Examining the Relationship between Personality and Entrepreneurial Attitudes: Evidence from U.S. College Students

Michael L. Harris  
East Carolina University  
East Fifth Street  
Greenville, North Carolina 27858  
Email: HarrisMI@ecu.edu

Shanan G. Gibson  
East Carolina University  
East Fifth Street  
Greenville, North Carolina 27858  
Email: Gibsons@ecu.edu

Todd D. Mick  
Metropolitan Community College of Kansas City  
3200 Broadway  
Kansas City, Missouri 64111
Abstract

The current study examined the degree to which seven personality variables, creativity, self efficacy, openness to experience, risk tolerance, perseverance, variety seeking, and strong judgment were correlated with entrepreneurial attitudes in U.S. college students. The Entrepreneurial Attitude Orientation (EAO) was used to measure entrepreneurial attitudes based on the constructs of achievement, innovation, personal control and self esteem. Findings indicated that with the exception of risk avoidance, all of the personality constructs correlated with at least two of the entrepreneurial attitudes. However, patterns of correlation were not consistent across male and female students. In particular, creativity and entrepreneurial self esteem were found to significantly differ along gender lines, with males having higher creativity scores and females possessing stronger levels of entrepreneurial self esteem.

Introduction

As indicated in various reports from the Global Entrepreneurship Monitor (GEM) entrepreneurs are constantly pursuing new business ventures based on both opportunity and necessity. Specifically, entrepreneurship has long been considered a powerful source of economic growth and innovation (Reynolds & White, 1997). The current study proposes to examine the relationship between various personality constructs and entrepreneurial attitudes. The goal is to determine not only if these personality traits are correlated with entrepreneurial attitudes, but also if any gender differences exist.

The rest of this manuscript is organized as follows: a review of the role of personality...
constructs in entrepreneurship research, followed by a description of entrepreneurial attitudes as measured by the Entrepreneurial Attitude Orientation scale (EAO). Next, consideration is given to the role of gender in entrepreneurship, and finally three hypotheses are put forth for examination. This background information is followed by a discussion of the methods utilized in the current study, the findings of our research, and lastly a section discussing the implications of our findings and plans for future research.

**Personality, Attitudes and Entrepreneurship**

**Entrepreneurship and Personality**

Management research has made extensive use of psychological personality variables as predictors for constructs such as leadership, organizational behavior, and entrepreneurship. According to Rauch and Frese (2007a), personality variables serve an important role in the development of a consistent entrepreneurship theory. As such, they call for the inclusion of entrepreneurship as a more “active participant” in the revival of personality research (p. 44). The current study makes an effort to do that by examining the role of individual differences in relation to entrepreneurial attitudes.

Prior research has examined numerous personality constructs in the field of entrepreneurship, and various traits have been linked to business creation and success (Rauch & Frese, 2007a). McClelland (1961) and Collins, Hanges & Locke (2004) asserted that need for achievement is an entrepreneurial trait and positively correlated with business success (Rauch & Frese, 2007b), while Gasse (1985) and Hansemak (2003) found that entrepreneurs often possess
a greater internal locus of control. Research also suggests that entrepreneurs are confident
(Robinson, 1987), have a high level of self esteem and self efficacy (Krueger & Brazeal, 1994;
Erickson, 2002; Rauch & Frese, 2007a; Frazier & Niehm, 2006), demonstrate greater initiative
(Bateman & Grant, 1993; Stewart, Watson, Carland & Carland, 1999), and posses a more
positive attitude toward risk and autonomy (Douglas & Shepherd, 2002; McMullen & Shepherd,
2006; Rauch & Frese, 2007a). In addition, creativity (Feldman & Bolino, 2000; Zampetakis &
Moustakis, 2006), innovation (Rauch & Frese, 2007b) and improvisation (Hmieleski & Corbett,
2006) have been linked to entrepreneurial intentions and business success.

Obviously there are numerous personality constructs that have been shown to have
potential for predicting either entrepreneurship or entrepreneurial success. The current paper will
focus on seven of these which have either shown promise in previous research in terms of being
associated with entrepreneurship or are constructs which are highly consistent with the
definitions of the entrepreneurial attitudes of interest.

**Creativity.** Creativity and innovation are often linked together and involve the willingness
to identify novel or unique ways of action (Patchen, 1965). De Bono (1996) defines creativity as
the formulation of something currently not available, while Feldman, Csikszentmihalyi and
Gardner (1994) believe that creative people are good at problem solving, posing new questions,
and identifying new products or services. As explained by Thompson (2004), creativity
underpins innovation and innovation underpins enterprise development. Early research by
Schumpter (1935) included creativity and innovation as core concepts for entrepreneurship.
Entrepreneurs have been noted for their ability to introduce new products or services into existing markets, as well as the identification of new markets and technologies (Rauch & Frese, 2007a).

Entrepreneurs face constant challenges, and creative thinking is often required to overcome various obstacles (Amabile, 1983). This explains why creativity (Zampetakis & Moustakis, 2006) and improvisation (Hmieleski & Corbett, 2006) are viewed as important constructs in entrepreneurship, and both can help predict new venture creation. Similarly, Rauch & Frese (2007b) found that entrepreneurs are more innovative than the general population, and innovativeness is positively correlated with business success. While creativity and innovation are interrelated, Rauch and Frese (2007a) believe that specific measures of creativity need to be studied more in entrepreneurship research.

*Self Efficacy.* Bandura’s (1997) construct of self efficacy is defined as people’s judgments of their capabilities to execute necessary behaviors to successfully achieve desired ends. It is not necessarily concerned with the skills or abilities one has, but rather with perceptions of what one can do with the skills and abilities one possesses. Self efficacy has both theoretical and practical implications for entrepreneurs because initiating a new venture requires the belief that one has the knowledge, skills, and abilities necessary to be successful. Entrepreneurial self efficacy has been found to be significantly related to both entrepreneurial intentions (Kickul & D’Intino, 2005) and new venture creation (Frazier & Niehm, 2006). Self efficacy is central to most human functioning, but because actions are based more on what people believe they can do than on what is objectively true, self efficacy should be a strong correlate of entrepreneurial attitudes.
Openness to Experience. Openness to experience is a personality dimension that characterizes someone who is intellectually curious and tends to seek new experiences and explore novel ideas. Someone high on openness can be described as creative, innovative, imaginative, reflective, and untraditional. Zhao and Seibert (2006) contend that the relationship between openness to experience and entrepreneurship has been well accepted for many years; they cite Schumpeter (1935/1976) as having argued that the defining characteristic of the entrepreneur is his or her emphasis on innovation. Others have noted the strong desire of entrepreneurs to be creative and to create something larger than themselves (Engle, Mah & Sadri, 1997). Starting a new venture is likely to require the entrepreneur to explore new or novel ideas, use his or her creativity to solve novel problems, and take an innovative approach to products, business methods, or strategies.

Risk Avoidance. A fourth characteristic frequently associated with entrepreneurs is the propensity for risk-taking. Risk taking, both personal and financial, is a traditional aspect of the definition of entrepreneurial activity (McClelland, 1961; entrepreneur, n.d.). Researchers have reported significant associations between risk tolerance and entrepreneurship (Chattopadhyay & Ghosh, 2002), and Stewart and Roth (2001) concluded that risk-tolerant individuals are more likely to choose entrepreneurial careers versus risk-avoidant individuals who are likely to choose traditional, organizational employment. In addition, research by Sexton and Bowman (1983, 1984) showed that a high propensity for risk-taking was a characteristic that delineated
entrepreneurs and non-entrepreneurs. Stewart and Roth (2001) performed a meta-analysis of 12 studies published between 1980 and 1999, showing that the risk propensity of entrepreneurs is greater than that of managers. Based on this body of research, risk avoidance should be negatively related to individual’s entrepreneurial attitudes.

Perseverance. The perceived ability to overcome adverse circumstances (Stoltz, 1997) has long been considered a requirement of entrepreneurship. According to Eisenberger and Leonard (1980) perseverance influences individuals’ courses of action, the level of effort individuals exhibit in their endeavors, and the endurance and resilience exhibited toward setbacks and failure (Gideon, Baron & Balkan, 2005). Markman (2007) proposes that the general ability to overcome adversity is a required competency in entrepreneurship because of the repeated obstacles and uncertain outcomes encountered. Supporting this contention, Gideon, Baron, and Balkan (2005) concluded that because individuals react differently to similar adversities, success in entrepreneurship contexts is determined by the extent to which individuals persevere despite what appear to be insurmountable obstacles, or adversities (Stoltz, 1997). Similarly, Locke and Baum (2007) consider perseverance to be among the motivating factors which are necessary for entrepreneurship. Their conceptualization of entrepreneurial motivation is synonymous with the concept of perseverance - an inner drive toward entrepreneurship goals that energizes, directs, and sustains new venture creation and growth.

Variety Seeking. Efforts to explain innovative behavior are now focused upon not only dispositional variables, but also the interaction of individual and situational variables (Burns,
The degree to which one has a high motivation to experience variation has been linked to many human behaviors, including consumerism (Mittelstaedt, Grossbart, Curtis & DeVere, 1976; Stanforth, 1995; Wahlers, Dunn, & Etzel, 1986; Workman & Johnson, 1993), food preferences (Potts & Wardle, 1998), and internet preferences (Slater, 2003), among others. Pre-dating the term variety seeking – and typically considered the primary direct source of it – is the concept of sensation seeking, or desire for “varied, novel and complex sensations and experiences, and willingness to take physical and social risks for the sake of such experiences” (Zuckerman, 1979, p. 10). This definition is in many ways akin to how we typically describe an entrepreneur, as someone who is willing to undertake risk in the process of beginning a new business enterprise. Variety seeking is also thought to develop from indirect or situational sources, and this too is consistent with many characterizations of new venture creation. Specifically, not all motivations for variation arise from an internal preference for change, but rather some develop from the desire to solve a problem, or as reactions to changes in the environment (Van Trijp, 1995). For some entrepreneurs the motivation to attempt something new is very much a response to situational factors including dissatisfaction with current work, inadequacies identified in current products, or other unique opportunities which present themselves.

Strong Judgment. Strong judgment refers to the process of collecting information prior to decision making, as opposed to acting rashly and without knowledge. Very few successful entrepreneurs begin their enterprises without thoughtful consideration of many factors related to their goals. Data-driven information processing is typically associated with novel decision
situations (Louis & Sutton, 1991; Walsh, 1995), and the decision to create a new venture is a novel situation for most individuals. For many entrepreneurs data collection takes the form of accumulating confirming and disconfirming evidence via intensive searching for information related to their efforts (Learned, 1992). Baron (2000) has found that entrepreneurs are less likely to engage in counterfactual thinking than are others and that this leads to fewer decisions based on heuristics or upon poor judgment. Bo Peabody, a poster-child of the multi-millionaire internet entrepreneur, argues that while some success stories are predicated on being lucky, many others are based upon being smart (Farrell, n.d.). Indeed Shook, Priem, and McGee (2003) undertook a review of the literature on venture creation and individual attributes associated with it and determined that individual judgment was a particularly important future direction for research on the role of enterprising individuals in venture creation because sound entrepreneurial judgment is required in each phase of venture creation process.

**Entrepreneurial Attitudes**

An attitude is “a complex mental state involving beliefs and feelings and values and dispositions to act in certain ways” (attitude, n.d.). Attitudes tend to change across time and situations through an interactive process with the environment, and can offer a prediction about a person’s future actions (Carlson, 1985). The work of Robinson, Stimpson, Huefner, and Hunt (1991) was one of the first to use an attitudinal scale to predict entrepreneurial activity. They designed the EAO model to measure entrepreneurial attitudes based on the constructs of achievement, innovation, personal control and self esteem. Achievement in business refers to
concrete results associated with the start of a business; personal control of business outcomes concerns one’s perception of control or influence over his or her business; innovation in business relates to acting on business activities in novel ways; and perceived self esteem in business relates to self confidence with regard to one’s business affairs.

The theory of planned behavior argues that intention is an antecedent to behavior (Azjen, 1991), and prior studies have shown that intentions play a crucial role in understanding the entrepreneurial process (Shapero & Sokol 1982; Krueger, 1993; Krueger & Brazeal, 1994). Shapero and Sokol (1982) argue that attitudes are linked with entrepreneurial intentions, especially in perceived venture feasibility and desirability. Additional research found that positive entrepreneurial exposure can impact intentions (Krueger, 1993), though this may vary according to individual characteristics and situations (Krueger & Brazeal, 1994).

**Gender and Entrepreneurship**

According to the GEM’s 2006 *Report on Women and Entrepreneurship* (Allen, Langowitz & Minniti, 2007) men are twice as likely to engage in entrepreneurial activities as women on a global scale, indicating the existence of a real gender gap. Similarly, past research has suggested that women are faced with greater obstacles when engaging in entrepreneurial activities.

Some of the specific challenges women may face as they pursue business ownership include access to fewer resources and role models (Hisrich & Brush, 1987; Carter, 2000, Thomas, 2001; Marlow & Patton, 2005), as well as less managerial experience and technical
expertise (Chaganti & Parasuraman, 1996; Jones & Tullous, 2002). In addition, women often have less of a credit history (Shaw, Carter & Brierton, 2001), often causing them greater difficulty in obtaining loans (Verheul & Thurik, 2001; Coleman, 2002). Research has also indicated that women may less interested in business ownership (Matthews & Moser, 1995; Kourilsky & Walstad, 1997) and have less self efficacy for entrepreneurship (Chen, Greene & Crick, 1998). Unfortunately, these factors can cause women to not be taken as seriously and afforded the same level of respect as their male counterparts (Woldie & Adersua, 2004).

While any of these aforementioned factors may impede their progress in achieving entrepreneurial success, entrepreneurship can be an important source of future employment for women. Perhaps a more in-depth examination of possible links between personality and attitudes can lead to a better understanding of real or perceived gender differences towards entrepreneurship.

Hypotheses

Considerable past research has indicated a strong relationship between certain personality characteristics and attitudes. Therefore, we offer the following hypotheses:

Hypothesis 1: Significant positive correlations are anticipated between the personality constructs of creativity, self efficacy, openness to experience, perseverance, variety seeking, and strong judgment and the four entrepreneurial attitudes measured.

Hypothesis 2: A significant negative relationship is anticipated between risk avoidance and all four of the entrepreneurial attitudes.

Hypothesis 3: It is further anticipated that these relationships will be demonstrated for all participants; as the personality constructs in question are not known to be differentially distributed across male and female populations.
Method

Participants

Participants were 307 students enrolled at multiple colleges and universities (37% males, 63% females), ranging in age from 17 to 57 years old, with an average age of 25.3 years. The schools surveyed were located across the U.S., with the common denominator being an existing course curriculum related to entrepreneurship. Although the students were solicited by faculty teaching courses related to entrepreneurship, small business management, or other topics related to business ownership, they were not characterized by a common major/concentration within a college of business, per se.

Procedure

During the 2007-08 academic year, faculty teaching undergraduate courses received a letter requesting their voluntary participation. The stated purpose of the study was to examine the relationship between personality variables and entrepreneurial attitudes. Faculty members have been asked to request that their students complete an 88-item anonymous online survey. Survey completion was entirely voluntary and no identifying information was recorded.

Measures

We measured entrepreneurial attitudes with the EAO survey instrument (Robinson et al., 1991), along with additional measures of creativity, self efficacy, openness to experience, and risk tolerance (Goldberg, Johnson, Eber, Hogan, Ashton, Cloninger & Gough, 2006). The EAO is theoretically well grounded and provides a composite score based on four attitude subscales: 1)
Achievement in business (Cronbach’s alpha = .84), 2) Personal control of business outcomes (Cronbach’s alpha = .70), 3) Innovation in business (Cronbach’s alpha = .90), and 4) Self-esteem in business (Cronbach’s alpha = .73). In an early validation of the EAO the four subscales were shown to produce 77% accuracy in predicting entrepreneurship (Robinson et al., 1991).

**Analyses**

The primary goal of the current study is to expand upon our understanding of the relationship between personality and entrepreneurial attitudes among U.S. college students. Consistent with this, the variables of interest were examined utilizing correlation analyses. Because prior research has indicated some differences in the strength of entrepreneurial attitudes among male and female college students (Ede, Panigrahi & Calcich, 1998; Harris & Gibson, 2008), the patterns of correlation will also be examined based upon gender.

**Results**

In order to begin to assess the degree to which these personality constructs are related to the entrepreneurial attitudes of interest, bivariate correlations were computed for each of the attitudes with each of the personality variables for both nationalities. Table 1 shows the results of these analyses, both at the sample population level, as well as broken down by gender.

Support for our hypotheses was mixed. With regard to Hypothesis 1, significant positive correlations are anticipated between the personality constructs of creativity, self efficacy, openness to experience, perseverance, variety seeking, and strong judgment with the four entrepreneurial attitudes. Self efficacy and strong judgment were significantly correlated with all
four variables; however, the relationship with entrepreneurial self esteem was not in the direction posited. Creativity, openness to experience, perseverance, and variety seeking showed similar patterns of correlation; each was positively correlated with entrepreneurial achievement and negatively correlated with entrepreneurial self esteem. The relationship between risk avoidance and all four of the entrepreneurial attitudes was not significant; this was inconsistent with Hypothesis 2.

Table 1. Correlations between Entrepreneurial Attitudes and Personality Constructs.

<table>
<thead>
<tr>
<th></th>
<th>Self Efficacy</th>
<th>Creativity</th>
<th>Openness to Experience</th>
<th>Risk Avoidance</th>
<th>Perseverance</th>
<th>Variety Seeking</th>
<th>Strong Judgment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurial Innovation</td>
<td>.14*</td>
<td>.02</td>
<td>-.02</td>
<td>-.06</td>
<td>.01</td>
<td>-.04</td>
<td>.26*</td>
</tr>
<tr>
<td>Male Students</td>
<td>.32*</td>
<td>.20*</td>
<td>-.03</td>
<td>-.15</td>
<td>.02</td>
<td>.08</td>
<td>.35*</td>
</tr>
<tr>
<td>Female Students</td>
<td>.03</td>
<td>-.08</td>
<td>-.01</td>
<td>-.01</td>
<td>.01</td>
<td>-.11</td>
<td>.22*</td>
</tr>
<tr>
<td>Entrepreneurial Achievement</td>
<td>.28*</td>
<td>.31*</td>
<td>-.20*</td>
<td>-.05</td>
<td>.34*</td>
<td>.31*</td>
<td>.27*</td>
</tr>
<tr>
<td>Male Students</td>
<td>.12</td>
<td>.26*</td>
<td>.19*</td>
<td>-.15</td>
<td>.34*</td>
<td>.31*</td>
<td>.24*</td>
</tr>
<tr>
<td>Female Students</td>
<td>.35*</td>
<td>.32*</td>
<td>.22*</td>
<td>.02</td>
<td>.33*</td>
<td>.30*</td>
<td>.29*</td>
</tr>
<tr>
<td>Entrepreneurial Personal Control</td>
<td>.18*</td>
<td>.05</td>
<td>.02</td>
<td>.03</td>
<td>.05</td>
<td>.03</td>
<td>.22*</td>
</tr>
<tr>
<td>Male Students</td>
<td>.09</td>
<td>-.05</td>
<td>-.17</td>
<td>-.12</td>
<td>-.06</td>
<td>-.03</td>
<td>.27*</td>
</tr>
<tr>
<td>Female Students</td>
<td>.24*</td>
<td>.12</td>
<td>-.11</td>
<td>.06</td>
<td>.12</td>
<td>.07</td>
<td>.27*</td>
</tr>
<tr>
<td>Entrepreneurial Self Esteem</td>
<td>-.21*</td>
<td>-.31*</td>
<td>-.14*</td>
<td>-.03</td>
<td>.24*</td>
<td>-.25*</td>
<td>-.13*</td>
</tr>
<tr>
<td>Male Students</td>
<td>-.09</td>
<td>-.12</td>
<td>-.13</td>
<td>.06</td>
<td>-.30*</td>
<td>-.16</td>
<td>-.04</td>
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<tr>
<td>Female Students</td>
<td>-.27*</td>
<td>-.38*</td>
<td>-.17*</td>
<td>.01</td>
<td>-.21*</td>
<td>-.29*</td>
<td>-.16*</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

Table 2 provides the descriptive statistics for the four entrepreneurial attitudes and the personality variables for both male and female students, as well as the t-tests comparing male and females mean scores on the variables of interest. Contrary to Hypotheses 3, creativity and entrepreneurial self esteem were found to significantly differ along gender lines; while males had higher creativity scores, females appeared to possess stronger levels of entrepreneurial self
Discussion & Implications

Contrary to expectations, all seven of the personality constructs were not found to be significantly correlated with all four of the entrepreneurial attitudes of interest. However, with
the exception of risk tolerance (which showed no relationship with any of the variables), all of the personality variables were found to be associated with at least two entrepreneurial attitudes.

Self efficacy and strong judgment appear to be the personality constructs with the greatest relationship to the entrepreneurial attitudes, as they were related to all four. Likewise creativity, openness to experience, perseverance, and variety seeking were all found to be significantly correlated with entrepreneurial achievement and entrepreneurial self esteem, but not with entrepreneurial innovation or entrepreneurial personal control. In addition to the general patterns of relationship observed, some interesting distinctions presented in regards to the patterns of correlation for male and female students.

One example of said difference is in relation to self efficacy. Although self efficacy was related to women’s entrepreneurial achievement, self control, and self esteem, it was correlated only with entrepreneurial innovation among men. If high levels of self efficacy help entrepreneurs to overcome setbacks, snags, and obstacles, and it strengthens their conviction that they can succeed (Bandura, 1997) then the relationship to achievement is especially important and should contribute to women not only entering the entrepreneurial realm, but also to their ability to survive long term.

Strong judgment was more consistent in its pattern across males and females. Judgment is an important personality construct as it plays a critical role in decision making. Successful entrepreneurs are often viewed as very good decision makers, particularly in an environment of uncertainty, and as was pointed out by Shook, Priem, and McGee (2003), strong judgment is
manifest in every stage of the venture creation process. Sound judgment can allow entrepreneurs to succeed in situations where others are unable. As suggested by Shane (2003), entrepreneurs seem to have the special ability to identify opportunities that others cannot recognize, though at times they can make judgments before the opportunity is fully evaluated (Busenitz, West, Sheppard, Nelson, Chandler & Zacharakis, 2003).

Openness to experience, variety seeking, and perseverance were all significantly related to entrepreneurial achievement for both males and females; however the correlation between openness to experience and entrepreneurial self esteem reached significance for females only. Within both the male and female samples, self esteem scores were negatively correlated with openness to experience, variety seeking, and perseverance. On the surface this may seem like a contradiction since individuals with high entrepreneurial self esteem would generally be thought to embody these other traits. However, when examined closer it may indicate that those with entrepreneurial self esteem have a more realistic understanding of the expectations associated with business ownership, and a keen understanding of the entrepreneurial process. This may indicate that these factors supersede self esteem and entrepreneurial success requires a great reliance on a creative thought process that allows for the best judgment of business opportunities. Entrepreneurs are often described as being broadminded and introspective; they reflect on their own thinking and ideas to determine potential problems and opportunities. While entrepreneurs must be open to new business ideas and concepts, it is through their creativity that they best develop solutions to take advantage of existing opportunities (Zhao & Seibert, 2006).
This can also help explain why six of the personality variables were significantly related to entrepreneurial achievement. As pointed out by Sternberg (2004), successful entrepreneurs often have a blend of analytical, creative and practical intelligences. Busenitz and Arthurs (2007) argue that entrepreneurs need both entrepreneurial and dynamic capabilities in order to identify business opportunities and arrange organizational resources to take advantage of these opportunities. Achievement is often viewed as the ultimate sign of business success and requires the proper mix of entrepreneurial talent and temperament.

Creativity was correlated with entrepreneurial achievement for both men and women, but with entrepreneurial innovation for males only, and with entrepreneurial self esteem for women only. Past research has linked creativity with innovation and innovation with enterprise development (Thompson, 2004), and many entrepreneurs have been lauded for their ability to improve innovation in the marketplace (Bosma & Harding, 2006). Since creativity and innovation were only correlated for male students, and male students had significantly higher creativity scores, an interesting possibility exists. Our results seem to indicate that female students, while entrepreneurial in general, may lack confidence in their creative abilities and/or be less inclined to enter into innovative ventures. This is consistent with past research that has shown women are particularly attracted to the retail and service sectors because of low entry barriers. While Robb (2002) and Marlow and Patton (2005) suggests that this type of industry segregation may result from the resource restraints of female entrepreneurs, it may also result from personal differences between men and women.
Perhaps entrepreneurship education can help bridge a real or perceived gender gap in creativity and innovation. Sternberg (2004) suggests the amount of relevant knowledge individuals have at their disposal is one of the most important links to creativity. If the creative process involves forming novel ideas and identifying market opportunities, this serves as a potentially useful avenue for training students or nascent entrepreneurs to become more entrepreneurial in orientation. For example, teaching students to make connections among seemingly unrelated pieces of information can be a useful strategy. This is a task that students can be encouraged to perform, and which may lead to increased capability of entrepreneurial creativity. Similarly, Hmieleski and Corbett (2006) promote the use of simulations and role-playing exercises in entrepreneurship courses to help improve improvisational skills. Increased creativity can help nascent entrepreneurs learn how to adjust their business plans to better take advantage of opportunities and solve unexpected problems.

Tolerance for risk was the only variable to show a completely consistent correlation pattern for males and females; as with the aggregate, it did not relate to any of the entrepreneurial attitudes. According to Stewart and Roth (2001) the role of risk tolerance in entrepreneurship has been difficult to definitively conclude because empirical studies examining the relative risk-taking propensities of entrepreneurs have produced conflicting findings. For instance, Brockhaus (1980) found no risk propensity differences between entrepreneurs and managers. More recently, Miner and Raju (2004) meta-analyzed 14 studies not previously considered by Stewart and Roth (2001), and came to a very different conclusion, that entrepreneurs are more risk-averse than are
managers. They conclude that the role of risk propensity in entrepreneurship remains unresolved and is an area for further inquiry. Consistent with the Miner and Raju findings, Xu and Ruef (2004) find that entrepreneurs are significantly more risk-averse than the general population with regard to financial decisions. Our findings support what appears to be an emerging consensus that risk tolerance is not necessarily associated with entrepreneurial attitudes or actions.

Fortunately, what may be our most significant finding is the high degree of similarity between male and female students. Despite some gender differences, more similarities existed on both attitudinal and personality scores. Although past research has shown that women may be less confident in their entrepreneurial skills and generally less likely to actually start a business (Allen, Langowitz & Minniti, 2007), hopefully change is on the way. Our findings reinforce Brush’s point (1998) that differences related to gender alone are not conclusive and that a better understanding of entrepreneurial success requires consideration of the combination of personality traits, attitudes, and outside factors such as economic necessity. Perhaps women, especially young adults, are just as inclined to start a business and will do so in the future, particularly as they are exposed to a greater number of successful role models.

A greater insight into the entrepreneurial temperament of college students can be used to develop effective entrepreneurship education programs, whether these programs are offered in a College of Business or through continuing education courses at local community colleges. As suggested by Katz (2007), entrepreneurship education can increase one’s competency and ability to become a successful business owner. Similarly, research shows that entrepreneurial cognition
(Palich & Bagby, 1995), talent (Thompson, 2004) and perspective (Kuratko, 2005) can be improved through education and training programs. These programs, particularly ones with experiential activities, can help enhance students’ self efficacy towards entrepreneurship and allow them to view business ownership as a viable option (Florin, Karri & Rossiter, 2007). Many young adults are interest in entrepreneurship and those with post-secondary academic experience are more likely to actually engage in entrepreneurial activities (Minniti, Bygrave & Autio, 2005).

**Future Research**

This research provides implications at both the theoretical and practical levels. From a theoretical perspective, our findings support the contention that psychological and attitudinal characteristics play an important role in understanding the entrepreneurial process and can influence the number of would-be entrepreneurs (Hisrich, Langan-Fox & Grant, 2007). Successful entrepreneurs must be confident, creative, and possess strong judgment to adapt to the changing markets, products, and technology in the current business world. On the practical level, an individual’s personality is often a pre-cursor to one’s beliefs and attitudes, and a better understanding of the relationship between personality and attitudes known to predict entrepreneurial success can provide guidance for better training and mentoring young adults interested in entrepreneurship.

Research has shown that 80% of would-be entrepreneurs in the U.S. are between the ages of 18-34, making this a very important group for the future success of the national economy (Kuratko, 2005). The constantly changing business environment, in both the U.S. and in the...
global marketplace, will require the next generation of business professionals to utilize intellect, ingenuity, and forward thinking to develop appropriate strategies that capitalize on entrepreneurial opportunities. Future studies should continue to explore possible links between attitudes and personality in order to develop a more thorough entrepreneurial profile of the new generation of emerging entrepreneurs. In addition, to increase the generalizability of studies such as this, it is imperative that future samples of data be collected from current entrepreneurs so as to allow comparisons with would-be entrepreneurs and empirically formulate the proposed profile to be developed. This information can then be used to help better prepare them for the challenges of entrepreneurial growth and development. Ultimately a comprehensive model of “who” the entrepreneur is – one that combines individual differences (gender, nationality, education, prior exposure), psychological attributes (personality, attitudes), social attributes (social intelligence, social competence, support networks), and cognitive attributes (decision making styles, use of heuristics, information processing) – in a situational framework should be the goal of entrepreneurship research in academia.

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