

THE LONGITUDINAL EFFECTS OF ENTREPRENEURSHIP TRAINING ON RISK TOLERANCE: A LOOK AT SIMILARITIES AND DIFFERENCES BETWEEN MALE AND FEMALE UNDERGRADUATE STUDENTS

Linda E. Parry
Western Kentucky University
linda.parry@wku.edu

Robert Wharton
Western Kentucky University
robert.wharton@wku.edu

Douglas Fugate
Western Kentucky University
douglas.fugate@wku.edu

ABSTRACT

Small businesses are a major engine of growth for the U.S. economy, and universities have responded with a variety of programs designed to nurture potential entrepreneurs. What is still unclear is the real effect these programs have on instilling entrepreneurial values and dispositions in the typical student. In a small pilot study, we track a group of students, struggling over the course of one full year to complete an entrepreneurial exercise. Results suggest that there is little overall change in entrepreneurial attitudes toward risk but the experience may have a more positive impact on women and a more negative impact on men.

INTRODUCTION

For many years, the US economy has depended upon the entrepreneurial spirit to spur economic growth and development. From the earliest businesses in Colonial America to the latest dot.com enterprise, entrepreneurs have been responsible for much of the employment, new product innovation, and new wealth found in our economy.

Women start new businesses at two times the rate of men, according to a 1996 House Small-Business Committee report. Between 1987 and 1999, the number of women-owned firms increased 103 percent, representing 38 percent of all businesses in the country. The employment resulting from women entrepreneurs represents a substantial factor in economic growth, with more than 27.5 million people employed by women-owned firms (NFWBO).

As a result, social scientists are interested not only in the characteristics of the entrepreneur, but also differences between male and female entrepreneurs. Many studies attempt to identify common characteristics would allow researchers to construct an entrepreneurial profile. Thus, it follows, individuals matching the profile could be nurtured and encouraged to engage in pioneering new ventures.

Risk-taking is defined as the willingness to commit resources to a course of action that may result in success or failure. Social scientists since the days of Adam Smith have identified risk-taking as fundamental to the practice of entrepreneurship (Caird, 1988). However, it is not clear if this response to risk is an enduring personality trait that responds to situational encouragement or if it is an attitudinal variable that can be taught or learned (McClelland, 1961; Storey, 1995). It is also not clear if there are differences among males and females in their perceptions of risk (Mahadea, 2001).

Most studies focus on people that have already become entrepreneurs. In this study we start at the very beginning of the process and investigate risk-taking among male and female students within the context of a year-long entrepreneurship course. Specifically, we want to know does risk-taking change over time and are there differences between males and females in their tolerance for risk?

Developments in Business Simulation and Experiential Learning, Volume 30, 2003

LITERATURE REVIEW AND HYPOTHESES

The traditional understanding of the entrepreneur as a risk bearer stems from the early work of J.S. Mill (1858) who used risk to differentiate entrepreneurs from managers. This generalized personality trait approach is widely accepted in the popular press and a variety of academic writers (Begley and Boyd 1987). More cautious observers believe the entrepreneur to be a moderate, not a high, risk taker. Entrepreneurs take calculated risks. They collect as much data as possible before they make a decision. Meyer, Walker and Litwin (1961), McClelland (1961), Mancuso (1975), and Sexton and Bowman (1985) are frequently cited in that regard.

However, a number of authors argue that risk taking is a necessary but not sufficient determinant of entrepreneurship since moderate risk taking is also found in successful managers. There is little agreement that a consistent, trans-situational personality trait is responsible for entrepreneurial tendencies.

To some extent, the inability to find a strong personality trait difference between entrepreneurs and non-entrepreneurs is also due to inconsistent research methodology (Das and Bing-Sheng 1997) and a high degree of variability among entrepreneurs themselves (Gartner 1985). Inconclusive or weak findings, however, have not dispelled Mill's original contention. Das and Bing-Sheng (1997) write "Risk taking appears to be one of the most distinctive features of entrepreneurial behavior, since creating new ventures is by definition a risky business...the subject of risk behavior should be at the heart of entrepreneurial behavior" (p. 70).

Perhaps it is more productive to examine the issue of entrepreneurial risk taking from a cognition-oriented approach. In other words, it is not likely that entrepreneurs are inherently more willing than managers to take risks as it is that entrepreneurs define or approach risk in a different cognitive fashion (Palich and Bagby 1995, Peacock 1986). Studies suggest that entrepreneurs may be more optimistic and thus more willing to take risks that others would avoid-- although they themselves do not see this action as particularly risky. McNerney (1994) says that "entrepreneurs don't get any particular joy out of taking risks, but they are willing to take calculated risks in certain circumstances." Amit and Glosten (1993) explain self-reported risk moderation as a function of the entrepreneurs strong belief in their abilities to achieve their goals, thus their perceived probability of failure would be relative low, and therefore, perceived risk level would be low. Shaver and Scott (1991) advance a similar argument: If one must have fear to demonstrate courage, one must recognize failure to demonstrate risk. In their study of high technology entrepreneurs, Corman, Perles and Vancici (1988) found most did not perceive themselves as doing anything risky.

Perhaps the most interesting cognition related finding, at least relative to the purpose of this paper, is an unpublished study by Shaver, Williams and Scott (1990) that demonstrates the power of social cognitive conditioning. Using a bogus test of entrepreneurial abilities, subjects who thought they had

entrepreneurial characteristics demonstrated high risk taking behavior, more need for achievement and greater creativity (all positively related to new venture creation). In short, this suggests that social environments shape entrepreneurs and that new venture formation is not exclusively a "personological" phenomenon. This can also happen in a class environment. In this study, students are exposed to entrepreneurship activity over the course of a year. If students experience success, their attitudes toward risk will change. In fact, what they saw as risk in the beginning of the project may no longer appear risky at the end of the experience. This leads us to hypothesize:

H1: Students in an activity-based entrepreneurial course will be more risk tolerant at the end of the course than they were at the beginning of the course.

Researchers have explored the differences between male and female entrepreneurs. Men tend to be self-employed at a younger age and they have more than twice the pre-occupational work experience than females. Males start businesses with more money and a wider access to capital (Mahadea, 2001). Nevertheless, many of these observations come after the entrepreneurial activity has begun. In this study, male and female students are starting at the same time; they are about the same age; and they have taken the same business courses. They have access to the same mentoring. Consequently, we hypothesize:

H2: There will be no difference in risk-taking tolerance between male and female students.

THE ENTREPRENEURSHIP COURSE

In 2000, we supervised an entrepreneurship class whose goal was to allow business students to actually create, manage and market a musical CD. Over two semesters, students formed their own company, Starving Students Production (SSP), and, produced and sold a rock CD entitled "Code Red: Destination Unknown."

Our primary objective with this project was to give students the opportunity to develop their entrepreneurial skills by starting and operating an actual business. In effect, we were implementing a "learning by doing" approach.

The course, begun in Spring 2000, was comprised of a two-semester course sequence. As we designed the course, the marketing plan and fund raising would be completed in the spring semester; summer interns would keep the project moving through the production stage and in the fall, students would sell and market their product.

Our product, a musical CD, was based on a similar project that had been successful at Elon College. Two years prior to our project, Elon students had produced and sold a jazz CD. Since we are located near Nashville, TN, "Music City USA", we had a number of musicians, recording studios, and technical advice within a fifty-mile radius. We also liked the idea of selling a CD since it was a product that our students already knew and could get excited about.

Sixty-five students expressed interest in participating in this business experiment. We limited the class to twenty students. To make a final selection, we asked students to fill

Developments in Business Simulation and Experiential Learning, Volume 30, 2003

out a questionnaire that included major, course expectations, and the amount of time they were willing to put into the project. Our final selection contained junior and senior business administration majors. There were an equal number of males and females with an average age of 21.

To reinforce the concept that students would have personal responsibility for running a business, all students were required to purchase two shares of company common stock at \$10 a share. This was more symbolic than practical as the total cost of the project was estimated to be \$15,000. At the end of the venture, any profits would be split equally among the twenty students after a small, undetermined percentage was placed into a fund to support future entrepreneurship projects.

In the spring the students conducted market research. Students researched area residents, students, music retailers and secondary sources. Based on this research, students decided to produce a rock music CD featuring a compilation of independent rock artists from the region, sell it for \$12.99 to 16-30 year olds, and distribute it at area music and electronic stores as well as via the Internet. As students began to make decisions for their own company, they felt some power. They were entrepreneurs.

Fall marked several new changes. First, since SSP had acquired debt, we imposed several new conditions. We required students to keep journals and record daily their activities in SSP as a way to gauge individual participation. Furthermore, to encourage everyone's participation and to raise the needed break-even funds, each student was responsible for selling 100 CDS. Every student was now forced to be entrepreneurial. Two students did not like the individual sales goal and withdrew from the class.

As in most start-ups, things did not always go according to plan. The original timeline called for CD production to be completed over the summer with the product delivered in August. Unfortunately, production difficulties occurred and another company had to be quickly found to manufacture 100 CDS to sell at a scheduled Release Party. Many students had thought they would sell their entire allotment of CDs at the release party. When they did not, they began to perceive the risks that lay ahead.

During the fall CD sales continued to be slow. Now the class was split in three factions. Approximately thirty percent of the students were becoming truly entrepreneurial and developing new strategies to sell the CD. Fifty percent of the students just watched the others work. The remaining twenty percent of SSP members became the vocal critics of other students, the entire project and us.

To say things were bleak by November would be a serious understatement. However, just when some students had lost all hope, an alternative presented itself. The university bookstore management offered SSP the opportunity to staff a sales cart in the regional mall. Students worked over 890 hours at the cart. Fortunately, the mall cart revenues generated sufficient revenues to more than cover all CD production and marketing expenses. This was not the ideal culmination of the SSP CD business plan but it did point out the importance of being flexible and responding to environmental threats and

opportunities. Consequently, this project did make a small profit.

By most measures the CD project was very successful. The entrepreneurship project won the Southern Business Award for Innovation in Teaching. The university used the project to attract future students. Many students used their experience to receive lucrative job offers. Most of the students, despite undergoing some major disappointments, had experienced success. This provided positive reinforcement. Nevertheless, did this project of sweat and tears really change the personal orientations of male and female students?

METHOD

Whetten and Cameron (1995) noted that people could alter their aversion to risk if they learn to interpret information about change as they are experiencing the event. To find out if the students in the entrepreneurship class changed their personal orientations towards risk, we administered questionnaires to the students before they began the project and at the completion of the project.

Self-administered questionnaires were given to the twenty original students in the entrepreneurship class. The questionnaire contained items that measured aversion to risk. Students would circle either "yes" or "no" to indicate their agreement to twenty statements. Examples of these statements included, "I would never give up my job before I was certain I had another one" and "To broaden my horizons, I would be willing to take risks." Other items focused on demographic information. Included in this section were questions about gender, age, and college status (freshman, sophomore, junior, or senior).

At the end of the project, an identical questionnaire was administered to the students. At this time, two students had dropped the class so eighteen students remained in the class. Seven other surveys were either not completely filled out or the students did not give sufficient demographic data to ensure matching. Eleven pre- and post-project surveys were completed and used in the analysis as matching pairs. Although seven surveys were discarded for matching pair analysis, there is no reason to conclude that these respondents differed in any significant way from the matched pairs.

The matched pairs of completed surveys contained four females and seven males. All students were between the ages of 21-25. There was one junior and the rest seniors. All students were enrolled in the College of Business. A variety of majors were represented from marketing, management, computer information systems, and accounting.

DATA ANALYSIS

A paired-samples t test was performed comparing the means of the group on the pretest and the means on the post-test. The t was not statistically significant at the $p < .05$ level for risk aversion.

Proportionate change statistics were performed comparing the responses for each subject for the pretest and post-test. A

Developments in Business Simulation and Experiential Learning, Volume 30, 2003

number of respondents showed substantial changes in their attitudes. Six students had a 10% or greater change in attitude towards risk. Three students became more risk averse and three became less risk averse.

An independent samples t test was performed to observe

any interactions between gender and risk. Levene test statistic was performed to test for the equality of variances. Table one demonstrates that the statistic was not significant at $p < .10$ level. Therefore, the two groups (male and female) were not equal in their responses.

TABLE ONE
INDEPENDENT SAMPLES T-TEST GROUP STATISTICS

| | Gender | N | Mean | Std. Deviation | Error Mean |
|----------------|--------|---|------|----------------|------------|
| Time 1 | | | | | |
| Risk Tolerance | Male | 7 | 16.1 | 2.97 | 1.12 |
| | Female | 4 | 11.8 | 3.50 | 1.75 |
| Time 2 | | | | | |
| Risk Tolerance | Male | 7 | 15.9 | 4.63 | 1.75 |
| | Female | 4 | 12.5 | 2.38 | 1.19 |

RESULTS

Although there were no significant differences between the pre- and post-test matching pairs on aversion to risk for the group as a whole, there were some substantial changes in scores for some of the students. Three students had dramatic changes in scores on their willingness to accept risk (12%, 13% and 40%). Interestingly, three other students showed similar swings in their willingness not to take on risk (12%, 13% and 40%).

Interestingly, there was interaction effect for all three items and gender. Females indicated a greater willingness to take on risk as a result of the entrepreneurship activity. In the beginning of the course, there were differences between males and females in their aversion to risk. As females became more willing to accept risk at the end of the project, these differences disappeared (Table 1).

DISCUSSION

Entrepreneurship is considered a significant factor in providing job opportunities for students. In the U.S., 800,000 businesses are launched each year with employees. Two million more people begin businesses on their own. As a result, universities have been rapidly adding entrepreneurship courses to their curriculum.

Many of these courses are experiential or "hands-on" courses in which students not only read about entrepreneurship but also have the opportunity to experience it first hand. Starving Student Productions is one example of having students experience all the excitement and stress of running a company over a twelve-month period. After such an experience, we hypothesized that students would move more in the direction of entrepreneurs in their orientation towards risk. Our hypothesis was not supported. However, we did uncover some important results.

Although the group as a whole did not move towards

having entrepreneurial orientations, three students showed substantial changes in their movement towards a willingness to accept risk. This represented about twenty-five percent of the group. In retrospect, that is about the same percentage of students who took control of the project and ultimately succeeded in spite of incredible odds. At the same time, there was a group of students who just looked to the leaders for direction. They generally did not propose any creative activity to help sell the CD. Towards the end of the semester, these students did work hard but it was more to protect their grade than it was for any interest in the project becoming a success. Given these students' experiences, it is not unexpected that they did not move very much towards an entrepreneurial orientation. Also, during the course of the semester, about 20% of the students complained and looked for reasons outside themselves as to why the project did not proceed exactly according to plan. For the most part, these students did not experience personal success. One student only sold seven of his required 100 CDs. Two students failed the class. Their enthusiasm for entrepreneurship would have been dimmed by the CD project. This could account for some students having a dramatic reversal away from entrepreneurship.

If there was no change in risk orientation for some of the students, does this mean that experiential courses in entrepreneurship are ineffective? Mintzberg (1975), when examining instruction via purely lecture pedagogy, argued that cognitive learning "no more makes a manager than it does a swimmer" (60). November (1997) suggested that problem-based learning experiences that simulate the work environment are an appropriate bridging tool between academic study and learning in the workforce. Starving Students created a learning environment that was realistic and problem-based. Therefore, there were many reasons why one might enter into experiential entrepreneurial activities.

There was an interaction effect for gender and entrepreneurial orientation. Women in the class did become exhibit less risk aversion as a result of the project. This is an

Developments in Business Simulation and Experiential Learning, Volume 30, 2003

important finding and brings up an interesting question. Do females react differently to experiential courses than their male counterparts? Preston-Whyte and Nene (1991) argue that women start out at a disadvantage to men because "their horizons tend to be more limited than those of men." In contemporary times, one would hope that this was not the case, however, it may be that female students do not consider entrepreneurship because of cultural conditioning. Once they experienced the class, they may have been more willing to tolerate risk. This is an important finding and needs to be pursued.

This was a pilot study. There were a number of weaknesses, the critical one is the small number of students in the study. However, there were some important findings, and therefore, we recommend that this study take place with a larger sample. It is critical to find out what effect activity-based classes have over a period of time. One of the students in SSP recently emailed to say that she was considering opening up a franchise as a result of her experience. We recommend that post-tests one and two years after the class be conducted to see if any attitudes and behaviors remain or have become diminished.

Also, this study was done looking at one course. Granted the course took place over a year and was very intense. Nevertheless, it would be interesting to look at student orientation after they have undergone a complete program, such as a major or minor in entrepreneurship, to observe changes in attitudes.

There were other factors that need to be considered when undertaking entrepreneurial research projects. Although our students were basically in the traditional age range of 21 to 24 years, they brought with them various experiences and maturity levels. Since these projects called for independent, self-motivated students, we found that both classes provided a great learning opportunity for our best students and an inferior experience for students who lacked discipline and initiative. Most research studies control for age, but not for maturity or experience levels. Ours was no exception. Therefore, we recommend taking these factors into consideration when focusing on risk tolerance.

Finally, in the past decade, academia has come to embrace activity-based learning. There are studies indicating that students' cognitive understanding of material improves when they put concepts to work. However, more research needs to be conducted to observe if attitudes and behaviors are really changed from these experiences.

REFERENCES

- Amit, Raphael and Glosten Lawrence (1993). Challenges to theory development in entrepreneurship research, *Journal of Management Studies* 30(5): 815.
- Begley, T.M. and D.P.Boyd (1987). Psychological characteristics associated with Performance in Entrepreneurial Firms and Small Business, *Journal of Business Venturing* 2:79-93.
- Bonnett, C., & Furnham, A. (1991). Who wants to be an entrepreneur? *Journal of Economic Psychology*, 12:465-478.
- Caird, S. (1988). A review of methods of measuring enterprising attributes. Durham, UK: Durham University Business School.
- Corman, J. B. Perles and P. Vancici (1988). Motivational factors influencing high technology entrepreneurship, *Journal of Small Business Management*, 26(January):36-42.
- Cromie S., Callahan, I., & Jansen, M (1992). The entrepreneurial tendencies of managers. *British Journal of Management*, 3:1-5.
- Das, T.K. & Bing-Sheng, T. (1997). Time and entrepreneurial risk behavior. *Entrepreneurship: Theory and Practice*, 22(2):69.
- Gartner, W. B. (1985). A conceptual framework for describing the phenomenon of new venture creation, *Academy of Management Review*, 10:696-706.
- Mahadea, D. (2001). Similarities and differences between male and female entrepreneurial attributes in manufacturing firms in the informal sector in the Transkei. *Development Southern Africa*, 18:189-197.
- Mancuso, J.R. (1975). The Entrepreneurs' Quiz, in C.M. Baumbach and J. R. Mancuso (eds) *Entrepreneurship and Venture Management*, Englewood, NJ: Prentice-Hall, Inc.
- McClelland, D.C., (1961). The achieving society. New York: Van Nostrand.
- McNerney, Donald (1994). Truths and falsehoods about entrepreneurs, *HR Focus*, 71(8): 7.
- Meyer, H.H., Walker, W. B. & Litwin, G.H. (1961). Motive Patterns and Risk Preferences Associated with Entrepreneurship, *Journal of Abnormal and Social Psychology*, 63: 570-574.
- Mill, J.S. (1848), Principles of Political Economy with some of their Applications to Social Philosophy, in J. A. Schumpeter (ed) *History of Economic Analysis* , New York: Oxford University Press 1954.
- Mintzberg, H. (1975). The manager's job: Folklore and fact. *Harvard Business Review*, July/August, 49-61.
- National Foundation of Women Business Owners (<http://www.nfwbo.org>).
- November, P. (1997). Learning to teach experientially: A pilgrim's progress. *Studies in Higher Education*, 22(3):289-300.
- Olson, P. (1985). Entrepreneurship: process and abilities. *American Journal of Small Business*, Summer, 25-31.
- Palich, L.E. and Bagby, D.R. (1995). Using cognitive theory to explain entrepreneurial risk-taking: Challenging conventional wisdom, *Journal of Business Venturing*, 10:425-438.
- Peacock, P. (1986), The influence of risk taking as a cognitive judgmental behavior of small business success, *Frontiers of Entrepreneurship Research*, 110-118.

Developments in Business Simulation and Experiential Learning, Volume 30, 2003

- Preston-Whyte, E. & Nene, S. (1991). Black women and the rural informal sector. In Preston-Whyte, E. & Rogerson, C. (Eds.). South Africa's informal economy. Cape Town: Oxford University Press.
- Sexton, D. & Bowman, N. (1985). The entrepreneur: A capable executive and more. *Journal of Business Venturing*, 1(1):129-140.
- Shaver, K. & Scott, L. (1991), Person, process, choice: The psychology of new venture creation, *Entrepreneurship: Theory and Practice* 16(2): 23.
- Shaver, K., Williams S., and Scott L. (1990), Entrepreneurial Beliefs, Creativity and Risk-Taking: Personality or Situation?, unpublished manuscript, College of William and Mary.
- Storey, D.J. (1995). *Understanding the Small Business Sector*. London: Routledge.
- Whetten, D. & Cameron, K. (1995). *Developing Management Skills*, 3rd edition. NY: Harper Collins College Publishers.