

# ***Does Competition Among Universities for Ranking Affect College Students' General Self-Efficacy in China?***

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**Abstract:** General self-efficacy depends on self-belief and the external environment. For college students, the competition among universities for ranking serves as an external environment. In this study, the author demonstrates the impact of competition among universities for ranking on college students' general self-efficacy. A growth mindset, which refers to the belief that one's abilities can be developed over time, is proposed to moderate this effect. Three questionnaires collected 43 students' responses on their awareness of university ranking, general self-efficacy, and mindset. Correlation and regression analyses were conducted to produce the results. The results suggest that gender is a significant moderator and that a growth mindset functions as a practical means for increasing a student's general self-efficacy in the context of competitive higher education. The study found that male students were positively affected by the competition among universities for ranking, while female students were negatively affected. The findings highlight the importance of jointly considering university prestige, gender, and mindset to understand general self-efficacy.

**Keywords:** higher education, competition, self-efficacy, growth mindset, stereotype

## **1. Introduction**

The competition among universities for ranking has been an ongoing phenomenon in the higher education industry. In most countries, the central government ranks domestic universities and then releases the ranking list to the public. In China, the rankings are produced through projects initiated by the government, like Project 211 and Project 985, which refers to the top-tier Chinese universities aiming for higher research standards in 21st century, and development plans, like the Double First-Class University Plan, which refers to list of universities included in the arrangements for the Chinese higher education institution development in 2010s. University alliances, like the C9 League, which refers to an elite university grouping in China with considerable portion of national research grants and researchers. also create competition among elite universities in China. From a global perspective, most universities have been active in the rankings game for some time now. These universities are annually assessed and ranked by ranking systems like the UK's Times Higher Education (THE) World University Ranking, Quacquarelli Symonds' (QS) World University

Rankings, and China's Academic Ranking of World Universities (ARWU). Both domestic and international rankings foster competition among universities, though.

The rankings provide an essential point of reference for the allocation of government funds and encourage or discourage student enrollment. However, distilling university performance across several indicators into a single performance report also raises the question of whether it is healthy to assess universities of diverse specialties using one ranking list [1]. The ethical issue inherent in this dilemma becomes especially pronounced when one considers that the primary stakeholders here are students. Prospective students use those university rankings in their decision-making processes as they apply to certain universities. High-ranking universities are perceived as high-quality universities, offering excellent education and research opportunities. When students identify themselves according to their institution, they may base their self-evaluations off of where their university places in global university competitions. A student's general self-efficacy is contingent upon this self-evaluation. The role of competition among universities for ranking is one of many external factors that may affect college students' general self-efficacy. In this case, the university's competitors may influence students' perceptions of its place in this ranking system and their belief in their own capabilities.

Various competitions exist in every student's life, but they may view them with different mindsets. Students who are inclined to the competitions may emphasize the development of their university and themselves, even though they know their university does not rank as highly as others. The emphasis on the development of group and individual raises the attention on Dweck's theory of growth mindset, which refers to the belief that one's abilities can be developed over time [2]. Whether a growth mindset helps increase one's general self-efficacy is something that has not been discussed in the literature. Such a topic is worth examining, however, because a growth mindset is teachable. If educators know that the competition among universities for ranking negatively influences students' general self-efficacy, they can embed a growth mindset intervention into the curriculum.

This study proposes two hypotheses to investigate the relationship between competition among universities for ranking, college students' general self-efficacy, and a growth mindset. Hypothesis 1 supposes that a significant negative relationship exists between college students' awareness of the competition among universities for ranking and their general self-efficacy. Hypothesis 2 presumes that a growth mindset moderates the association between college students' awareness of the competition among universities for ranking and their general self-efficacy. This study uses survey data collected from Chinese undergraduate students to test these hypotheses.

## 2. Literature Review

The literature review that follows synthesizes previous research on the competition among universities for ranking, the development of self-efficacy theory, and the development of growth mindset theory. Most studies on this subject explore the relationship between competition among universities and students' general self-efficacy through a macro lens, yet not a single study investigates the psychological consequences of being aware of the competition among universities from a micro perspective.

### 2.1. Competition Among Universities for Ranking

Universities rankings are released by both the central government of individual countries or via international ranking systems. In China, these ranking systems have become an integral part of the higher education industry. In fact, the earliest international ranking system, the Academic Ranking of World Universities (ARWU), also known as the "Shanghai Ranking," was established in China

[3]. Therefore, it goes without saying that students and faculty in China are made aware of such competition relatively early.

University rankings influence prospective, current, and post-graduate students as they become aware of them. For prospective students, university rankings guide decisions about their future enrollment [4], with high-achieving students tending to choose top-ranking universities that have received government recognition for their excellence [5]. Current students are also stakeholders in the ranking results. The university administration publishes ranking results in their marketing brochures or annual reports to increase public and private funding [6]. These generous grants and other forms of assistance allow them to offer current students more scholarship opportunities and facilitates their learning experience through better and greater on-campus resources. When it comes to post-graduate students, they rely on the university rankings for transparency about their university's standing and the fields for which it is known when entering the job market [7].

## **2.2. General Self-Efficacy**

With the establishment of Social Cognitive Theory, Bandura first defines self-efficacy as an estimate of one's ability to arrange and use action to achieve a specific goal [8]. In other words, self-efficacy is one's confidence in completing a specific task [9]. Throughout their college careers, university students are required to solve problems in varied contexts and develop skills via different tasks. Therefore, along with the skills they acquire, self-efficacy can be considered a requisite for them to thrive in college. Bandura points out possessing the necessary skills is only half the equation; the individual must also possess the self-confidence to effectively exercise these skills to complete the task at hand [10]. Acknowledging that self-efficacy functions differently in different settings, this study focuses on students' general self-efficacy, and does not limit its discussions to specific disciplines. General self-efficacy can be defined as one's belief in the capability to control one's life by organizing resources related to motivation, cognition, and action [11]. The concept of general self-efficacy is closely related to self-evaluation [12]. Thus, self-evaluation could be an effective way to measure general self-efficacy. Since college life is naturally accompanied by many academic and social challenges, students' self-evaluation of their general ability to succeed in light of those challenges is worthy of further examination.

## **2.3. The Relationship between Competition among Universities for Ranking and Students' General Self-Efficacy**

According to Zhang et al., general self-efficacy depends on the external environment, and includes both challenges and opportunities [13]. One such challenge or opportunity lies with university rankings and their ability to affect students' general self-efficacy. Previous studies of competition among universities for higher rankings generally adopt a macro perspective and tailor their implications to university leaders and policymakers. To date, no study has analyzed the psychological consequences the competition among universities for ranking holds for college students from a micro perspective.

## **2.4. Undergraduate Students' Growth Mindset**

A growth mindset is characterized by the belief that one's abilities can be developed over time. Individuals with a growth mindset believe they can improve their skills and abilities with effort, making them more likely to take on challenging tasks [2]. A more recent study connected a growth mindset to other social psychological competencies, finding that a growth mindset can influence the formation of judgments and stereotypes, which can then affect behavior in the form of seeking challenges and practicing resilience [14]. A growth mindset has practical implications for increasing

undergraduate students' general self-efficacy in light of competition among universities for ranking. Indeed, several interventionist studies show that students can be motivated by a growth mindset to take on academic challenges and remain persistent—behavior that may be reinforced by educators and school officials [15].

### **3. Methods**

#### **3.1. Participants and Procedures**

The data for this study was collected via three questionnaires administered to undergraduate students in China. The target population was current undergraduate students, who were registered full-time in a Chinese university for the 2022-2023 academic year. Each questionnaire measures a single construct of awareness of the competition among universities for ranking, general self-efficacy, and growth mindset. The survey was delivered via an online form sent to students at a university in the midwestern and eastern parts of China. It took the participants less than three minutes to complete. After excluding invalid responses, the sample size for analysis was 43 (21 male, 21 female, and one unidentified). Thirty percent of the participants were seniors, 44% juniors, 19% sophomores, and 7% first-year students.

#### **3.2. Measures**

##### **3.2.1. Awareness of the Competition among Universities for Ranking.**

A five-item scale was used to measure students' awareness of the competition among universities with respect to ranking. The five items were comprised of descriptions that represent the respondent's proactive exposure to five representative ranking systems in Chinese higher education. The five ranking systems are "Project 211 & 985", "Double First Class", "Times Higher Education (THE)", "Quacquarelli Symonds (QS)", and "Academic Ranking of World Universities (ARWU)". The manner in which the items are worded are intended to reflect no subjective judgment and are therefore designed to reduce biased responses. A sample item reads as follows: "In the past year, I checked my university's place in the list of 'QS' (either university or discipline)." Participants could respond by recalling their recent exposure to the five ranking systems. Because the time period mentioned in the survey item (i.e., "in the past year") was relatively recent, it was presumably easy for respondents to accurately recall the frequency. Moreover, participants were not required to reflect on their familiarity with these rankings; they only needed to choose the frequency with which they checked them. They could respond according to a four-point Likert-type scale. The four response options were: 1 (never, frequency=0), 2 (rarely, frequency=1), 3 (sometimes, frequency=2), 4 (often, frequency  $\geq 3$ ). After completing the five items, participants' responses were summed to provide a total awareness score. The total score ranged between 5 (indicating that an individual never checked university rankings) and 20 (indicating that the individual checked university ranking 15 times or more). The score was used to determine the individual's awareness of the competition among universities for ranking.

##### **3.2.2. General Self-Efficacy**

To assess college students' general self-efficacy, this study used Schwarzer and Jerusalem's general self-efficacy (GSE) scale design [16]. A Chinese-translated version was implemented to avoid misunderstanding and invalid responses. The 10-item scale required participants to respond according to a four-point Likert-type scale. The four response options were: 1 (not at all true), 2 (hardly true), 3 (moderately true), and 4 (exactly true). After completing the 10 items, participants'

responses were summed to yield a score for general self-efficacy. That score ranged from 10 to 40; the higher the score, the greater the individual's general self-efficacy belief.

### 3.2.3. Growth Mindset

This construct was measured by Dweck's Growth Mindset Scale [2]. This scale is deemed appropriate for use for ages 10 and up, which would make it suitable for use among the college student population. The scale measures growth mindset and the extent to which people believe they can become smarter provided they continue to make an effort to do so. A Chinese-translated version was also used in this survey. The 3-item instrument asked participants to respond according to a six-point Likert-type scale. The six response options were: 1 (strongly agree), 2 (agree), 3 (mostly agree), 4 (mostly disagree), 5 (disagree), and 6 (strongly disagree). After completing the ten items, participants' responses were averaged to an overall mindset score. A score of less than 3.3 indicated a "fixed mindset," meaning the student believed one's intelligence would not change over time, whereas a score of 3.3 or higher was taken to indicate a "growth mindset."

## 4. Results

### 4.1. Exploratory Data Analysis

Descriptive statistics of college students' awareness of the competition among universities for ranking, general self-efficacy, and growth mindset were calculated first. The mean frequency with which participants checked their university ranking for previous years was four times. The mean of university ranking awareness was 9. The mean general self-efficacy score was 25.79. The mean mindset score was 2.88. Fourteen participants were found to possess a growth mindset (score  $\geq 3.3$ ), while 29 participants possessed a fixed mindset (score  $< 3.3$ ).

The data distribution of the three constructs was skewed. Further statistical tests required the data to be normally distributed, so a log transformation was made to conform the skewed data to normality.

### 4.2. Correlation Analysis

For all data, the Pearson correlation coefficient ( $r$ ) of university ranking awareness and general self-efficacy was .05, indicating little linear correlation between the two variables. In terms of Pearson's  $r$ , Cohen offers some guidelines for those conducting research in the behavioral sciences: weak correlation,  $\geq .10$ ; moderate correlation,  $\geq .30$ ; strong correlation  $\geq .50$  [17]. For the data of male participants, Pearson's  $r$  was .41, which was considered a moderate positive correlation between male students' university ranking awareness and general self-efficacy. Among female participants, the result was an  $r$  of -.34, which was considered a moderate negative correlation. Given these results, gender was later included in the regression analysis as a factor variable.

Table 1 shows that, as two independent variables, awareness of the competition among universities for ranking and mindset were correlated with general self-efficacy. It is notable that the two independent variables were not correlated. The absolute values of correlations among them were lower than .30, which ensures these two variables were independent of each other, and that they might independently predict the value of the dependent variable.

Table 1: Descriptive statistics and correlations among the variables by gender.

Gender	Variables	M $\pm$ SD	1	2	3
Male(n=21)	1. log(Ranking	2.17 $\pm$ .40	-		

	Awareness)				
	2. log(Mindset)	.87±.54	.05	-	
	3. log(General Self-Efficacy)	3.21±.33	.41*	.31	-
Female(n=21)	1. log(Ranking Awareness)	2.07±.42	-		
	2. log(Mindset)	1.04±.34	-.26	-	
	3. log(General Self-Efficacy)	3.21±.27	-.34	.55**	-

Note: \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ ; The same below.

For participants in different years of school, there was no evidence that the number of years completed influenced their general self-efficacy, so the present study does not discuss how the awareness of the competition among universities for ranking affects the general self-efficacy of students at different points in their college careers.

### 4.3. Regression Analysis

The plot of the relationship between university ranking awareness and general self-efficacy by gender (see Figure 1) showed the opposite direction of effects. University ranking awareness was measured by how frequently the participant checked university rankings. That score was then converted into the log(Ranking Awareness) on the x-axis. The general self-efficacy score was converted into the log(General Self-Efficacy) on the y-axis. Male participants' responses indicated a positive relationship between university ranking awareness and general self-efficacy, while female participants' responses indicated a negative relationship between these two variables. This finding suggests that the effect of university ranking awareness may be gender-dependent.

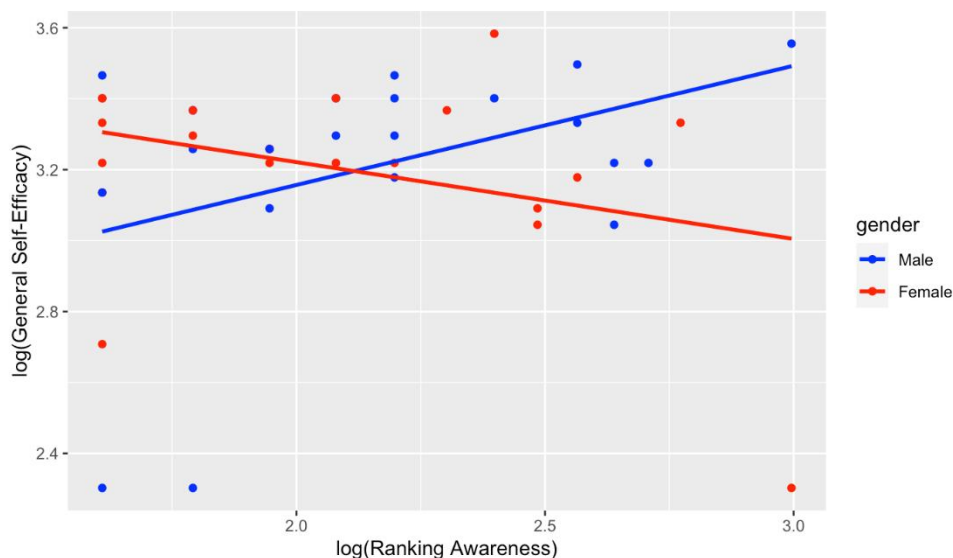


Figure 1: The relation between ranking awareness and general self-efficacy by gender.

Then, a multiple regression model was constructed to determine the interaction effect of gender and university ranking awareness. The results of the regression analysis and the ANOVA test showed an interaction effect. Since the regression coefficient ( $\beta = -.553$ ) for the interaction of ranking awareness and female gender was significant at the alpha level .05, with a  $p = .016$ , a significant gender moderation effect was determined to exist. The regression analysis results are presented in Table 2 below.

In other words, the influence of university ranking awareness on college students' general self-efficacy depends significantly on gender. The moderation analysis suggested that the effects of ranking awareness for males ( $\beta = .34$ ) and females ( $\beta = -.21$ ) are significantly different. Male participants with higher university ranking awareness tended to exhibit higher general self-efficacy. Female participants with higher awareness, on the other hand, were more likely to exhibit lower general self-efficacy.

Table 2: Regression analysis of the model with gender and ranking awareness interaction.

Variable	Estimate ( $\beta$ )	Std. Error	t value	Pr ( $> t $ )	$R^2$
log(Ranking Awareness)	.336	.159	2.121	.041*	.147
log(Gender female)	1.170.	.473	2.472	.018*	
log(Ranking Awareness:Gender female)	-.553	.219	-2.523	.016*	

Since the moderating effect of gender was significant, the study fitted the male and female participants' data with two multiple regression models to test the hypothesis that a growth mindset moderates the relationship between university ranking awareness and general self-efficacy. The mindset score was converted to a categorical variable in the regression analysis. A mindset score of 3.3 or higher was converted to a "growth mindset," and a score of 3.3 or lower was converted to a "fixed mindset."

Of the 21 female participants, five possessed a growth mindset and 16 possessed a fixed mindset. The moderation analysis and ANOVA test revealed that the regression coefficient ( $\beta = .914$ ) for the interaction of growth mindset and university ranking awareness was significant at the alpha level .001, with a  $p = .0005$ . The estimated effects of ranking awareness on general self-efficacy for fixed mindset ( $\beta = -.53$ ) and females ( $\beta = .38$ ) were significantly different. The regression analysis results by gender are depicted in Table 3 below.

Table 3: Regression analysis of the model with the mindset and ranking awareness interaction.

Gender	Variable	Estimate ( $\beta$ )	Std. Error	t value	Pr ( $> t $ )	$R^2$
Female	log(Ranking Awareness)	-.531	.125	-4.253	.001***	.575
	log(Growth Mindset)	-1.891	.446	-4.243	.001***	
	log(Ranking Awareness: Growth Mindset)	.914	.214	4.273	.001***	
Male	log(Ranking Awareness)	.529	.211	2.510	.022*	.279
	log(Growth Mindset)	1.267	.786	1.612	.125	
	log(Ranking Awareness: Growth Mindset)	-.557	.354	-1.574	.134	

Of the 21 male participants, eight were determined to have a growth mindset, and thirteen were determined to have a fixed mindset. The regression coefficient for the interaction of growth mindset and university ranking awareness was insignificant. Therefore, no moderating effect of growth mindset was found for male participants.

## 5. Discussion

This study analyzed the relationship between university ranking awareness and Chinese college students' general self-efficacy, with participants' growth mindset being believed to increase their general self-efficacy.

### 5.1. Discussion of Hypothesis 1

Awareness and general self-efficacy were difficult psychological constructs to measure. Thus, correlation coefficients above .3 were expected to indicate relatively strong positive correlations between the two variables. The impact of competition among universities with regards to ranking on participants was deemed insignificant if students of all genders were considered as a whole. However, university ranking awareness was positively associated with general self-efficacy among male students. Meanwhile, among the female students, the association was significantly negative. The difference between male and female participant responses reveals that the competition among universities for rankings stimulated male and female participants' general self-efficacy in opposite directions. Male students demonstrated higher general self-efficacy when they were more aware of their university's ranking. By contrast, female students exhibited lower general self-efficacy when they were more aware of the rankings.

Students interpreted university ranking as a form of educational privilege, and incorporated it into their self-evaluations. Students who actively check university rankings are presumed to be from a good university, since only good universities appear in the rankings. Participants in this study were mostly students from good, but maybe not top, universities. This fact could yield mixed results in the students' responses; the students may have felt ambivalent about their university's ranking and the stereotype associated with it. Therefore, if the students were using their university rankings to form their self-evaluations, it can be concluded that male students tended to think highly of themselves, knowing their university's rankings, while female students tended to degrade their self-evaluations. The positive and negative psychological impacts of university ranking among male and female students, respectively, implies that the awareness of university ranking incited feelings of better selves and worse selves. These findings are consistent with those reported by Mayr et al., who assert that college-aged women have a lower preference for competition than men, though these preferences are not based off of actual individual performance [18]. Mayr et al. explain further that female college students are comparatively less excited about individual-level competitions—such as those involving where their university ranks among others—than male students. Along these same lines, the present study contends that the competition among universities for ranking imposes pressure on college students, and regardless of how highly a university is ranked, female students need more support to navigate such a competitive environment. An example of such support could be in the form of educators' instruction on adolescent self-regulation and its impact on group stereotypes.

### 5.2. Discussion of Hypothesis 2

A growth mindset, however, could regulate the negative effect of ranking awareness in female students. In this study, female students were found to be negatively affected by university ranking, but growth mindset displayed a significant ameliorating effect on such a negative impact. A fixed mindset, on the other hand, would significantly worsen the negative impact brought on by awareness of their university's rank. Dweck and Yeager argue that mindsets influence the formation of judgments and stereotypes [14]. With this in mind, female students with growth mindsets may be more likely to form favorable judgments of their university and themselves, and reject the stereotype that only students from top universities possess greater capabilities. A fixed mindset may increase the likelihood that they would subscribe to stereotypical beliefs about rankings and a student's caliber.

## 6. Conclusion

This study features some limitations, which could serve as points of further development or improvement. First, the study surveyed students on a past issue, limiting the study of the effect of a growth mindset. If a longitudinal study were to be conducted and more waves of data collected, the impact of a growth mindset in the long-term could be more accurately assessed. Second, future studies would benefit from inquiring into students' cognitive processes as they become aware of their university's ranking. Students' judgments of their university and themselves could function as another critical measure, in addition to university ranking awareness. Having done this, the next step would be to model how the judgments participate in the establishment of general self-efficacy beliefs

However, this study unprecedentedly explored how college students' general self-efficacy relates to their awareness of the competition among universities for ranking. Male students' general self-efficacy benefited from the competition among universities for ranking, while female students' general self-efficacy was suffered from ranking awareness.

It also argued that self-efficacy can be positively affected by a growth mindset. Mindset, as an internal factor, can be cultivated, even though the competition among universities for ranking, as an external factor, cannot be changed. A growth mindset could be introduced as a coping strategy to the university curriculum. This psychological intervention would proactively prompt students to gain a better understanding of their capacity and potential in such a competitive context.

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