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## “I know I can, but I don't fit”: Perceived fit, self-efficacy, and entrepreneurial intention

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## ABSTRACT

While extant literature generally suggests a positive relationship between entrepreneurial self-efficacy and entrepreneurial intention, several moderators have been identified – suggesting possible boundary conditions on that relationship. This paper introduces perceived person-entrepreneurship fit to entrepreneurship and shows that it moderates the relationship between entrepreneurial self-efficacy and entrepreneurial intention. Three studies are conducted which illuminate the utility of randomized experiments and methodological approaches to address limitations in the interpretation of empirical results. Studies 1 and 2 are randomized experiments to examine causality; Study 3 contains two correlational surveys to triangulate the results by examining whether the proposed effects withstand the influence of confounding variables in real-life. The findings indicate that when a strong perception of fit with entrepreneurship is achieved, entrepreneurial intention is strongly predicted by entrepreneurial self-efficacy. In contrast, if one perceives a low level of fit or no fit, entrepreneurial intention will be low, regardless of entrepreneurial self-efficacy.

## Executive summary

Belief in one's own ability to start and run a new venture successfully, i.e., entrepreneurial self-efficacy (ESE), is an important predictor of entrepreneurial intentions (EI) (Chen et al., 1998; De Noble et al., 1999; McGee et al., 2009). Both the theory of planned behavior (Ajzen, 1991) and Shapero's entrepreneurial event model (Krueger et al., 2000) suggest a positive effect of ESE on EI. While this theoretical relationship between ESE and EI is widely recognized, recent empirical studies (Bullough et al., 2014; Fitzsimmons and Douglas, 2011; Hsu et al., 2017b; Kickul et al., 2009; Lee et al., 2011; Piperopoulos and Dimov, 2015; Shinnar et al., 2014) show that this link may be weaker or even disappear under certain conditions. Our current research is motivated by these recent findings and by Schlaegel and Koenig's (2014) call for more research on the boundary conditions of the relationship between entrepreneurship ESE and EI.

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Some individuals believe that they have the knowledge, skills, and abilities to start and run a company but lack the intention to do so. We suggest that one of the reasons that inhibit them from starting a business is that they do not perceive a fit with what the entrepreneurship process could offer. Specifically, we argue that the perception of a misfit between personal needs and what starting a business offers constitutes a boundary condition to the ESE-EI link. Stated differently, individuals who perceive that entrepreneurship does not meet their personal needs will not have a strong intention to start a business, regardless of their level of entrepreneurial self-efficacy.

We draw upon person-environment fit (P-E fit) theory (e.g., Lewin, 1936; Kristof, 1996) to develop a new construct of perceived person-entrepreneurship fit (Perceived P-ENT Fit) to examine the boundary condition discussed above. We designed two experiments and two correlational surveys to test our hypotheses. In the experiments with students, we use two robust manipulation methods – elicitation (Foo, 2011) and deception (Hsu et al., 2017b) – to test for causality. Only a small number of entrepreneurship studies use these types of active participation experimental designs (Hsu et al., 2017a). We triangulated the experimental results with correlational surveys across a student sample and a sample of employees accessed via Amazon Mechanical Turk. The studies show consistent results and support our hypotheses that Perceived P-ENT Fit increases EI and positively moderates the relationship between ESE and EI.

This research makes important contributions to the entrepreneurship literature. First, we draw upon fit theory to introduce Perceived P-ENT Fit as a new construct. Second, we use Perceived P-ENT Fit to explain inconsistencies in the influence of ESE on EI. Third, we make methodological contributions by combining different correlational surveys and randomized experiments—our use of robust active participation manipulations and internal analyses and our novel tests of bilateral causality between ESE and EI.

## 1. Introduction

One of the prominent explanations for why people pursue entrepreneurship rests on entrepreneurial self-efficacy (ESE) or the belief in one's entrepreneurial ability (Chen et al., 1998). Research on ESE suggests that individuals who believe that they have the ability to successfully start a business will have an intention to do so (Zhao et al., 2005). However, recent studies have also found that the influence of ESE on entrepreneurial intentions may not be as strong under certain circumstances. von Graevenitz et al. (2010), for example, showed that after taking an entrepreneurship course, students' ESE increased but their intention to start a business decreased.

We reason that an individual's perception of fit with entrepreneurship plays a vital role in whether ESE leads to EI. Entrepreneurship is a long process (McGee et al., 2009; Moroz and Hindle, 2012) that is full of uncertainty (Knight, 2002). The attributes of this journey may not fit the personal needs of some individuals (Gupta et al., 2009; Hsu et al., 2016). Examples of such personal needs may include work-life balance (Justo et al., 2015) or financial circumstances that require a stable income (Parker et al., 2005).

We build on the growing literature of person-environment fit theory which shows that attitudinal outcomes, such as intention, are shaped by individual evaluations of internal factors and the external environment (Chatman, 1989; Kristof-Brown et al., 2005b; Saks and Ashforth, 1997). Markman and Baron (2003) introduced fit theory to entrepreneurship. Their conceptual paper used person-entrepreneurship fit as a theoretical framework to articulate the importance of personal factors in predicting venture outcomes. We extend their seminal piece by introducing a theoretical construct that differentiates and operationalizes the content dimensions of perceived fit.

Perceived fit is conceptually different from actual fit or objective fit (i.e., fit between personal attributes and entrepreneurship as identified by an outsider such as the researcher). While actual fit with entrepreneurship has direct links to successful business outcomes (Markman and Baron, 2003), this fit may not be known prior to individual engagement in entrepreneurship. It is, therefore, the fit perception that motivates the individual to become an entrepreneur. A better understanding of the construct of perceived fit would thus contribute to entrepreneurship theory, practice, and education.

Because needs fulfillment is an important motivational driver (Deci and Ryan, 2002; Greguras and Diefendorff, 2009), we focus on the needs-supplies dimension of perceived person-entrepreneurship (P-ENT) fit to develop a model based on person-environment (P-E) fit theory. First, we suggest a positive relationship between Perceived P-ENT Fit and EI. Second, we reason that the link between ESE and entrepreneurial intention is amplified by the perceived fit between personal needs and what the entrepreneurial process supplies (i.e., the needs-supplies dimension). Conversely, the relationship is weakened or even non-existent for those who perceive a misfit. Hence, we argue that P-ENT fit, anchoring on the needs-supplies dimension, explains why high ESE may not transfer into high entrepreneurial intention.

We conducted three studies to test our model. The first two studies are experiments using student participants. For the third study, we surveyed students and validated the findings with a working employee sample. Results from these studies contribute to entrepreneurship research in several ways. First, we extend research on the contingent relationship between ESE and EI (Bullough et al., 2014; Fitzsimmons and Douglas, 2011; Hsu et al., 2017b; Kickul et al., 2009; Lee et al., 2011; Piperopoulos and Dimov, 2015; Shinnar et al., 2014) by identifying perceived fit as an important factor explaining whether ESE predicts entrepreneurial intentions. Second, entrepreneurship scholars have recognized the importance of person-entrepreneurship fit with the pursuit of entrepreneurship (e.g., Lee et al., 2011; Markman and Baron, 2002, 2003). As we show in this paper, perceived fit, and, in particular, the needs-supplies dimension, explains an entrepreneurial phenomenon that cannot be explained by existing theories. In doing so, we open another avenue for scholars to examine individual entrepreneurs. Fit can be perceived differently from individual to individual (Kristof, 1996) and from time (e.g., pre-entry) to time (e.g., post-entry), this variance can affect the person's attitudes and behaviors (Edwards et al., 2006; van Vianen, 2018). Therefore, it is important to study perceived fit in entrepreneurship.

We also make methodological contributions. First, we apply two distinct research methods: randomized experiments and correlational surveys. Most studies on entrepreneurial intentions use either cross-sectional surveys which raise the issue of reverse causality or longitudinal studies which cannot eliminate alternative explanations. To overcome those limitations, we conducted two experiments to examine causal effects and surveys to triangulate results. Our mixed method approach overcomes some of the limitations of each method and increases confidence in the findings (Onwuegbuzie and Collins, 2007). Entrepreneurship research using mixed method approaches is still in its infancy (Molina-Azorín et al., 2012). Our study illuminates the value added of using a mixed-method approach for entrepreneurship research.

Second, we introduce the internal analyses method to entrepreneurship. When the treatment effect in an experiment is not sufficiently strong to detect statistical significance on the hypothesized relationship, researchers should perform internal analyses as an alternative method rather than conclude that no relationship exists (Aronson et al., 1990). Although causal inference cannot be drawn from internal analyses, the information revealed by such analyses delivers a signal of whether causality may exist (T. D. Wilson et al., 2010). In cases when there are signals of causality, researchers should design and conduct another experiment to verify causality (Aronson et al., 1990). To our knowledge, we are the first to employ internal analyses in entrepreneurship research, thereby advancing the design and analyses of entrepreneurship experiments.

Third, we apply two distinct manipulations in our experiments. Whereas most studies use one method to manipulate perception (e.g., Burtch et al., 2015; Zhu et al., 2018), we apply the deception approach (Hsu et al., 2017b) and the elicitation approach (Foo, 2011) to test the contingency effect of ESE on entrepreneurial intentions. We also discuss the appropriateness of each manipulation approach for different constructs and for future research.

## 2. Theoretical development

### 2.1. Theories of entrepreneurial intentions

There is a debate in entrepreneurship research as to whether the formation of entrepreneurial intention is worth studying. The primary concern is that intention may not transfer into start-up behavior. While this concern is valid, Shane (2008) indicated “as much as 40 percent of the U.S. population will be self-employed for some part of their work life” (p. 3). Because entrepreneurial behavior, such as the startup decision and actual actions, does not occur overnight, entrepreneurs must first have an intention to start a business. Our view is that the appropriateness of entrepreneurial intention depends on the research question. Entrepreneurial intention should be an appropriate outcome for studies on nascent entrepreneurs (McGee et al., 2009, p. 966) whose intentions might only lead to start-up behaviors several years later. For example, individuals who intend to start a capital-intensive business are unable to do so immediately because of resource scarcity (Kannianen and Keuschnigg, 2004).

Krueger et al. (2000) argue that “[i]n the psychological literature, intentions have proven to be the best predictor of planned behavior, particularly when the behavior is rare, hard to observe, or involves unpredictable time lags” (p. 411). They compared two theoretical models that have been extensively applied to the study of entrepreneurial intention: the Krueger-Ajzen model based on Ajzen's theory of planned behavior (Ajzen, 1991) vs. the Krueger-Shapero model adapted from the research of Shapero and Sokol (1982). Krueger et al. (2000) found that both models were equally effective in predicting EI. Schlaegel and Koenig (2014) and Fitzsimmons and Douglas (2011) also introduce models for predicting EI.

Each of these models has a central construct that is similar or highly related to self-efficacy. Consequently, most EI studies include entrepreneurial self-efficacy as either a predictor or a control variable. As we discussed earlier, however, existing theories do not explain why some individuals with strong self-efficacy do not have strong EI. In this paper, we explain that this relationship is contingent on individual perceptions of fit with entrepreneurship. In the next section, we draw upon person-environment fit theory to introduce the concept of perceived person-entrepreneurship fit.

### 2.2. Person-environment fit: categories and content dimensions

Research on person-environment fit (P-E fit) suggests that attitudinal and behavioral outcomes are influenced by how one's personal attributes fit the external environment (e.g., Lewin, 1936; Parsons, 1909; Pervin, 1968). Individuals who experience fit are more committed and satisfied, perform better, and have lower intentions to quit their jobs or organizations (Kristof-Brown et al., 2005a; Oh et al., 2014). The prevailing research surrounding P-E fit distinguishes several categories and content dimensions.

In terms of categories, there are person-vocation/person-career fit, person-job fit, person-organization fit, person-group fit, and person-supervisor fit (Kristof-Brown, 2000; Kristof-Brown et al., 2005a, 2005b; Kristof, 1996). This paper introduces an additional category of P-E fit: person-entrepreneurship fit. The content dimensions of P-E fit are less definitive (Judge and Ferris, 1992). Needs-supplies and demands-abilities, however, are the two most commonly accepted dimensions (Cable and DeRue, 2002; Kristof-Brown et al., 2005a).

The needs-supplies dimension of fit is the extent to which the external environment, such as a job or organization, “fulfills the needs of an individual” (Hoffman and Woehr, 2006, p. 391). The demands-abilities dimension is the extent to which demands from the external environment and a person's ability are congruent (Cable and DeRue, 2002). There may be similar or overlapping content dimensions across different categories of fit. For example, person-job fit contains the content dimension of the needs-supplies which reflects whether the supplies from the job meet the person's needs, while the needs-supplies dimension also exists in person-vocation fit to reflect the match between the supplies from the specific vocation and the person's needs.

### 2.3. Fit research in entrepreneurship

Fit theory has been applied to entrepreneurship by Markman and Baron (2003). They use person-entrepreneurship fit (P-ENT fit) as a framework to articulate the importance of individual attributes, such as self-efficacy to entrepreneurship. The closer the person-entrepreneurship fit, the greater the likelihood or magnitude of business success. Actual P-ENT fit, however, is unknown prior to engagement in the entrepreneurship process. As such, it is the perception of fit that motivates the person to enter entrepreneurship.

According to fit theory (Cable and Judge, 1996; Kristof, 1996; Saks and Ashforth, 2002), individuals use social information to make sense of their fit to the environment (Kristof-Brown and Billsberry, 2013; Yu, 2013). Social information provides the cues that individuals use to construct and interpret events, norms, and expectations (Salancik and Pfeffer, 1978).

In the context of entrepreneurship, individuals periodically receive and process social information about starting businesses. They hear stories about entrepreneurs and the entrepreneurial process from their friends and family members, read business information in newspapers and magazines, and watch TV shows featuring entrepreneurs. From this social information, individuals interpret what the entrepreneurship process can offer - which together with the individuals' evaluations of their personal attributes form fit perceptions. These interpretations differ from person to person and from time to time.

### 2.4. Perceived P-ENT Fit anchored on the needs-supplies dimension

The level of fit with entrepreneurship depends on the extent to which individuals perceive that their needs can be fulfilled through the entrepreneurial process. Markman and Baron's (2003) framework of P-ENT fit provides the initial step for entrepreneurship scholars to build upon (Baron, 2012; Brigham et al., 2007; Lee et al., 2011; Leung and Uy, 2010; Leung et al., 2006; Monsen and Wayne Boss, 2008; Verheul et al., 2015). Their framework, however, does not differentiate between the two content dimensions of P-ENT fit.

The first content dimension of P-ENT fit is needs-supplies. Several theories (Avey et al., 2009; Deci and Ryan, 2002; Greguras and Diefendorff, 2009; Higgins, 1998; Salancik and Pfeffer, 1978) suggest that needs fulfillment is the primary driver of attitudes and behaviors. For example, individuals have needs for belongingness which prompt them to find a workplace that they can call home (Avey et al., 2009). The second content dimension of P-ENT fit is demands-abilities. Greguras and Diefendorff (2009) explain that demands-abilities fit is conceptually similar to self-efficacy which refers to the belief in one's ability to successfully engage in the behaviors needed to accomplish certain goals (Bandura, 1977, 1982). Greguras and Diefendorff (2009, p. 468) describe the demands-abilities dimension as "the belief that one has the skills and abilities to perform effectively."

Therefore, the effect of the perceived demands-abilities fit on the individual is captured to some extent by self-efficacy. Hence, we anchor person-entrepreneurship fit on the needs-supplies dimension, defined as the perceived compatibility between a person's needs (e.g., needs for achievement, safety etc.) and what the entrepreneurial process has to offer. This enables us to capture the effects of both demands-abilities (through the effect of self-efficacy) and needs-supplies.

We contend that the perception of fit between individual needs and what entrepreneurship can offer affects the intention to start a business. This perception differs from person to person based on the social information that individuals receive and process. For example, an individual who receives information from a friend who owns a part-time business selling cookies from home may form the perception that entrepreneurs have scheduling autonomy but limited achievement in terms of monetary gains. Conversely, a person who learns of successful entrepreneurs working long hours to run million-dollar businesses may perceive that entrepreneurship is financially rewarding but provides little scheduling flexibility. These evaluations shape perceptions and interpretations of what entrepreneurship supplies.

Personal needs also differ. For instance, someone with strong needs for financial security may perceive a poor fit with the pursuit of entrepreneurship on the belief that entrepreneurship is full of uncertainty (Knight, 2002) and unstable financial returns (Shane, 2008). On the other hand, a person with a strong need for self-fulfillment may view the uncertainty associated with entrepreneurship as a challenge or an opportunity that can fulfill a need for self-achievement (Baron, 2004). This combination of personal needs and social information processing underlies individual perceptions of needs-supplies fit (Greguras and Diefendorff, 2009).

Our reasoning above is supported by research showing that job seekers choose to work for organizations where they perceive high needs-supplies fit (Cable and Judge, 1996; Westerman and Cyr, 2004). While most job seekers have not worked for the prospective company, they receive company information from social sources that inform perceptions about whether working for the company meets their needs (e.g., self-achievements). This information influences the application decision (Saks and Ashforth, 2002). Extending this line of argument:

**Hypothesis 1.** Perceived P-ENT Fit increases entrepreneurial intention.

### 2.5. Entrepreneurial self-efficacy and the moderating effect of Perceived P-ENT Fit

Entrepreneurial Self-Efficacy (ESE) refers to the belief in one's ability to perform entrepreneurial tasks and activities (Chen et al., 1998; De Noble et al., 1999; McGee et al., 2009). The positive relationship between ESE and entrepreneurial intention has been validated (Chen et al., 1998; Liñán and Chen, 2009; McGee et al., 2009; Schlaegel and Koenig, 2014; F. Wilson et al., 2007; Zhao et al., 2005) in numerous studies (Schlaegel and Koenig, 2014). Most of these studies are correlational, and the causal effect of ESE has not been examined. Recent studies also show that the ESE-EI relationship may be weaker than previously thought or even non-existent under certain circumstances (Bullough et al., 2014; Fitzsimmons and Douglas, 2011; Hsu et al., 2017b; Kickul et al., 2009;

Lee et al., 2011; Piperopoulos and Dimov, 2015; Shinnar et al., 2014). As Schlaegel and Koenig (2014) suggested, “moderators [to the formation of EI] have not been examined systematically across studies” (p. 303).

For instance, Hsu et al. (2017b) found ESE to be better at predicting the intentions of individuals who are satisfied with their current financial situation. Piperopoulos and Dimov (2015) also found that entrepreneurship education can, at times, increase student ESE but lower entrepreneurial intentions. Other studies show that the ESE-EI relationship is weaker for males than females (Shinnar et al., 2014) and that the relationship between ESE and entrepreneurial intention is stronger when perceived desirability (i.e., the extent to which people desire to enter entrepreneurship) is low<sup>1</sup> (Fitzsimmons and Douglas, 2011).

In this paper, we argue that the relationship between ESE and entrepreneurial intention is contingent on the extent to which entrepreneurship supplies personal needs (c.f., Brockner et al., 2004). P-E fit theory suggests that individuals will consider jointly whether they have the abilities demanded by the task and whether performing the task supplies their needs (Chuang et al., 2016). The intention to perform the task is highest when the demands-abilities and needs-supplies dimensions of P-E fit are both favorable (Kristof-Brown et al., 2005a, 2005b). If either dimension is unfavorable, the effect of the other on the intention is weaker. As discussed earlier, the ESE construct is akin to the demands-abilities dimension of P-E fit and our conceptualization of P-ENT fit centers on the needs-supplies dimension of P-E fit. We, therefore, propose that the ESE-EI relationship is strengthened by Perceived P-ENT Fit. Our approach is consistent with Deci and Ryan's (2002) Self-Determination Theory about need satisfaction as a predictor of individual attitudinal and behavioral outcomes.

Since the ESE-EI relationship has been investigated extensively, we do not state such a hypothesis in the current paper. Instead, we hypothesize the moderating effect directly. Therefore:

**Hypothesis 2.** The positive effect of ESE on entrepreneurial intention is moderated by Perceived P-ENT Fit, such that the stronger the perception of fit with entrepreneurship, the stronger the effect.

### 3. Methods

In researching individual entrepreneurs, alternative explanations for empirical findings are often possible (Hsu et al., 2017a). An experiment that randomly assigns the participants to different experimental groups averages out individual differences and unobserved variables (Colquitt, 2008). Alternative explanations are thereby ruled out and causality revealed (Aronson et al., 1990). Our first and second studies use randomized experiments in a computer lab and a classroom to examine causal relationships between ESE, Perceived P-ENT Fit, and entrepreneurial intention. Study 3 is a correlational survey that investigates whether the experimental findings from the computer lab (Study 1) and the classroom (Study 2) withstand the influence of confounding/unobserved variables.

In the first two studies, we use student samples. In the third study, we use both a student sample and a working employee sample. Student samples are appropriate under certain circumstances (Highhouse, 2009), such as studies on nascent entry into entrepreneurship (Hsu et al., 2017a). Student samples are also frequently used to study entrepreneurial intention because experienced entrepreneurs have already transformed their intent to actual behavior (Liñán and Chen, 2009; Zhao et al., 2005). Undergraduate students are suitable in the current studies because they have limited full-time occupational experience which can threaten internal validity by biasing or confounding the experimental manipulations and study results (Abbink and Rockenbach, 2006; Arentz et al., 2013; Burmeister-Lamp et al., 2012; Burns, 1985).

#### 3.1. Study 1

##### 3.1.1. Sample and procedure

This study is a randomized experiment that manipulates the student participant ESE and Perceived P-ENT Fit and then measures Entrepreneurial Intention (EI). Data were collected at a university in the southeastern United States. Undergraduate students volunteered to participate in a research program for extra course credit. Approximately 500 students were in the pool. The data were collected in two sessions. The first session was an online survey. The second session was an experiment in a computer laboratory. The experimental procedure and study variables are illustrated in Table 1.

The first session ( $t_0$ ) collected data on demographic variables (age, gender, education background, and entrepreneurial experience) and baseline attitudes toward entrepreneurship (ESE, Perceived P-ENT Fit, and EI) to check whether the random assignment and manipulations in the second session ( $t_1$ ) experiment were successful. In the online survey pre-experiment at  $t_0$ ,  $ESE_0$  and *Perceived P-ENT Fit*<sub>0</sub> were measured by asking “How confident would you be in your capability of successfully performing the various roles and tasks of entrepreneurship?” and “How would you perceive the level of fit between entrepreneurship and your personal needs?”  $EI_0$  was measured with Liñán and Chen's (2009) six-item scale. All questions were on a seven-point Likert scale. The research program director emailed an invitation to the subject pool. One-hundred and seventy-one undergraduate students participated in the first session online survey.

We waited a week before conducting the second session experiment in  $t_1$  to minimize any carryover effects (Hsu et al., 2017a). One-hundred and nine students participated. The experiment was a 2 ( $ESE_1$ ) × 2 (*Perceived P-ENT Fit*<sub>1</sub>) between-subjects design. The participants were randomly assigned to one of the four experimental groups. Sixty-one were female (56%), eighty-two (75.2%) did

<sup>1</sup> Conceptually, ‘what people need’ is different from ‘what people desire’ examined by Fitzsimmons and Douglas (2011), partly because the two constructs (perceived P-ENT fit vs. perceived desirability) stem from different theories (P-E fit theory vs. expectancy theory).

**Table 1**

Study 1: experimental procedure and study variables.

Session 1: pre-experimental online survey in $t_0$			
Variables measured:			
<i>Demographics</i> (age, gender, education background, entrepreneurial experience)			
<i>ESE<sub>0</sub></i> : “How confident would you be in your capability of successfully performing the various roles and tasks of entrepreneurship?”			
<i>Perceived P-ENT Fit<sub>0</sub></i> : “How would you perceive the level of fit between entrepreneurship and your personal needs?”			
<i>EI<sub>0</sub></i> : 6-item scale by Liñán and Chen (2009)			
Session 2: experiment in $t_1$ (one week after Session 1)			
Participants were randomly assigned to one of the four experimental groups			
<i>High ESE groups (ESE<sub>1</sub> = 1)</i>		<i>Low ESE groups (ESE<sub>1</sub> = 0)</i>	
Participants solved eight strategic dilemma questions and received deceptive positive feedback.		Participants solved eight strategic dilemma questions and received deceptive negative feedback.	
“The results of the computer analysis show that 75% of your answers match those of successful entrepreneurs. This puts you in the top 5% among undergraduate students nationwide who possess the potential knowledge and skills of college students to start a business.”		“The results of the computer analysis show that only 25% of your answers match those of successful entrepreneurs. This put you at the bottom 30% among undergraduate students nationwide. Your answers demonstrate that you may not yet have had sufficient skills and knowledge to start a business for now.”	
<i>High Fit group (Perceived P-ENT Fit<sub>1</sub> = 1)</i>	<i>Low Fit group (Perceived P-ENT Fit<sub>1</sub> = 0)</i>	<i>High Fit group (Perceived P-ENT Fit<sub>1</sub> = 1)</i>	<i>Low Fit group (Perceived P-ENT Fit<sub>1</sub> = 0)</i>
Article emphasizing the fit between starting a business and the needs of college graduates to elicit perceptions of strong fit	Article emphasizing the misfit between starting a business and the needs of college graduates to elicit perceptions of weak fit	Article emphasizing the fit between starting a business and the needs of college graduates to elicit perceptions of strong fit	Article emphasizing the misfit between starting a business and the needs of college graduates to elicit perceptions of weak fit
Among all participants, we asked four manipulation check questions immediately after the manipulations and then measured EI:			
– Four manipulation checks:			
1. Were your answers to the strategic questions largely consistent with those of expert entrepreneurs? Response categories: yes/no			
2. Were you told advantages or concerns about starting a business for a college graduate? Response categories: yes/no			
3. According to the test result, how confident would you be in your capability of successfully performing the various roles and tasks of entrepreneurship? Response categories: Seven-point Likert scale (No confidence to Complete confidence) (post-experiment <i>ESE<sub>1</sub></i> )			
4. According to the article, how would you perceive the level of fit between entrepreneurship and your personal needs? Response categories: Seven-point Likert scale (No fit at all to Complete fit) (Post-experiment <i>Perceived P-ENT Fit<sub>1</sub></i> )			
– <i>EI<sub>1</sub></i> with the six-item scale by Liñán and Chen (2009)			

not have any entrepreneurial experience, thirty-six (33%) had an entrepreneur parent, and thirty-six (33%) had a relationship to a family business. Because the experiment employed deception, students were debriefed after completing the second session experiment at  $t_1$  to restore their baseline attitudes.

After the data were collected, we matched student responses in the first ( $t_0$ ) and second ( $t_1$ ) sessions and performed ANOVA analyses to examine between-groups differences (group assignment taking place at  $t_1$ ) in *ESE<sub>0</sub>*, *Perceived P-ENT Fit<sub>0</sub>*, and *EI<sub>0</sub>* captured in the first session ( $t_0$ ) and the demographic variables (gender, entrepreneurial experience, family business, entrepreneurial parent). There were no statistically significant differences, suggesting that random assignment was successful (cf., Gielnik et al., 2015).

### 3.1.2. Manipulation of ESE

To manipulate participant *ESE<sub>1</sub>*, we adopted the deception approach of Hsu et al. (2017b). Participants were asked to read a cover story and answer eight questions about the case (see Appendix A). Hsu et al. (2017b) used four questions to manipulate ESE. McGee et al. (2009), however, suggests that ESE is a multi-dimensional construct that concerns one's abilities to search new business ideas, plan marketing and financing strategies, assemble resources, manage people, and manage finances. To be consistent with this definition, we expanded it to eight questions to cover the five dimensions of ESE identified by McGee et al. (2009). These questions include writing a business plan (planning), rental agreement (assembly), part-time job (assembly), competition strategy (planning), marketing strategy (planning), new business opportunity (searching), co-founder selection (people management), and financing decision (financial management). A sample question can be found in Appendix B.

After the participants submitted their answers, a message on the computer screen informed them that their answers were being analyzed and compared to those of expert entrepreneurs and that the results – whether they have entrepreneurial abilities or not based on their answers – would be shown on the next screen. The message was a deception to manipulate ESE, as the message was pre-programmed according to the participant experimental group (*ESE<sub>1</sub>* coded as 1 for the high ESE groups and 0 for the low ESE groups).

For example, a participant who was randomly assigned to the high ESE group received the positive feedback, regardless of the answer given to the strategic questions. In the positive feedback condition, participants were told that “The results of the computer analysis show that 75% of your answers match those of successful entrepreneurs. This puts you in the top 5% among undergraduate students nationwide who possess the potential knowledge and skills of college students to start a business.” In the negative feedback condition, participants were told that “The results of the computer analysis show that only 25% of your answers match those of successful entrepreneurs. This puts you at the bottom 30% among undergraduate students nationwide. Your answers demonstrate that you may not yet have had sufficient skills and knowledge to start a business for now.”

**Table 2**Study 1: mean difference tests of *Post-experiment ESE<sub>1</sub>* and *Post-experiment Perceived P-ENT Fit<sub>1</sub>*.

Variables	N	Mean	Std. Deviation	t-Test for equality of means
Post-experiment ESE <sub>1</sub> (manipulation check)				
High ESE experimental groups ( <i>ESE<sub>1</sub></i> = 1)	53	5.25	1.27	5.145**
Low ESE experimental groups ( <i>ESE<sub>1</sub></i> = 0)	56	3.82	1.61	
Post-experiment Perceived P-ENT Fit <sub>1</sub> (manipulation check)				
High fit experimental groups ( <i>Perceived P-ENT Fit<sub>1</sub></i> = 1)	53	4.36	1.77	2.558*
Low fit experimental groups ( <i>Perceived P-ENT Fit<sub>1</sub></i> = 0)	56	3.57	1.44	

\*\*  $p < .01$ .\*  $p < .05$ .

### 3.1.3. Manipulation of Perceived P-ENT Fit

We used the elicitation approach (cf., Foo, 2011) to manipulate *Perceived P-ENT Fit<sub>1</sub>*. We also used a different test-deceptive feedback technique to manipulate *Perceived P-ENT Fit* to minimize participant suspicion of deception (Aronson et al., 1990). The students were instructed to read an article on the computer screen. They were told the article was from Entrepreneur Magazine and had some facts about entrepreneurship for college students. They then answered several questions. The participants were randomly assigned to the high fit (coded as 1) or low fit (coded as 0) groups and were given different versions of the articles according to their assigned experimental group. Each article presented different truths regarding entrepreneurship for college graduates. Specifically, the two versions (available from the authors upon request) were largely consistent. However, essential elements were modified to elicit the participant perception of strong fit or weak fit with entrepreneurship.

Greguras and Diefendorff (2009) argued that needs satisfaction is driven by psychological needs for autonomy, such as personal freedom and independent thought and action, and needs for competence, such as self-achievement. We manipulated these elements in the articles. For example, while both articles noted that start-ups have high failure rates, the article for the strong fit group emphasized the experience college graduates can gain from starting a business to elicit their perceived fit with needs for achievement or competence. The article for the strong fit group also emphasized matches with the needs of college graduates for independent thought and action and the time commitment of starting a business. On the other hand, the article for the weak fit group emphasized a lack of financial return that jeopardizes needs for achievement or competence and the tasks associated with starting a business were framed as tedious and boring. The article for the weak fit group also highlighted the long working hours involved in starting a business.

### 3.1.4. Dependent variable

We used Liñán and Chen's (2009) six-item scale of EI. The participants were asked to rate the statements on a 7-point (1 = total disagree; 7 = total agree) Likert scale. To capture their intentions elicited by the experimental scenario, we inserted the phrase, "Given the test result and the advantages for a college graduate," before each statement for the two strong fit groups and "Given the test result and the disadvantages for a college graduate" for the two weak fit groups. The item scores were averaged for statistical analyses (Cronbach  $\alpha = 0.95$ ).

### 3.1.5. Manipulation checks

Four manipulation checks were done immediately after the last manipulation (i.e., the article). To check whether the participants received the information in the article correctly, we asked, "Were your answers to the strategic questions largely consistent with those of expert entrepreneurs?" and "Were you told advantages or concerns about starting a business for a college graduate?" Participants responded yes or no to the two questions.

To check whether the manipulations of the test results and the articles changed the participant perceptions of entrepreneurial abilities and fit with entrepreneurship, we asked, "According to the test result, how confident would you be in your capability of successfully performing the various roles and tasks of entrepreneurship?" (*Post-experiment ESE<sub>1</sub>*) from No Confidence to Complete Confidence and "According to the article, how would you perceive the level of fit between entrepreneurship and your personal needs?" (*Post-experiment Perceived P-ENT Fit<sub>1</sub>*) from No Fit at All to Complete Fit. Both questions were on a seven-point Likert scale.

We examined the between-groups difference in the participants' answers of confidence (*Post-experiment ESE<sub>1</sub>*) and fit perceptions (*Post-experiment Perceived P-ENT Fit<sub>1</sub>*). Mean difference tests (see Table 2) showed that the students in high *ESE<sub>1</sub>* groups (*ESE<sub>1</sub>* = 1) reported significantly higher *Post-experiment ESE<sub>1</sub>* than those in the low *ESE* groups (*ESE<sub>1</sub>* = 0). Similarly, students in the strong fit groups (*Perceived P-ENT Fit<sub>1</sub>* = 1) perceived stronger *Post-experiment Perceived P-ENT Fit<sub>1</sub>* than those in the weak fit groups (*Perceived P-ENT Fit<sub>1</sub>* = 0). These tests demonstrated that the manipulations of *ESE* and *Perceived P-ENT fit* were successful.

### 3.1.6. Analyses and results

Among the 109 students who participated in the experiment, 11 who failed the manipulation checks<sup>2</sup> (e.g., a person in the low

<sup>2</sup> We also performed the crosstab analysis with the dropped cases and regression with the full sample. The results led us to conclude that the 11 dropped cases were due to random errors and only added noise to the model.

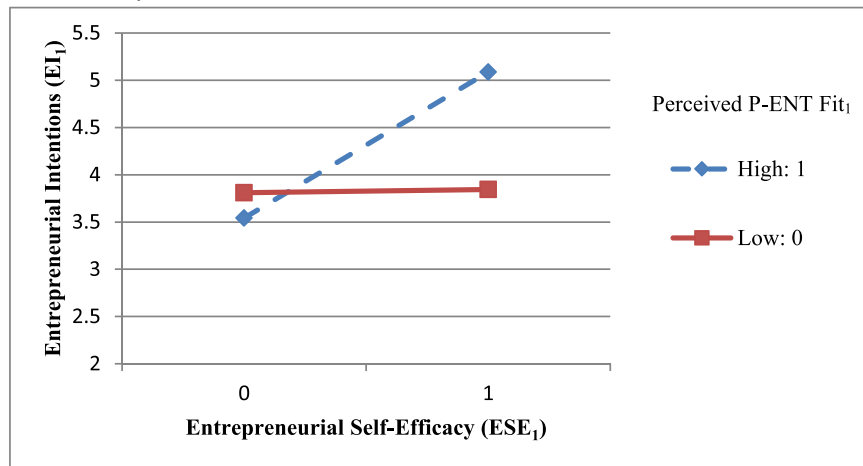
**Table 3**  
Study 1: regression models for the effects on entrepreneurial intention.

	Model 1	Model 2
Independent variables		
$ESE_1$	0.223*	0.034
Perceived P-ENT Fit <sub>1</sub>	0.136	-0.062
Interacting term		
$ESE_1 \times$ Perceived P-ENT Fit <sub>1</sub>		0.339*
$R^2$	0.07*	0.11*
$\Delta R^2$		0.04*

Dependent variable: Entrepreneurial Intention<sub>1</sub>; Values shown as standardized coefficients;

\*  $p < .05$ .  $N = 98$ .

**Study 1: The Interaction Effect of Perceived P-ENT Fit<sub>1</sub> and  $ESE_1$  on  $EI_1$**



**Fig. 1.** Study 1: the interaction effect of perceived P-ENT Fit<sub>1</sub> and  $ESE_1$  on  $EI_1$ .

$ESE_1$  group [ $ESE_1 = 0$ ] answered Yes to “Were your answers to the strategic questions largely consistent with those of expert entrepreneurs?” and rated 7 on “According to the test result, how confident would you be in your capability of successfully performing the various roles and tasks of entrepreneurship?”) were excluded from the analyses. The final sample contained 98 responses.

We first examined the zero-order correlations between  $ESE_1$ , Perceived P-ENT Fit<sub>1</sub>, and  $EI_1$ . The only significant correlation was that of  $ESE_1$  and  $EI_1$  ( $r = 0.241$ ,  $p < .05$ ). The correlation between Perceived P-ENT Fit<sub>1</sub> and  $EI_1$  was positive but not significant ( $r = 0.129$ ,  $p > .10$ ). The correlation between  $ESE_1$  and Perceived P-ENT Fit<sub>1</sub> almost did not exist ( $r = 0.001$ ,  $p > .10$ ), signaling that the deception approach and the elicitation approach manipulated  $ESE_1$  and Perceived P-ENT Fit<sub>1</sub> independently.

To examine the moderating hypothesis, we performed hierarchical linear regression. As we explained in the [Sample and Procedure section](#), ANOVA tests showed that the random assignment was successful. As a result, there was no need to include control variables (Schjoedt and Bird, 2014) as individual differences, alternative explanations, and confounding effects should have been equalized by the successful random assignment (Hsu et al., 2017a). Therefore, we did not include any control variables in the regression. We also did not mean-center the two independent variables because they were binary variables (Dawson, 2014; Warner, 2008) where 0 was a meaningful point (Dalal and Zickar, 2012).

The results can be found in [Table 3](#). Model 1 included the two independent variables ( $ESE_1$ : 1 = high vs. 0 = low; Perceived P-ENT Fit<sub>1</sub>: 1 = high vs. 0 = low).  $ESE_1$  positively predicted  $EI_1$  ( $\beta = 0.223$ ,  $p < .05$ ). While the coefficient of Perceived P-ENT Fit<sub>1</sub> was positive, it was not significant ( $\beta = 0.136$ ,  $p > .10$ ). [Hypothesis 1](#) was not supported in Study 1. The two variables explained 7% variance in  $EI_1$ . We multiplied  $ESE_1$  and Perceived P-ENT Fit<sub>1</sub> to create the interaction term and added it into Model 2. The coefficient of  $ESE_1$  became nonsignificant ( $\beta = 0.034$ ,  $p > .10$ ), and the interaction term was significant and positive ( $\beta = 0.339$ ,  $p < .05$ ).

It appeared that the effect of  $ESE_1$  on  $EI_1$  found in Model 1 was partialled out by the interaction term in Model 2. The interaction term explained an additional 4% variance in  $EI_1$ . Compared to the variance explained by the interaction terms in other existing entrepreneurship studies, this additional 4% of explained variance is significant (cf., Powell and Eddleston, 2013). The positive coefficient indicated that the positive relationship between  $ESE_1$  and  $EI_1$  was strengthened by Perceived P-ENT Fit<sub>1</sub>, thereby providing support for [Hypothesis 2](#).

We plotted the moderating effect in [Fig. 1](#) which clearly showed that when Perceived P-ENT Fit<sub>1</sub> was low, the effect of  $ESE_1$  on  $EI_1$  was weak. While Perceived P-ENT Fit<sub>1</sub> was high,  $ESE_1$  strongly and positively predicted  $EI_1$ . Simple slope analysis (Jaccard et al., 1990) confirmed that the slope for high Perceived P-ENT Fit<sub>1</sub> is significant ( $\beta = 1.411$ ,  $t$ -value = 3.050,  $p < .01$ ), whereas it is not significant for low Perceived P-ENT Fit<sub>1</sub> ( $\beta = 0.113$ ,  $t$ -value = 0.254,  $p > .10$ ). This result was consistent with our argument that



Perceived P-ENT fit moderates the relationship between ESE and EI.

### 3.1.7. Post hoc analysis

From the study results, we could not conclude that the experimental data in Study 1 supported [Hypothesis 1](#). We speculated that this was because the deception manipulation of ESE had stronger treatment effects than the elicitation manipulation of Perceived P-ENT fit. This speculation was confirmed by a post hoc analysis looking into the effect sizes of the two mean difference tests ([Table 2](#)) which revealed that the effect size of the test for ESE (eta squared = 19.83%) was stronger than that for Perceived P-ENT fit (eta squared = 5.83%).

To further examine the relationship between *Perceived P-ENT Fit*<sub>1</sub> and *EI*<sub>1</sub>, we followed the suggestion of [Aronson et al. \(1990, p. 213–216\)](#) and performed internal analysis. While controlling for *ESE*<sub>1</sub> (0 vs. 1) in the regression, we changed the independent variable from the manipulation of perceived fit (i.e., *Perceived P-ENT Fit*<sub>1</sub>: 0 vs. 1) to the manipulation check of perceived fit (i.e., *Post-experiment Perceived P-ENT Fit*<sub>1</sub>: “According to the article, how would you perceive the level of fit between entrepreneurship and your personal needs?”). The coefficient of the *Post-experiment Perceived P-ENT Fit*<sub>1</sub> became significant and positive ( $\beta = 0.767, p < .01$ ), supporting [Hypothesis 1](#).

Nevertheless, T. D. [Wilson et al. \(2010\)](#) cautioned that internal analysis does not completely rule out alternative explanations, such as individual differences, because it eliminates the advantage of random assignment. In this regard, [Aronson et al. \(1990\)](#) encouraged researchers to conduct another experiment based on the results of internal analyses to test causality more thoroughly. Following their recommendation, we conducted Study 2.

## 3.2. Study 2

### 3.2.1. Sample and procedure

As discussed earlier, a possible reason that the main effect of Perceived P-ENT fit on EI was weak and non-significant in Study 1 was that the deception manipulation (for ESE) might weaken the elicitation manipulation (for Perceived P-ENT fit). The purpose of Study 2 was to conduct a “cleaned” experiment (e.g., removing the manipulation of ESE) that more clearly reveals the causal effect of Perceived P-ENT fit on EI. Consequently, we only manipulated Perceived P-ENT fit in Study 2. This randomized experiment was a two-group (*Perceived P-ENT Fit*<sub>1</sub>) between-subjects design. The experimental instrument and procedure were nearly identical to Study 1 (e.g., the two-session procedure, the one-week waiting period between sessions, the variables/question items asked in both sessions) except for the manipulation of ESE.

Data were collected at another university in the southeastern United States from undergraduate students enrolled in an introductory entrepreneurship course. To avoid the effect of the course content on student responses regarding entrepreneurship, we conducted the experiment at the beginning of the semester. A survey was given in the second week to capture the students' baseline attitudes, as we did in Study 1. The experiment was conducted in the third week. The experimental instrument was given to the students in the form of written surveys. One-hundred and twenty-four students, who participated in both sessions, received extra course credit. Forty-one students were female (33%), ninety-nine students (80%) did not have any entrepreneurial experiences, fifty-one (41%) students had an entrepreneur parent, and forty-seven (38%) students' families owned a family business.

### 3.2.2. Analyses and results

We first checked whether random assignment was successful. ANOVA results did not reveal any between-groups differences in *ESE*<sub>0</sub>, *Perceived P-ENT Fit*<sub>0</sub>, and *EI*<sub>0</sub> captured in the first session (*t*<sub>0</sub>) and in the demographic variables. Random assignment was again successful (cf., [Gielnik et al., 2015](#)).

We then examined whether the manipulation of Perceived P-ENT fit was successful by comparing the means of the respondents' *Post-experiment Perceived P-ENT Fit*<sub>1</sub> (“According to the article, how would you perceive the level of fit between entrepreneurship and your personal needs?”) between the two experimental groups. As indicated in [Table 4](#), the mean difference test ( $t = 4.154, p < .01$ ) showed that the students in the strong fit groups (*Perceived P-ENT Fit*<sub>1</sub> = 1) perceived stronger *Post-experiment Perceived P-ENT Fit*<sub>1</sub> than those in the weak fit groups (*Perceived P-ENT Fit*<sub>1</sub> = 0). The manipulation of Perceived P-ENT fit was successful.

To test [Hypothesis 1](#), we performed the mean difference test for two reasons. First, the purpose of Study 2 was to examine only the main effect. Second, the random assignment should have averaged out individual differences and thus no control variables were

**Table 4**

Study 2: mean difference tests of post-experiment *ESE*<sub>1</sub> and Post-experiment Perceived P-ENT *Fit*<sub>1</sub>.

Variables	N	Mean	Std. deviation	t-Test for equality of means
Post-experiment perceived P-ENT <i>Fit</i> <sub>1</sub> (manipulation check)				
High fit experimental groups ( <i>Perceived P-ENT Fit</i> <sub>1</sub> = 1)	62	4.92	1.11	4.154**
Low fit experimental groups ( <i>Perceived P-ENT Fit</i> <sub>1</sub> = 0)	62	3.92	1.54	
Entrepreneurial intention (dependent variable)				
High fit experimental groups ( <i>Perceived P-ENT Fit</i> <sub>1</sub> = 1)	59 <sup>a</sup>	4.01	1.37	3.784**
Low fit experimental groups ( <i>Perceived P-ENT Fit</i> <sub>1</sub> = 0)	62	3.01	1.55	

\*\*  $p < .01$ .

<sup>a</sup> Three cases contained missing values and were dropped.

needed as in Study 1. Table 4 showed the results of the mean difference test ( $t = 3.784, p < .01$ ). The students in the strong fit groups (*Perceived P-ENT Fit*<sub>1</sub> = 1) had higher EI than those in the weak fit groups (*Perceived P-ENT Fit*<sub>1</sub> = 0). Hypothesis 1 was thus supported.

### 3.2.3. Post hoc analyses

While we found no significant difference in  $ESE_0$  (the baseline ESE measured one week before the experiment) between the strong perceived fit group and the weak fit group, there was a significant difference in  $ESE_1$  (the post-experiment ESE measured in the post-experiment questionnaire) ( $t = 2.505, p < .05$ ) between the strong fit group (mean = 5.16) and the weak fit group (mean = 4.66). Since we did not manipulate ESE (e.g., provide any information related to entrepreneurial abilities or efficacy in the articles), the increase in students'  $ESE_1$  is noteworthy. A reason for the increase in  $ESE_1$  can be identified if we view Study 2 as the experiment that indirectly manipulated EI through an antecedent of EI (the fit information in the article) and then measured  $ESE_1$ . In this regard, Study 2 showed the causal effect of EI on ESE.

Taking together the results of Study 1 and the post hoc analyses of Study 2, we show that bilateral causality between ESE and EI is likely. This finding is important, particularly since the majority of studies on ESE and EI use correlational methods that do not establish causality.

## 3.3. Study 3

### 3.3.1. Sample

To triangulate the results of Studies 1 and 2, we conducted Study 3 as a correlational survey. The sample came from undergraduate students taking an introductory level management course at another university in the southeastern United States. The students were surveyed in the second week of the semester to minimize the effect of course content on ESE, perceived P-ENT fit, and EI. We ensured anonymity to the respondents to reduce the effect of social desirability bias (Podsakoff et al., 2003).

Three hundred and thirty-seven students participated in the study in a classroom setting. In this sample, one-hundred and seventy-one (50.7%) students were female. Two-hundred and eighty-seven students (85.2%) did not have any entrepreneurial experiences. Eighty-eight (26.1%) students had an entrepreneur parent. Ninety (26.7%) students' families owned a family business. Forty-six surveys contained missing data and were thus removed from the analyses, resulting in a final sample of 291 complete surveys.

### 3.3.2. Measures

**3.3.2.1. EI and ESE.** Entrepreneurial intention was measured with Liñán and Chen's (2009) six-item scale to be consistent with Studies 1 and 2. The Cronbach alpha was 0.97. McGee et al. (2009) nineteen-item scale was chosen to measure ESE because it was consistent with our manipulation of  $ESE_1$  in Study 1 that involved the participants' consideration of various aspects of new venture development (e.g., strategic questions in the experiment). Each question was measured on a seven-point Likert scale. The Cronbach alpha was 0.91. For EI and ESE, the item scores were averaged for statistical analyses.

**3.3.2.2. Perceived P-ENT fit.** Although several management studies have developed measures for the needs-supplies dimension of P-E fit (Brkich et al., 2002; Resick et al., 2007; Saks and Ashforth, 1997), the entrepreneurship context is unique. Hence, we modified existing items in those studies (Brkich et al., 2002; Resick et al., 2007; Saks and Ashforth, 1997) to develop a three-item measurement scale of Perceived P-ENT fit. Each author independently assessed the scale items, followed by an iterative discussion that led to a consensus on the modified items. We then invited a fit theory expert to validate whether our scale items for 'needs for achievement', 'independent thought and action', and 'personal freedom' were consistent with our manipulation of Perceived ENT-Fit in Study 1. The modified scale items ('Starting a business fulfills my needs for achievement', 'Starting a business satisfies my needs for independent thought and action', 'Starting a business satisfies my needs for personal freedom') were anchored on a seven-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The item scores were averaged for statistical analyses. The Cronbach alpha was 0.90.

**3.3.2.3. Control variables.** We controlled for several variables used in studies on entrepreneurial intention, including gender (Carr and Sequeira, 2007; Shinnar et al., 2018), family business (Carr and Sequeira, 2007), and entrepreneurial experience (Zhao et al., 2005). We also controlled for entrepreneurial attitude and subjective norm which link back to the theory of planned behavior (Ajzen, 1991). Family business was measured by asking 'Does your family own a family business?' Entrepreneurial experience was measured by the question: 'How many years of entrepreneurial experience did you have (put 0 if you don't have any)?' We used Liñán and Chen's (2009) three-item scale to measure subjective norm on a seven-point Likert scale. To measure entrepreneurial attitude, Carr and Sequeira's (2007) five-item scale anchoring on yes-no was chosen, because it reflected well the definition of personal attitude in the theory of planned behavior – how positive or negative a person views an object (Ajzen, 1991).

### 3.3.3. Descriptive statistics

Descriptive statistics and the correlation matrix are presented in Table 5. EI positively correlated with ESE and Perceived P-ENT fit, thereby providing preliminary support for our Hypothesis 1. The correlation ( $r = 0.72, p < .01$ ) between Perceived P-ENT fit and EI can be considered high. However, it is quite common that the beliefs and personal attitudes regarding entrepreneurship strongly correlate with entrepreneurial intention. Examples include Engle et al. (2010) who concluded that an average correlation between the antecedents and intention in the theory of planned behavior was 0.73; Liñán and Chen (2009) who found a 0.77 correlation

**Table 5**  
Study 3: descriptive statistics and correlations.

	Min	Max	Mean	S.D.	1	2	3	4	5	6	7
1. Gender <sup>a</sup>	1	2	1.53	0.50							
2. Family business <sup>b</sup>	1	2	1.72	0.45	0.050						
3. Entr. experience <sup>c</sup>	0	7	0.25	1.37	0.139 <sup>*</sup>	-0.009					
4. Entr. attitude <sup>d</sup>	1	2	1.88	0.25	0.034	-0.029	0.069				
5. Subjective norm	1	7	5.26	1.76	-0.011	0.075	0.112 <sup>*</sup>	0.325 <sup>**</sup>			
6. ESE	1.95	7	5.15	0.80	0.049	0.113 <sup>*</sup>	0.065	0.285 <sup>**</sup>	0.367 <sup>**</sup>		
7. Perceived P-ENT fit	1	7	4.41	1.46	0.118 <sup>*</sup>	0.155 <sup>**</sup>	0.110 <sup>+</sup>	0.386 <sup>**</sup>	0.285 <sup>**</sup>	0.346 <sup>**</sup>	
8. EI	1	7	3.68	0.77	0.233 <sup>**</sup>	0.182 <sup>**</sup>	0.199 <sup>**</sup>	0.402 <sup>**</sup>	0.341 <sup>**</sup>	0.378 <sup>**</sup>	0.717 <sup>**</sup>

<sup>\*</sup>  $p < .05$ .

<sup>\*\*</sup>  $p < .01$ .

<sup>+</sup>  $p < .10$ ; N ranges from 300 to 317.

<sup>a</sup> Gender is coded as 1 = female vs. 2 = male.

<sup>b</sup> Family Business is coded as 1 = no vs. 2 = yes.

<sup>c</sup> Entrepreneurial Experience is coded in years.

<sup>d</sup> Entrepreneurial Attitude is coded as 1 = positive attitude toward entrepreneurship vs. 2 = negative attitude.

between personal attitude and entrepreneurial intention; and Van Gelderen et al. (2015) who found a 0.66 correlation between subjective norm and entrepreneurial intention.

Despite this evidence of correlations presented in earlier studies, methodologists may argue that “just because two things are correlated does not mean that they are measuring the same construct” (Koskey and Shermis, 2013, p. 201). To address this concern, we performed several tests which will be discussed in the next section.

### 3.3.4. Scale reliability, common method bias, and discriminant validity

We tested scale reliability and common method bias using Confirmatory Factor Analyses (CFA) with Amos on the 19 items of ESE, 6 items of EI, and 3 items of Perceived P-ENT fit. Since McGee et al. (2009) decomposed ESE into five factors, we followed their procedure to construct a seven-factor model (five factors for ESE, one factor for Perceived P-ENT fit, and one factor for EI). The first-order CFA model showed acceptable fit (CFI = 0.91, RMSEA = 0.07) (Hu and Bentler, 1999; Schreiber et al., 2006), although the chi-square of the model was significant ( $\chi^2 = 914.05$ ,  $df = 329$ ,  $p < .01$ ).

We then compared this model with the alternative one-factor model where all 28 items were loaded on a single factor and the three-factor model where the 19 ESE items were loaded on a single factor and the items associated with Perceived P-ENT fit and EI were loaded on their respective factors. The fit indices for the original seven-factor model were better than the alternative models (one-factor model: CFI = 0.49, RMSEA = 0.17; three-factor model: CFI = 0.74, RMSEA = 0.12). These tests suggested that there was no single underlying factor (Malhotra et al., 2006). Common method bias did not seem to be a concern.

To further examine whether the strong correlation between Perceived P-ENT fit and EI poses a threat to construct validity, we followed the recommendation of Zait and Berdea (2011) to perform a Chi-square difference test. We employed a CFA to compare two models, each of which contains only two factors (Perceived P-ENT fit and EI) and their respective items. The first model ( $\chi^2 = 702.393$ ,  $df = 35$ ,  $p < .01$ ) was a model where the two factors (Perceived P-ENT fit and EI) were not correlated, while the second ( $\chi^2 = 226.182$ ,  $df = 34$ ,  $p < .01$ ) was the one where we allowed for correlation. The result of the difference test was significant ( $\Delta\chi^2 = 476.211$ ,  $\Delta df = 1$ ,  $p < .01$ ), indicating that our items representing their respective factors presented discriminant validity.

Additionally, the average variance extracted (AVE) for the three P-ENT fit items is 0.709 and the AVE for EI is 0.740. Both constructs exceed the threshold of 0.5, demonstrating convergent validity. Moreover, the squared correlation between P-ENT fit and EI (0.514) is lower than the AVE for P-ENT fit (0.709) and the AVE for EI (0.740), demonstrating discriminant validity.

### 3.3.5. Analyses and results

Hierarchical linear regression was used to test the main and moderating effects. Because ESE and Perceived P-ENT fit were continuous variables in which 0 was not a meaningful point, we mean-centered the two independent variables used to compute the interaction term to ease interpretation (Dalal and Zickar, 2012). We performed the hierarchical linear regression and collinearity test in SPSS. The highest VIF value was about 1.4, below the general cutoff value of 2.5 (Warner, 2008), and all the tolerance values were below 1.

Model 1 (see Table 6) contained only control variables, Model 2 added the two independent variables, and Model 3 represented the full model that included the interaction term of Perceived P-ENT fit and ESE. The relationships between the controls and EI were consistent across the three models and largely in line with the gendered entrepreneurship (e.g., Shinnar et al., 2018), family business (Carr and Sequeira, 2007), serial entrepreneurship (Simmons et al., 2016), and entrepreneurial intention literatures (Kautonen et al., 2015; Liñán and Chen, 2009).

The entrepreneurial intentions of the male students were higher than those of the female students (Gender:  $\beta = 0.203$ , 0.137, and 0.138 for Models 1, 2, and 3, respectively,  $p < .01$ ). The students whose family owned a family business had a stronger intention to become an entrepreneur than students without a family business (Family Business:  $\beta = 0.168$ , 0.087, and 0.077 for Models 1, 2, and

**Table 6**  
Study 3: regression models for the effects on entrepreneurial intention.

	Model 1	Model 2	Model 3
Control variable			
Gender <sup>a</sup>	0.203**	0.137**	0.138**
Family business <sup>b</sup>	0.168**	0.087*	0.077*
Entr. experience <sup>c</sup>	0.114*	0.098*	0.097*
Entre. attitude <sup>d</sup>	0.321**	0.115**	0.116**
Subjective norm	0.208**	0.083*	0.087*
Independent variables			
ESE		0.093*	0.127**
Perc. P-ENT fit		0.574**	0.565**
Interacting term			
ESE X Perc. P-ENT fit			0.094*
R <sup>2</sup>	0.297**	0.583**	0.590**
ΔR <sup>2</sup>		0.286**	0.008*

Dependent variable: Entrepreneurial Intention; Values shown as standardized coefficients;

\*  $p < .05$ .

\*\*  $p < .01$ .

+  $p < .10$ ;  $N = 291$ .

<sup>a</sup> Gender is coded as 1 = female vs. 2 = male.

<sup>b</sup> Family Business is coded as 1 = no vs. 2 = yes.

<sup>c</sup> Entrepreneurial Experience is coded in years.

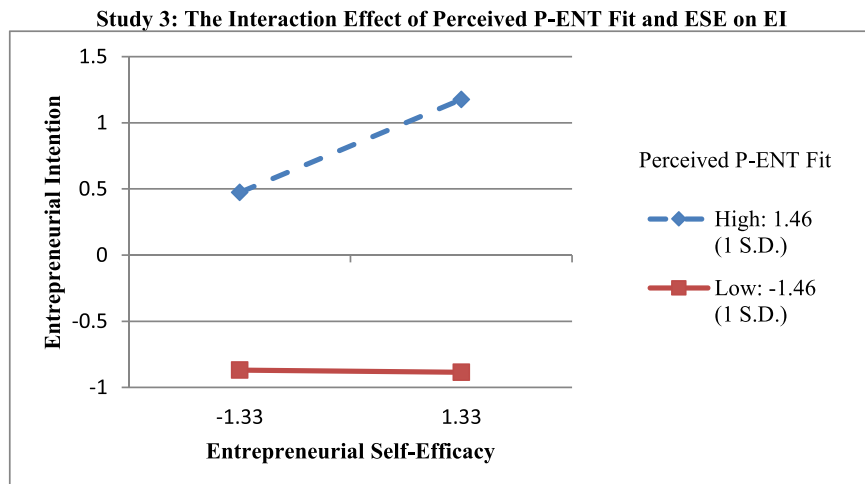
<sup>d</sup> Entrepreneurial Attitude is coded as 1 = negative attitude toward entrepreneurship vs. 2 = positive attitude.

3, respectively,  $p < .05$ ). Years of entrepreneurial experience positively predicted entrepreneurial intention (Entrepreneurial Experience:  $\beta = 0.114$ ,  $0.098$ , and  $0.097$  for Models 1, 2, and 3, respectively,  $p < .05$ ). Entrepreneurial Attitude positively predicted EI (Entrepreneurial Attitude:  $\beta = 0.321$ ,  $0.115$ , and  $0.116$  for Models 1, 2, and 3, respectively,  $p < .01$ ). Subjective Norm also positively predicted EI (Subjective Norm:  $\beta = 0.208$  and  $0.087$  for Models 1 and 3, respectively,  $p < .05$ ).

In Model 2, both the coefficients of ESE ( $\beta = 0.093$ ,  $p < .05$ ) and Perceived P-ENT fit ( $\beta = 0.574$ ,  $p < .01$ ) were positively related to EI. The variables in Model 2 together explained 58% of the variance in EI, including the 29% variance between the two independent variables (change in  $R^2 = 0.286$ ). Therefore, [Hypothesis 1](#) was supported.

The interaction term was added in Model 3. The control variables, two independent variables, and the interaction term together explained 59% of the variance in EI. The coefficients of ESE ( $\beta = 0.127$ ,  $p < .01$ ), Perceived P-ENT fit ( $\beta = 0.565$ ,  $p < .01$ ), and the interaction term all were significant ( $\beta = 0.094$ ,  $p < .05$ ), demonstrating that the positive relationship between ESE and EI was strengthened by Perceived P-ENT fit.

We plotted the interaction effect, anchored at +1 and -1 S.D. of ESE and Perceived P-ENT fit, in [Fig. 2](#). Consistent with the result of Study 1, ESE strongly and positively predicted EI when respondents perceived a high level of fit with entrepreneurship. When they perceived lower or no fit with entrepreneurship, however, their intention to become an entrepreneur was less dependent on their ESE. Simple slope analysis ([Jaccard et al., 1990](#)) showed that the slope for high Perceived P-ENT fit was significant ( $\beta = 0.439$ ,  $t$ -value =  $3.176$ ,  $p < .01$ ), whereas it was non-significant for low Perceived P-ENT fit ( $\beta = 0.103$ ,  $t$ -value =  $1.197$ ,  $p > .10$ ). These



**Fig. 2.** Study 3: the interaction effect of perceived P-ENT Fit and ESE on EI.

findings supported [Hypothesis 2](#).

### 3.3.6. Post hoc analyses

We conducted post hoc analyses by collecting data from 197 working employees recruited on Amazon Mechanical Turk ([Aguinis and Lawal, 2012](#); [Paolacci et al., 2010](#)). The survey instrument is similar to Study 3, except that we added more control variables to capture the difference between working employees and students. The additional controls were Age, Job Satisfaction measured with Lee et al.'s three-item scale ([Lee et al., 2011](#)), and Years in Paid Employment. ESE ( $\beta = 0.236, p < .01$ ) and Perceived P-ENT fit ( $\beta = 0.353, p < .01$ ) both predicted EI. The interaction term of ESE and Perceived P-ENT fit is still positive and becomes moderately significant ( $\beta = 0.427, p < .10$ ). The results provide partial support for our model. The increase in the significance level of the interaction term of ESE and Perceived P-ENT fit may be attributable to the heterogeneous attributes of the working employees.

## 4. Discussion

Since [Chen et al. \(1998\)](#) first proposed entrepreneurial self-efficacy as a distinctive individual characteristic that differentiates entrepreneurs and managers, ESE has often been used to predict entrepreneurial intention, activities (e.g., [Florin et al., 2007](#); [Mueller and Goić, 2003](#); [Zhao et al., 2005](#)), and venture performance ([Hmieleski and Baron, 2008](#); [Hmieleski and Corbett, 2008](#)). Many studies show a positive link between ESE and entrepreneurial intention. However, scholars have recently highlighted some conditions where the ESE-EI link is weaker than previously predicted ([Bullough et al., 2014](#); [Hsu et al., 2017b](#); [Kickul et al., 2009](#); [Lee et al., 2011](#); [Piperopoulos and Dimov, 2015](#); [Shinnar et al., 2014](#)). Extending this line of research, we draw on P-E fit theory to propose that the ESE-EI relationship is weaker for individuals who perceive a low fit between the supplies of entrepreneurship and their needs.

Using two randomized experiments, we demonstrated the causal effects of ESE and Perceived P-ENT fit on EI and the moderating effect of Perceived P-ENT fit on the ESE-EI relationship. We also conducted two correlational surveys to extend the results to a target population of individuals, who are about to make choices regarding their future employment. The results demonstrate that our model withstands the influence of unobserved variables in real-world contexts.

Further, the post hoc analyses, together with the three studies, demonstrate the validity of our use of student samples to study entrepreneurial intention. Especially for studies on the decisions around nascent entry into entrepreneurship, participant occupational experiences may confound the results. That said, decisions made by rookies can be very different from those made by veterans ([Hsu et al., 2014](#)). Therefore, although the student sample is appropriate for the research questions in our study, future researchers should carefully validate the use of student samples for other Perceived P-ENT, ESE or EI studies.

We focused on the needs-supplies dimension since this fit dimension has a strong impact on attitudes ([Kristof-Brown et al., 2005b](#)) and consequently entrepreneurial intentions. Moving beyond needs-supplies fit, future studies can include the demands-abilities fit for current entrepreneurs, since this fit dimension should have a greater effect on performance. That is, the needs-supplies fit is more appropriate for our research question of attitudes around (first-time) entry into entrepreneurship; for existing entrepreneurs, the demands-abilities fit could better predict which entrepreneurs succeed.

Perceived P-ENT fit is an important, yet overlooked construct in entrepreneurship. Though the P-E fit perspective has been applied to entrepreneurship (e.g., [Lee et al., 2011](#); [Markman and Baron, 2003](#)), these studies have not conceptualized perceived person-entrepreneurship fit as a construct. An advantage of investigating perceived P-ENT fit as a construct is that the fit perception accounts for individual differences and environmental considerations.

We also argued that P-ENT fit is a unique category of P-E fit that should be distinguished from the existing categories of P-E fit. P-E fit theory has identified different categories of fit, such as person-vocation fit (P-V fit), person-career fit (P-C fit), person-job fit (P-J fit), person-organization fit (P-O fit) ([Kristof-Brown, 2000](#); [Kristof-Brown et al., 2005a, 2005b](#); [Kristof, 1996](#); [Morley, 2007](#)), person-group fit (P-G fit) and person-supervisor fit (P-S fit) ([Oh et al., 2014](#)). There may be some interaction effects between P-ENT fit, other categories of P-E fit, and other variables that could be investigated further.

In addition, the effects of variables, such as gender ([Gupta et al., 2009](#); [Gupta et al., 2014](#); [Justo et al., 2015](#); [Shinnar et al., 2014](#)) and time ([Fayolle, 2007](#)) on the fit between the personal needs of prospective entrepreneurs and what entrepreneurship supplies should also be further considered. The more we understand about P-ENT fit, the better our predictions should be about the attitudinal and behavioral outcomes of entrepreneurs.

### 4.1. Practical implications

The results of our study have important practical implications for entrepreneurship education. A key purpose of entrepreneurship education is to prepare students for the uncertainty of starting a new venture. However, while entrepreneurship courses do increase ESE ([Peterman and Kennedy, 2003](#); [Shinnar et al., 2014](#)), student EI actually weakens in some cases ([von Graevenitz et al., 2010](#)). When we consider the construct of perceived P-ENT fit, it is likely that some students perceived a poor fit after receiving formal entrepreneurship education and thus moved away from entrepreneurship based on that realization. Our study findings suggest that entrepreneurship education should help students learn more about the person-side of the P-ENT fit, i.e., their personality, needs, and values. Educators should also emphasize the supplies of entrepreneurship in different contexts – monetary income, job autonomy, and opportunities for self-achievement.

#### 4.2. Limitations and future research

While this paper is the first to introduce the construct of perceived P-ENT fit, there are various conceptual concerns that remain to be addressed in future research. For instance, objective fit (fit observed by a third party) should theoretically be highly related to the perception of fit if the individual can accurately assess the environment (Kristof-Brown et al., 2005a, 2005b). Since entrepreneurship is filled with uncertainty, it is unclear how much objective fit or actual fit can be transferred to perceived fit. It would be instructive to examine the difference between perceived fit and objective fit, particularly in this uncertain, entrepreneurship context. However, the current paper was unable to answer that question because measurement methods for objective person-entrepreneurship fit are unavailable. Even in the management journals, researchers “were unable to locate any studies that included multiple methods of measuring PO fit in a single sample.” (Hoffman and Woehr, 2006, p. 397).

Furthermore, the dimensionality of perceived P-ENT fit needs more research to establish its robustness. We measured perceived P-ENT fit as the fit between the students' needs and the supplies of the entrepreneurial process. However, just as other types of person-environment fit have several content dimensions, P-ENT should also have various content dimensions that deserve further investigation. For example, future research should investigate the fit of starting a business, different entrepreneurial tasks, or the composition of the founding team with the person's personality, values, and capabilities.

Since our variables were self-reported in Study 3, common method bias is a concern. Additional tests suggest that this bias was unlikely to account for the results. Further, while single-source bias is an issue for main effects, it is usually not a concern for conditional effects, such as the moderating effects of perceived fit on the ESE-EI relationship in this paper. This is because the common method issue cannot inflate (but can deflate) interaction effects (Siemsen et al., 2010). More importantly, Study 3 triangulates our experimental studies, so that the collective results increase confidence in our research model.

#### 5. Conclusion

What influences individual intent to become an entrepreneur is an important question for policymakers and educators alike because entrepreneurship contributes significantly to economic growth and societal well-being. The influence of entrepreneurial self-efficacy is an essential predictor of entrepreneurial intention. However, evidence showing the link between entrepreneurial self-efficacy and entrepreneurial intention is largely built on correlational methods, thereby leaving the causal effect unexamined. Using a mixed method approach, we demonstrate the causal link between entrepreneurial self-efficacy and entrepreneurial intention. More importantly, our paper shows that this link is contingent on subjective assessments of whether the pursuit of entrepreneurship fulfills personal needs (i.e., perceived fit with entrepreneurship). As we reasoned and found, the demands-ability assessment, as epitomized by entrepreneurial self-efficacy, can give way to the person-entrepreneurship fit assessment. Individuals with the ability to be entrepreneurs may not intend to do so if they do not perceive that the supplies of entrepreneurship can fulfill their needs.

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#### Appendix A. Study 1: cover story

Statistics show that more than 50% of college students report a need for an on-campus dollar store selling dollar products (i.e. products sold at \$1) including simple daily items and groceries. This business opportunity seems feasible.

Entrepreneurs face many uncertainties. To evaluate whether you have sufficient knowledge and abilities to start a business on your own, the following pages will present some hurdles that you will need to overcome should you choose to start an on-campus dollar store. Please answer to the best of your knowledge.

#### Appendix B. Study 1: sample strategic question (financial decision)

You want to expand the business because the current business operation cannot fulfill customer demands. To address this problem, you would need an investment of \$200,000. A professional investor is showing interest. With such a large investment, however, you would potentially lose control over the dollar store. Conversely, if you decide not to accept the investment, you will not be able to fulfill the market demands and will run the risk of losing your existing customers.

Please indicate on the scale below which you are most likely to choose (0 = 100% to choose “accept the investment”; 7 = 100% to choose “reject the investment”).

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