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## An Empirical Examination of a Four-component of Creative Self-efficacy among Undergraduate Students

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**Abstract:** Creativity is very important to undergraduate students' careers as other important ability and skills. In this study, the author surveyed 135 undergraduate students who study in Zhejiang Gongshang University, China. Their majors is a wide range. The survey is about their creative self-efficacy. Creative self-efficacy and other key variables were measured by subjective way, using self-described questionnaires. Confirmatory factor analysis, MANOVA and so on were used to get the results. The results showed that confirmatory factor analysis showed good fit of theoretical construct of the scale. Creative self-efficacy had four dimensions. This paper makes a valuable contribution to creative self-efficacy literatures and university education. This study also will give some theoretical supports for university, the academic communities and other parties who are devoted in improving undergraduate students' creativity.

**Key words:** Creative self-efficacy, undergraduate students, China

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### INTRODUCTION

Rapid change, global competition and an increasingly demanding environment has made the creativity of individuals crucial to their long-term career performance. As McCorkle *et al.* (2007) indicated that both business and marketing students perceived creativity as important to their careers. They also found creativity to be as important to marketing students' careers as other important skills (e.g., writing, oral presentation, teamwork, etc).

Several previous studies have found that those who were have higher self-efficacy reported higher task effort and performance, persistence, resilience in the face of failure, effective problem solving and self-control (Prussia *et al.*, 1998; Stajkovic and Luthans, 1998; Gist and Mitchell, 1992). The reason why individuals with high self-efficacy can do better task performance is because it improves motivation.

Self-efficacy views can be general or specific. It is reasonable that creative self-efficacy is defined as a personal belief in how much one can turn new idea into action with prospective situations. Therefore, creative self-efficacy is important to creativity.

In the light of this issue, this research is undertaken to determine the construct of undergraduate students' creative self-efficacy in Zhejiang Business University, China. In addition, this study is conducted to identify the factors of the creative self-efficacy.

**Creativity:** When informally asked, what is creativity? Many undergraduate students respond that they don't

know exactly what creativity is but they can recognize it when they see it. Finding a consistent definition and especially one that our students can understand, is not very easy. As early as 1960's, Rhodes (1961) found there were more than 40 definitions of creativity in research. Creativity is an important topic in psychology research because creativity are closely related behaviors. Moreover, creativity was viewed as a form of active mental health (Warr, 1994). Warr (1994) identified five types of active mental health: positive self-regard, competence, aspiration, autonomy/independence and integrated functioning. Individuals can gain positive self-regard, a feeling of competence and a sense of independence if they solve any problem in a creative way. Creativity is also often used to describe both novel outcomes and novel processes simultaneously. Although related, Csikszentmihalyi (1996) explained that a creative process (e.g., creation of new ideas) should be differentiated from a creative output (e.g., the actual innovation) because using a creative process does not always gain a creative outcome. Creative outputs may include a novel painting by an art student, a novel human resource strategy by a management student, or a novel marketing plan by a marketing student, whereas, the creative process is the methodology used (e.g., brainstorming) to develop new ideas to solve particular problems in a student's applied domain (e.g., marketing) that improves the likelihood that a novel outcome will be achieved. For pedagogical reasons, this article focuses on the perspective of creativity associated with the process (e.g., creation of new ideas).

From this perspective, Alvino (1990) conception of creative thinking is appropriate to creativity. Alvino offered a frequently used definition of creative thinking as “a novel way of seeing or doing things that is characterized by four components-fluency (generating many ideas), flexibility (shifting perspective easily), originality (conceiving of something new) and elaboration (building on others ideas)” (p.50). Understanding Alvino’s definition of creative thinking can help us to teach our students to be more creative in practice.

Therefore, researchers and practitioners both want to identify the factors that stimulate personal creativity because creativity can directly improve an organization’s performance and promote employee’s active behavior.

McElvaney (2006) identified the relationship between supervisor’s behavior and employee’s creativity in an organizational background. Binnewies *et al.* (2008) also found job control and support for creativity moderated the relationship between age and creativity.

However, there is a common complaint among employers is that under graduate students are often lack of sound creative thinking. To better prepare students for the business world, many researchers worked hard to find the good way to foster students’ creativity.

Geissler *et al.* (2012) indicated that Six Thinking Hats® system in various courses was the technique to be easy to use creative discussions, understanding other perspective when addressing a topic.

However, research into the construct of undergraduate students’ creativity is very limited.

**Creative self-efficacy:** Generalized self-efficacy is defined as a personal judgement of “how well one can execute courses of actions required to deal with prospective situations” (Bandura, 1982). Self-efficacy is also one’s belief, like work ethic which represents the degree that one believes he or she capable of successfully perform a specific task within a given context, even a difficult context.

Creative self-efficacy, defined as “the belief one has the ability to produce creative outcomes” (Tierney and Farmer, 2002). Creative self-efficacy is a strong predictor of employee creativity (Tierney and Farmer, 2002).

There appears to be no consensus regarding the definitional elements of creative self-efficacy. Yang (2007) developed the creative self-efficacy scale for college students. And used four items to measure creative self-efficacy: I feel that I am good at generating novel ideas; I have confidence in my ability to solve problems creatively; I have a knack for further developing the ideas of others; I am good at finding creative ways to solve problems. Ackerley (2006) also used a four-item likert scale developed by Tierney and Farmer, in her study,

cronbach’s coefficient alpha was .92. In these research, the participants are both employees. Yang (2007) developed the creative self-efficacy scale for college students.

The purpose of this paper is to propose the definitional elements of undergraduate students’ creative self-efficacy. In this study, we used Alvino (1990) definition of creative thinking, including fluency self-efficacy, flexibility self-efficacy, originality self-efficacy and elaboration self-efficacy.

As far as the above is concerned, the following hypotheses are developed:

**H1:** There will be four elements of undergraduate students’ creative self-efficacy

**H2:** There are significant differences between majors

**H3:** There are no significant differences between female undergraduate students and undergraduate male students

## METHODS

**Sample and procedures:** Data for this research were collected by questionnaire. We asked 135 undergraduate students to voluntarily participate in this research. Participants administered a self-administered questionnaire with an accompanying cover letter that stated the purpose of the research. They answered questions regarding age, majors, gender and so on.

The samples for the study was drawn from undergraduate students in Hangzhou and approximately half were female (54.8%, n = 74). Some of them served as a leader in student union (42%, n = 67). Mean age was 21.4 (SD = 2.2) years. They studied in various fields, including business, art, philosophy, information technology, math, economics, language and so on.

**Measures:** The major measures for this present research were creative self-efficacy. Unless stated otherwise, participants responded to all questionnaire items for measures using a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree).

According to Alvino (1990) definition of creative thinking, creative self-efficacy is measured with Yang (2007) scales and comprising four items for each of the fluency self-efficacy, flexibility self-efficacy, originality self-efficacy and elaboration self-efficacy component.

## RESULTS

**Dimensionality of creative self-efficacy:** To test The dimensionality of Yang (2007) creative self-efficacy scales, we estimate a three-factor model and a four-factor model

**Table 1: Confirmatory factor analysis for the component of creative self-efficacy**

Model	$\chi^2$	df	$\Delta\chi^2$	CFI	TLI	IFI	SRMR
Three-component model	382.1	130	269.4***	0.848	0.816	0.842	0.100
Four-component model	191.4	76	195.1***	0.911	0.812	0.912	0.077

\*\*\*p<0.001. For sample size, n = 135, change in  $\chi^2$  is related to the preceding model in the sequence. CFI: Comparative fit index, TLI: Tucker-lewis index, IFI: Incremental fit index, SRMR: Standardized root mean square residual

**Table 2: Cronbach alpha and average variance extracted statistics for the components of creative self-efficacy**

Components of creative	Cronbach	Average variance
Self-efficacy	Alpha	Extracted
Fluency self-efficacy	0.729	0.516
Flexibility self-efficacy	0.731	0.576
Originality self-efficacy	0.736	0.507
Elaboration self-efficacy	0.724	0.594

For sample size, n = 135

comprising all 18 items. Both models are tested using maximum likelihood estimation in AMOS 5.0. We used absolute fit index (CFI), Tucker-lewis Index (TLI) and the Incremental Fit Index (IFI) and Chi-square difference tests to examine model fit (Smith and Hall, 2008).

Table 1 reports the Confirmatory factor analysis (CFA) results for the dimensions of creative self-efficacy.

The three-component model fit is unacceptable, the Chi-square difference test shows that the four-component model has better fit than the three-component model. In addition, the changes in the fit measures from the three-component model to the four-component model are substantial. Thus, these findings empirically support the existence of four separate dimensions of undergraduate students' creative self-efficacy.

**Reliability and validity:** To examine reliability we calculated Cronbach alpha statistics for each dimension of creative self-efficacy. As shown in Table 2.

The Cronbach alpha statistics for each are above dimension 0.70. A 0.65 shows good reliability for scale items. So the Cronbach alpha statistics is acceptable. All sub-scales showed good internal reliability (Table 2). As Table 2 shows each AVE for the dimensions of creative self-efficacy is above 50, indicating the acceptable convergent validity.

Overall, our test indicates that a four-component model of undergraduate students demonstrates acceptable model of fit. In addition, each dimension of creative self-efficacy exhibits satisfactory reliability and validity.

We used Multivariate Analysis of Variance (MANOVA) to examine the difference in creative self-efficacy between genders. Results from MANOVA shows no significant in the level of four dimensions of undergraduate students' creative self-efficacy. In addition, the correlations of the four components with each are almost identical for males and females. Thus, the H2 is accepted.

We also used Multivariate Analysis of Variance (MANOVA) to examine the difference in creative self-efficacy between majors. Results from MANOVA

shows significant in the level of four dimensions of undergraduate students' creative self-efficacy. Thus, the H3 is also accepted. Those whose majors are engineering and nature science have slightly higher level of fluency self-efficacy (mean = 4.06) and originality self-efficacy (mean = 4.12) than those whose majors are art and society science (mean of fluency = 3.26, mean of originality = 3.16). Yang (2007) indicated there are significant difference between students whose major is engineering and art on fluency and resolving problem.

## DISCUSSION

The findings support the research hypotheses. More specifically, the findings suggest that the undergraduate students' creative self-efficacy has four dimensions, fluency self-efficacy, flexibility self-efficacy, originality self-efficacy and elaboration self-efficacy (H1).

The finding that gender is not directly related to undergraduate students' creative self-efficacy is expected (H2).

As argued by Maury and Yehuda (1997), careers in the 21st century require a new set of support structures, including self-support or self-management. Given the complex and rapidly changing nature of the current work environment, undergraduate students' career success needs strategies of self-planning, such as self-set career goals, goal-pursuing behavior and design steps how to achieve goals. If one undergraduate student have higher creativity, he can design good strategies to plan his own career.

Effectively influencing his environment and regulating his own action is very critical for employee's career, especially in modern labor markets (Converse *et al.*, 2012). Therefore, career self-management has become students' task even before entering an organization.

During these decades, self-efficacy has received more and more attention in studies of the organizational behaviors or psychology. Because researchers and practitioners both agreed that self-efficacy have important implications for individual behaviors and career success.

In this rapid change age, teaching and fostering the undergraduate students' valuable creativity is very critical for universities. Creativity is not only for developing new products and technology, but also for designing any business plan, even a career is very useful. In a word, those undergraduate students with higher creativity will be more possible to achieve career success.

As Tierney and Farmer (2002) argued, creative self-efficacy in turn is a strong predictor of individual creativity.

This article has attempted to offer a deep insight into the construct of undergraduate students' creative self-efficacy.

**Implications of the results:** Since creative self-efficacy is a vital antecedent of creative behaviour and performance, universities that seek to enhance undergraduate students' creativity should benefit from an understanding of construct of creative self-efficacy. Enhancing belief in one's creativity should be several central components of creativity courses.

We found undergraduate students' creative self-efficacy has four components. So, universities can develop the undergraduate students' creative by enhancing the four dimensions.

### CONCLUSION

This study is to examine the construct of undergraduate students's creative self-efficacy. The research findings indicate that creative self-efficacy has four dimensions: fluency self-efficacy, flexibility self-efficacy, originality self-efficacy and elaboration self-efficacy.

Undergraduate students who fulfill high levels of creative self-efficacy will report greater career self-management than those who do not (Yu, 2013). Universities can potentially enhance students' creativity by developing students' creative self-efficacy.

The study makes a valuable contribution to creative self-efficacy literatures by being one of the first to present findings of the construct of creative self-efficacy. We argue that gender is not directly related to undergraduate students' creative self-efficacy is expected.

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