



# Tertiary students' entrepreneurial career intentions of entrepreneurship-embedded internship programs

Chun-Mei Chou, Chien-Hua Shen, Hsi-Chi Hsiao & Su-Chang Chen

To cite this article: Chun-Mei Chou, Chien-Hua Shen, Hsi-Chi Hsiao & Su-Chang Chen (2017) Tertiary students' entrepreneurial career intentions of entrepreneurship-embedded internship programs, *Studies in Higher Education*, 42:11, 2116-2133, DOI: [10.1080/03075079.2015.1125596](https://doi.org/10.1080/03075079.2015.1125596)

To link to this article: <https://doi.org/10.1080/03075079.2015.1125596>



Published online: 23 Dec 2015.



Submit your article to this journal [↗](#)



Article views: 557



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 2 View citing articles [↗](#)

## Tertiary students' entrepreneurial career intentions of entrepreneurship-embedded internship programs

Chun-Mei Chou<sup>a\*</sup>, Chien-Hua Shen<sup>b</sup>, Hsi-Chi Hsiao<sup>c</sup> and Su-Chang Chen<sup>d</sup>

<sup>a</sup>*Graduate Institute of Vocational and Technological Education, National Yunlin University of Science & Technology, Yunlin, Taiwan, R.O.C.*; <sup>b</sup>*Department of Business Administration, Transworld Institute of Technology, Yunlin, Taiwan, R.O.C.*; <sup>c</sup>*Department of Business Administration, Cheng Shin University, Kaohsiung, Taiwan, R.O.C.*; <sup>d</sup>*Department of Marketing and Logistics and Management, National Penghu University of Science and Technology, Penghu, Taiwan, R.O.C.*

This study examines 1630 tertiary students in regard to their entrepreneurial career intentions (ECIs) and their influencing factors. The findings may serve as academic reference for the development of entrepreneurship-related education. The results show that students' computer self-efficacy (CSE) has a significant direct effect on ECIs, and entrepreneurship cognition (EC) has a significant effect on ECIs via CSE. The pattern and empirical data of EC and CSE on ECI have a good fit. This paper provides insights from Taiwan's tertiary institutions about the ECIs of students and contributes to a better understanding of them. We describe the development of the influencing factors, discuss the implications and provide suggestions for entrepreneurship education development.

**Keywords:** Entrepreneurship cognition; entrepreneurial career intentions; computer self-efficacy; tertiary students

### Introduction

As the domestic unemployment rate climbs, employment-oriented tertiary education programs urgently need to find efficacious teaching resources for entrepreneurship education in Taiwan. Difficulties faced by tertiary students in their learning careers cannot be solved by confining the issue to current employment concerns (Chou et al. 2010; Sobel and King 2008).

The service industry occupies a large percentage of the industrial structure in Taiwan, especially insurance, fixed property, retail, wholesale, and so on. Some factors influencing business management style and employment include scientific innovation investment, alliance chains, and online entrepreneurship (Chou et al. 2010; Dyer, Gregersen, and Christensen 2009). The small- and medium-sized enterprise platform supports e-commerce business counseling; it includes e-commerce business, independent business, network marketing, and benchmarking e-commerce business. The Directorate General of Budget, Accounting and Statistics (2014) calculated that the small- and medium-sized enterprise platform counseled 88 industrial associations from 2010 to 2012, and assisted more than 9000 small- and medium-sized enterprise

---

\*Corresponding author. Email: [choucm@yuntech.edu.tw](mailto:choucm@yuntech.edu.tw)

applications related to e-commerce opportunities. It also set up approximately 1000 enterprise e-commerce websites for female entrepreneurs (Small and Medium Enterprise Administration Ministry of Economic Affairs 2013).

Entrepreneurship education plays the role of helping to reduce the unemployment rate in a country. Entrepreneurship career intentions explores the students' self-employment, entrepreneurship intentions, and entrepreneurship learning attitude concerning the entrepreneurship and business field; at the same time, it provides entrepreneurial experiences in the process of obtaining entrepreneurship ability and an entrepreneurship education (Abebe 2012; Chou, Shen, and Hsiao 2011; Chou et al. 2010; Fukuda 2014; Gurel, Altinay, and Daniele 2010; Linan et al. 2011; Todorovic, McNaughton, and Guild 2011; Yemini and Haddad 2010). Some research has found that students' experiences related to entrepreneurship cognition (EC) and computer self-efficacy (CSE) have provided them with chances to learn new entrepreneurship skills, which may be helpful for their future entrepreneurial endeavors (Dyer, Gregersen, and Christensen 2009; Haynie and Sepherd 2009; Kicjul et al. 2009; Kumara 2012). Haynie and Sepherd (2009) define cognitive adaptability as the ability to be dynamic, flexible, and self-regulating in one's cognition, given dynamic and uncertain task environments. Cognitive adaptability in entrepreneurship education signifies students' ability to effectively and appropriately change entrepreneurship learning behavior by feedback from the entrepreneurship education learning context in which cognitive processing is embedded (Tolentino et al. 2014; Uy et al. 2015). Research suggests that EC is an important factor affecting entrepreneurial interests, intentions, and behaviors (Lanero, Vázquez, and Muñoz-Adánez 2015; Shinnar, Hsu, and Powell 2014).

This study aims to explore the variables which may influence tertiary student's entrepreneurial career intentions (ECIs), and to find the relationships among the variables. The purposes of this study are to address the following two questions:

1. What are the relationships between tertiary students' perceived EC, CSE, and ECIs?
2. Can we identify a suitable model that will identify important implications and enhance ECIs?

## Literature review

### *Entrepreneurship cognition*

The EC integrated into related entrepreneurship education has five theoretical dimensions: goal orientation, meta-cognitive knowledge, meta-cognitive experience, meta-cognitive control, and monitoring (Brigham, De Castro, and Shepherd 2007; Haynie and Sepherd 2009; Morgan and Gorman 2012). Haynie et al. (2010) found cognitive adaptability to be composed of interrelated processes describing meta-cognitive functioning.

Research indicates that individuals with more EC in the way that they approach a task or a situation of entrepreneurship education exhibit the following: (1) goal orientation signifies that individuals perceive, and subsequently assign meaning, to the characteristics of the environment in the context of their own goal orientation, and are more likely to recognize the fact that there are multiple decision frameworks available by which to formulate a response and (2) individuals subsequently draw on their cognitive knowledge and experiences to generate multiple, alternative decision

frameworks, focusing on interpreting, planning, and implementing goals to manage a changing environment (Culbertson, Smithand, and Leiva 2011; Haynie et al. 2010). The application of ideas and concepts from cognitive science has gained currency within entrepreneurship research, as evidenced by the growing accumulation of successful studies framed in entrepreneurial cognition terms (Mitchell et al. 2002).

There are three issues requiring further investigation regarding EC. First, there remains some debate on whether an entrepreneurial cognition construct is even necessary. Several scholars advocate the use of a general measure of meta-cognition instead of a domain-specific entrepreneurial cognition construct. Second, the dimensionality of the construct has yet to be fully established. While most scholars acknowledge the multi-dimensional nature of the entrepreneurial cognition construct (Brigham, De Castro, and Shepherd 2007; Haynie and Sepherd 2009; Kicjul et al. 2009), very few researchers have explicitly examined the underlying dimensions that make up the actual construct, by using some type of theoretical model of entrepreneurial activity and tasks. Entrepreneurship is characterized by activities in the creation of new businesses; to become an entrepreneur, various combinations of personal attributes, traits, background, experience, and disposition are required. Third, one of these personal attributes, entrepreneurial cognition, appears to be a particularly important antecedent to new venture intentions. Moreover, recent research suggests that an individual's entrepreneurial cognition may be elevated through training and education, thus potentially improving the rate of entrepreneurial activities (Haynie and Sepherd 2009; Mitchell et al. 2002).

Moreover, several scholars have simply relied on single survey questions to capture an individual's level of entrepreneurial cognition. Entrepreneurs appear to identify opportunities based on cues or signals from the environment that they filter and process through a number of mechanisms (e.g. intentions). According to EC, entrepreneurs are likely to recognize patterns that suggest potential opportunities from among the myriad cues and signals received. Finally, very few studies have included a sampling of nascent entrepreneurs; rather, most of the initial studies of CSE relied on samples of university students or samples of small business owners (Haynie and Sepherd 2009; Kicjul et al. 2009; Memili et al. 2010).

### *Computer self-efficacy*

CSE is an individual's judgment regarding his/her ability to fulfill job requirements requiring computer competence (Chou et al. 2010; Vajargah and Jahani 2010; Wilson, Kickul, and Marlino 2007). The current study examines students' self-efficacy beliefs with regard to their computer literacy skills.

Some researchers suggest that CSE may be an important factor related to the acquisition of entrepreneurial skills in e-commerce industry (Ma'atoofi and Tajeddini 2010; McGee et al. 2009; Obschonk, Silbereisen, and Schmitt-Rodermund 2010; Vajargah and Jahani 2010). Mars and Garrison (2009) found that students' attitudes toward computers constituted a critical issue in entrepreneurial-based curricula. Todorovic, McNaughton, and Guild (2011) posit that monitoring the user's attitudes toward computers should be a continuous process if the computer is to be used as an entrepreneurial tool. A review of the literature indicates that CSE has been investigated in similar settings; however, it has not been thoroughly investigated as an additional assessment tool in this important entrepreneurial educational context. The computer has become an essential instrument in every organization, particularly in today's era of globalization.

It is difficult to imagine a job or task that could be completed without using computers; these days, employees perform numerous tasks using computers and supporting devices (Wiradinata 2013). Achim and Al Kassim (2015) indicate that employees still face problems using the computer due to the rapid changes in computer application; they found that feelings of anxiety in persons operating computers slightly affected employees' self-efficacy. Concerning the changes in the computer technology and applications, many organizations and employees now rely on the use of the computer as the main tool to complete tasks (Morgan and Gorman 2012).

Based on the above, for students, there is a close correlation between CSE and self-employment (Mars and Garrison 2009; Vajargah and Jahani 2010). Researchers have proposed that positive attitudes toward entrepreneurial cognition, high CSE, and entrepreneurship attitude may be important factors in helping students in establishing their ECIs.

### ***Entrepreneurial career intentions***

ECIs include students' entrepreneurial attitudes toward entrepreneurship, role models, and entrepreneurial experience. Tertiary students participate in entrepreneurial education to realize their career intentions based on their entrepreneurial cognition and high rate of entrepreneurial self-efficacy (Gurel, Altinay, and Daniele 2010; Kumara 2012; Pihie 2012; Sobel and King 2008; Yemini and Haddad 2010).

ECIs of individuals with high perceived entrepreneurial education support their greater likelihood to engage in entrepreneurial activity as their employment (Chou, Shen, and Hsiao 2011; Hofer 2010, 2012; Kumara 2012; Pihie 2012). Hofer et al. (2012) recommend entrepreneurial education to provide support regarding business survival assignments, internship in companies and banks, business plan preparation, guest speakers in class, company visits, start-up business assignments, and business growth assignments. Undergraduates' immediate involvement in undertaking entrepreneurship education is also hoped to spark their interest, besides providing a clearer perception for the students concerning the entrepreneurial world, while reducing the rate of unemployment among graduates (Chou et al. 2010; Souitaris, Zerbinati, and Al-Laham 2007).

Some researchers indicate that self-efficacy, personality traits, Internet usage habits, facilitating conditions, and behavioral intentions/attitudes of individuals toward entrepreneurship are important factors in e-commerce (Nejad and Abbaszadeh 2012; Van Dam, Schipper, and Runhaar 2010; Veciana, Aponte, and Urbano 2005; Wiradinata 2013). Zhao, Seibert, and Hills (2005) investigated the effects of perceived learning resulting from entrepreneurship-related courses, previous entrepreneurial experience, and risk propensity on entrepreneurial intentions, and found that they were fully mediated by self-efficacy. Haynie and Sepherd (2009) state that CSE is evident through self-perceptions regarding entrepreneurial belief and ability. Urban's (2011) empirical research provides conclusive evidence concerning among females who believe they have the skills needed to be entrepreneurs, and placing their preference for entrepreneurship as a career choice high on the list of options.

Abebe (2012) emphasize strong empirical support for the social predictors of ECIs. Hsu and Chiu (2004) find the beliefs in one's capabilities to organize and execute Internet actions required to produce given attainments is a potentially important factor to explain the consumers' decisions in e-commerce use, such as e-service. This study aims to identify the correlations among EC, CSE and ECIs.

## Methodology

### Research design

This study employed structural equation modeling (SEM) to analyze the relationships between tertiary students' perceived EC, CSE, and ECIs. Data were collected through a survey questionnaire comprised of questions on demographics and multiple items for each construct in the study. Normal distribution testing results of the related variables in the model of this study is shown in Table 1.

Although all observation variables do not reach normal distribution ( $p < .05$ ), multi-variance normal test is insignificant ( $p > .05$ ), which demonstrates normal distribution. According to the conditions of Maximum Likelihood (ML), within the most commonly used approach in SEM, one of the conditions should be a simple random sampling that meets multi-variance normal distribution. Samples of this study meet the conditions of ML. Some scholars suggest that ML is influential only when Kurtosis is above 25; therefore, when Kurtosis is below 25, ML is still an applicable analysis (Bagozzi and Yi 1988; Bentler and Bonett 1980; Hair et al. 2010). Boomsma and Hoogland (2001) compared and probed into the completeness of different estimation methods, and concluded that in regard to models with observation variables above 6 or 8, with non-normal distribution, ML has better statistical traits. Thus, although overall variables of this study meet the multi-variance normal distribution of ML, a single variable does not meet normal distribution. Kurtosis of multi-variance distribution is not large ( $< 25$ ); therefore, this research estimates the model by ML.

### Subjects

This study treats students from tertiary schools as the population, and adopts random sampling and cluster sampling for its. The characteristics of those tertiary schools include participation in related entrepreneurship education subjects, courses, programs, and entrepreneurial competitions. Tertiary institutions were collected and logged in a sample list arranged sequentially. The stratified sampling was in accordance with the basic information (e.g. school attributes, learning background, and current post) and computer randomly selected sample of departments.

Table 1. Mean and standard deviations of variables and normal distribution test.

Variables	Mean	Standard deviation	Skewness	Kurtosis	$\chi^2$	$p$ -Value
Goal orientation	4.37	.49	.25	.23	3893.14	.000
Cognitive knowledge	4.25	.58	-.31	-.19	3889.32	.000
Cognitive experience	3.98	.61	.27	.16	3766.21	.000
Playfulness	4.24	.72	-.26	.25	4745.61	.000
Ease of use	4.21	.56	-.28	.24	3561.84	.000
Effectiveness	4.49	.64	.37	.29	3421.98	.000
Usefulness	4.26	.64	-.31	-.46	5163.67	.000
Self-employment	4.23	.53	-.29	-.53	4244.39	.000
Undertake risk	4.27	.52	-.29	-.31	3977.24	.000
Subjective norm	3.98	.67	.34	-.21	3534.23	.000
Total	4.13	.56	-.29	-.31	248.34	1.000

Taiwan’s Ministry of Education Statistics (2013) calculated that 77 tertiary institutions and entrepreneurship management-related majors comprise 1624 departments of this study group. The present study adopting department random sampling, selected 42 departments. The respondents are students of 35 tertiary schools, stratified for region and educational networks. In this population, there are 14 public and 21 private universities (Taiwan’s Ministry of Education Statistics 2013). A total of 1920 questionnaires of the formal scale were distributed, and 1630 effective questionnaires were returned, for a response rate of 85%. Krejcie and Morgan (1970) calculated the actual number of questionnaires for sampling 384. This study used 500% sampling; proportional sampling was 1920 people. Participants gave informed consent before the study commenced.

A total of 52.8% were male and 47.2% were female. The breakdown of participants’ by academic discipline was as follows: 30.2% science, engineering, agriculture and design; 56.7% business, management, tourism, and recreation; 5.4% livelihood, health and medical care; and 7.7% Liberal arts, law, education and general knowledge. In terms of year of work experience, 25.8% of the participants were in 1 years (and below), 32% were in more than 1 years and less than 3 years, 28.8% were in more than 3 years and less than 5 years, and 13.4% were in over 5 years (Table 2).

**Measures**

A 41-item survey questionnaire was developed to measure participants’ entrepreneurial cognition, CSE, ECIs, and demographic information. The research tool is a ‘Questionnaire of Factors Which Influence Tertiary students’ Entrepreneurial career intentions.’ The questionnaire includes an EC scale, CSE scale and ECIs scale (Chou, Shen, and Hsiao 2011; Chou et al. 2010; Dyer, Gregersen, and Christensen 2009; Todorovic, McNaughton, and Guild 2011). The contents are described as follows:

1. EC scale: The scale for EC included three constructs: goal orientation (5 items), cognitive knowledge (4 items), and cognitive experience (4 items). The EC

Table 2. Distribution of participants’ background in formal scales.

Basic information		Group	No of people	%
Gender	Male		861	52.8
	Female		769	47.2
Work experience	1 years (and below)		420	25.8
	More than 1 years and less than 3 years		522	32.0
	More than 3 years and less than 5 years		470	28.8
	Over 5 years		218	13.4
Current post	Full-time students		621	38.1
	Part-time students		1009	61.9
Learning background	Science, engineering, agriculture, and design		492	30.2
	Business, management, tourism, and recreation		924	56.7
	Livelihood, health, and medical care		88	5.4
	Liberal arts, law, education, and general knowledge		126	7.7
School attributes	Public		848	52.0
	Private		782	48.0

scale was built on the research tools of Brigham, De Castro, and Shepherd (2007), Dyer, Gregersen, and Christensen (2009), Gurel, Altinay, and Daniele (2010), and Wilson, Kickul, and Marlino (2007). The scale was designed to investigate the important factors that cause a person to perceive and accept entrepreneurship ideas. The scale's reliability in terms of Cronbach's  $\alpha$  coefficient is .88.

2. CSE scale: The scale for CSE included three constructs: playfulness learning (4 items), ease of use (4 items), job autonomy (3 items), and usefulness (3 items). The CSE scale was based on the concepts of Brinkerhoff (2006), Chou et al. (2010), Henry and Stone (1997), and Vajargah and Jahani (2010). The scale's reliability in terms of Cronbach's  $\alpha$  coefficient is .91.
3. ECI scale: The scale for ECIs included three constructs: self-employment (4 items), undertaking risk (4 items), and subjective norm (4 items). The ECI scale was built based on the research tools of Abebe (2012), Casillas and Moreno (2010), Fukuda (2014), Obschonk, Silbereisen, and Schmitt-Rodermund (2010), Pihie (2012), and Todorovic, McNaughton, and Guild (2011). The scale was designed for students' self-assessment of the results of ECIs. The scale's reliability in terms of Cronbach's  $\alpha$  coefficient is .91.

The 'Questionnaire of Factors Which Influence Tertiary students' Entrepreneurial career intentions' was reviewed by three experts with more than seven years of education industry and off-campus internship, as well as successful entrepreneurs for subject contents' suitability to ensure the scale's expert validation. Six tertiary students were invited to answer the questionnaire to enhance the validity of the scale's contents. In addition, five tertiary schools were selected for a pre-test, and 74 students were selected as the pre-test objects in total. Data collection was conducted consistent with objective sampling and snowball sampling via teachers and administrative staff of entrepreneurship education program. The scales used in this study are in self-assessment form, and a 5-point Likert scale was used as the scoring method. There are five levels of choices from 'agree' to 'do not agree.' The higher the score an individual receives, the larger extent of agreement the individual has. The scales' factors, number of questions reliability and validity are shown in Table 3.

### **Data analysis**

In processing the survey data used in this study, the collected questionnaires were coded, and the Statistical Package for Social Science (SPSS version 12.0) and linear structural analysis (LISREL version 8.5) were used to verify the correlations among the factors of EC, CSE and ECIs variables and their effects, in order to achieve the purpose of this study. In this study, the statistical test level  $\alpha=0.05$  was applied to all the factors.

A SEM system was used to capture the relationship between, and the cause and effect of, exogenous variables and endogenous variables; the use of SEM to investigate the causal relationship in a study is one of the suitable methods. The evaluation indices used in this study are based on the absolute fitness volume, incremental fitness volume, and parsimonious fitness volume classified by Hair et al. (2010) for the overall goodness of fit test. The evaluation standard for overall goodness of fit statistics is detailed in Table 4.

Table 3. An overview of factors, number of questions, reliability, and validity for tertiary students' EC, CSE, and ECIs scale.

Factor	Composition of scales	No of items	Factor loading (%)	Cronbach's $\alpha$	Accumulated explained variance (%)	Kmo	Total reliability Cronbach's $\alpha$
EC scale	Goal orientation	5	24.52	.88	68.51	.89	.88
	Cognitive knowledge	4	22.41	.86			
	Cognitive experience	4	20.18	.86			
CSE scale	Playfulness	4	27.24	.90	69.43	.88	.91
	Ease of use	4	18.44	.88			
	Effectiveness	3	18.23	.84			
	Usefulness	3	4.52	.84			
ECIs scale	Self-employment	4	25.23	.89	68.24	.89	.91
	Undertake risk	4	26.21	.85			
	Subjective norm	4	17.13	.84			

**Results**

**Data inspection**

We can see from Table 5 that the variables observed in this study are all in an abnormal distribution ( $p < .05$ ). Overall, if a multivariate normality test reaches a significant level ( $p > .05$ ), then it is in a normal distribution. Based on SEM, the assumption for ML is that the samples are simply and randomly selected, and are in a multivariate normal distribution.

In this study, the sample data did not fully meet the ML assumption, but the influence will be significant when the kurtosis value is greater than 25. Therefore, when the kurtosis value is less than 25, the ML method can still be applied. In this study, since the kurtosis value of the multivariate distribution is small ( $<25$ ), the ML method was still used for model estimation.

Table 4. Overall evaluation standard for goodness of fit.

Type of fitness	Fitness indicator	Evaluation standard	Scholars' suggestion
Absolute fitness volume	$\chi^2/df$	$<3.0$	Hair et al. (1998)
	GFI	$>0.9$	Hair et al. (2010)
	SRMR	$<0.1$	Hu and Bentler (1999)
	RMSEA	$<0.08$	Jarvenpaa, Tractinsky, and Vitale (2000)
Incremental fitness	AGFI	$>0.8$	Hair et al. (2010)
	NFI	$>0.9$	Bentler and Bonett (1980)
	NNFI	$>0.9$	Bentler and Bonett (1980)
Parsimonious fitness	PNFI	$>0.5$	Bentler and Bonett (1980)
	PGFI	$>0.5$	Bentler and Bonett (1980)
	CFI	$>0.9$	Bagozzi and Yi (1988)
	IFI	$>0.9$	Bentler and Bonett (1980)

Table 5. A test of variables' means, standard deviations, and normal distributions.

Variable	Mean	Standard deviation	Skewness	Kurtosis	$\chi^2$	<i>p</i> -Value
EC1:Goal orientation	3.975	.650	-.313	-.489	563.208	.000
EC2:Cognitive knowledge	3.473	.989	-.227	-.532	389.342	.000
EC3:Cognitive experience	3.986	.587	-.233	-.345	356.431	.000
EC subscale	3.784	.624	-.121	-.568	621.034	.000
CSE1:Playfulness	3.638	.678	-.145	.585	1216.434	.000
CSE2:Ease of use	3.891	.647	-.299	.096	1089.733	.000
CSE3:Effectiveness	3.734	.634	.032	.332	798.423	.000
CSE4:Usefulness	3.728	.657	-.088	.245	1123.587	.000
CSE subscale	3.698	.543	.124	.289	655.701	.000
ECI 1:Self-employment	3.873	.658	-.036	-.564	989.341	.000
ECI 2:Undertake risk	3.801	.734	-.255	-.071	556.821	.000
ECI 3:Subjective norm	3.832	.702	-.233	-.214	889.301	.000
ECIs subscale	3.886	.626	-.132	-.223	1098.219	.000
Overall	3.783	.480	.121	-.352	437.723	.941

In this study, LISERL 8.5 software was used for model validation and the inspection of the sample selection estimation method. Table 6 shows the parameter values after the model estimation by the software. Before the model's goodness of fit evaluation, whether there is any 'violation of estimation' or whether the estimated coefficient is beyond the scope defined must be ascertained. Based on the inspected violation of estimation, the estimated parameters in this study are all positive in the error variance, and no negative value exists. Standardized coefficients are all between 0.18 and 0.91. The estimated parameters in this study's data did not exhibit the violation of estimation problem, and were ready for the goodness of fit test. If its value is greater than the absolute value of 1.96, it means that the estimated parameters have already reached a significance level of .05 (Hair et al. 1998). We can see from Table 6 that in addition to  $\lambda 1$ ,  $\lambda 3$ , and  $\lambda 7$ , the other estimated parameters in this study are all up to a significant level.

Table 6. Tests of variables' means, standard deviations, and normal distributions.

Parameter	Standardized coefficient	Standard error	<i>t</i> Value	Parameter	Standardized coefficient	Standard error	<i>t</i> Value
$\lambda 1$	0.68	—	—	$\delta 1$	0.554	0.045	5.018*
$\lambda 2$	0.43	0.21	4.628*	$\delta 2$	0.823	0.056	8.934*
$\lambda 3$	0.65	—	—	$\delta 3$	0.595	0.019	8.814*
$\lambda 4$	0.66	0.13	8.094*	$\delta 4$	0.496	0.031	9.342*
$\lambda 5$	0.72	0.12	9.210*	$\delta 5$	0.502	0.025	9.458*
$\lambda 6$	0.92	0.13	10.355*	$\delta 6$	0.223	0.019	5.298*
$\lambda 7$	0.72	0.14	9.256*	$\delta 7$	0.398	0.024	9.346*
$\lambda 8$	0.92	0.13	9.718*	$\epsilon 1$	0.202	0.017	5.450*
$\lambda 9$	0.91	—	—	$\epsilon 2$	0.179	0.021	3.854*
$\lambda 10$	0.73	0.072	11.514*	$\epsilon 3$	0.511	0.036	9.023*

Note: Refer to indices in Table 1.

\*  $p < .05$ .

**Goodness of fit test**

The evaluation criteria used in this study was based on the absolute fitness volume, incremental fitness volume, and parsimonious fitness volume classified by Hair et al. (1998) for the overall goodness of fit test. The test of variable reliability and validity was used to determine the goodness of fit of the model's internal structure. The data of various indicators, after being estimated by the software LISREL version 8.5, are shown in Table 7.

The overall assessment results of the measurement model show that in the model of this study  $\chi^2 = 31.821$ ,  $p < .05$ , have reached a significant level. This indicates that a significant difference exists between the model and the empirical data's total variable matrix. As the test of  $\chi^2$  can be easily affected by the number of samples and the data's normal or abnormal state, the evaluation of other indicators needs to be added for a comprehensive evaluation of the model's overall goodness of fit.

First of all, in the testing indices for the absolute fitness volume, the ratio of chi-square degrees of freedom is  $\chi^2/df = 1.871$ , which is less than the acceptable value of 0.3, indicating that the mode is acceptable. The goodness of fit index (GFI) = 0.965, which is greater than the acceptable value of 0.9, indicating that the mode is acceptable. The standardized root mean square residual index (SRMR) = 0.037, which is less than the acceptable value of 0.1, indicating that the mode is acceptable. The average root mean square error of approximation (RMSEA) = 0.059, which is less than <0.08, indicating that the mode is acceptable. The above indices show that the model in this study falls into an acceptable range in the goodness of fit test of absolute fitness volume.

Secondly, in the testing indices for the incremental fitness volume, the adjusted fitness index Adjusted Goodness of Fit Index (AGFI) = 0.901, which is greater than the accepted values of 0.8, indicating that the mode is acceptable. The baseline fitness index Normed Fit Index (NFI) = 0.928, which is greater than the acceptable value of 0.9, indicating that the mode is acceptable. The non-baseline index Non-Normed Fit Index (NNFI) = 0.931, which is greater than the acceptable value of 0.9, indicating that the mode is acceptable. The above indices show that the model in this study falls into an acceptable range in the goodness of fit test of incremental fitness volume.

Table 7. Overall goodness of fit test results of ECIs.

Type of fitness	Fit index	Evaluation standard	Analysis of results not researched	Goodness of fit
Absolute fitness volume	$\chi^2/df$	<3.0	31.821/17 = 1.871	Acceptable
	GFI	>0.9	0.965	Acceptable
	SRMR	<0.1	0.037	Acceptable
	RMSEA	<0.08	0.059	Acceptable
Incremental fitness	AGFI	>0.8	0.901	Acceptable
	NFI	>0.9	0.928	Acceptable
	NNFI	>0.9	0.931	Acceptable
Parsimonious fitness	PNFI	>0.5	0.587	Acceptable
	PGFI	>0.5	0.482	Acceptable
	CFI	>0.9	0.976	Acceptable
	IFI	>0.9	0.982	Acceptable

Lastly, in the testing indices for the parsimonious fitness volume, Parsimonious normed fit index (PNFI) = 0.587, which is greater than the acceptable value of 0.5, indicating that the mode is acceptable. The revised fitness index Parsimony Goodness of Fit Index (PGFI) = 0.523, which is greater than the acceptable value of 0.5, indicating a good level of fitness index, and to accept this mode. Fitness index Comparative Fit Index (CFI) = 0.976, which is greater than the acceptable value of 0.9, indicating that the mode is acceptable. Incremental Fit Index (IFI) = 0.982, which is greater than the acceptable value of 0.9, indicating that the mode is acceptable. The above indices show that the model in this study still falls within an acceptable range in the goodness of fit test of parsimonious fitness volume.

Overall, from the data inspection above, the indices for absolute fitness volume and incremental fitness volume show that the models in this study are all acceptable. In the parsimonious fitness volume, except for the PGFI value which is slightly lower, the fitness index is acceptable. The data models can be described as fit; the overall model is consistent with the empirical model, and the extent to which the theoretical model can explain the empirical model is also appropriate.

### *The effects among latent variables*

In this study, after the overall model's goodness of fit test, the effects among latent variables are further compared in order to understand the relationship between the variables. The direct and indirect effects among latent variables and the effects among variables are shown in Table 8, and are described as follows:

1. In the direct effect, the results of this study reveal that tertiary students' CSE is an important factor directly influencing their ECIs, and the influence effect is 0.88. A higher level of recognition of CSE among tertiary students implies a more significant level of ECIs. On the other hand, the influence effect of EC concerning ECIs is only .052, indicating that tertiary students' EC has very limited influence on their ECIs.
2. The indirect effect of tertiary students' EC on ECIs is as high as 0.52, and the total effect is 0.88. Tertiary students' EC does indeed influence their awareness of ECIs. Students' EC influences their ECIs mainly through their awareness of CSE.

### *Test results*

The empirical results of tertiary students' ECIs are shown in Figure 1, and are analyzed as follows: (1) The estimated value of the direct affecting parameter between EC and CSE is 0.79 ( $t = 4.06, p < .05$ ); this means that EC has a significant effect on CSE. (2) The estimated value of the direct affecting parameter between EC and ECIs

Table 8. The effect of various latent variables in ECIs influence pattern.

Latent variable	EC			CSE		
	Direct	Indirect	Total effect	Direct	Indirect	Total effect
ECIs	0.52	0.26	0.78	0.88	–	0.88

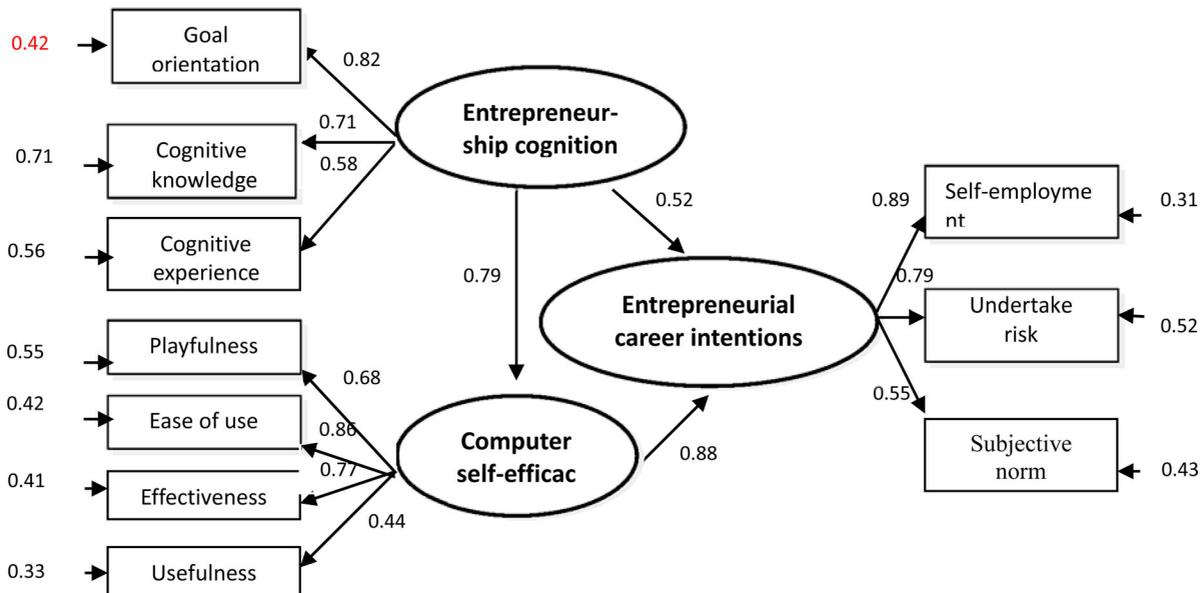


Figure 1. Path of tertiary students' entrepreneurial career intentions.

is 0.52 ( $t = 0.25$ ,  $p > .05$ ); this means that EC does not necessarily have a significant effect on ECIs. (3) The estimated value of the direct affecting parameter between CSE and ECIs is 0.88 ( $t = 5.34$ ,  $p < .05$ ); this means that CSE has a significant effect on ECIs.

## Discussion

Students' CSE has a significant direct effect on ECIs, and EC has a significant effect on ECIs through CSE. The influence pattern and empirical data of EC and CSE on ECIs has a good fit. The influence effects of EC, CSE and ECIs show that for tertiary students, the influence of EC on ECIs is revealed mainly through their awareness of CSE. In addition, CSE has a direct and significant effect on ECIs. From the influence of EC, CSE and ECIs, we can clearly see that compared with EC, CSE has a greater influence on ECIs (Bustos-Orosa 2008; Dyer, Gregersen, and Christensen 2009; Mars and Garrison 2009).

Regarding the test results, according to the goodness of fit test standard by Hair et al, the model in this study has a good overall fit (Hair et al. 1998). In the absolute fitness and incremental fitness tests, all indices meet the standard, and have the best fit. Most of the parsimonious fitness indices meet the test standard, and have a good fit. Overall, in the ECIs and influence model established in the study based on abovementioned theories, both the model and the data have a good fit, and in the parameter estimation most of the estimated values are significant. This shows that all the indices of latent variables have importance; only the parameter value of EC on ECIs is low. Overall, the empirical data have good explanatory power.

Students' EC influences CSE, and goal orientation is an important factor which influences CSE. Students' CSE influences ECIs; ease of use and effectiveness are important factors which influence ECIs (Haynie and Sepherd 2009; Madhoushi et al. 2011; McGee et al. 2009; Prosser et al. 2008).

The results show that among all latent variables in the model, the direct influence of EC on ECIs is not significant, indicating that the assumed influence of EC on students' ECIs needs further testing, and deserves more in-depth study and validation in the future. Based on test results, although the overall result is acceptable, the model consistency level is not entirely satisfactory, and its EC has a relatively low explanatory power for ECIs. The possible reasons are presented next.

The measurement error variance of the three main variables in the model is too large. Although in the course of the investigation in this study each step was made following reasonable procedures, survey bias and restrictions on the study objects in answering the questionnaire exist in a sample survey. These can result in a bias between the survey data and the actual situation (Bentler and Bonett 1980; Hair et al. 2010; Hayat and Riaz 2011; Lee et al. 2011).

The influence lies in the test of indices and method. Currently in verifying the calculation of structural equations, the index value is subject to the sample size, and sometimes the index values may influence each other. When the index is far greater than or much lower than the standard value, the judgment is more accurate; when the index is close to the standard value, we then need to consider the possible influence of the error of the missing scope of variables. Although we tried to establish a complete research model in this study based on past research and theories, there has been little domestic research on the topic of students' ECIs.

## **Conclusion**

The main purpose of this study was to determine the relationships between tertiary students' perceived EC, CSE, and ECIs. The finding indicated that students' CSE has a significant direct effect on ECIs, and EC has a significant effect on ECIs through CSE. CSE may influence students' ECIs; this requires more investigations. Students' CSE is an important factor which influences entrepreneurship career intention. Based on the study results, CSE plays an influential role. Students learned the entrepreneurial job requirements and discovered that they became more aggressive in entrepreneurial career planning and self-employment, realizing their career making decisions and finding their future entrepreneurial direction.

Students' EC has a significant effect on ECIs through CSE. Researchers can also examine if a high level of entrepreneurial cognition among students leads to implementing ECIs and innovative learning, which are essential to learning entrepreneurship. It would be useful to examine the impacts of different factors in tertiary schools in developing students' entrepreneurial cognition. The entrepreneurial cognition exposure to entrepreneurship courses and career guidance has implications in regard to the development of the entrepreneurial attitude and intention. Career guidance facilitates the acceptance and support of the intention to become entrepreneurs more than entrepreneurial courses have done for tertiary students. This research opines that entrepreneurial cognition influences entrepreneurship career intention, leading to a better understanding of what it takes to influence the attitude toward self-employment, undertaking risk, and the subjective norm over behavior related to entrepreneurship development.

## **Limitations and future research**

There are a number of limitations that should be noted in light of the present findings. Scoring according to scales is based on students' self-report questionnaire; therefore, this study cannot eliminate samples that were influenced by situations, attitudes, real respondents, emotions, or which are seemingly unmatched to reality. Although the use of self-reports to collect data has its benefits, it may lead to common method variance, namely, a situation that may inflate the true associations between variables.

This study aimed to probe into the factors of tertiary students' ECIs, which is significantly affected by school feedback regarding goal orientation; future studies can include measurements of this variable, and modify the model in order to further probe into the cause-and-effect relations among the variables. There may be undetected factors which resulted in a low explanatory power, and other variables which have not been identified (Hayat and Riaz 2011; Shinnar, Pruett, and Toney 2009). Regarding this model's test results, perhaps a future study can be conducted to find the variables either missing in the theories or which can be further added or deleted, or more comprehensive empirical data can be collected for testing to improve the consistency between this model and the empirical data.

## **Implication for theory and practice**

The research findings also have important practical implications. First, this study provides contributions to measuring ECIs in relation to entrepreneurial education subject and within a particular context. It also contributes to the few researches on measuring tertiary students' ECIs. It is important that integrating the subject of entrepreneurial

education teaching into the curriculum and providing a platform for sharing entrepreneurial information is advisable to promote students' entrepreneurial cognition. Teachers need to adapt to the changing times, absorbing and applying new entrepreneurial strategies if they want to attract students' entrepreneurial interest and achieve better learning results. Students can better understand entrepreneurial education if they learn innovative entrepreneurial information-related subjects in the classroom, helping their entrepreneurial cognition and searching for entrepreneurial resources through participation in entrepreneurial education learning, discussion and the sharing of innovative entrepreneurial ideas on entrepreneurial information platforms.

Secondly, to foster ECIs, it seems relevant for future studies to explore the entrepreneurship learning methods that effectively enhance students' CSE. Particularly, researchers can identify which computer and technology teaching methods improve students' ECIs. Exploring a combination of innovation entrepreneurship teaching methods that can highly influence students' entrepreneurial cognition and entrepreneurial career formation and development also has great potential for future examination.

### Disclosure statement

No potential conflict of interest was reported by the authors.

### References

- Abebe, M. A. 2012. "Social and Institutional Predictors of Entrepreneurial Career Intention: Evidence from Hispanic Adults in the U.S." *Journal of Enterprising Culture* 20 (1): 1–23.
- Achim, N., and A. Al Kassim. 2015. "Computer Usage: The Impact of Computer Anxiety and Computer Self-Efficacy." *Procedia – Social and Behavioral Sciences* 172: 701–8.
- Bagozzi, R. P., and Y. Yi. 1988. "On the Evaluation of Structural Equation Models." *Academy of Marketing Science* 16: 76–94.
- Bentler, P. M., and D. G. Bonett. 1980. "Significance Tests and Goodness of fit in the Analysis of Covariance Structures." *Psychological Bulletin* 88 (3): 588–606.
- Boomsma, A., and J. J. Hoogland. 2001. "The Robustness of LISREL Modeling Revisited." In *Structural Equation Models: Present and Future*, edited by R. Cudeck, S. du Toit, and D. Sorbom, 139–68. Chicago, IL: Scientific Software International.
- Brigham, K. H., J. O. De Castro, and D. A. Shepherd. 2007. "A Person-Organization Fit Model of Owner-Managers' Cognitive Style and Organizational Demands." *Entrepreneurship Theory and Practice* 31 (1): 29–51.
- Brinkerhoff, J. 2006. "Effects of a Long-Duration, Professional Development Academy on Technology Skills, Computer Self-Efficacy, and Technology Integration Beliefs and Practices." *International Society for Technology in Education* 39: 22–43.
- Bustos-Orosa, M. A. 2008. "Inquiring into Filipino Students' Conceptions of Good Teaching: A Qualitative Research Study." *The Asia-Pacific Education Researcher* 17: 157–71.
- Casillas, J. C., and A. M. Moreno. 2010. "The Relationship between Entrepreneurial Orientation and Growth: The Moderating Role of Family Involvement." *Entrepreneurship and Regional Development* 22 (3–4): 265–91.
- Chou, C. M., C. H. Shen, and H. C. Hsiao. 2011. "The Influence of Entrepreneurial Self-Efficacy on Entrepreneurial Career Intentions – Using Entrepreneurial Intention as the Mediator Variable." *International Business and Management* 3: 7–11.
- Chou, C. M., C. H. Shen, H. C. Hsiao, and S. C. Chen. 2010. "A Study on Constructing Entrepreneurial Competence Indicators for Business Department Students of Vocational and Technical Colleges in Taiwan." *World Transactions on Engineering and Technology Education*, 8: 316–20.
- Culbertson, S. S., M. R. Smith, and P. I. Leiva. 2011. "Enhancing Entrepreneurship: The Role of Goal Orientation and Self-Efficacy." *Journal of Career Assessment* 19 (2): 115–29.

- Directorate General of Budget, Accounting and Statics. 2014. "Statistical Abstract of National Income in Taiwan." <http://www.stat.gov.tw/public/data/dgbas03/bs4/nis93/ni.pdf>.
- Dyer, J. H., H. B. Gregersen, and C. Christensen. 2009. "Entrepreneur Behaviors, Opportunity, Recognition, and the Origins of Innovative Ventures." *Strategic Entrepreneurship Journal* 2 (4): 317–38.
- Fukuda, K. 2014. "An Empirical Study on Entrepreneurial Intentions among Japanese University Students." *International Journal of Entrepreneurship and Small Business* 21 (2): 216–30.
- Gurel, E., L. Altınay, and R. Daniele. 2010. "Tourism Students' Entrepreneurial Intentions." *Annals of Tourism Research* 37 (3): 646–69.
- Hair, J. F. Jr., R. E. Anderson, R. L. Tatham, and W. C. Black. 1998. *Multivariate Data Analysis*. 5th ed. Englewood Cliffs, NJ: Prentice Hall.
- Hair, J. F., W. C. Black, B. J. Babin, and R. E. Anderson. 2010. *Multivariate Data Analysis*. 7th ed. Upper Saddle River, NJ: Pearson Prentice Hall.
- Hayat, N., and M. T. Riaz. 2011. "The Entrepreneurial Orientation can Enhance the Teacher Performance in Higher Education." *Revista Romaneasca pentru Educatie Multidimensionala* 3: 85–96.
- Haynie, M., and D. Sepherd. 2009. "A Measure of Adaptive Cognition for Entrepreneurship Research." *Entrepreneurship Theory and Practice* 33 (3): 695–714.
- Haynie, J. M., D. Shepherd, E. Mosakowski, and P. C. Earley. 2010. "A Situated Metacognitive Model of the Entrepreneurial Mindset." *Journal of Business Venturing* 25 (2): 217–29.
- Henry, J. W., and B. W. Stone. 1997. "The Development and Validation of Computer Self-Efficacy and Outcome Expectancy Scales in a Nonvolitional Context." *Behavior Research Methods, Instruments, and Computers* 29 (4): 519–27.
- Hofer, A. R., J. Potter, A. Fayolle, M. Gulbrandsen, P. Hannon, R. Harding, A. L. Dahlstrand, et al. 2010. "From Strategy to Practice in University Entrepreneurship Support: Strengthening Entrepreneurship and Local Economic Development in Eastern Germany: Youth, Entrepreneurship and Innovation." OECD Local Economic and Employment Development (LEED) Working Papers, 2010/09, OECD Publishing. <http://dx.doi.org/10.1787/5km7rq1xvnxp-en>.
- Hofer, A. R., and J. Potter. 2012. "University Entrepreneurship Support: Policy Issues, Good Practices and Recommendations." OECD Local Economic and Employment Development (LEED) Working Papers, 2011/12, OECD Publishing. <http://www.oecd.org/edu/imhe/46588578.pdf>
- Hsu, M. H., and C. M. Chiu. 2004. "Internet Self-Efficacy and Electronic Service Acceptance." *Decision Support Systems* 38 (3): 369–81.
- Hu, L., and P. M. Bentler. 1999. "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives." *Structural Equation Modeling* 6 (1): 1–55.
- Jarvenpaa, S. L., N. Tractinsky, and M. Vitale. 2000. "Consumer Trust in an Internet Store." *Information Technology and Management* 1 (1/2): 45–71.
- Kicjul, J., L. K. Gundry, S. D. Barbosa, and L. Whitcanack. 2009. "Intuition Versus Analysis? Testing Differential Models of Cognitive Style on Entrepreneurial Self-Efficacy and the New Venture Creation Process." *Entrepreneurship Theory and Practice* 33 (2): 439–53.
- Krejcie, R. V., and D. W. Morgan. 1970. "Determining Sample Size for Research Activities." *Educational and Psychological Measurement* 30 (3): 607–10.
- Kumara, P. A. P. S. 2012. "Undergraduates' Intention Towards Entrepreneurship: Empirical Evidence from Sri Lanka." *Journal of Enterprising Culture* 20 (01): 105–18.
- Lanero, A., J. L. Vázquez, and A. Muñoz-Adán. 2015. "A Social Cognitive Model of Entrepreneurial Intentions in University Students." *Psychology and Learning College Students* 31: 243–59.
- Lee, L., P. K. Wong, M. D. Foo, and A. Leung. 2011. "Entrepreneurial Intentions: The Influence of Organizational and Individual Factors." *Journal of Business Venturing* 26 (1): 124–36.
- Linan, F., J. C. Rodriguez-Cohard, J. M. Rueda-Cantuche, and J. M. Rueda-Cantuche. 2011. "Factors Affecting Entrepreneurial Intention Levels: A Role for Education." *International Entrepreneurship and Management Journal* 7 (2): 195–218.

- Ma'atoofi, A. R., and K. Tajeddini. 2010. "The Effect of Entrepreneurship Orientation on Learning Orientation and Innovation: A Study of Small-Sized Business Firms in Iran." *International Journal of Trade, Economics and Finance* 1: 254–60.
- Madhoushi, M., A. Sadati, H. Delavari, M. Mehdivand, and R. Mihandost. 2011. "Entrepreneurial Orientation and Innovation Performance: The Mediating Role of Knowledge Management." *Asian Journal of Business Management* 3: 310–16.
- Mars, M. M., and S. Garrison. 2009. "Socially-oriented Ventures and Traditional Entrepreneurship Education Models: A Case Review." *Journal of Education for Business* 84 (5): 209–96.
- McGee, J. E., M. Peterson, S. L. Mueller, and J. M. Sequeira. 2009. "Entrepreneurial Self-Efficacy: Refining the Measure." *Entrepreneurship Theory and Practice* 33 (4): 965–88.
- Memili, E., K. A. Eddleston, F. W. Kellermanns, T. M. Zellweger, and T. Barnett. 2010. "The Critical Path to Family Firm Success Through Entrepreneurial Risk Taking and Image." *Journal of Family Business Strategy* 1 (4): 200–9.
- Mitchell, R. K., L. Busenitz, T. Lant, P. P. McDougall, E. A. Morse, and J. B. Smith. 2002. "Toward a Theory of Entrepreneurial Cognition: Rethinking the People Side of Entrepreneurship Research." *Entrepreneurship Theory and Practice* 27 (2): 93–104.
- Morgan, M., and P. Gorman. 2012. "Enhancing the Employability Skills of Undergraduate Engineering Students." [http://www.ineer.org/Selections-from-ineer-books/2011\\_Innovations\\_v7\\_RLA\\_Final\\_Chap-18\\_Morgan-and-O'Gorman.pdf](http://www.ineer.org/Selections-from-ineer-books/2011_Innovations_v7_RLA_Final_Chap-18_Morgan-and-O'Gorman.pdf).
- Nejad, B. A., and M. M. S. Abbaszadeh. 2012. "Study of the Entrepreneurship in Universities as Learning Organization Based on Senge Model." *International Education Studies* 5: 67–77.
- Obschonk, M., R. K. Silbereisen, and E. Schmitt-Rodermund. 2010. "Entrepreneurial Intention as Developmental Outcome." *Journal of Vocational Behavior* 77 (1): 63–72.
- Pihie, Z. A. L. 2012. "Entrepreneurship as a Career Choice: An Analysis of Entrepreneurial Self-Efficacy and Intention of University Students." *European Journal of Social Sciences* 9: 338–49.
- Prosser, M., E. Martin, K. Trigwell, P. Ramsden, and H. Middleton. 2008. "University Academics' Experience of Research and its Relationship to their Experience of Teaching." *Instructional Science* 36 (1): 3–16.
- Shinnar, R., M. Pruet, and B. Toney. 2009. "Entrepreneurship Education: Attitudes Across Campus." *Journal of Education for Business* 84 (3): 151–59.
- Shinnar, R. S., D. K. Hsu, and B. C. Powell. 2014. "Self-efficacy, Entrepreneurial Intentions, and Gender: Assessing the Impact of Entrepreneurship Education Longitudinally." *The International Journal of Management Education* 12 (3): 561–70.
- Sobel, R. S., and K. A. King. 2008. "Does School Choice Increase the Rate of Youth Entrepreneurship?" *Economics of Educating Review* 27 (4): 429–38.
- Souitaris, V., S. Zerbinati, and A. Al-Laham. 2007. "Do Entrepreneurship Programs Raise Entrepreneurial Intention of Science and Engineering Students? The Effect of Learning, Inspiration and Resources." *Journal of Business Venturing* 22 (4): 566–91.
- Small and Medium Enterprise Administration Ministry of Economic Affairs. 2013. "2013 White Paper on Small and Medium Enterprises in Taiwan." <http://www.moeasmea.gov.tw/ct.asp?xItem=10510&andCtNode=1106&andmp=1>.
- Taiwan's Ministry of Education Statistics. 2013. "Taiwan University List: Number of Schools." Accessed January 18, 2015. <http://ulist.moe.gov.tw/Home/UniversityList>.
- Todorovic, Z. W., R. B. McNaughton, and P. Guild. 2011. "ENTRE-U: An Entrepreneurial Orientation Scale for Universities." *Technovation* 31 (2–3): 128–37.
- Tolentino, L. R., V. Sedoglavich, V. N. Lu, P. R. J. M. Garcia, and S. L. D. Restubog. 2014. "The Role of Career Adaptability in Predicting Entrepreneurial Intentions: A Moderated Mediation Model." *Journal of Vocational Behavior* 85 (3): 403–12.
- Urban, B. 2011. "Gender Perspectives on Entrepreneurship and Self-Efficacy: Evidence from an Emerging Economy." *International Journal of Humanities and Social Science* 1: 39–47.
- Uy, M. A., K. Y. Chan, Y. L. Sam, M. H. R. Ho, and O. S. Chernyshenko. 2015. "Proactively, Adaptability and Boundary Less Career Attitudes: The Mediating Role of Entrepreneurial Alertness." *Journal of Vocational Behavior* 86: 115–23.
- Vajargah, K. F., and S. Jahani. 2010. "Application of ICTS in Teaching and Learning at University Level: The Case of Shahid Beheshti University." *The Turkish Online Journal of Educational Technology* 9: 33–39.

- Van Dam, K., M. Schipper, and P. Runhaar. 2010. "Developing a Competency-Based Framework for Teachers' Entrepreneurial Behavior." *Teaching and Teacher Education* 26 (4): 965–71.
- Veciana, J. M., M. Aponte, and D. Urbano. 2005. "University Students' Attitudes Towards Entrepreneurship: Two Countries Comparison." *International Entrepreneurship and Management Journal* 1 (2): 165–82.
- Wilson, F., J. Kickul, and D. Marlino. 2007. "Gender, Entrepreneurial Self-Efficacy, and Entrepreneurial Career Intentions: Implications for Entrepreneurship Education." *Entrepreneurial Theory and Practice* 31: 1042–2587.
- Wiradinata, T. 2013. "Factors Influencing Nascent Entrepreneurs in an e-Marketplace." *International Journal of Business and Commerce* 3: 35–61.
- Yemini, M., and J. Haddad. 2010. "Engineer-Entrepreneur: Combining Technical Knowledge with Entrepreneurship Education – The Israeli Case Study." *International Journal of Engineering Education* 26: 1220–29.
- Zhao, H., S. E. Seibert, and G. E. Hills. 2005. "The Mediating Role of Self-Efficacy in the Development of Entrepreneurial Intentions." *Journal of Applied Psychology* 90 (6): 1265–72.