

PREDICTING ENTREPRENEURIAL INTENTIONS: INCREMENTAL VALIDITY OF PROACTIVE PERSONALITY AND ENTREPRENEURIAL SELF- EFFICACY AS A MODERATOR

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ABSTRACT

Despite scholarly calls for exploring how individual difference variables interact to influence entrepreneurial intentions, two commonly cited theories (theory of planned behavior and the entrepreneurial event model) do not offer explicit considerations of which variables interact and how they function together to influence intention. Drawing from these intention-based models and extant empirical findings, we propose that a narrow personality characteristic, proactive personality, is more proximally related to entrepreneurial intentions than broader personality characteristics (e.g., FFM). More importantly, we also propose that proactive personality and entrepreneurial self-efficacy interact to predict unique variance in entrepreneurial intentions, whereby self-efficacy beliefs have stronger effects when proactive personality is high. Results supported our propositions and substantiated calls from the literature to examine interactional effects among antecedents of entrepreneurial intentions. We suggest that future intention-based models consider the interplay of personality characteristics and attitudes explicitly, particularly in narrow contexts such as entrepreneurship.

Keywords: Proactive personality, entrepreneurial intentions, self-efficacy

INTRODUCTION

While there exists a burgeoning literature base studying entrepreneurship and its antecedents, scholars increasingly call on scientists to integrate theoretical models in an attempt to consolidate and aid the progress of research investigating entrepreneurial intentions (Schlaegel & Koenig, 2014). Although there are many models purporting to describe the link between individual differences and intentions, we adopt a self-regulation focus by drawing from the theory of planned behavior (Ajzen, 1991), self-efficacy theory (Bandura, 1991), and most specifically, Shapero and Sokol's (1982) entrepreneurial event model (EE). There are obviously pitfalls in attempts to integrate multiple theories (e.g., fragmented theorizing or incoherence), however, it is imperative that scientists make clear the relationships and overlap between theories to aid in consolidating and comparing research findings. Starting with these intention-based models, we then incorporate meta-analytic findings to propose and test four hypotheses.

Despite the proliferation of research into broad personality traits (e.g., extraversion and conscientiousness) and various entrepreneur outcomes (Brandstatter, 2011; Owens, Kirwan, Lounsbury, Levy, & Gibson, 2013; Zhao & Seibert, 2006), proactive personality and entrepreneurial self-efficacy are much more narrow personality traits that have recently been explored in relation to entrepreneurial intentions. Given suggestions by scholars to focus more attention on context-specific predictors of entrepreneurial intentions, the motivation of the

current study is to shed light on how proactive personality and entrepreneurial self-efficacy interact to predict students' entrepreneurial intentions.

Individuals with a proactive personality are more attuned to both the environment and their adaptation or opportunities in it, manifesting as personal initiative to enact change (Crant, 1996). Individuals higher in entrepreneurial self-efficacy (ESE) hold more positive beliefs regarding their ability to carry out the requirements of starting and owning a business successfully (Boyd & Vozikis, 1994). We argue that the influence of ESE on entrepreneurial intentions is stronger when individuals are proactive because their tendency to affect environmental change sharpens their attention to beliefs regarding that change (ESE). When individuals are less proactive, the relationship between ESE and entrepreneurial intentions should be weaker as they are less inclined to identify and incorporate relevant information, such as capability beliefs, into their intentions.

In addition to investigating how ESE and proactive personality operate within the entrepreneurial event model's framework, another contribution of this study lies in providing empirical evidence to substantiate interventions in how higher education, institutions (incubators, accelerators, investor groups) and consultants train and develop potential entrepreneurs, a value that scholars note as increasingly important (Kuehn, 2008). Hence, there is great practical value in better understanding the interaction amongst individual difference variables on entrepreneurial intentions, and this understanding can inform how we work with potential entrepreneurs in the future.

Entrepreneurial Intentions

The importance of entrepreneurship has long been integral to the conceptualization of the American economic system. It is not uncommon to hear the terms innovation, development, and job creation as running themes of the United States' economic model for success. The idea of the U.S.A. as an ever-increasingly hotbed for start-ups and small-business creation may be misleading, however, as recent Gallup findings cast a shade over the veracity of those claims. In fact, Jim Clifton, Gallup's CEO, recently concluded that the United States ranks 12th in the world in terms of new business creation (Clifton, 2015). Furthermore, Clifton argues that innovation cannot replace the role that entrepreneurship plays in creating and sustaining jobs in America. Perhaps one way to encourage the growth of entrepreneurship lies in a better understanding of the factors that influence the critical first step in creating a business – entrepreneurial intentions.

Intentions to start, create, or own a business prior to launching or owning said business are broadly referred to as entrepreneurial intentions (EI). The intentions-behavior link has been detailed theoretically by Ajzen and colleagues for many decades (Ajzen, 1991). According to this theory of planned behavior, deliberate behavior often is preceded by the intention to engage in that behavior. This fact is not lost on scholars researching entrepreneurship, as entrepreneurial intentions are considered the fundamental first step in an individual's progression from idea to business creation (Bird, 1988; Krueger, & Carsrud, 1993). After all, before one could oversee their successful startup, one must first decide to start that business. For example, prospective entrepreneurs must perform many intentional activities such as locating resources/funds, refining a concept, and researching a market (Delmar & Shane, 2004). Although competing models have been applied to describe the entrepreneur process (e.g., Entrepreneur Event model; Shapero & Sokol, 1982), recent empirical investigations have demonstrated the intentions-behavior link in entrepreneurship to be rather robust (Kautonen, Gelderen, & Fink, 2015; Van Gelderen,

Kautonen, & Fink, 2015) lending support to the many theories proposing intentionality as an integral part of creating new businesses (Katz & Gartner, 1988; Shook, Priem, & McGee, 2003).

The two most commonly cited models to study entrepreneurial intentions are the theory of planned behavior (TPB; Ajzen, 1991) and Shapero's model of the entrepreneurial event (EE; Shapero & Sokol, 1982). Although thorough comparison of these theories is beyond the scope of this paper (see Krueger, Reilly, & Carsrud, 2000), there are two points from these models that we wish to build on. First, both models consider an individual's belief in their capabilities to be an antecedent to intentionality. Perceived behavioral control from TPB and perceived feasibility from EE both represent beliefs similar to Bandura's (1977) concept of self-efficacy, but contextualized to a specific domain. Second, the EE model also considers an individual's "propensity to act" as another antecedent of entrepreneurial intentions. Shapero and Sokol (1982) define propensity to act as individual differences in initiative and tendency to act. In contrast to the TPB which considers personality characteristics to be distal predictors of more proximal antecedents, the EE model posits a narrow personality trait, propensity to act, as having direct effects on entrepreneurial intentions. With these two points in mind, we first review two individual difference variables that have been explored as predictors of entrepreneurial intentions – personality characteristics and self-efficacy.

Five Factor Model and Proactive Personality

Measures of personality and the use of those measures to assess and select applicants have long been established in personnel research and practice (Guion & Highhouse, 2014; Ployhart, Schneider, & Schmitt, 2006). In fact, prominent practitioner Robert Hogan suggests that the influence of personality saturates entire organizations, whereby the personality of leaders defines the culture of the organization and may ultimately drive the success or failure of an organization (Hogan, 2007). The utility of personality assessment has largely been made possible by the emergence of a unifying model of personality traits, the Five Factor Model (FFM). Although there are various labels that purport the FFM as a description of the structure of personality, the generally accepted taxonomy includes: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (Goldberg, 1990). These five traits have been applied as predictors of job performance (Barrick & Mount, 1991), vocational interests (Larson, Rottinghaus, & Borgen, 2002), and of course, entrepreneurship (see Brandstätter, 2011 for a review of meta-analyses). Brandstätter's (2011) large quantitative review, concluded that, in regards to entrepreneurial intentions, personality traits demonstrated consistent relationships; extraversion, conscientiousness, and openness have positive correlations, and neuroticism has a negative correlation. Therefore, the current study expects this same pattern of relationships.

H1 Extraversion (+), Openness (+), Conscientiousness (+), and Neuroticism (-) will correlate with entrepreneurial intentions.

Our primary research interests involve the interaction of self-efficacy beliefs and proactive personality. Nevertheless, without including a measure of the FFM in subsequent hypothesis tests, we would be less confident that results were due to unique contributions of proactive personality, entrepreneurial self-efficacy, and their interaction.

For more than two decades, J. Michael Crant and colleagues developed a theory of proactive personality as a dispositional characteristic that entails a tendency to influence the environment and produce change (Bateman & Crant, 1993; Seibert, Crant, & Kraimer, 1999).

Conceptually, proactive personality is a dispositional characteristic distinct from FFM traits that should show diverging relationships with theoretically relevant outcomes (e.g., influencing the environment, creating a business). Studies that explore the construct validity of proactive personality have demonstrated that it is empirically distinct from the FFM and does in fact relate to different criteria (Bateman & Crant, 1993; Crant, 1995; Major, Turner, & Fletcher, 2006).

While much of the personality-entrepreneurship research revolves around molar, higher-order factors (e.g., FFM) to predict entrepreneurial behaviors, some scholars argue that much precision is lost in prediction by attending to such broad personality characteristics (Rauch & Frese, 2007). This argument mimics concerns over bandwidth issues in personnel selection where scientists debate whether the breadth of domains should typically match (see Ones & Viswesvaran, 1996 and Hogan & Roberts, 1996 for discussion). For instance, if we want to predict a narrow and specific behavior, then it may be most appropriate to use a narrow and specific personality trait. Not only does the EE model position a narrow personality characteristic as having a direct relationship with intentions, but Crant (1996) contends that a measure of proactive personality may serve the purpose of measuring the EE model's propensity to act construct. Additionally, meta-analytic findings have demonstrated consistently larger effect sizes between proactive personality and EI than FFM traits and EI (Rauch & Frese, 2007), further supporting the EE model's proximal position of propensity to act (proactive personality) in predicting entrepreneurial intentions.

Therefore, the following prediction was made:

H2 Proactive personality will predict entrepreneurial intentions beyond the effects of the FFM traits.

The Role of Entrepreneurial Self-Efficacy

Self-efficacy is a construct developed and refined by Albert Bandura (1977) that encompasses an individual's expectations of performance in either a broad sense (e.g., general self-efficacy) or a narrow perspective concerning specific tasks, settings, or domains (e.g., entrepreneurial self-efficacy). As explained by Bandura, self-efficacy perceptions are beliefs about performance expectations and these beliefs have consequences for the individual's subsequent behaviors. It follows then that beliefs regarding the mastery or performance of entrepreneurial behaviors will influence intentions to behave in a certain way later (e.g., becoming an entrepreneur). Indeed, both the EE model and TPB posit efficacy beliefs as direct antecedents of entrepreneurial intention (Krueger, Reilly, & Carsrud, 2000), and empirical findings support the influence of self-efficacy beliefs on EI (Zhao, Seibert, & Hills, 2005). Thus, the current study proposes the following:

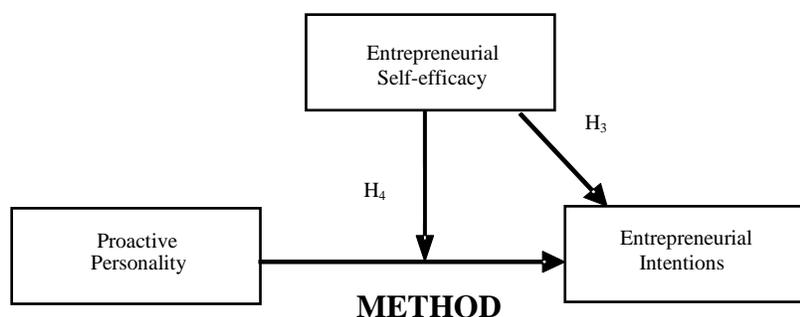
H3 Entrepreneurial self-efficacy will have a positive relationship with entrepreneurial intentions.

Previous meta-analyses show substantial heterogeneity amongst personality predictors of entrepreneurial outcomes, providing a strong empirical rationale for exploring moderator variables (Brandstätter, 2011; Schlaegel & Koenig, 2014; Zhao & Seibert, 2006). Although self-efficacy (general and domain-specific) has been looked at in relation to intentions and other individual difference variables (e.g., counterfactual thinking; Arora, Haynie, & Laurence, 2013), there has been scant empirical evidence to demonstrate how proactive personality and entrepreneurial self-efficacy may combine to affect entrepreneurial intentions. Furthermore, while proactive personality is theoretically and empirically related to entrepreneurial intentions,

it can be reasoned that this relationship should be stronger when entrepreneurial self-efficacy is high. That is, individuals with a proactive personality should be more likely to intend to start an organization when they believe that they can successfully do so. Since individuals measuring high on the proactive personality scale are more attuned to identifying and evaluating opportunities in the environment, they should also be more likely to hold entrepreneurial intentions when ESE is high and less likely to hold entrepreneurial intentions when ESE is low – compared to individuals scoring low on the proactive personality scale. Although the EE model proposes a direct effect of entrepreneurial self-efficacy (feasibility) and proactive personality (propensity to act) on EI, it does not offer consideration of the previously outlined pattern of interaction that may take place in influencing EI. Therefore, the fourth hypothesis posits that entrepreneurial self-efficacy will moderate the relationship between proactive personality and entrepreneurial intentions. A pictorial display of this interaction is shown in Figure 1.

- H4* Entrepreneurial self-efficacy will moderate the relationship between proactive personality and entrepreneurial intentions whereby proactive personality will be more strongly related to entrepreneurial intentions when self-efficacy is higher.

Figure 1



Participants and Procedure

Participants ($n = 471$) for this study were recruited from two locations in the southeastern United States, a private college and a public university. We chose a student population because, a) future employment is an impending, if not current, concern for students, and b) we wanted to capture enough variance in EI to test our hypotheses, and it is possible that current entrepreneurs or working adults would skew too much toward self or other-employment. Recent moderator analyses in a large meta-analytic study suggest that student samples do not systematically differ enough from nonstudent samples to discourage scientists from using either for research (Schlaegel & Koenig, 2014). Additionally, we were interested in interactions occurring prior to actual entrepreneurial activity. The average age across the sample was 20 years, with females constituting 74% of the participants.

All participants completed the measures via on-line survey. Students were asked to participate based on their enrollment in psychology and business courses at the two participating schools.

Measures

Responses to all of the dispositional and attitudinal measures were recorded on a 5-point Likert scale with the anchors “Strongly disagree” and “Strongly agree.”

FFM Traits. The five personality traits posited by the FFM were measured using publicly available items from <http://ipip.ori.org> (Goldberg, et al., 2006). The International Personality Inventory Pool (IPIP) is a collection of personality measures that are available for use in academic research. This study employed the 50-item IPIP version of Goldberg’s Big Five Factor Markers. Internal consistency estimates demonstrated acceptable reliability across the dimensions ($\alpha = .77$ to $\alpha = .89$).

Entrepreneurial Intentions. Three items were employed to measure entrepreneurial intentions, used in past research (e.g., Crant, 1996). A sample item is, “I will probably own my own business one day” ($\alpha = .93$).

Proactive Personality. Proactive personality was measured using a 10-item scale (Seibert et al., 1999). A sample item was “I excel at identifying opportunities” ($\alpha = .89$).

Entrepreneurial Self-efficacy. A brief measure of entrepreneurial self-efficacy was developed for this study after examining previous research and recommendations (e.g., McGee, Peterson, Mueller, & Sequeira, 2009). Considering the scope, purpose, and constraints in the current study, a general 3-item scale was created to assess participants’ self-efficacy for starting their own business. The first author carefully matched the content of items to “can do” statements tailored specifically to the entrepreneur domain, but not so specific (as well-developed, multidimensional measures constructed for actual entrepreneurs; McGee, Peterson, Mueller, & Sequeira, 2009) that participants would have to hypothesize or guess in responding (Bandura, 2006). Items were “If I was to start my own business in the future, I could be successful at doing so”, “I have the potential to acquire the resources necessary to own a business one day”, and “I have the necessary skills and abilities to effectively own a business in the future”. This 3-item scale demonstrated satisfactory internal consistency ($\alpha = .87$) and all three items had statistically significant ($p < .05$) factor loadings (.83, .83, and .85, respectively).

Demographics. The survey also contained questions regarding gender and age.

RESULTS

Intercorrelations between all of the study variables are displayed in Table 1. Hypothesis 1 predicted that extraversion (+), openness (+), conscientiousness (+), and neuroticism (-) would correlate with entrepreneurial intentions. Findings failed to support hypothesis 1, with all variables being related in the predicted direction, however, only openness and agreeableness were found to have a statistically significant relationship with entrepreneurial intentions ($r = .19$, $p < .01$ and $r = -.10$, $p < .05$, respectively).

Table-1
DESCRIPTIVE STATISTICS, INTERCORRELATIONS, AND RELIABILITIES

	Mean	SD	Age	Gender	E	A	C	N	O	EI	ESE	PP
Age	20	3.4	-									
Gender	-	-	-.05	-								
Extraversion	3.3	.84	.06	-.02	(.89)							
Agreeableness	4.1	.56	.08	.17*	.24*	(.81)						
Conscientiousness	3.7	.74	.09	.07	.04	.11	(.87)					
Neuroticism	3.0	.85	-.16*	.33*	-.23*	-.07	-.09	(.88)				
Openness	3.7	.57	.03	-.17*	.19*	.20*	.16*	-.22*	(.77)			
EI	2.8	1.3	.06	-.14*	.07	-.10	.05	-.05	.19*	(.93)		
ESE	3.6	1.1	.02	-.12*	.18*	.01	.20*	-.19*	.35*	.62*	(.87)	
PP	4.0	.60	.00	-.03	.23*	.21*	.31*	-.10	.44*	.31*	.48*	(.89)

Note. Correlations in bold are statistically significant at $p < .05$. Correlations in bold with an asterisk (*) are statistically significant at $p < .01$.

E = extraversion, A = agreeableness, C = conscientiousness, N = neuroticism, O = openness, EI = entrepreneurial intentions, ESE = entrepreneurial self-efficacy, and PP = proactive personality. Internal consistency estimates are provided in parentheses along the diagonal.

To test the remaining hypotheses, hierarchical regression was employed in step-wise fashion (see Table 2). All beta weights reported in text and tables are standardized. In the first step, entrepreneurial intentions were regressed on all the control variables (FFM). Next, proactive personality was added in step 2 and was a statistically significant ($\beta = .32, p < .05$) predictor of EI. The addition of proactive personality accounted for a significantly larger portion of variance beyond the FFM ($\Delta R^2 = .07, p < .05$), supporting hypothesis 2.

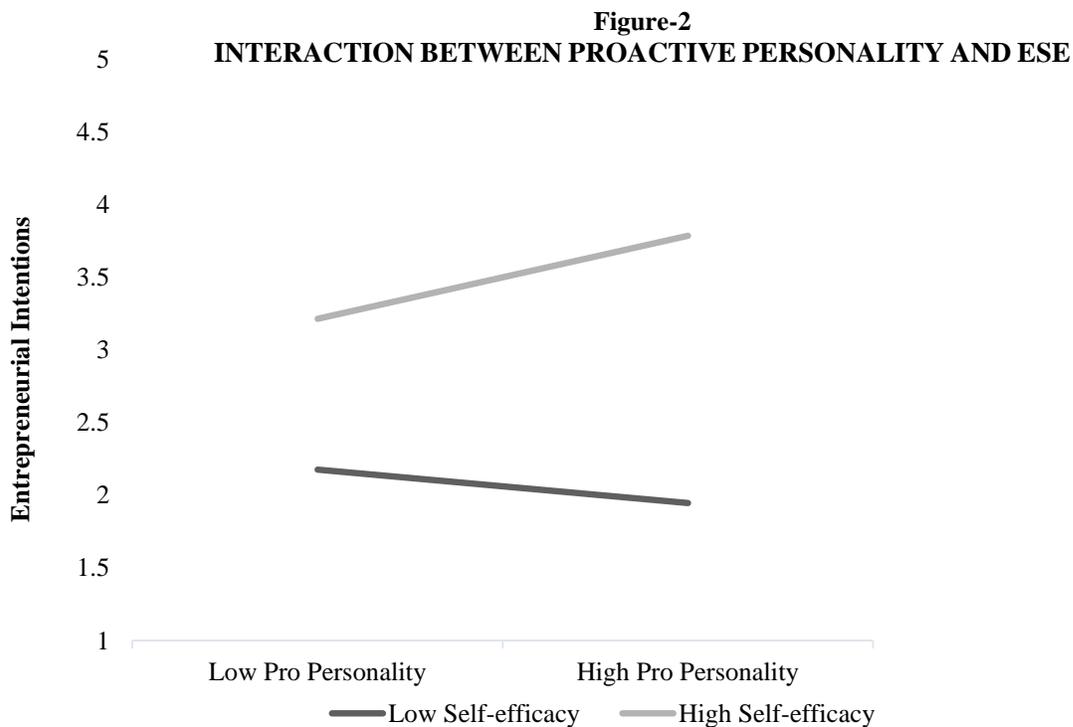
Hypothesis 3 predicted that ESE would have a positive relationship with EI and thus, ESE was added to the regression model in step 3. Analysis supported hypothesis 3 with ESE sharing a strong, positive relationship with EI ($\beta = .62, p < .05$). Addition of ESE to the regression model also significantly improved prediction of EI, accounting for 28% additional variance in the criterion ($\Delta R^2 = .28, p < .05$).

To test hypothesis 4, which predicted that ESE would moderate the relationship between proactive personality and EI, we first created an interaction term by mean-centering proactive personality and ESE and taking their product (Aiken & West, 1991). This interaction term was then added to the regression model in step 4 and was found to be a statistically significant predictor of EI ($\beta = .11, p < .05$) and accounted for additional variance beyond the previous predictors ($\Delta R^2 = .01, p < .05$). Simple slopes of this interaction are displayed in Figure 2 with high and low values calculated as one standard deviation above and below the mean, respectively (Aiken & West, 1991). The final model explained a substantial portion of variance in EI ($R^2 = .42, p < .05$).

Exploratory analyses were conducted to examine gender differences in the study variables. Within the FFM measures, women reported higher levels of agreeableness, openness, and neuroticism. This pattern of findings is not unlike those reported from cross-cultural studies of gender differences in personality traits (Costa, Terracciano, & McCrae, 2001). While women were not practically different from men in terms of proactive personality ($M = 4.02$ vs. $M = 4.06$, respectively), women were less likely to endorse entrepreneurial self-efficacy ($\Delta M = .30, p < .01$) and entrepreneurial intentions ($\Delta M = .41, p < .01$).

Table-2				
HIERARCHICAL REGRESSION MODELS PREDICTING ENTREPRENEURIAL INTENTIONS				
	Step 1	Step 2	Step 3	Step 4
Extraversion	.07	.03	-.02	-.02
Agreeableness	-.16*	-.18*	-.10*	-.10*
Conscientiousness	.03	-.04	-.08*	-.08*
Neuroticism	.01	-.01	.06	.06
Openness	.20*	.09	-.01	-.02
Proactive Personality		.32*	.07	.10*
Entrepreneurial Self-efficacy			.62*	.62*
Proactive Personality x ESE				.11*
ΔR^2		.07*	.28*	.01*
Model <i>F</i>	5.86*	38.7*	271*	8.88*
R^2	.06	.13	.41	.42

Note. FFM = Five Factor Model, PP = Proactive Personality, ESE = Entrepreneurial Self-efficacy, and PP x ESE = interaction term (product of mean-centered proactive personality and entrepreneurial self-efficacy). Statistically significant ($p < .05$) values appear with an asterisk.



DISCUSSION

As the scholarly consensus approaches entrepreneurial activity as a volitional, intentional act, we adopted a self-regulation approach to study a previously unexplored relationship – the interaction between proactive personality and entrepreneurial self-efficacy in predicting entrepreneurial intentions.

The theory of planned behavior (Ajzen, 1991) and social-cognitive theory (Bandura, 1991) both situate self-efficacy perceptions as proximal to predicting behavioral intentions, arguing that more distal predictors (e.g., personality traits) may influence intentions indirectly or via interaction with other dispositional characteristics. Furthermore, both theories assert that context specificity enhances the prediction of behavior with dispositional factors, whereby a narrow personality construct such as proactive personality should predict specific intentions (starting a business) better than broad personality constructs such as the FFM. Alternatively, the entrepreneurial event model (Shapero & Sokol, 1982) situates a personality characteristic (propensity to act) as a proximal and direct cause of EI, alongside self-efficacy. This study provided a partial test of the EE model by examining whether proactive personality, a construct that has been proposed to capture the same content as propensity to act (Crant, 1996), predicted entrepreneurial intentions beyond broad personality factors. Findings support the use of narrow over broad predictors when the criterion is also narrow in scope. Moreover, ESE accounted for unique variance beyond the FFM and proactive personality.

A recent meta-analysis by Schlaegel and Koenig (2014) failed to find support for the EE model's "propensity to act" influencing EI. The conflict between our study and the meta-analytic finding may lie in how propensity to act was coded in the meta-analysis. Inspection of the primary studies that were included reveal a vast array of measures that appear to be coded as propensity to act, yet most primary studies do not mention propensity to act and the coding procedure leaves it unclear as to how it was determined that the studies' measures were identified as propensity to act. For instance, Altinay, Madanoglu, Daniele, and Lashley (2012) and Ang and Hong (2000) are the first two studies listed as measuring propensity to act, however, neither made mention of propensity to act or Shapero and Sokol's (1982) model. Thus, it is uncertain whether one measure or a composite of multiple measures, and which ones, were coded as propensity to act. Our study employed a measure that matched propensity to act in both content and theory (Crant, 1996), which may explain this discrepancy in findings.

Our primary interest centered on the interaction between proactive personality and ESE. The theoretical relationship between self-efficacy and intentions is detailed in accounts of self-efficacy (Bandura, 1991), and this theory has been supported in meta-analytic work reporting a strong relationship between self-efficacy and EI (Krueger, Reilly, & Carsrud, 2000). Despite calls for examining interactions between personality and beliefs such as self-efficacy, there has been no research demonstrating how proactive personality and a general measure of entrepreneurial self-efficacy interact in relation to EI. Our study revealed that proactive individuals are more likely to report intentions to start a business when ESE is high, and less likely when ESE is low, compared to individuals low in proactive personality. We believe that individuals with a proactive personality are more likely to seek out, identify, and act on opportunities in the environment (Seibert, Crant, & Kraimer, 1999), and we also believe that traits such as proactive personality match the tasks of entrepreneurship better than general traits like the FFM (Rauch & Frese, 2007). As proactive individuals are more attuned to the opportunities in the environment, or lack thereof, self-efficacy for starting a business may hold

larger sway in their intentions to do such. Not only do the self-regulation theories of Ajzen (1991) and Bandura (1991) propose direct effects of self-efficacy, or perceived behavioral control, on intentions, but researchers have also found that proactive personality can predict career outcomes through indirect means such as goal-setting (Greguras & Diefendorff, 2010), which is also an intentional act (Locke & Latham, 2002). Taken together, our study contributes to the literature by providing evidence of a) the incremental validity of proactive personality in predicting entrepreneurial intentions, and b) the moderating role of entrepreneurial self-efficacy in the proactive personality – entrepreneurial intentions relationship.

Limitations and Future Research

This study focused on a) comparing a broad set of measures (FFM traits) to a narrow measure (proactive personality) in predicting entrepreneurial intentions, and b) the moderating role that entrepreneurial self-efficacy plays in the proactive personality – entrepreneurial intentions relationship. It should first be noted that this study used students at two separate universities from a variety of majors (e.g., business, psychology, education) in order to obtain a more generalizable sample. Nevertheless, we were not working with actual entrepreneurs, or even students that had reported already starting a business (although this could be the case). Considering that no meaningful pattern of differences between student and nonstudent samples has been demonstrated (Schlaegel & Koenig, 2014) and the fact that the purpose of the current study was to explore interactions in the student population, we felt a student sample was appropriate.

There is no shortage of literature detailing the extent to which personality influences leadership in organizations (Hogan & Kaiser, 2005; Judge, Bono, Ilies, & Gerhardt, 2002; Kaiser, Hogan, Craig, 2008). Given that entrepreneurs usually fulfill a leadership role in the start of their venture (if not maintaining that role throughout the entrepreneurship cycle), it follows that entrepreneur personality is a consideration of scientists interested in understanding and predicting intentions to create a business, as well as subsequent organizational outcomes. While this study focused on FFM traits, entrepreneurial self-efficacy, and proactive personality, there are many other well-documented personality constructs that have been found to predict entrepreneurial intentions. These constructs include: risk propensity, achievement motivation, need for autonomy, locus of control, and many others. Since these constructs have been investigated elsewhere, the current study was most interested in exploring the moderating effect of ESE in relation to the proactive personality – entrepreneurial intentions relationship, and not providing an exhaustive comparison amongst all of the possible personality variables. Moving forward, researchers should continue to compare narrow personality constructs with broader personality constructs. After all, the utility of a “new” measure can only be evidenced by demonstrating incremental validity beyond measures of other constructs.

Entrepreneurship scholars have long called for the inclusion of self-efficacy measures in entrepreneurship research (Boyd & Vozikis, 1994). Although sophisticated refinements to initial entrepreneurial self-efficacy measures have been attempted, they result in bulky instruments that may best serve as tools for coaching actual entrepreneurs or identifying specific/dimensional aspects of ESE that interventions should target. For instance, McGee, Peterson, Mueller, and Sequeira (2009) offer a multidimensional measure of ESE involving 5 factors (searching, planning, marshaling, implementing-people, and implementing-financial). Although the authors critique the use of unidimensional measures of ESE in research, the breadth of the construct’s

measure should be considered in the context of its purpose. Take the factor of marshaling for example. Items measuring this factor include “get others to identify with and believe in my vision and plans for a new business” and “clearly and concisely explain verbally/in writing my business idea in everyday terms.” While these items would be valuable in measuring the efficacy of interventions aimed at increasing a potential entrepreneur’s self-beliefs regarding leadership and soliciting buy-in, it may not be applicable to a student sample, most of which are not taking entrepreneurship classes or considering the fine-grained elements of what it takes to begin a new venture. Our point here is not to offer a rebuttal of McGee and colleagues’ proposal that ESE is multidimensional, but instead to offer the reasoning for why a single-factor, 3-item measure was used instead. Ultimately, future research should continue to validate both multidimensional and unidimensional (global) ESE measures for diverse samples used in research. Such validation research may be applied to developing recruitment, screening, and/or developmental plans for academic programs, incubators, accelerators, and investor groups. For example, we know that many of the personality traits which predict EI also predict entrepreneur performance (Brandstätter, 2011). By acknowledging the influence of proactive personality and ESE on intentions, future research should ask if later attrition may be attenuated as poor-fitting individuals either self-select out or are screened, and greater performance accumulated by those who progress to business ownership.

Is self-efficacy a mediating variable between personality traits and entrepreneurial outcomes? Unfortunately, such a test was not preferred in this study as there was no ability to claim a causal sequence from proactive personality to ESE to EI. While this study could not offer such a test, previous research has examined entrepreneurial self-efficacy as a mediating variable, with several studies finding support. Baum and Locke (2004) found that self-efficacy mediated the effects of personality traits (passion and tenacity) on subsequent venture growth in a sample of entrepreneurs. The self-efficacy measure used by Baum and Locke involved two questions aimed at assessing entrepreneurs’ beliefs in their ability to meet sales and employment targets. Zhao, Seibert, and Hills (2005) also explore self-efficacy as a mediating variable between an individual’s characteristics (risk propensity and experience) and their intentions to become an entrepreneur, using entrepreneurial self-efficacy and a general self-efficacy measure. They found that their generalized ESE measure (self-efficacy assessed in multiple entrepreneurial domains then averaged across domains) was related to entrepreneurial intentions; however, a general measure of self-efficacy was not. In both of the previous studies mentioned, a longitudinal design was employed that allowed for arguments of causality. Although ESE as a mediating variable fits in a model with an intervention and temporal sequence, the current study had no basis to assume that proactive personality *causes* entrepreneurial self-efficacy, which in turn influences entrepreneurial intentions. Although meta-analytic research has provided evidence for competing models of entrepreneurial intent and its antecedents (Schlaegel & Koenig, 2014), further empirical research is needed to examine these complex mediational and interactional relationships that may occur prior to the direct antecedents of EI.

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