

Relationships Between Entrepreneurial Attitudes and Intentions in an Experiential Education

By VANCE GOUGH*

The aim of entrepreneurship education is to promote entrepreneurial behavior. Governments encourage universities to teach entrepreneurship to promote entrepreneurial behavior to launch new ventures, to create jobs, and to promote economic growth. Entrepreneurial attitude, intention, and behavior are different entities. While one's intention may be followed by a behavior, one's behavior more predictably follows one's attitude. This paper seeks to demonstrate the relationship between entrepreneurial attitude and entrepreneurial intent to better predict one's entrepreneurial behavior. These findings have potential implications for Entrepreneurship Education, particularly in the design and implementation of andragogy with regards to outcomes-based learning.

Keywords: Entrepreneurship, Entrepreneurial Attitude Orientation (EAO) Scale, Entrepreneurial Intention, Entrepreneurship Education, Entrepreneurship Attitude, Currency Returns, Siegel Hypothesis

JEL Classification: D81

I. Introduction

A principal goal of entrepreneurship research has been to identify elements that predict positive entrepreneurial behavior (Shane and Venkataraman, 2000). Two of these elements are entrepreneurial intent (EI) and entrepreneurial attitude (EA). An ever-present question asked of entrepreneurship faculty and university entrepreneurship programs is whether entrepreneurship can be taught. The existence of entrepreneurship education is premised on the answer that indeed it can. There is a body of knowledge (Pittaway and Cope, 2007; Martin *et al.*, 2013; Souitaris *et al.*, 2007) that has shown a link between entrepreneurship education in universities and the EI of entrepreneurship students. There is evidence that entrepreneurship education programs and courses are able to “build awareness of entrepreneurship as a career option and to encourage favorable attitudes (EA) towards entrepreneurship” (Gorman *et al.*, 1997, p. 13). While entrepreneurial behavior is the goal, there needs to be a clearer understanding of EI and EA and the relationship between these two elements in order to facilitate stronger pedagogies/andragogies in entrepreneurship education to achieve that goal.

This study focused on determining if there is a positive correlation between EI and EA for university entrepreneurship students. Data was collected at Utah Valley University between Fall 2015 and Spring 2017. Students completed surveys using a pre-test/post-test during entrepreneurship courses. Influence from self-selection for entrepreneurship was minimized by testing first time entrepreneurship students and MBA students who were not entrepreneurship majors.

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This research is built upon the Theory of Planned Behavior (TPB) (Fishbein and Ajzen, 1975). TPB is a well-established framework that provides a conceptual and theoretical link between behavior and intentions. The central concept of the TPB is the “individual’s intention to perform a certain behavior” (Autio *et al.*, 2001, p. 147). Researchers in entrepreneurship have used the TPB as a foundation for exploring the formation of EI (Hisrich *et al.*, 2013; Koe, 2016).

This research examines the correlation of EA with EI. It builds on the concept of EI being an attitude with the specific object of “starting a business.” EA will be seen as a conceptual and theoretical foundation for EI. This will help us to determine if we can trust in EI assessments to measure potential entrepreneurial outcomes.

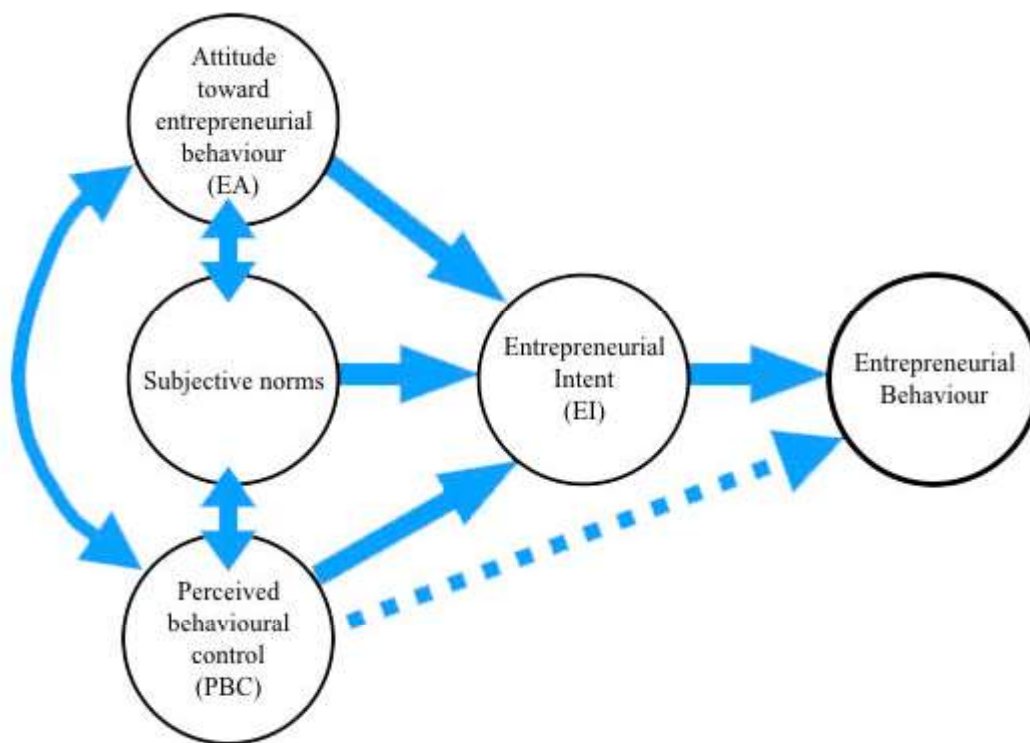
The rest of the article proceeds as follows. First, we review the literature on entrepreneurial intent, attitude, and education. The following sections will illustrate the research methodology, describe the data and measures, and then present the empirical results. The concluding sections discuss the implications of the findings and the limitations of the analysis.

II. Review of Literature

A. Entrepreneurial Intent

Thompson (2009, p. 676) defined entrepreneurial intention as “a self-acknowledged conviction by a person that they intend to set up a new business venture and consciously plan to do so at some point in the future.” It has been found that EI measurements are vague (Thompson 2009, p. 670) and lack a theoretical foundation or conceptual framework. Entrepreneurial intentions do not account for prior behaviors and their influence on present behavior (Ajzen and Madden, 1986). They are based on one merely stating that they are interested in starting a business in the future (Kolvereid and Bullvag, 1996). Ajzen postulated (1985, p. 21) that “the very act of stating an intention may induce heightened commitment to one’s behavior.” Yet intentions inherently have no compulsion, accountability, or responsibility for one to follow through (Thompson, 2009, p. 671). Ajzen (1985, p. 29) even admitted that “intentions can only be expected to predict a person’s attempt to perform a behavior, not necessarily its actual performance.” Further, most of those who convey entrepreneurial intent fail to start businesses (Aldrich and Ruef, 2006, p. 66). EI measurements also have been shown to discount the influence of social norms and peer influence (Krueger *et al.*, 2000, p. 426; Bagozzi *et al.*, 1992). Nevertheless, EI is currently accepted as “the single best predictor of any planned behavior, including entrepreneurship” (Krueger *et al.*, 2000, p. 413). But Krueger (2000, p. 430) admitted that alternative competing models, specifically noting the Entrepreneurship Attitude Orientation (EAO) measurement of attitude, may be better suited to explain problems of the intention measurement, such as social norms issues inherent with EI.

The Theory of Planned Behavior (TPB) by Ajzen (1991, 2011) has been widely used to describe and support the measurement of entrepreneurial intention. TPB is based on the premise that actions are controlled by intentions, but it also realizes that not all intentions are fulfilled by actions (Ajzen 1985, p. 11). The TPB attempts to predict and explain volitional behavior by addressing the intention-behavior relationship (Ajzen 1985, p. 18). The theory is built upon the relationship between intentions and three precursors: attitude towards a behavior, subjective norms, and perceived behavioral control (PBC) (Ajzen 2002, p. 1). (See Figure 1.)

Figure 1: Illustration of Ajzen's Theory of Planned Behaviour (Ajzen, 1991)

The subjective norms referenced in the TPB relate to issues such as perceived social pressures to perform a certain behavior (Autio *et al.*, 2001, p. 147). PBC is the combined perception of one's ease or difficulty in performing a behavior and one's perceptions of their individual control during that behavior (Ajzen 1991, p. 183). PBC is different than Rotter's (1966) concept of a perceived locus of control (LOC). One's LOC is generalized to remain stable across situations, while one's PBC is able to, and even expected to, vary in different situations (Ajzen 1991, p. 183).

Many researchers have used the TPB in attempting to explain and understand the entrepreneurial intentions of post-secondary students (Fayolle and Gailly, 2015; Autio *et al.*, 2001; Fayolle and Lassas-Clerc, 2006; Liñán, 2004; Kolvareid and Moen, 1997). The TPB has also been used to predict EI (Kolvareid and Bullvag, 1996; Tkachev and Kolvareid, 1999; Krueger *et al.*, 2000, Autio *et al.*, 2001, Engle *et al.*, 2010). It has been the "most commonly used theoretical framework in this stream of research" (Schlaegel and Koenig, 2012, p. 655). That being said, there is no uniform approach to measure individual EI (Thompson, 2009, p. 669) within the TPB. Shapero (1975) and Shapero and Sokol (1982) presented expectancy-driven frameworks. These models were built upon by Bird (1988) and Krueger (1993). Krueger (1993, pp. 6-7) used expectancy-driven models to measure the effects of prior exposure to entrepreneurial experience. He specifically looked at feasibility and desirability with regards to intention (Krueger, 1993, p. 8). Davidsson used an economic-psychological model of factors to address the factors that influence EI and coined the term 'entrepreneurial conviction,' which resembles the TPB's attitude toward behavior belief (Davidsson, 1995, pp. 5-6). Bagozzi *et al.* (1992, p. 506) suggested that the "relative effects of attitudes and subjective norms on intentions vary with personal characteristics." Autio *et al.* (2001) found "the measurement of an individual's entrepreneurial

intent has only been described by disparate metrics, with no carefully developed and psychometrically validated measurement scale.” Ajzen (1985, p. 28) himself specified “intentions can only be expected to predict a person's attempt to perform a behavior, not necessarily its actual performance.” While scholars continue to look at different approaches to measure EI within the TPB, there are a number of methods within the literature that have been accepted. The one used in this paper is the Kolvereid (1996), Kolvereid and Bullvag (1996), and Kolvereid and Moen (1997) method.

According to the TPB, intention is strongly influenced by an individual's attitudes, subjective norms, and perceived behavioral control with regard to the object of the intention, which is entrepreneurial activity. These precursors are in turn influenced by experience-based factors. Building on Ajzen's work, there are those who have asserted that “in its simplest form, intentions predict behavior, while in turn, certain specific attitudes predict intention” (Krueger *et al.*, 2000, p. 413). An increase in entrepreneurial intention has been shown to be influenced by a number of personal and environmental factors. These include education and training in entrepreneurship; a student's prior entrepreneurial experience (and/or exposure); and demographic characteristics (Fayolle and Gailly, 2015, p. 77). Some claim that these intentions may change over time, and this has created skepticism whether the constancy of intention has been proven (Fayolle and Gailly, 2015; Goode *et al.*, 2010, Moreau and Raveleau, 2006). While intentions may change, a meta-analysis of 10 meta-analyses in the entrepreneurship literature by Kautonen *et al.* (2015, p. 657) found that intention explains 28% of variance in behavior (Sheeran, 2002, p. 3), and Armitage and Conner's (2001, p. 484) work found a mean explained variance of 23% in their meta-analysis of 185 independent tests of the TPB across multiple domains. Clearly, while intention may not be 100% predictive, it has indeed been shown to influence behavior.

B. Entrepreneurial Attitude

Empirical studies have found that attitudes, in general, “have been shown to explain approximately 50% of the variance in intentions, and that intentions explain approximately 30% of the variance in behavior” (Autio *et al.*, 2001, p. 148). When analyzing how management education may influence attitudes, Schein (1967) identified an issue concerning the longevity of attitude change. He questioned “if a school is able to influence attitudes and values, it is likely that a company (future employer) can also influence them” (Schein, 1967, p. 619). Some say “attitudes are temporary constructions rather than memory-based entities” (Schwarz, 2008, p. 22). But Petty (2006, p. 24), using a metacognitive model on attitudes, showed that attitudes instead create evaluative predispositions that influence behavior over a longer period of time. It has further been shown that individuals who “form their attitudes through direct experience held those attitudes more confidently and behaved more consistently with those attitudes, than did subjects who formed their attitudes through indirect experience” (Fazio and Zanna, 1978b, p. 228). So, attitudes may change, but depending on the educational experiences that create these attitudes, there is a greater chance for longevity of the attitude towards a given object.

Many have found that one's attitudes have direct effects on behavior (Bagozzi *et al.*, 1992, p. 505; Fazio and Zanna, 1978b). The term “attitude” refers to the inclination to assess an attitude object in a favorable or unfavorable manner (Schwarz, 2008, p. 41). The concept of EA, building on the foundation of attitude theory (Allport, 1935), has been used in entrepreneurship research since the early 1990s. In the 1960s and early 1970s, some social psychologists had abandoned the concept of attitude as a predictor of behavior (Fazio and Zanna, 1978b, p. 229). Then, later in the 1970s, there was a “challenge by others in their field, with methodological and conceptual refinements which indicated that attitudes

can sometimes be relatively good predictors of behavior” (Fazio and Zanna, 1978b, p. 229). The earlier problem with attitude as a predictor of behavior was based on testing and parameters around general objects. Later research showed that attitude “can only be measured in relation to a specific object; for example, a person, thing, or action” (Hatten and Ruhland, 1995, p. 224; Robinson 1987).

The specific topic of entrepreneurial attitude (EA) looks beyond a stated intention, and instead towards the actual predisposition to behave in a generally favorable or unfavorable way with respect to a specific attitude object of starting a business (Rosenberg and Hovland, 1960; Ajzen, 1987; Shaver and Scott, 1991). Social psychologists have found that there are certain variables that influence the strength of the association between attitudes and behaviors (Fazio and Zanna, 1978b, p. 229). They found, beyond specific situational limitations or competing attitudes, that the individual is more likely to behave consistently with their declared attitudes towards a specific object (Fazio and Zanna, 1978b, p. 229; Heberlein and Black, 1976, pp. 477-8; Staub, 2013, pp. 218-9). Schein (1967, p. 619) also identified that key to attitude is “the identification of those individual and organizational variables that will determine the pattern of maintaining or abandoning the changes produced.” Heberlein and Black(1976) further found that:

Including only specific beliefs in a study is likely to give high attitude-behavior correlations but will not show how the belief and action relate to other similar attitudes and behavior. Including only general attitudes is likely to be disappointing because not much of the variance in behavior can be predicted. By including both, one can better predict behavior from attitudes, yet show how the beliefs and actions are part of a larger cognitive configuration. (Heberlein and Black, 1976, p. 479)

Once testing of attitudes is based on specific objects, the results theoretically would be better predictors of future behavior. Building on the concept that focusing on specific situational attitude objects common among entrepreneurs will strengthen the ability to predict one’s actual predisposition to act as an entrepreneur, the Entrepreneurial Attitude Orientation (EAO) tool was created as a “multidimensional self-reporting measure of one’s (entrepreneurial) attitudes” (Miao, 2012, p. 503). Building on the early theoretical foundation of Allport’s (1935) attitude theory, the EAO instrument (Robinson, 1987; Robinson *et al.*, 1991) measures an individual’s specific attitude toward four business-related attitudes that are consistently held by entrepreneurs. The EAO does not measure one’s attitude toward entrepreneurship; it measures one’s attitude toward specific objects related to doing business. The attitude objects measured by the EAO consist of these four subscales: achieving in business (ACH), innovating in business (INN), personal control in business (PC), and self-esteem in business (SE). The EAO compares the attitudinal components of an individual and their attitudes in interacting within a business setting to those that are consistently held by entrepreneurs. It was built based on a tripartite model of attitude components that vary on a common evaluative continuum (Breckler, 1984, p. 1191; Allport, 1935).

The EAO tool has been validated and confirmed in multiple studies using Cronbach’s alpha to support internal consistency and Pearson’s correlation coefficients to show that all four subscale factors are statistically significant (Miao, 2012, p. 506; Shariff and Saud, 2009, p. 132). The EAO considers attitude to be “a dynamic interactional way that an individual relates to the attitude object, changing across time and from situation to situation” (Robinson *et al.*, 1991). Specific attitudinal qualities, including “whether or not an attitude was based on a direct experience with an attitude object” (Fazio and Zanna, 1978a) have been shown to increase attitude-behavior consistency (Fazio and Zanna,

1978b). Miao (2012, p. 503) found that “the superiority of the attitudinal approach is its focus on a specific domain, which reduces unexplained variability and improves the prediction of real activity.”

Allport (1935) theorized and demonstrated that attitudes consist of three specific types of reaction towards an attitude object: affect, cognition, and behavior. Building upon Allport’s model, Robinson *et al.* (1991, p. 17) defined entrepreneurial attitude, where:

- a) The affect component consists of positive or negative feelings toward the attitude object;
- b) The cognitive component consists of the beliefs and thought about the attitude object; and
- c) The behavioral component consists of behavioral intentions and predisposition with regard to the attitude object.

Robinson *et al.*’s (1991) attitude model has been cited in over 1,100 studies and has been used to examine both theoretical and practical approaches to entrepreneurial attitudes (Krueger *et al.*, 2000; Busenitz and Barney, 1997; Chen *et al.*, 1998, Mueller and Thomas, 2001; Peterman and Kennedy, 2003; Souitaris *et al.*, 2007; Fayolle and Gailly, 2015; Shane, 2003; Zhao and Seibert, 2006; Harris *et al.*, 2015; Do Paço *et al.*, 2015; Fayolle and Lassas-Clerc, 2006).

C. Entrepreneurship Education

Entrepreneurship education is a growing academic field, especially in the United States (Etzkowitz *et al.*, 2000; Fiet, 2001; Solomon *et al.*, 2002; Katz, 2003; Matlay *et al.*, 2014). Entrepreneurship education programs range “from highly intensive multiple week formats, to entire semester courses, to one- or two-year entrepreneurship programs” (Chrisman *et al.*, 2012; McMullan and Gough, 2002). There are many approaches being used to teach entrepreneurship. It is not a monolithic discipline (Piperopoulos and Dimov, 2015). The growth of entrepreneurship programs has been encouraged by governments, which want more new ventures with their resulting creation of jobs (Kirby, 2004; Birch, 1987). However, Pittaway and Cope (2007) observed that “entrepreneurship education programs developed in response to government policy initiatives tend to be narrow in focus and do not necessarily benefit from an evaluation of their effectiveness.” There is also a “lag between taking an entrepreneurship course, typically in a university or college, and starting a business...that may take months, years, or even decades” (Chrisman *et al.*, 2012). There is little evidence on the extent to which entrepreneurship programs developed by universities lead to the creation of new enterprise or the development of new entrepreneurs. It has been found that Entrepreneurship Education has a statistically significant, yet small, positive relationship with entrepreneurial intentions (Bae *et al.*, 2014, p. 234 and 238). The same study found the relationship between Entrepreneurship Education and EI is greater than that between business education and EI (Bae *et al.*, 2014, p. 238). The entrepreneurship education and EI relationship has been researched by many, yet there are still theoretical and empirical disagreements. Some explain this through the orientation frame of how the course is delivered. Some courses are theory oriented while others have a more practical orientation. Piperopoulos and Dimov (2015) argue that the teaching orientation of an entrepreneurship course creates a distinct motivational frame for its students. They found that the relationship between the course orientation (theoretical vs. practical) and the student is contextually sensitive, depending on the motivational disposition of the student (Piperopoulos and Dimov, 2015). Entrepreneurship education has been “largely disconnected from the field of education...and (it) needs to clearly and accurately combine knowledge from both the fields of entrepreneurship and education”(Fayolle, 2013, p. 698). Entrepreneurship courses have typically been taught using a combination of theoretical and practical teaching methods. There is a current trend to use

more experiential teaching methods in the field (Neck *et al.*, 2014, p. 1; Gough, 2016, p. 111; Fayolle, 2013, p. 696).

There are dominant theoretical perspectives about the nature of learning processes in entrepreneurship education. These are based on how to help students learn and gain the aptitudes and attitudes to perform entrepreneurial tasks (von Graevenitz *et al.*, 2010, p. 93). Human capital theory (HCT) and entrepreneurial self-efficacy are two unique primary theoretical perspectives that are used to teach/assist students in gaining identified attitudes/aptitudes. These perspectives also serve as a link to understanding the relationship between entrepreneurship education, entrepreneurial attitudes, and entrepreneurial intentions (Bae *et al.*, 2014, p. 219).

C.1 Human Capital

Human capital, which includes attributes such as formal education, training, employment, prior start-up experience, owner experience, family business experience, skills, industry knowledge, etc., has been traditionally linked to higher potential success for nascent entrepreneurs (Unger *et al.*, 2011, p. 342). Human capital is the investment of a student in schooling, on-the-job training, and other experiences to attain these attributes (Becker, 1994, pp. 17-8).

A meta-analysis on Human Capital Theory and entrepreneurship education (Martin *et al.*, 2013, p. 220) found that entrepreneurship education is associated with higher levels of:

- Total entrepreneurship-related human capital assets
- Entrepreneurship-related knowledge and skills
- Positive perceptions of entrepreneurship
- Intentions to become an entrepreneur

The experiences gained in developing human capital assist in the creation of an entrepreneurial mindset, which has been defined as “a way of thinking about business that focuses on and captures the benefits of uncertainty” (Ireland *et al.*, 2003, p. 968). The entrepreneurial mindset involves the ability to (Ireland *et al.*, 2003, pp. 969-70):

- Recognize entrepreneurial opportunities
- Have entrepreneurial alertness
- Use real options logic
- Create one’s own entrepreneurial framework.

Some see human capital as a determinant of EI (Davidsson and Honig, 2003). Findings “suggest that while human capital increases the probability of becoming a nascent entrepreneur, it may not reliably differentiate successful from less successful entrepreneurial processes...and that formal education as provided by business classes, only succeeded in increasing the pace of gestation activities, not in affecting critical outcomes” (Davidsson and Honig, 2003, p. 313).

C.2 Self-Efficacy

Proponents of the entrepreneurial self-efficacy perspective believe in one's "ability to successfully perform the various roles and tasks of entrepreneurship" (Chen *et al.*, 1998; De Noble *et al.*, 1999; McGee *et al.*, 2009, Robinson and Sexton, 1994; Zellweger *et al.*, 2011; Piperopoulos and Dimov, 2015). "Individuals tend to avoid tasks about which they have low self-efficacy, whereas on the contrary they are drawn and perform better on tasks where they believe they have higher self-efficacy" (Piperopoulos and Dimov, 2015, p. 972). Entrepreneurial self-efficacy is known as one of "triggers of entrepreneurial intentions" (Bae *et al.*, 2014, p. 220). Studies have provided evidence that entrepreneurship education teaching techniques have an influence on student self-efficacy (von Graevenitz *et al.*, 2010, p. 93).

Research has shown that positive self-efficacy, when combined with entrepreneurship education, is a reliable predictor of increased EI in students (Chen *et al.*, 1998, Pittaway *et al.*, 2010). Others have shown that entrepreneurship education may affect the EA in students (Piperopoulos and Dimov, 2015). There is still the question about how EI and EA are interrelated and whether these measures affect actual entrepreneurial behavior. This paper will explore this interrelationship using a correlation analysis.

III. Method

A. Hypothesis

We want to determine if there is a relationship between a student's entrepreneurial attitude scores and their reported entrepreneurial intent both before and after taking an introductory course in entrepreneurship. If there is a correlation between the two, this would suggest that entrepreneurial intent is a component of entrepreneurial attitude based on the TPB proposed by Ajzen. That being the case, instructors may modify/adjust androgogy in entrepreneurship education, using a combination of theoretical and practical teaching methods, to help the student develop a stronger EA and thus increase their intent to actually launch ventures. The potential to actualize entrepreneurial behavior is the intended outcome. We thus propose:

Proposition 1: Entrepreneurial attitudes are positively related to one's entrepreneurial intention.

According to the TPB, attitude is one of three precursors to intentions, along with subjective norms and perceived behavioral control. It is also one of the more difficult elements of the model to measure. With three precursors, it would be expected that the amount of variance in the EI accounted for by EA would be about 33.33%. We would expect somewhat less of the variance to be accounted for in the pre-test because of the limited exposure to entrepreneurship. Accordingly, we hypothesize:

H1: *The amount of variance in EI scores accounted for by the EAO scores, as measured by the coefficient of determination, r^2 , will be less than 33.33% in a pre-test analysis.*

H2: *The amount of variance in EI scores accounted for by the EAO scores, as measured by the coefficient of determination, r^2 , will exceed 33.33% in the post-test analysis.*

B. Measurement

Entrepreneurial intention was measured using the Kolvereid scale and method using the average of three different measures of entrepreneurial intentions, see Kolvereid and Bullvag (1996). This provides an index of entrepreneurial intent. Kolvereid and Bullvag's (1996) questions were "What is the probability that you ever will start a new business?" (0-100 per cent). This question was adopted from Brenner *et al.* (1991).

- "Imagine you could choose between being self-employed and employed by someone. What would you prefer?" (1 = Would prefer to be employed by someone; 7 = Would prefer to be self-employed).
- "What is the probability that you during your working life will pursue a career as self-employed rather than being employed by someone?" (0-100 per cent).

In the questionnaire, all responses were obtained on a 7-point Likert-type scale from strongly agree to strongly disagree.

The EAO tool used in the study measures entrepreneurial attitudes using the following attitude subscales (Robinson *et al.*, 1991):

- Perceived self-esteem in business (SE), pertaining to the self-confidence and perceived competency of an individual in conjunction with his or her business affairs.
- Perceived personal control of a business (PC), concerning the individual's perception of control and influence over his or her business.
- Need for Achievement in business (ACH), referring to concrete results associated a business venture.
- Innovation in business (INN), relating to perceiving and acting upon business activities in new and unique ways.

Each EAO item on the attitude sub-scales was scored using a ten-point strongly-disagree to strongly-agree scale.

Data was collected over four semesters (Fall 2015 – Spring 2017). 575 students participated. Pre- and post-tests were conducted with both undergraduate and MBA students who were taking introductory level courses in entrepreneurship at a large teaching university in the western US. The undergraduate courses were designed to teach using a more practical orientation, while the MBA classes were designed with a more theoretical orientation. The data was collected anonymously by the instructors, and the information was then exported after each semester into electronic spreadsheet format. The statistical processing was carried out first with Minitab, and then using Regression Analysis of Time Series (RATS) software to do cross-sectional analysis. Since our data does not involve time series, we did not check for cointegration. Descriptive statistics were used to determine the relationships between EI and EA. The Pearson correlation coefficient was used to measure correlation between these two variables.

C. Sample and Participant Selection

Using a convenience sample, 575 students were asked to complete pre- and post-tests as part of their coursework in entrepreneurship courses. 166 of these were graduate students. These courses were introductory survey courses in entrepreneurship.

Out of the 575 students, 196 of them completed both the pre- and post-tests. 74 of these were graduate students. Some of the students chose not to complete both the EAO and EI assessments. We chose to include the 160 students in the sample who completed both assessments with no missing responses. Those meeting these criteria included 61 graduate students and 99 undergraduate students. Of the 160 total students, 26.25% were female and 73.75% were male.

D. Analysis

Surveys were carried out as a class exercise in each of the participating courses. Students filled in questionnaires on-line at both the beginning and end of the semester. Participation was voluntary and anonymous to the researchers. All data were anonymous. The questionnaire was developed based on current surveys from the literature (Robinson *et al.*, 1991, Kolvereid and Moen, 1996) and consisted of questions based on the measurement of the EAO, using its four subscales and the measurement of EI using the Kolvereid scale. Students used a unique identifier and password known only to them in filling out the survey in order to match data sets between the pre- and post-test. Additional demographic questions included course section, semester, instructor, age, and gender.

Correlational analysis, using the Pearson r , was used to see if there was a correlation between EA and EI to verify if there is two-way relationship between EA and EI.

IV. Results

Summary statistics of the sample are included in tables 1 and 2. Table 1 describes the summary statistics for the measurement of EA. Table 2 describes the summary statistics for the measurement of EI.

Table 1: Data Description and Summary Statistics of All Students for Pre- and Post-Tests of the Four EA Sub-Scales. Sample Period: Fall 2015-Spring 2017 Semesters

Variables	Mean	Standard Error	Minimum	Maximum
Pre-test EA Self Esteem (SE) in Business Score	71.963750	9.755827077	43.1	93.6
Pre-test EA Self Esteem (SE) in Business Score	75.160000	9.292204077	48.6	96.7
Pre-test EA Perceived Personal Control (PC) of a Business Score	66.321250	10.148051134	39.4	93.4
Pre-test EA Perceived Personal Control (PC) of a Business Score	70.757500	10.251513464	37.8	95.0
Pre-test EA Achievement (ACH) in Business Score	77.456875	9.841048813	36.8	97.5
Pre-test EA Achievement (ACH) in Business Score	80.575625	8.614998964	57.2	100.0
Pre-test EA Innovation (INN) in Business Score	67.793750	9.956696729	30.0	96.5
Pre-test EA Innovation (INN) in Business Score	70.630000	9.623763827	32.6	93.2

Table 2: Data Description and Summary Statistics for Pre- and Post-Test Entrepreneurial Intent Scores (Kolvereid Method)

Variables	Mean	Standard Error	Minimum	Maximum
Pre-test	45.825000	19.299216265	8.0	80.0
Post-test	52.887500	19.651039789	8.0	80.0

A. Correlation

A correlational analysis was run separately for undergraduate and MBA students on both the pre-test and post-test data. The data analysis indicated a significant positive correlation between all but one of the four subscales of the EAO and the Kolvereid EI scale for the undergraduate students. However, the data indicated a lesser, but still positive correlation between the change in the four subscales of the EAO and the Kolvereid EI scale for the MBA sample. The proportion of variability was explained by using the square of the regression coefficient, r^2 , which is known as the coefficient of determination.

Table 3: Pearson Correlation of Pre-Test of EI and EA Scores - for Undergraduate Students (N=99) who Completed Both Pre- and Post-Tests

Pre-test EA	Pre-test EI	r^2
Self Esteem Score (SE)	$P < 0.0065$	0.0739
Personal Control Score (PC)	$P < 0.0001$	0.2280
Achievement Score (ACH)	$P < 0.0001$	0.2897
Innovation Score (INN)	$P < 0.0001$	0.2987

Table 4: Pearson Correlation of Post-Test of EI and EA Scores - for Undergraduate Students (N=99) who Completed Both Pre- and Post-Tests

Post-test EA	Post-test EI	r^2
Self Esteem Score (SE)	$P < 0.0008$	0.1102
Personal Control Score (PC)	$P < 0.0001$	0.3561
Achievement Score (ACH)	$P < 0.0001$	0.3383
Innovation Score (INN)	$P < 0.0001$	0.3933

The coefficient of determination, was as low as $r^2 = 7\%$ in the pre-test, and as high as $r^2 = 39\%$ in the post-test for undergraduate student sample, with most in the 20% to 40% range. All of the r^2 increased for each of the EA subscales in the undergraduate sample.

For the MBA sample (see Tables 5 and 6) the coefficient of determination ranged from a low of $r^2 = 7.25\%$ to a high of $r^2 = 34.32\%$ in the pre-test, while the post-test ranged from a low of $r^2 = 7.04\%$ to a high of $r^2 = 29.9\%$. Particularly, this shows a decrease in the MBA sample of Self Esteem EA r^2 scores from 7.25% in the pre-test to 7.04% in the post-test. While all of the other EA subscale r^2 post-test scores showed an increase, the r^2 scores were all below the 33.33% threshold expected in Hypothesis 1b.

Table 5: Pearson Correlation of Pre-Test of EI and EA Scores - for MBA Students (N=61) who Completed Both Pre- and Post-Tests

Pre-test EA	Pretest EI	r^2
Self Esteem Score (SE)	$P < 0.035$	0.0725
Personal Control Score (PC)	$P < 0.0001$	0.1680
Achievement Score (ACH)	$P < 0.0001$	0.1793
Innovation Score (INN)	$P < 0.0001$	0.3432

Table 6: Pearson Correlation of Post-Test of EI and EA Scores - for MBA Students (N=61) who Completed Both Pre- and Post-Tests

Post-test EA	Post-test EI	r^2
Self Esteem Score (SE)	$P < 0.0388$	0.0704
Personal Control Score (PC)	$P < 0.0001$	0.2400
Achievement Score (ACH)	$P < 0.0001$	0.2626
Innovation Score (INN)	$P < 0.0001$	0.2995

We then checked to see if our dependent variables have the same finite variance. We wanted to understand whether the relationship between the variables stayed the same at all points. We checked to see if the variance of the errors were constant. While there was significant standard deviation in the data, the sample sizes for each of the samples were large enough to ensure that the correlations were significant.

B. Support for the Hypotheses

As the results indicate, *Hypothesis 1* was supported in both the undergraduate and MBA samples with the exception of one EAO subscale (Self-Esteem) in the pre-test. *Hypothesis 2* was supported in the undergraduate sample, post-test analysis with the EAO Innovation ($r^2 = 39.33\%$), Achievement ($r^2 = 33.83\%$), and Personal Control ($r^2 = 35.61\%$) subscales but not on the Self-Esteem subscale ($r^2 = 11.02\%$).

Results for *Hypothesis 2* in the MBA sample were well below expectations as all of the post-test r^2 scores were below the 33.33% threshold. We even found that the post-test EAO Self-Esteem r^2 score decreased by 0.21% and the Innovation r^2 score decreased by 4.37% as compared to the pre-test.

V. Discussion

A. Theory of Planned Behavior

Krueger *et al.* (2000, p. 414) have stated that “a strong intention to start a business should result in an eventual attempt, even if immediate circumstances such as marriage, child bearing, finishing school, a lucrative or rewarding job, or earthquakes may dictate a long delay.” The TPB suggests that EA, in addition to one’s subjective norms and perceived behavioral control, influence one’s intent, which then influences one’s entrepreneurial behavior. The results of this analysis question whether a “long delay” described by Krueger *et al.* (2000) impacts the eventual entrepreneurial attempt (or behavior). There was a significant difference between changes in pre-test and post-test results for undergraduate and MBA students.

Results for *Hypothesis 1* support the TPB model in that EA and EI are linked from a correlation viewpoint for both undergraduate and MBA students who took their first entrepreneurship course. Conversely, results for *Hypothesis 2* were different for MBA students as compared to undergraduate students. While the undergraduate students showed post-test r^2 scores above the 33.33% threshold for the EA subscales of Personal Control, Achievement and Innovation, all of the MBA r^2 EA subscale scores were under 30%. We are still unsure what means govern this effect. There is a difference between

MBA and undergraduate students and how they reported their entrepreneurial attitudes before and after taking an introductory entrepreneurship course. Why are there differences between the results of the undergraduate and MBA students? This discrepancy may be due to the teaching methods used. The MBA students were taught from a more theoretical framework, whereas the undergraduate students were taught from a more experiential framework. This may indicate that differences in teaching methodology between human capital and entrepreneurial self-efficacy have different outcomes on EA. If the same teaching methods were used to teach entrepreneurship to both of these groups, there may have been a different result for *Hypothesis 2* for the MBA students. Yet, as Piperopoulos and Dimov (2015) stated, “It would be naïve to expect that all entrepreneurship courses should be taught in a practically oriented mode, as this may well not be feasible (due for example to resource limitations) and/or appropriate due to the content/context the course wishes to cover” (p. 983). That being said, there was less impact on MBA students in terms of positive EA change.

Apart from teaching orientation, are there other differences between these two types of student. One difference is the amount of prior work/industry experience. We may infer, if one accepts the TPB, that there may be a difference in subjective norms or the perception of behavioral control for students after they have graduated with an undergraduate degree and then return for graduate studies. This questions whether work experience after receiving an undergraduate degree has an influence on one’s subjective norms, as these relate to attitudes toward entrepreneurial behavior. If there is a correlating relationship between EA and EI, as inferred by *H1*, the TPB suggests that the other two factors (Subjective Norms and Perceived Behavioral Control) may be affected by the differences between undergraduate and MBA students.

B. Differences Between EA Subscale Results

There was a strong *Pearson correlation* between EI scores and the EA subscale measures of the need for Personal Control in business, the need for Achievement in business, and the attitude towards Innovation. However, the coefficient of determination results indicated that the measure of EA towards self-esteem in business was less influenced by the entrepreneurship courses taught.

What is different about self-esteem as compared to the other subscale measures? Is there something about the teaching practices used in entrepreneurship education that diminishes the entrepreneurial self-esteem of post-secondary students? In an introductory entrepreneurship course, there may be a realization among some students that becoming an entrepreneur is not something that they want to pursue (von Graevenitz *et al.*, 2010, pp. 98-9). This realization would imply that one’s self-esteem in becoming an entrepreneur would diminish.

Conversely, an introductory entrepreneurship course for some students may help them to realize that entrepreneurship is something that they really enjoy (von Graevenitz *et al.*, 2010, p. 91). In this particular sample of students, the undergraduate students taking these courses were a combination of students from different schools/colleges/faculties from across the university. Compared to MBA students, undergraduate students have a greater ability and option to change their majors and/or complete minors in other/new disciplines.

The implication for education is that by influencing either EA or EI, there may be a resulting influence on the other measure. We infer that, as the attitude change literature points to increasing uses of experiential education teaching methods as key components to positively influencing entrepreneurial attitudes in post-secondary students, these same teaching methods may suggest influencing a higher EI. The practical teaching orientation, typically using experiential education teaching methods based on engaging entrepreneurship student’s entrepreneurial attitudes (cognitively, emotionally, and

behaviorally), may not only influence one's entrepreneurial attitude, but this correlation suggests that these methods may also influence their entrepreneurial intent.

Our results support the original proposition, in that there is a strong relationship between EA and EI. The results further indicate that while EA may be a significant precursor to EI, as proposed in the TPB model, EI may also be a precursor to EA. Although attitude may be a critical element in developing EI, the correlation suggests that methods to increase student EA may also need to be considered as important parts of future entrepreneurial educational programming and andragogy development.

VI. Future Research

Many questions are raised by the results of this research to be answered with further analysis of the data and additional data gathering. First, further analysis of the pre-test, post-test differences in both the EI and EA need to be explored to establish the impact and directionality of changes based on the educational experiences. Addressing the differences in teaching methods and the use of a separate control group may also explain some of the discrepancies found between the MBA and undergraduate students. Additional research should also explore more how EI may be a precursor to EA. An exploration into particular methodologies and teaching methods for entrepreneurship education that have greater impacts on both EA and EI, may help guide the andragogy. Finally, the development of positive "Subjective Norms" and "Perceived Behavioral Controls" in entrepreneurship educational programming should be studied to assess their unique impact on EI and ultimately entrepreneurial behavior.

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