

## Building self-efficacy for entrepreneurial careers: New resource skill

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### ABSTRACT

While the ability to garner resources is key to entrepreneurial pursuits, there is little research concerning potential entrepreneurs' resource acquisition skills or how these skills might be related to psychological and cognitive factors important for successful entrepreneurial behavior. Using data collected from two survey-based independent samples of undergraduate college students from two Midwestern universities, this research tests mediational hypotheses utilizing structural equation modeling techniques with bootstrapping. The findings, consistent across the two studies, indicate that new resource skill does indeed mediate the relationship between proactive personality—a personality characteristic—and entrepreneurial self-efficacy—a key cognitive antecedent of entrepreneurial intentions and behavior.

### Introduction

Entrepreneurship involves the coordination and leveraging of resources (Alvarez & Barney, 2005) to exploit an opportunity (Stevenson & Jarillo, 1990; Stevenson, Roberts & Grousbeck, 1989); as such, resources and the resourcefulness of the entrepreneur have long been acknowledged as key factors in the success of new ventures (Brush, Greene, & Hart, 2001; Greene, Brush & Brown, 1997; Morris, Webb, Fu & Singhal, 2013b). For the entrepreneurial venture, resources are essential to achieving a competitive advantage (Barney, 1991), to mitigating the risks of failure, and to increasing the venture's probability of survival (Shane, 2008). Stevenson and Jarillo's (1990, p. 23) definition of entrepreneurship, which states that entrepreneurs "pursue opportunities without regard to the resources they currently control" is a starting point from which to examine how aspects of human capital contribute to an entrepreneur's ability to be successful and thereby perform the many roles and tasks they will encounter in the future. Human capital theory suggests that knowledge and skills (Schultz, 1961) are a result of investments in education and work experi-

ence (Becker, 1975). Despite the importance of resources to the field, and a renewed attention to skill development in entrepreneurship (Chell, 2013), there is still insufficient research on how entrepreneurs actually assemble, acquire, manage and leverage resources for their organizations (Brush et al., 2001; Morris et al., 2013b) creating a void in the research literature.

A skill that defines entrepreneurship is how one gains access to resources one does not necessarily own or control (Morris et al., 2013b). Proactive personality may explain some of this ability, but a construct introduced by Baum and Locke (2004) in their study of practicing entrepreneurs called "new resource skill" may offer a way to measure the skill of seeking and acquiring resources. Since a goal of entrepreneurship education (Edelman, Manolova, & Brush, 2008), is to understand which skills help students prepare for entrepreneurial careers (Burton, Sørensen, & Dobrev, 2016), we argue it is important to also test these relationships among college students and potential aspiring entrepreneurs. In this study we examine new resource skill and proactive personality in relationship with entrepreneurial self-efficacy, an important outcome variable in entrepreneurship research. Entrepreneurial self-efficacy has been shown to be related to entrepreneurial intentions (Prabhu, McGuire, Drost, & Kwong, 2012), venture initiation and

entrepreneurial performance (e.g., Engle et al., 2010; Lavolette, Radu Lefebvre, & Brunel, 2012; Miao, Qian, & Ma, 2017; Murphy, Tocher & Burch, 2019).

This paper focuses on developing a better understanding of how an entrepreneur's personality characteristics might impact his or her skills which in turn might serve as antecedents to the entrepreneur's cognitions with respect to entrepreneurial self-efficacy. As such, this paper makes the following contributions: First, the testing of the measure of new resource skill in this context allows the creation of a link between the definitional understanding of entrepreneurship (Stevenson & Jarillo, 1990; Stevenson et al., 1989) and a measurable entrepreneurial skill. Second, while personality characteristics are relatively stable, skills can be acquired. By articulating the skill-based mechanism through which proactive personality is related to entrepreneurial self-efficacy, this research also contributes to entrepreneurship theory. Third, to the best of the researchers' knowledge, the measure of new resource skill, while tested in the field with practicing entrepreneurs has only been tested in Baum and Locke's (2004) study. This paper tests whether the measure of new resource skill previously tested with practicing entrepreneurs generalizes to aspiring and potential entrepreneurs.

### Literature Review and Hypotheses

The goal of many undergraduate programs is to prepare students for a career in their respective field. Like other programs, entrepreneurship programs prepare students for an entrepreneurial career, whether that be to start a business or to take advantage of entrepreneurial opportunities (Burton et al., 2016). Today, more than 3,000 schools include entrepreneurship offerings ranging from a single course to a popular or competitive major, and in some schools, entrepreneurship has even emerged as a required component of the business school curriculum (Morris, Kuratko, & Cornwall, 2013a). Through educating the students in the entrepreneurial process and by helping build skills required for starting a business and taking advantage of entrepreneurial opportunities, entrepreneurship programs develop entrepreneurial self-efficacy in students (Wilbanks, 2015; Wilson, Kickul, & Marlino, 2007). It is this kind of self-efficacy, a confidence in one's abilities, which has been shown to have a positive relationship with higher entrepreneurial intentions and new venture performance (Baum & Locke, 2004; Prabhu et al., 2012). When aspiring entrepreneurs are developed in this way, they may have an advantage over others.

To develop entrepreneurs requires an understanding of how entrepreneurs think, act, and behave (Carland, Carland & Stewart, 1996). To study an individual in his or her environment is to study individual differences as they relate to entrepreneurship. Within the field of entrepreneurship, linking individual differences to the process or outcomes of entrepreneurship is not new (Cooper, Gimeno-Gascon, & Woo, 1994; Lamine, Mian, & Fayolle, 2014; Rauch &

Frese, 2007a; Taormina & Kin-Mei Lao, 2007; Ucbasaran, Westhead, & Wright, 2008; Unger, Rauch, Frese, & Rosenbusch, 2011), but merely understanding how entrepreneurs think, act and behave does not necessarily provide the action-oriented information needed to develop aspiring entrepreneurs to be successful in their careers over time. In order to better develop aspiring entrepreneurs for success in their careers it is important to understand what role entrepreneurial skills play in this process.

To further make this connection to an entrepreneur's success, when it comes to the concept of job performance and ultimately the performance of their organization, it is useful to consider where and how precedence for linking individual differences to processes, outcomes, or performance exists in other research areas. For example, personnel psychologists have a long history of examining how individual differences and aspects of human capital (knowledge, skills, and abilities) contribute to job performance over time and in various work contexts (Borman & Motowidlo, 1993; Motowidlo, Borman, & Schmit, 1997). Similarly, entrepreneurship researchers (i.e., Cooper et al., 1994; Ucbasaran et al., 2008; and Unger et al., 2011) have applied Becker's (1975) human capital distinction between general and specific human capital as it relates to the jobs and tasks associated with entrepreneurship. New Resource Skill is an example of such a specific skill associated with entrepreneurship.

### New Resource Skill

Resources and the skill to marshal resources are important for entrepreneurial pursuits (Brush et al., 2001; Morris et al., 2013b). As Hannan and Freeman (1984, p. 152) point out, "Creating an organization means mobilizing several kinds of scarce resources." The idea of acquiring and leveraging resources is key to entrepreneurship, such that one of the well-cited definitions of entrepreneurship revolves around pursuing opportunity "without regard to the resources they currently control" (Stevenson & Jarillo, 1990, p. 23; Stevenson et al., 1989). Just as it is not very probable to start a business without a recognized opportunity, it is not very probable to start a business without resources.

Entrepreneurial resources may take various forms, and may include financial resources, human resources, and/or social capital resources (De Clercq, Lim, & Oh, 2013). It is rare that an entrepreneur, especially when acting on his or her own, will have access to all the resources they need at the time they decide to start their business. Therefore, leveraging and accessing resources they do not necessarily own, or control, is an important skill for entrepreneurs (Morris et al., 2013b). As a skill, this could encompass: utilizing creative approaches to leveraging resources, determining new uses for existing resources, and using the resources currently owned by others (Morris et al., 2013b). However, merely having the skills, or the human capital is not enough, entrepreneurs must also have the confidence,

or self-efficacy, to utilize these skills effectively when faced with tasks and challenges.

Human capital theory suggests that both knowledge and skills (Schultz, 1961) are attainable and therefore the result of one's investments in education and work experience. They can be generalizable and therefore applicable to multiple jobs, tasks or contexts or specialized to a specific job, task or context (Becker, 1975). It has been well documented in the context of new ventures, that the ability of a founder to navigate the early period of finding and deploying resources or hiring someone who can (Timmons, 2000) is critical to not only the new venture's success (Smith & Smith, 2000) but can also be the linchpin for the organization's ultimate survival (Baum & Locke, 2004).

Unique to this context, Baum and Locke (2004) argued for a specific kind of skill stating that the ability or inability to effectively systematize and organize resources in a start-up can literally "make or break" the organization. They introduced new resource skill (NRS) based on the work of Stevenson (1985), defining the construct as "the ability to acquire and systematize the operating resources needed to start and grow an organization" (Baum & Locke, 2004, p. 589). They found several significant positive relationships between new resource skill and the new venture's performance six years later. These included entrepreneurs' self-efficacy, communicated vision, stated goals, tenacity and the new venture's actual growth.

## **Proactive Personality**

The influence of personality has long been of interest to the study of entrepreneurship (Rauch & Frese, 2007b; Uy, Chan, Sam, Ho, & Chernyshenko, 2015). It is acknowledged that personality characteristics may impact an individual's knowledge and skills (Rauch & Frese, 2007b) as well as their entrepreneurial attitudes and behaviors, ultimately affecting entrepreneurial performance. Critical to the agentic nature of entrepreneurship is the personality characteristic of proactive personality, defined as having a personal disposition of demonstrating proactive behavior (Bateman & Crant, 1993). Proactive behavior consists of "taking initiative in improving current circumstances or creating new ones; it involves challenging the status quo rather than passively adapting to present conditions" (Crant, 2000, p. 436).

A person with a proactive personality can be characterized as "one who is relatively unconstrained by situational forces, and who effects environmental change" (Bateman & Crant, 1993, p. 105). As such, someone with proactive personality is likely to engage in proactive behavior (Crant, 2000) or "behavior that directly alters environments" (Bateman & Crant, 1993, p. 104). Past research has demonstrated how proactive personality and proactive behavior are positively related to job performance (Crant, 1995), leadership effectiveness (Bateman & Crant, 1993; Crant & Bateman, 2000), and entrepreneurship (Becherer & Maurer,

1999; Cools & Van den Broeck, 2007; Kickul & Walters, 2002; Prabhu et al., 2012; Zampetakis, Kafetsios, Bouranta, Dewett, & Moustakis, 2009). Proactive personality can explain variance in individual performance beyond the big five personality traits (Crant, 1995; Crant & Bateman, 2000). Furthermore, Proactive personality has been demonstrated to be important to both aspiring and practicing entrepreneurs. In the context of entrepreneurship education, proactive personality has been found to be related to "an additional 17% of the variance in entrepreneurial intentions over and above variance accounted for by gender, education, and entrepreneurial parents" (Crant, 1996, p. 46) in college students.

In their meta-analysis on personality and entrepreneurship, Rauch and Frese (2007a) concluded that proactive personality (Bateman & Crant, 1993) is profoundly related to an entrepreneur's business success. They highlighted the importance of proactive personality to entrepreneurship, stating, "by definition, entrepreneurs have to be self-starting and influence their environment by founding new organizations and by identifying and acting upon opportunities" (Rauch & Frese, 2007a, p. 359).

Acting on opportunities in this context requires that entrepreneurs draw on resources not necessarily in their control. The process of acquiring resources to pursue entrepreneurial opportunities requires that individuals have the human capital, or the skill, to acquire these resources. Therefore, individuals with proactive personality will be more likely to take initiative and acquire the necessary resources for their opportunities, demonstrating greater new resource skill. Drawing on this connection between proactive behavior in entrepreneurship and individuals' proclivity to take initiative in their environment, we propose the following hypothesis:

**Hypothesis 1.** Proactive personality will be positively related to new resource skill.

## **Entrepreneurial Self-Efficacy**

The concept of self-efficacy comes from Bandura's (1999) social cognitive perspective. Self-efficacy is an individual's belief that he or she can successfully perform a behavior, and "Efficacy beliefs influence how people feel, think, motivate themselves, and behave" (Bandura, 1993, p.118). People's self-efficacy beliefs have a strong effect on their behavior through their choice of tasks as well as the motivation and effort they apply to accomplishing those tasks, making it an important predictor of performance (Chen, Greene, & Crick 1998). When talking about self-efficacy it is not uncommon for the concept of generalized self-efficacy to be distinguished from other types of task or domain specific to self-efficacy.

In contrast to generalized self-efficacy, entrepreneurial self-efficacy (ESE) assesses the extent to which the individual believes that he or she is capable of performing the roles

and tasks necessary in an entrepreneurial context (Boyd & Vozikis 1994). Entrepreneurial self-efficacy is a well-established cognitive antecedent of entrepreneurial behavior, including venture initiation and entrepreneurial performance (e.g., Engle et al., 2010; Laviolette et al., 2012). Over time, entrepreneurial self-efficacy has become a “proxy for other more ‘objective’ measures of entrepreneurial performance” (Arora, Haynie, & Laurence, 2013, p. 363) because we are not always able to measure entrepreneurial performance of students post-graduation. For example, it has been found to be positively related to entrepreneurial intentions (Prabhu et al., 2012); outcomes of entrepreneurship education (Edelman et al., 2008); and the entrepreneurial performance among both habitual and nascent entrepreneurs (Miao et al., 2017).

In a meta-analysis of practicing entrepreneurs, Rauch and Frese (2007a), identified generalized self-efficacy and proactive personality as strong predictors in the likelihood of business startup and venture success. They concluded that those with higher generalized self-efficacy were more likely to create new business ventures and those with both proactive personality and generalized self-efficacy were more likely to be successful in those businesses. This research highlights the consistent findings that these two constructs influence entrepreneurial success.

In a study of students from China, Finland, Russia and the United States, Prabhu et al., (2012) tested the relationship between entrepreneurial self-efficacy, proactive personality and entrepreneurial intentions. They found that entrepreneurial self-efficacy both mediated and moderated the proactive personality to entrepreneurial intentions relationship. This further suggests a need to better understand the relationship between proactive personality and entrepreneurial self-efficacy.

Entrepreneurial self-efficacy is an example of a domain-specific application of self-efficacy and is defined as an individual’s self-confidence in their ability to successfully perform entrepreneurial roles and tasks (Chen et al., 1998; Zhao, Seibert, & Hills, 2005). It is influenced by human capital such as prior experience and education (Zellweger, Sieger, & Halter, 2011; Zhao et al., 2005). Building upon this idea, Forbes (2005, p. 601) argued that understanding entrepreneurial self-efficacy is important “because it can affect individuals’ willingness to engage in entrepreneurship as well as the behavior of those who are already entrepreneurs.”

Entrepreneurial self-efficacy is positively related to several entrepreneurial attitudes and behaviors including: perceptions of opportunities (Krueger & Dickson, 1994); opportunity identification, (Barbosa, Gerhardt, & Kickul, 2007); entrepreneurial intentions (Chen et al., 1998; Zhao et al., 2005); the decision to pursue an entrepreneurial career (Kickul, Gundry, Barbosa, & Whitcanack, 2009); and entrepreneurial performance (Baum & Locke, 2004; Hmieleski & Baron, 2008). It has been found to differentiate between those that start businesses and those who do not. For exam-

ple, Markman, Balkin, and Baron (2002) in a study of patent holders, found those who had greater self-efficacy were more likely to have started their own business.

In a longitudinal study of practicing entrepreneurs, New resource skill was directly related to entrepreneurial self-efficacy and the entrepreneur’s self-efficacy had the strongest relationship ( $\lambda = .34$ ) with venture growth (Baum, Locke, & Smith, 2001; Baum & Locke, 2004). To test whether these relationships will generalize among collegiate aspiring entrepreneurs, we propose the second hypothesis:

**Hypothesis 2.** New resource skill will be positively related to entrepreneurial self-efficacy.

In the literature, entrepreneurial self-efficacy is closely related to entrepreneurial behaviors including Entrepreneurial Orientation (Cools & Van den Broeck, 2007), and performance. Meta-analysis results indicate that personality is indeed related to the entrepreneurial behaviors of both business creation and business success (Rauch & Frese 2007a). For example, Prabhu et al., (2012) focused on the role entrepreneurial self-efficacy can play in the relationship between proactive personality and entrepreneurial intent. Building on their work, we argue that the effect of dispositional variables such as proactive personality on entrepreneurial self-efficacy is likely to be mediated by acquired skills such as new resource skill.

Entrepreneurial self-efficacy is not a dispositional trait. Entrepreneurial self-efficacy originates from various experiential sources, including enactive mastery, vicarious experiences and modeling among others (Forbes, 2005). In other words, entrepreneurial self-efficacy is acquired, through acquisition and mastery of skills related to the tasks of entrepreneurship. We argue that the relationship between the dispositional personality factors to entrepreneurial self-efficacy is mediated through skills related to entrepreneurship. We focus on the skill related to resource acquisition, i.e., new resource skill. While new resource skill is in fact, positively related to proactive personality, we argue that the skills and abilities are what drive the efficacy cognitions. We thus unpack the link between proactive personality and entrepreneurial self-efficacy. This research tests whether these relationships will generalize among collegiate aspiring entrepreneurs with the final hypothesis:

**Hypothesis 3.** New resource skill will mediate the effect of proactive personality on entrepreneurial self-efficacy.

## Method

### Participants

**Study 1.** Data used for study 1 was collected from undergraduate business students of a Midwestern university.

In all, 169 students participated in the larger study and out of that, 152 responses were found to be complete for this study. Among the participants, 49% were women, and 51% were men. The average age was 22.5 years, with an average of 5.9 years of work experience. In this study, most of the participants were seniors (72.8%) and juniors (20.1%), with freshmen and sophomores constituting 3% each and fifth-year seniors constituting 1.2%.

**Study 2.** Study 1 was replicated using a sample of undergraduate business students from another Midwestern university. In study 2, we followed the exact same process as study 1 to recruit students. In this study, 155 students participated, and out of that, 139 responses were considered complete for this study. Among the participants, 54.2% were women, and 48.8% were men. The average age was 22.4 years, with an average of 5.2 years of work experience. In this study, most of the participants were seniors (51%), followed by freshmen (25%), juniors (14.2%), and sophomores (9%).

## Procedure

The same procedure for collecting data was followed for both studies. The research team negotiated with course instructors in the respective colleges to find courses that would be willing to give their students extra credit for participating in research. The research team then made class announcements in each of these courses and allowed students to sign up for one of the 75-minute sessions via a sign-up sheet. Students (at each of the two universities) then came to the designated computer lab at the date and time of their session. Only those students, who volunteered to participate and reported to the study location, were given access to the study materials. Since all the respondents volunteered for the study for extra credit, it is not possible to calculate the response rate for the surveys.

The study was conducted in a computer lab. The scales that were consistently presented to all participants and used in this study were administered online using the Qualtrics online survey tool. Additional activities that were part of a larger study were administered via a paper-and pencil packet of scenarios. The packets were used to facilitate the random assignment of instructions for different scenarios and exercises throughout the packet.

In order to mitigate the common method variance related issues at the design stage, we followed the recommendations of Podsakoff, Mackenzie, Lee & Podsakoff (2003). We reviewed the items carefully and made sure that they were clear and understandable. (Podsakoff et al., 2003; Tourangeau, Rips, & Rasinski, 2000). As mentioned before, this study was a part of a larger study, where some variables were recorded on a paper-and pencil survey while some were recorded in an online survey. By separating the variables in this fashion, we also created psychological separation among different variables (Peake & D'Souza, 2015;

Podsakoff et al., 2003).

The hypotheses related to proactive personality, new resource skill, and entrepreneurial self-efficacy were tested using survey research. Using a two-study design whereby Study 2 was planned as a constructive replication of the results in Study 1. Both focused on the entrepreneurial self-efficacy of undergraduate students likely to form the pipeline of next-generation entrepreneurs. Such constructive replication can be useful in establishing the validity of results (Lykken, 1968) and “enriches the data relevant to the theory tested and increases confidence in generalization” (Eden, 2002, p. 842). Overall, constructive replication provides greater strength to the findings. Drawing the sample from undergraduate business students increases the internal validity of the findings because the participants are all relatively homogeneous. As such, this research is generalizable to similar populations for the purpose of encouraging entrepreneurial self-efficacy among potential entrepreneurs.

## Validating the Sample

The studies were similar as both were tested on student samples from two Midwestern universities, but the samples were slightly different. Descriptive statistics indicated that in Study 1, the respondents had an average of 3.66 years of education, with an average of .38 entrepreneurship courses completed, while for study 2, the respondents had an average education of 2.9 years, with an average of .28 entrepreneurship courses completed. A t-test performed to test whether the differences in respondents of the two studies were statistically significant found that differences in education ( $p < .01$ ,  $t = -6.7$ ) and number of entrepreneurship courses completed ( $p < .05$ ,  $t = -2.4$ ) were both statistically significant. No other variables included in the study showed any statistically significant differences. Table 1 shows results of the t-tests.

## Measures

**Entrepreneurial self-efficacy.** Entrepreneurial self-efficacy was measured using Zhao's et al. (2005) four-item scale, which assessed participants' confidence (1 = not at all confident, 5 = very confident) in undertaking various entrepreneurship tasks such as “Identify new business opportunities” and “Creating new products.” The Cronbach's alpha for the scale was 0.817, which is consistent with the 0.766 reported by Zhao et al. (2005).

**New resource skill.** Baum and Locke (2004) measured new resource skill using five items from the scale. Sample items included “I am good at organizing people and machines for new projects” and “I know how to find the resources that we need.” The Cronbach's alpha for the five-item scale was 0.689.

**Proactive personality.** Proactive personality was

Table 1  
Means and T-tests

	Study 1 Mean	Study 2 Mean	t-statistic	Statistical Significance
Age	22.50	22.40	-0.27	0.79
Gender	.51	.46	-0.91	0.36
Education	3.66	2.90	-6.71**	0.00
Work Experience	5.91	5.22	-1.65	0.10
Experimental Condition	1.51	1.48	-0.45	0.65
Entrepreneurship coursework	0.26	0.38	2.47*	0.01
Proactive Personality	5.18	5.33	1.54	0.13
New Resource Skill	21.43	20.99	-1.10	0.27
Entrepreneurial Self-Efficacy	3.62	3.64	0.30	0.76

measured using the shortened 10-item scale used in Seibert, Kraimer, and Crant (2001). Cronbach's alpha for this measure was .90.

**Control variables and demographic data.** Based on previous research, this analysis controlled for several demographic self-reported variables, including age, gender, education (years in college), entrepreneurship coursework, and years of work experience. Both Study 1 and Study 2 used the same measures.

### Analytical Approach

Both studies followed the same procedure for data analysis. First, a measurement model using Mplus was developed that included the three latent factors of entrepreneurial self-efficacy, new resource skill, and proactive personality. The residuals on the two similarly worded items in the new resource skill scale were allowed to correlate. No other error variances were correlated. Consistent with previous use (Greguras & Diefendorf, 2010; Li, Liang, & Crant, 2010), the proactive personality scale 10 items were assigned randomly to four parcels. Two parcels had three items each, and the other two parcels had two items each.

We then conducted confirmatory factor analyses on both the samples. The models for both studies indicated adequate fit; Study 1 ( $\chi^2 = 102.207$ ,  $df = 61$ , CFI = 0.954, SRMR = 0.051, RMSEA = 0.063) and Study 2 ( $\chi^2 = 76.452$ ,  $df = 61$ , CFI = 0.984, SRMR = 0.042, RMSEA = 0.040) indicating construct validity (Bagozzi, Yi, & Phillips, 1991).

As a best practice, we incorporated measures to mitigate common method bias in our study design, we also undertook further statistical testing using the *single unmeasured latent method factor* approach recommended by Podsakoff et al. (2003). A CMV factor was added to the confirmatory factor analysis model, and paths were specified from each of the items to the common method factor. The

correlation between all the latent factors and the common method factor were restricted to zero. However, the model could not converge, which is not uncommon for such a model (Podsakoff et al., 2003). For convergence reasons, all the factor loadings to the common method factor were constrained to be the same and the model showed a good fit for both studies (Study 1:  $\chi^2 = 99.017$ ,  $df = 60$ , CFI = 0.957, SRMR = 0.054, RMSEA = 0.062; Study 2:  $\chi^2 = 76.025$ ,  $df = 60$ , CFI = 0.983, SRMR = 0.043, RMSEA = 0.042). Comparison with the original models revealed that the models with CMV were not statistically significantly better than the model without CMV in either study (Study 1:  $\Delta \chi^2 = 3.19$ ,  $\Delta df = 1$ , ns; Study 2  $\Delta \chi^2 = .427$ ,  $\Delta df = 1$ , ns). See Table 2 for CMV testing the validity of the sample data set.

### Results

The means, standard deviations, reliabilities, correlations and the relationships among the variables for Study 1 and Study 2 are presented in Tables 3 and 4.

To test the hypotheses, a structural model was defined which included both the latent variables (entrepreneurial self-efficacy, new resource skill, and proactive personality) and the control variables (age, gender, work experience, education, and experimental condition and entrepreneurship coursework). In both studies, paths were drawn from all the control variables to both the mediator (new resource skill) and the dependent variable (entrepreneurial self-efficacy). A path was also drawn from proactive personality to new resource skill, and from new resource skill to entrepreneurial self-efficacy, hypothesizing full mediation. The model indicated a very good fit in both studies. Study 1:  $\chi^2 = 161.545$ ,  $df = 117$ , RMSEA = .055, CFI = 0.944, SRMR = .063. Study 2:  $\chi^2 = 148.837$ ,  $df = 117$ , RMSEA = 0.044, CFI = 0.962, SRMR = 0.059). Based on the reviewer feedback, we also tested the model in a combined sample ( $\chi^2 = 199.292$ ,  $df = 117$ , RMSEA = 0.049, CFI = 0.949, SRMR = 0.046).

Table 2  
Fit indices with and without CMV

	Study 1 CFA	Study 1 CFA with CMV	Study 2 CFA	Study 2 CFA with CMV
X <sup>2</sup>	102.207	99.017	76.542	76.025
df	61	60	61	60
CFI	0.954	0.957	0.984	0.983
SRMR	0.071	0.054	0.040	0.042
RMSEA	0.063	0.062	0.042	0.00

Table 3  
Means and correlations - study 1

	Mean	Std. Deviation	1	2	3	4	5	6
Age	22.50	1.70	1.00					
Gender	0.51	0.50	0.05	1.00				
Work Experience	5.91	2.90	.25**	0.01	1.00			
Education	3.66	0.70	.48**	0.10	-0.03	1.00		
Proactive Personality	5.18	0.87	0.02	-0.08	-0.06	-0.04	1.00	
New Resource Skill	3.49	0.66	0.04	-0.11	0.11	-0.10	.47**	1.00
Entrepreneurial Self-Efficacy	3.62	0.71	-0.05	-.179*	-0.02	-0.15	.42**	.45**

\*\* . Correlation is significant at the 0.01 level (2-tailed).

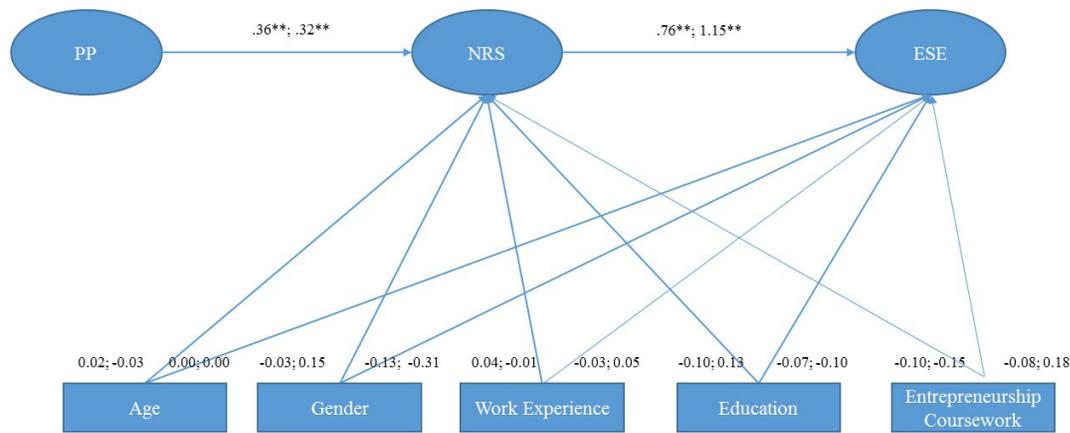
\* . Correlation is significant at the 0.05 level (2-tailed). Listwise  $N = 152$

Table 4  
Means and correlations - study 2

	Mean	Std. Deviation	1	2	3	4	5	6
Age	22.40	4.37	1.00					
Gender	0.46	0.50	0.00	1.00				
Work Experience	5.22	4.30	.82**	0.04	1.00			
Education	2.90	1.28	.36**	0.08	.37**	1.00		
Proactive Personality	5.33	0.79	0.03	0.07	0.11	0.01	1.00	
New Resource Skill	3.43	0.67	-0.16	0.12	-0.10	0.15	.43**	1.00
Entrepreneurial Self-Efficacy	3.64	0.74	0.07	-0.04	.18*	0.10	.59**	.50**

\*\*Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed). Listwise  $N = 139$



Study 1; Study 2  
 \* p<.05  
 \*\* p<.01

Figure 1. Model with standardized path coefficients

Since the overall structural model fit well, we proceeded to test the hypotheses by observing the significance of the path coefficients on the hypothesized paths.

To test Hypothesis 1, which stated that proactive personality would be positively related to new resource skill, we investigated the loading on the path coefficient from proactive personality to new resource skill. The path coefficient was positive and statistically significant in both samples, supported (Study 1  $b = 0.36, p < .01$ ; Study 2  $b = 0.32, p < .01$ ; Combined sample  $b = 0.35, p < .01$ ), indicating support for Hypothesis 1.

To test Hypothesis 2, which stated that new resource skill will be positively related to entrepreneurial self-efficacy, we investigated the loading on the path coefficient from new resource skill to entrepreneurial self-efficacy. The path coefficient was positive and statistically significant in both samples (Study 1,  $b = 0.76, p < .01$ ; Study 2,  $b = 1.15, p < .01$ ; Combined sample  $b = 0.86, p < .01$ ). Therefore, we concluded that Hypothesis 2 was supported.

Hypothesis 3 predicted that new resource skill would mediate the effect of proactive personality on entrepreneurial self-efficacy. This hypothesis was tested by examining the indirect effect of proactive personality on entrepreneurial self-efficacy as mediated through new resource skill. In the past, mediation was often tested using variations of the Baron and Kenny (1986) four-step procedure. More recently, mediation testing best practices have pointed towards SEM analysis (Baron & Kenny, 1986; Kenny, 2008; LeBreton, Wu, & Bing, 2009; MacKinnon, 2008; MacKinnon & Fairchild, 2009). We have therefore followed the more recent recommendations to undertake SEM analyses rather than using the Baron and Kenny (1986) procedure. We also used the Mplus indirect effect calculation, which uses the delta method as articulated in the MacKinnon (2008). As Cheung & Lau (2008) argue, indirect effects do not follow a normal distribution and that bootstrapping offers a more

robust approach to testing statistical significance. Following their advice, we used 1000 bootstrap draws for constructing the confidence interval and report the LLCI and ULCI in the tables. The indirect effect was statistically significant (Study 1,  $b = .28, p < .01$ ; Study 2  $b = .37, p < 0.01$ ; Combined sample,  $b = .30, p < .01$ ). Therefore, we concluded that Hypothesis 3 was supported.

### Discussion

Finding support in the literature for the influence of both proactive personality, and entrepreneurial self-efficacy on positive venture outcomes, as well as support for the relationship between new resource skill and entrepreneurial self-efficacy in practicing entrepreneurs the presented studies demonstrated (using two independent samples) that dispositional variables (e.g., proactive personality) can influence entrepreneurial skills (e.g., new resources skills) which in turn can influence entrepreneurial cognitions (e.g., entrepreneurial self-efficacy). The studies thus highlighted the mediating role of entrepreneurial skills related to resources – new resource skill. It follows from Stevenson and Jarillo (1990) that the skills related to resources are highly valuable entrepreneurial skills.

Hypothesis 1 argued for a relationship between proactive personality and new resource skill. The hypothesis was supported, indicating that those who are more proactive by disposition also tend to have greater new resource skill, a key skill for entrepreneurial careers. In other words, an individual who has a more proactive personality would be more likely to take initiative in everyday situations when compared to others, and such initiative extends to acquiring resources for entrepreneurial pursuits. By linking the research on proactive personality (Bateman & Crant, 1993; Uy et al., 2015) to new resource skill (Baum & Locke, 2004), this paper also contributes to the research conversation on how

personality variables can contribute to development of skills in the context of entrepreneurship (Rauch & Frese, 2007b).

Hypothesis 2 argued for a positive relationship between new resource skill and entrepreneurial self-efficacy and was supported in both samples. Those who have the skills related to resource gathering, i.e., new resource skill, are more likely to have entrepreneurial cognitions. Entrepreneurial self-efficacy can help differentiate those who start a business from those who do not and may at times be the best predictor of future entrepreneurial performance (Aroora et al., 2013) in a context like entrepreneurial education. While entrepreneurship research has long articulated the importance of skills related to gathering resources, there is little research articulating the role of resource related skills in development of entrepreneurial cognitions. By linking new resource skill (Baum & Locke, 2004) to entrepreneurial self-efficacy cognitions (Chen et al., 1998; Kickul et al., 2009; Zhao et al., 2005), this paper connects two important areas of entrepreneurship research.

The third hypothesis argued for the role of new resource skill as a mediator between proactive personality and entrepreneurial self-efficacy, both of which are related to entrepreneurial intentions. The combination of skills and confidence can help potential entrepreneurs overcome some of the barriers to starting their own ventures. It is thus possible that those with proactive personality, through their own initiative, will acquire skills and develop the needed efficacy to pursue an entrepreneurial career.

When combined, these two studies found that new resource skill mediated the relationship between proactive personality and entrepreneurial self-efficacy. This is important to entrepreneurship education and also to the development of aspiring entrepreneurs of any age. By building on an existing construct in the entrepreneurship literature and linking it to both proactive personality (Bateman & Crant, 1993; Uy et al., 2015) and entrepreneurial self-efficacy (Chen et al., 1998; Kickul et al., 2009; Zhao et al., 2005) the authors develop potential points of interventions that can help develop entrepreneurial skills.

### **Conclusion**

The present study investigates how a skill related to performance of entrepreneurial ventures (new resources skill) contributes to the relationship between proactive personality and entrepreneurial self-efficacy and discusses why attention should be paid to such a skill. This paper makes several different contributions. It argues for attending to a new construct - new resource skill - in the development of entrepreneurial self-efficacy while taking into account the influence of an individual's level of proactiveness as measured by proactive personality. Most studies in the entrepreneurship literature involve samples of entrepreneurs or nascent entrepreneurs (i.e., individuals who have already expressed entrepreneurial intentions). While these studies are important for understanding entrepreneurship, it is dif-

ficult to untangle the effect of entrepreneurial intentions, prior knowledge, and entrepreneurial self-efficacy. However, by using a sample of college students, the effect of new resource skill and proactive personality on entrepreneurial self-efficacy can be better isolated.

### **Theoretical Implications**

This paper was motivated by Baum and Locke's (2004) research investigating how new resource skill was related to entrepreneurs' self-efficacy and venture growth. The purpose of this paper was to better understand how new resource skill, proactive personality and entrepreneurial self-efficacy are related in a sample of college students and potential aspiring entrepreneurs and whether the construct of new resource skill would generalize into the domain of student preparation. The studies presented in this paper advance knowledge of entrepreneurship and entrepreneurship theory in several ways. First, this paper aligns the concepts of skills and job performance as outlined by researchers with the goal of preparing students for entrepreneurial careers. Second, it introduces a specific skill that is unique to the accepted definitions of entrepreneurship as one that has been shown to be linked to the performance of actual entrepreneurs. Third, it explores the extent to which the construct of new resource skill could be relevant to the entrepreneurship student, thus extending its generalizability from the domain of performance into the domain of preparation or training.

### **Practical Implications**

The skill set of new resource skill includes finding and organizing resources to start new organizations and solve business problems or anticipate future needs in existing businesses. Opportunities to develop this skill set exist through classroom instruction, discussion, movie clips and experiential activities. A course lecture introduction on the concept of "resources not currently controlled" and how to identify a students' own social capital and social network could get students started thinking about what resources they personally have access to and how they might go about borrowing, leasing, renting, buying, or bartering for resources from their social network. A case could be used as an opener to that class conversation. This classroom-based conversation could then be followed by scenario prompts that give students a real or fictitious situation with a person or a business that needs to "find money or people to start a new organization or program" or "reorganize people or machines for a new project". Movie clips could be used to augment this class discussion. Two examples of movie clips include one from the movie, *New in Town* (Brooks & Elmer, 2009) with Renee Zelleger and Harry Connick, Jr, and the other from *The Founder* (Handfeld & Hancock, 2016) with Michael Keaton, Nick Offerman and John Carroll Lynch. At the end of the *New in Town* movie, the plant

Table 5.  
Unstandardized results from study 1 & study 2

	Study 1				Study 2				Combined Sample			
	NRS		ESE		NRS		ESE		NRS		ESE	
Age	0.02	(0.033)	0.00	(0.041)	-0.03	(0.028)	0.01	(0.04)	-0.05*	(0.022)	0.02	(0.018)
Gender	-0.03	(0.107)	-0.13	(0.123)	0.15	(0.1)	-0.31	(0.128)	0.05	(0.076)	-0.19*	(0.086)
Work Experience	0.04	(0.02)	-0.03	(0.023)	-0.01	(0.03)	0.05	(0.038)	0.02	(0.018)	0.01	(0.019)
Education	-0.10	(0.093)	-0.07	(0.089)	0.13*	(0.051)	-0.10	(0.066)	0.09	(0.044)	-0.06	(0.041)
Entrepreneurship coursework	-0.10	(0.108)	-0.08	(0.144)	-0.15	(0.104)	0.18	(0.142)	-0.11	(0.072)	0.04	(0.088)
PP	0.36**	(0.102)			0.32**	(0.064)			0.35**	(0.064)		
NRS			0.77**	(0.217)			1.15**	(0.333)			0.86**	(0.15)
R-Square	0.53		0.51		0.55		0.76		.49		.57	
Indirect Effect of PP (X) on ESE (Y) as mediated through NRS (M)	.28**	(0.083)			0.37**	(0.081)			0.30**	(0.062)		
LLCI (Lower .5%)	0.077				0.16				0.161			
ULCI (Upper .5%)	0.49				0.566				0.476			

\*\* . Correlation is significant at the 0.01 level (2-tailed). \* . Significant at the 0.05 level (2-tailed).

is facing a shut down, but the manager finds a way to seek outside investors to buy the plant for the employees and the employees find a way to reconfigure their production facility to produce a new product that was developed by one of the employees. This would be an example of finding money to start a new organization or to find the resources we need. Additionally, in the movie, *The Founder*, the McDonald's brothers demonstrate rapid prototyping and the ability to organize people and machines for new projects when they share with Ray Kroc how they devised the "Speedee Service System" (McDonald's Corporation, n.d) by orchestrating the system to their employees on a chalked out layout of their new kitchen drawn on a tennis court.

In terms of course activities, immersive learning projects that involve working with real clients in existing organizations (Garrido-Lopez, Hillon, Cagle, & Wright, 2018) or experiential learning activities (Canziani, Welsh, Hsieh & Tullar, 2015) such as simulations can provide opportunities to deliberately practice developing new resource skill. In this way the development of new resource skill could be an additional objective added to existing course activities through one or more of the following ways: a) project teams are given instruction to think about resources that the organization needs regardless of what it currently controls or has access to; b) classroom based brainstorming or nominal-group activities where students deliberately practice asking questions using creative problem-solving strategies. Instead of listing the solutions to the problems, have students reframe the situation by asking questions, starting with; How can I? How can we? Where can we? Where can they? ... gain access to items needed to solve the problem. This type of engagement with others allows for the student to exercise their own capability while observing the ability of others to come up with ideas to the same problem.

These studies have practical implications for entrepreneurship education. With respect to this research, it is well established that entrepreneurship programs help enhance students' entrepreneurial self-efficacy (Harris, Gibson & Taylor, 2007; Wilson et al., 2007). However, to best prepare undergraduates as aspiring entrepreneurs, educators must also thoughtfully consider the knowledge and skills that are contextually relevant, or specific to the work (or the job per se) of entrepreneurship. By their very nature, skills are teachable and thus something students can learn.

Similarly, identifying those who demonstrate a proactive personality and encouraging them to develop new resource skill will increase their entrepreneurial self-efficacy. In an economic environment fraught with uncertainty, those who are able to seek out or take advantage of opportunities will be more successful. Jobs are not what they used to be; they are not as permanent. Developing skills like new resource skill can in turn develop entrepreneurial self-efficacy, which increases the chances they will have entrepreneurial intentions and eventually act on those intentions. As a result, new resource skill also fills a gap in the available measures of assessing what is taught in entrepreneurship.

Opportunities exist to influence educational programs. While efforts are being made, it is unclear how effectively knowledge is translating into program objectives of entrepreneurship education. As entrepreneurship education continues to evolve, it could benefit from a comprehensive documentation of all the required knowledge, skills and abilities needed to be successful in the various vocational tasks that could be experienced in such a career. Teachers can then do a better job of understanding how their course objectives, class exercises, and training experiences affect the relevant knowledge, skills, and abilities that are known to be correlated with entrepreneurs' actual work experiences. The current study helps with this goal of comprehensive documentation by highlighting the mechanism (i.e. new resource skill) that translates a personality variable into entrepreneurial self-efficacy. Entrepreneurial self-efficacy is an important antecedent of both entrepreneurial intentions and entrepreneurial performance.

If research can clarify these skills in a way that they can be clearly measured and developed, then entrepreneurship, as a career will be easier to define. Only through diligence in both research and the design of curriculum can it be claimed that students are truly being prepared for entrepreneurial careers.

## **Limitations and Future Research**

### **Limitations**

Studies 1 and 2, when combined, capture single respondent data in a cross-sectional format, and while the two-study design has other strengths, single respondent cross-sectional nature of the data is a limitation of this study. Similarly, while statistical approaches demonstrated that common method effects did not bias the results, future studies could implement advanced design approaches including temporal separation and multi-respondent data to mitigate common method bias (Podsakoff et al., 2003). A longitudinal study, one conducted on a more diverse sample and investigating entrepreneurial performance in the context of decisions and outcomes, can further advance knowledge about the interplay of personality factors related to entrepreneurship performance and new resource skill.

### **Future Research**

Future research can build on this work by identifying the moderating and mediating role of other individual difference variables, on entrepreneurial intentions and behaviors. Similarly, experimental interventions including classroom instruction or experiential exercises can further clarify the causal mechanisms underlying the relationships. Future studies could also extend the base of skills to be evaluated and follow students beyond graduation thereby not just examining end of program goals, but actual future entrepreneurial behaviour. These hypotheses could also be

tested among aspiring entrepreneurs who are not currently in college and those that have never attended college, further identifying the effects of experience and education. Assessing these relationships with participants who are experiencing different contexts will help develop evidence-based interventions for entrepreneurial training and education. Studies like these will better inform the impact of specific skills, such as new resource skill on entrepreneurial behaviors, and performance.

Edelman et al. (2008, p. 57) challenged the domain of entrepreneurship education when they asked, "Are our current entrepreneurship educational practices relevant to what actual entrepreneurs are practicing?" in other words, is what is needed or what is applicable to performance in the discipline of entrepreneurship really being taught? Directing more attention towards the actual performance and vocational tasks of practicing entrepreneurs would clarify how well students are prepared for similar tasks. Such an analysis would identify the appropriate knowledge, skills, and abilities to include in entrepreneurship curricula. By their very nature, skills are teachable. If the goal is to prepare students for entrepreneurial careers, then developing skills related to the acquisition and leveraging of resources is essential.

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