</p> <p>Control my own future</p> <p>Be my own boss</p> <p>Have free time for family, hobbies, leisure, and other interests</p> <p>Live an adventurous and exciting life</p> <p>Be recognized by family/friends for my accomplishments</p> <p>Become an influential person</p> <p>Have a steady paycheck (i.e. job and income I can count on)</p> <p>Have financial security</p> <p>Have peace of mind (i.e. peaceful and stress-free life)</p>
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The sample was already naturally divided into two groups, that of students and actual practicing entrepreneurs. We further divided the student group into those students with low nascent entrepreneurial qualities and those with high nascent entrepreneurial qualities. This was done through deriving an average score for each student based on responses to four questions (Table 3). Students responded to the questions in the form of a likert scale of 1-7. Students who scored an average response of three or less to the questions in Table 3 were classified as having low nascent entrepreneurial qualities. Students who scored an average response of five or higher to the questions in Table 3 were classified as having high nascent entrepreneurial potential. Students who scored an average of 3 were discarded as being too ambiguous to classify into either category for the purposes of this research.

**Table 3: Nascent/Non-nascent questions**

My ultimate goal is to be self employed
My goal is to start my own business
Having a job is more appealing than owning a business
I intend to strive for an idea to own my own business

This process allowed three distinct groups to emerge. These were actual entrepreneurs, students exhibiting high nascent entrepreneurial potential (referred to as nascent), and students exhibiting low nascent entrepreneurial potential (referred to as non-nascent). The entrepreneurially nascent students numbered 156. The entrepreneurially non-nascent students numbered 183. 161 students delivered scores of 3 and were considered too close to differentiate. Total students participating in the research were 500. These groups were then subjected to three combinations of a two way discriminate analysis using work goals and life aspirations as independent/predictive variables. The first analysis looks at the non-nascent student group compared to nascent student group. The second analysis looks at the non-nascent student group

compared to actual entrepreneurs. The third and final analysis looks at the nascent student group compared to actual entrepreneurs.

## **Results**

Results from a discriminate analysis are found in Table 4: Analysis 1. Responses of students categorized as non-nascent are compared to those categorized as nascent. In this analysis our results showed that work goals and life aspirations correctly classified 75.5% of the two cross validated groups of students (nascent and non-nascent) in the analysis. This indicates a strong difference between these two types of students. This supports our assertion that there is a significant difference in work goals and life aspirations between students exhibiting strong nascent entrepreneurial qualities and those exhibiting weak or non-nascent entrepreneurial qualities. Perhaps even more relevant is that only 21% of non-nascent students were incorrectly classified as actual entrepreneurs, which is exactly the same as the percent of non-nascent students who were incorrectly assigned to the nascent group.

Analysis two moves the discussion forward by comparing the non-nascent student group to actual entrepreneurs. Here the results are even stronger with 82.7% of cross validated grouped cases correctly classified in the analysis (Table 5). This indicates that there is a difference between the non-nascent group and the group of actual entrepreneurs and suggests that the non-nascent group of students may not be representative of or serve as proxies for the actual entrepreneur in entrepreneurial research.

Analysis three moves the discussion in a final step by comparing the nascent student group to actual entrepreneurs. Here the results are weaker with only 70.1% of cross-validated

grouped cases correctly classified (Table 6). However, the separation becomes even more indistinct when it is noted that, of the nascent student group, the discriminate analysis was only able to correctly identify them 48.1% of the time. Furthermore, the discriminating variables are not only different from those that separate non-nascent from the other two groups but also different from those which are supported by the literature as being a part of the entrepreneurial profile. This lack of discriminatory ability using questions previously identified as being a part of the entrepreneurial profile. This highlights the similarity of the nascent and actual groups and their dissimilarity with the non-nascent group thereby suggesting that nascent entrepreneurial students are very much like actual entrepreneurs and can serve as inexpensive and accessible proxies in their absence for both predictions of entrepreneurial activity and other forms of entrepreneurial research.

Table 7 shows the most discriminating questions found in the analysis. Reported are those questions with a factor loading of .2 or more. 18 questions were found to have a factor loading of .2 or greater in at least one of the three analyses. In fact, characteristics that most significantly discriminate between the actual/non-nascent and between the nascent/non-nascent subjects are virtually the same. Again highlighting the fact that actual and nascent entrepreneurs are very similar to each other and very dissimilar to non-nascent subjects. Twelve questions were found to have a factor loading in either or both of analyses one and two. In fact, both groups attach significantly more levels of importance to eight questions in particular. These questions have a factor loading of at least .25 in both analyses one and two (Table 7), and include; Be my own boss(high inclination), number one in both analyses; Be able to set my own working hours(high inclination), number two in both analyses; Have freedom to make my own decisions(high inclination); Be intimately involved in entire operation(high inclination); Had a

role model owning business(high inclination); Have control over pace of work(high inclination); Have a job and income I can count on(low inclination); Have fixed working hours(low inclination); Father occupation (high inclination); and to have job security (low inclination).

## **Implications**

As previously mentioned, acting entrepreneurs are pressed for time, resource short, and suspicious of anyone asking sensitive questions which might give away their competitive edge. Our results indicate that students can serve as proxies for acting entrepreneurs as long as we separate those with high nascent entrepreneurial inclinations from those without such inclinations (referred to here as non-nascent). This can be done through the use of student responses to Questions concerning their entrepreneurial inclinations (Table 3). As noted from discriminate analysis three, students registering high in the nascent entrepreneurial index are found to be quite similar to actual entrepreneurs with the analysis having difficulty discriminating between the two groups. On the other hand, students in the nascent group are found to be quite dissimilar to the non-nascent student group (Table 7: Analysis one). Students in the non-nascent group are found to be quite dissimilar to actual entrepreneurs as well (Table 7: Analysis two). Therefore, when using students as proxies for actual entrepreneurs, researchers would do well to distinguish between those who score high in nascent entrepreneurial inclinations and those who do not.

**Table 4: Analysis 1**

Analysis 1 (Non-nascent compared to Nascent)		
Predicted Group Membership ( % Correct)		
	Non-nascent	Nascent
Non-nascent	79.2%	20.8%
Nascent	28.8%	71.2%

75.5% of cross-validated grouped cases correctly classified

**Table 5**

Analysis 2 (Non-nascent compared to Actual Entrepreneurs)		
Predicted Group Membership ( % Correct)		
	Non-nascent	Actual
Non-nascent	79.2%	20.8%
Actual Entrepreneurs	15%	85%

82.7% of cross validated grouped cases correctly classified

**Table 6**

Analysis 3 (Nascent compared to Actual Entrepreneurs)		
Predicted Group Membership ( % Correct)		
	Nascent	Actual Entrepreneurs
Nascent	48.1%	51.9%
Actual Entrepreneurs	17.8%	82.2%

70.1% of cross-validated grouped cases correctly classified

Table 7

<b>Questions with most discriminatory power</b>	<b>Analysis 1 Nascent/Non- nascent</b>	<b>Analysis 2 Non- nascent/Actual</b>	<b>Analysis3 Nascent/Actual</b>
	<b>Question Rank (Factor Loadings)</b>	<b>Question Rank (Factor Loadings)</b>	<b>Question Rank (Factor Loadings)</b>
Be my own boss	1 (-.534)	1 (-.586)	4 (.308)
Be able to set my own working hours	2 (-.456)	2 (-.410)	
Have freedom to make my own decisions	3 (-.392)	7 (-.329)	
Be intimately involved in entire operation	4 (-.365)	3 (-.369)	
Had a role model owning business	5 (-.342)	10 (-.233)	
Have control over pace of work	6 (-.295)		
Have a job and income I can count on	7 (.290)	9 (.248)	
Have fixed working hours	8 (.253)	4 (.367)	8 (-.212)
Father Occupation (Dummy Variable)	9 (-.239)		
To have job security	10 (.230)	6 (.339)	10 (-.205)
Be friends/liked by co-workers		5 (.348)	1 (-.605)
Control my own future		8 (-.285)	
Have opportunity for advancement			2 (-.376)
Live an adventurous and exciting life			3 (-.362)
Earn attractive pay and benefits			5 (-.273)
Socio-Economic family background			6 (-.265)
Have authority to influence others			7 (-.249)
Become an influential person			9 (-.210)
Group Centroid	Nascent (-.932)	Non-nascent (1.142)	Nascent (-.709)
Groups Centroids	Non-nascent (.794)	Actual (-.731)	Actual (.387)

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