



# Idiocentrism-allocentrism and academics' self-efficacy for research in Beijing universities

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## Abstract

**Purpose** – This article aims to explore how self-efficacy is related to academic research activities and how intra-culturally relevant factors may play a role in self-efficacy in the context of higher education in Beijing. In particular, relationships of self-efficacy for research with research productivity and idiocentrism-allocentrism are to be examined.

**Design/methodology/approach** – A survey was administered to academics in ten randomly selected universities in Beijing and generated 296 valid questionnaires. Data were analysed using factor analysis and multiple regression.

**Findings** – Gender and discipline are identified as predictors of self-efficacy. Specifically, female academics reported lower levels of self-efficacy for research than males. Academics in the social sciences reported lower levels of self-efficacy for research than those in the natural sciences. Moreover, relationships are also found between self-efficacy for research and idiocentrism-allocentrism.

**Originality/value** – The study makes an extensive investigation of self-efficacy theory, originally developed in Western contexts, in an Eastern culture and provides evidence that intra-cultural and demographic factors play substantial roles in research self-efficacy.

**Keywords** Individual behaviour, Collectivism, Research, Higher education, China

**Paper type** Research paper

## Introduction

Research achievements can strengthen both the teaching and academic reputation of universities (Clark, 1983). In China, universities have become primary providers of research intended to serve national development interests (Ministry of Education of the People's Republic of China, 1998). The recent more open academic climate has encouraged university academics to embrace and follow internationally accepted standards of good scholarship. In spite of these changes, relatively little attention has been paid to academic research compared to teaching in most universities (Ministry of Education of the People's Republic of China, 2005), and scientific research in China has generally failed to establish an international reputation (Lin and Fan, 1990).

This study explored how intra-culturally relevant factors may be related to self-efficacy for research in the context of higher education in Beijing. Self-efficacy theory, originally developed in Western contexts (Bandura, 1997), needs to be extensively



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investigated in other cultural contexts. Empirical research based on self-efficacy theory may help our understanding of the research phenomenon in Beijing universities.

### Literature review

#### *Individualism and collectivism at the cultural level*

The individualism-collectivism dimension has been used extensively to categorize cultures (Hofstede, 1980; Markus and Kitayama, 1991; Singelis, 1994; Triandis, 1988, 1989; Wagner and Moch, 1986). In general, collectivists prefer or are expected to maintain tighter relations with in-groups – typically relatives, friends or colleagues – than individualists. At a cultural level, countries may be placed along a collectivism-individualism continuum (Hofstede, 2001). China has consistently been placed at the collectivism end of this continuum (Hofstede, 1983, 2001; Leung and Bond, 1984; Singelis *et al.*, 1999). Patterns of behaviour consistent with individualism and collectivism vary in terms of values, beliefs or norms in social contexts that affect individual behaviour preferences (Wagner and Moch, 1986). For example, the relative importance given to the in-group and out-group is a major factor that differentiates individualistic and collectivistic cultures (Chen, 1995; Earley, 1993; Leung, 1997; Triandis *et al.*, 1990; Triandis, 1995). Individualists tend to not particularly differentiate between in-groups and out-groups, and an equity principle is generally applied for reward allocation in both situations (Hui *et al.*, 1991; Leung, 1997), while collectivists tend to relate very differently towards in-group and out-group members and generally apply an equality principle to reward allocation within in-groups rather than out-groups (Chen, 1995; Hui *et al.*, 1991; Leung, 1997). Importantly collectivists generally tend to subordinate personal goals to group goals and an individual's goal is attained through contributing to the in-group's goals (Triandis *et al.*, 1990).

#### *Idiocentrism and allocentrism*

Individualism-collectivism has been conceptualised as a cultural characteristic, and it is fallacious to stereotype individuals by culture (Hofstede, 2001; Smith and Bond, 1998; Triandis, 2001; Triandis *et al.*, 1985). However, it is reasonable to suggest that overall, people are generally more collectivist-oriented than individualist in collectivist cultures and more individualist-oriented than collectivist in individualist cultures (Triandis *et al.*, 1988).

Idiocentrism-allocentrism self-construal (Triandis *et al.*, 1985) is used respectively to represent individualism-collectivism at the individual level. Self-construals are understandings that an individual develops about herself or himself, which include “traits, beliefs, motivations, values and behavioral styles” (Smith and Bond, 1998, p. 112). According to Markus and Kitayama (1991), definition of self depends partially on the extent of the self's separateness from, or connectedness with others. Allocentric individuals tend to emphasize shared values and common goals with in-groups, and interrelatedness and maintaining harmony with others. Idiocentrics tend to emphasize autonomy, self-interest, self-determination and freedom (Earley and Gibson, 1998). In particular, allocentrism involves consideration for other people, sharing of resources, susceptibility to social influence, face saving, sharing of outcomes, and feelings of involvement in others' lives (Hui and Triandis, 1986).

Some researchers (e.g. Singelis, 1994; Smith and Bond, 1998) have considered independent-interdependent self-construal equivalent to idiocentrism-allocentrism.

Both pairs of constructs are concerned with individualism and collectivism at the individual level, but independent-interdependent self-construals emphasize the extent of connectedness between self and others (Markus and Kitayama, 1991), while idiocentrism-allocentrism emphasizes interpersonal concern (Hui and Triandis, 1986). Whilst countries' cultures may be characterized as predominantly individualist or collectivist, an individual can be both allocentric and idiocentric in different contexts (Triandis *et al.*, 1985).

### *Self-efficacy*

Self-efficacy is a concept that refers to a person's belief in his or her capability to perform a task (Bandura, 1997). The formation and adjustment of self-efficacy is a complicated cognitive process in which relevant information is judged, selected, weighted and integrated by individuals with different attributes in a variety of circumstances. Self-efficacy can be strengthened through enactive mastery experiences, vicarious experiences, verbal persuasion, physiological and affective states (Bandura, 1997). Self-efficacy has consistently been demonstrated to be strongly related to individual performance (Bandura, 1997; Wood and Bandura, 1989). Self-efficacy can affect a person's performance not only as an independent variable but by mediating other factors. Specifically, self-efficacy is one of the most important factors that affects goal choice and commitment (Earley, 1986; Locke, 2003; Locke and Latham, 1990) and productivity (Earley, 1986). Moreover, such personal characteristics as gender (Vasil, 1992) and age (Blackburn *et al.*, 1991; Landino and Owen, 1988) have been found to moderate the relationship between self-efficacy and actual performance.

Some studies (Bandura, 1997; Vasil, 1992) have consistently concluded that research self-efficacy is positively correlated with research performance. Successful researchers are likely to require a strong sense of efficacy to cope with potentially fruitless outcomes and unexpected problems (Taylor *et al.*, 1984). Academic staff have been found generally to have lower self-efficacy for research than teaching or administration (Schoen and Winocur, 1988). Arguably, research activities are more likely to be beyond personal control than teaching.

### **Conceptual framework**

#### *Relationships between cultural values and self-efficacy*

Cultural values and practices are likely to affect how efficacy beliefs are developed and related to performance (Bandura, 1997). Earley (1994) found that the self-efficacy of idiocentrists either working in an in-group or an out-group tended to be lower than that of those working alone, whereas allocentrists' self-efficacy tended to be lower in an individual or out-group context than in an in-group context. Hence, it has been suggested that allocentrists may be more likely to enhance their self-efficacy in an in-group setting, while idiocentrists may be more likely to do so in an individual performance setting.

Since separation of self from in-group is not encouraged in collectivist cultures (Markus and Kitayama, 1991; Triandis, 1988), there may be few opportunities to develop self-efficacy for accomplishing a task successfully without the aid of other persons or a group context in collectivist cultures. In such cultures, an individual is encouraged to be modest and even to conceal her or his true capability, especially in public or in a group. Expressions of apparent low self-efficacy might be interpreted as a virtue in collectivist cultures, which approve of the self's ability to interact with

fellows in a sincere, polite and modest fashion (Hsu, 1981). Sastry and Ross (1998) found that Asians generally had significantly lower sense of personal control (self-efficacy) than non-Asians. Emphasis on sacrificing for such collectives as family and community decreased personal autonomy, thereby lowering levels of personal control. Similarly, Tafarodi *et al.* (1999) found that collectivism inhibited the development of high self-competence and individualism promoted it. A few studies have identified a similar relationship at the individual level. For example, Lam *et al.* (2002) found that Hong Kong Chinese working in an international bank tended to be more allocentric and reported lower self-efficacy in participative decision-making than their American counterparts.

One may conjecture that a good research performance needs to employ innovation and creativity to achieve best results from research activities. In collectivist cultures, there is likely to be less encouragement for people to question established theories and authority than in individualist cultures (Triandis and Gelfand, 1998). Once points of view are published or management adopts specific proposals, few people may be willing to challenge their accuracy and function. In addition, in collectively oriented systems, concerned with face-saving (Hui and Triandis, 1986; Ting-Toomey, 1988), people are likely to try to show consideration for other people's feelings. Therefore, in order to maintain a good relationship with others in a research team or a discussion group, most members could be expected to be hesitant about putting forward their own opinions or refuting an argument in public, which, at least in Western terms, is not conducive to genuine intellectual inquiry.

#### *Hypotheses*

Self-efficacy theory was originally developed in a Western culture (Bandura, 1997); however, it is considered to be universally applicable (Bond and Smith, 1998). Consistent with earlier studies (Bandura, 1997; Landino and Owen, 1988; Schoen and Winocur, 1988; Taylor *et al.*, 1984; Vasil, 1992), we predict that self-efficacy will be related to performance in this study. Hence the first hypothesis is:

*H1.* Self-efficacy for research will be positively related to research productivity.

It can be argued that some collectivist characteristics, such as being concerned for others rather than task-focused, may inhibit development or expression of high self-efficacy (Bandura, 1997; Sastry and Ross, 1998; Tafarodi *et al.*, 1999) and consequently allocentrism may be more likely to have lower self-efficacy than idiocentrism. Traditionally, Communism in China has promoted the view that individuals should work hard for the benefit of collectives, and this is reinforced in each student's mind through required courses at school (MacFarquhar and Fairbank, 1991). This has, by and large, reinforced traditional collectivist orientations in Mainland China, especially those of intellectuals (Altbach, 1998). In the context of the study, cultural characteristics may be expected to affect academics' performances. So, the second and third hypotheses are posited:

*H2.* Self-efficacy for research will be positively related to independent self-construal and idiocentrism.

*H3.* Self-efficacy for research will be negatively related to interdependent self-construal and allocentrism.

## Method

### *Population and sample*

All 57 universities with approximately 20,000 academics in Beijing (Beijing Municipal Educational Commission, 2006) are public institutions. Although firm data are unavailable, it is reasonable to assert that teaching and research quality are likely to vary significantly across these universities. Ten universities were randomly selected and then one or two departments (depending on the size of the university) were randomly selected within each university. Three hundred and fifty-one questionnaires were distributed and 296 valid questionnaires were returned, rendering a return rate of approximately 84 percent.

### *Instruments*

Twelve research activities were chosen as relevant for measuring research self-efficacy in the Chinese university context. Each participant was requested to tick the percentage, on an 11-point scale, ranging from 0 percent, not at all confident, to 100 percent, completely confident, that most closely matched his or her confidence to carry out a research task, for example, "How confident are you to publish articles in international journals?".

A research productivity scale was designed to correspond to the self-efficacy items, with the exception that the item "to initiate research interests", was excluded as its appropriateness for this purpose was considered questionable. Participants reported the "amount" of research activity from 0 to 12. For example, for the item "articles published in international journals", each was requested to tick the number of articles she or he published in international journals in the last five years.

Singelis's (1994) Self-Construal Scale (SCS) was selected to measure independent and interdependent self-construals. An English version of the SCS and two Chinese versions were obtained from Singelis by personal correspondence. The first author translated the SCS English version to Chinese independently then compared this version to the two Chinese versions provided by Singelis. Some concepts were renamed to fit the context of the study. For example, in the item "I will sacrifice my self interest for the benefit of the group I am in", the concept of group was considered very situation-specific in Chinese. "A group" had been translated into 小组 in one Chinese version and into 团体 in another. The first author changed it to 集体, which contextualised the item to the work setting for Chinese participants. Participants were requested to respond to 30 items on a seven-point Likert-type scale, ranging from strongly disagree to strongly agree.

Hui's (1988) Individualism-Collectivism (INDCOL) Scale was developed to measure collectivism at the individual level in relation to six target groups:

- (1) spouse;
- (2) parents;
- (3) kin;
- (4) neighbours;
- (5) friends; and
- (6) co-workers.

Only the most relevant section, that measuring co-worker allocentrism, was used in this study. Hui's (1988) INDCOL scale was selected not only because it was developed to measure individual level individualism-collectivism, but also because it had been validated with Hong Kong Chinese. A Chinese version and an English version were obtained from Hui by personal correspondence. Only some minor changes were made to Hui's Chinese version to accommodate differences between Hong Kong and Mainland China. For example, different titles were used to describe supervisors and subordinates. Participants were asked to respond to 11 items on a six-point Likert-type scale, ranging from strongly disagree to strongly agree.

### Analyses and results

Factor analysis was employed to identify interpretable dimensions, namely, self-efficacy for research, independent-interdependent self-construal and co-worker allocentrism. Eigenvalue greater than 1, scree test and interpretability were employed as extraction criteria.

#### *Factor analysis of self-efficacy in research items*

Principal axis factoring of the 12 self-efficacy for research items with Varimax rotation produced two clearly interpretable factors with eigenvalues 6.84 and 1.05, accounting for 57 percent and 9 percent of the variance respectively (Table I). The two self-efficacy for research factors were named according to the level of difficulty of the activities. "Self-efficacy for higher order research activities" comprised items related to relatively more difficult research tasks, and "Self-efficacy for lower order research activities" comprised relatively easier tasks. For example, "To supervise doctoral degree candidates" was in the first factor and "To supervise master's degree candidates" was in the second.

#### *Factor analysis of independent-interdependent self-construal items*

The 30 items of SCS were submitted to principal axis factoring with Varimax rotation to generate five factors with eigenvalues of 3.22, 1.84, 1.62, 1.18, and 1.08, accounting

	Factor 1	Factor 2
<i>Factor 1: Self-efficacy for higher order research activities (<math>\alpha = 0.88</math>)</i>		
To publish articles in international journals	0.85	0.28
To present papers in international conferences.	0.84	0.31
To supervise doctoral degree candidates	0.68	0.34
To initiate research interests	0.56	0.49
<i>Factor 2: Self-efficacy for lower order research activities (<math>\alpha = 0.89</math>)</i>		
To publish academic books	0.27	0.65
To present papers in domestic conferences	0.51	0.65
To publish textbooks	0.12	0.65
To publish articles in domestic journals	0.39	0.65
To supervise master's degree candidates	0.49	0.60
To take charge of research projects	0.54	0.59
To obtain research funds	0.43	0.55
To participate in research projects	0.37	0.50

**Table I.**  
Principal axis factoring  
with Varimax rotation of  
self-efficacy for  
research items



for 21.5 percent, 12.3 percent, 10.8 percent, 7.9 percent and 7.2 percent of the variance, respectively. Three independent self-construal factors were named “self-expression”, “self-concern” and “independent identity”, and two interdependent self-construal factors named “interdependence” and “obligation”, shown in Table II. Self-expression emphasizes expressing oneself directly and forthrightly. Independent identity is about independence from others. Self-concern is about valuing oneself above others. Interdependence is about interrelatedness with others. Obligation is related to subjugating personal interest to the group’s or others’ goals.

*Factor analysis of co-worker allocentrism items*

Principal axis factoring of co-worker allocentrism items was conducted with Varimax rotation to produce three interpretable factors. Eigenvalues were 2.26, 1.84 and 1.04

	1	2	3	4	5
<i>Factor 1: Self-expression (<math>\alpha = 0.65</math>)</i>					
I act the same way no matter who I am	0.78	0.07	0.12	0.08	0.19
I act the same way at home that I do at work.	0.51	-0.04	0.03	0.22	0.11
I prefer to be direct and forthright when dealing with people I've just met	0.51	-0.08	0.11	0.25	0.11
<i>Factor 2: Self-concern (<math>\alpha = 0.67</math>)</i>					
Being able to take care of myself is a primary concern for me	-0.04	0.84	-0.03	0.10	-0.03
I try to do what is best for me, regardless of how that might affect others	0.00	0.63	-0.02	-0.12	0.10
<i>Factor 3: Independent identity (<math>\alpha = 0.59</math>)</i>					
I feel it is important for me to act as an independent person	0.02	0.18	0.65	-0.04	0.11
Having a lively imagination is important to me.	-0.00	-0.14	0.54	0.17	0.03
I'd rather say "No" directly, than risk being misunderstood	0.13	-0.07	0.52	0.18	-0.20
My personal identity, independent of others, is very important to me	0.25	-0.05	0.37	0.11	-0.03
<i>Factor 4: Interdependence (<math>\alpha = 0.60</math>)</i>					
I feel good when I cooperate with others	0.31	-0.10	0.12	0.64	-0.02
I feel my fate is intertwined with the fate of those around me	0.11	0.01	0.18	0.54	0.14
My happiness depends on the happiness of those around me	0.18	0.01	0.07	0.44	0.22
<i>Factor 5: Obligation (<math>\alpha = 0.53</math>)</i>					
I often have the feeling that my relationships with others are more important than my own accomplishments	0.09	0.02	0.06	0.16	0.63
I will stay in a group if they need me, even when I am not happy with the group	0.16	0.13	-0.16	0.03	0.57
I will sacrifice my self interest for the benefit of the group I am in	0.19	-0.25	0.07	0.27	0.38

**Table II.**  
Principal axis factoring  
with Varimax rotation of  
self construal items

and the factors accounted for 25 percent, 20 percent and 12 percent of the variance, respectively (see Table III). The three co-worker allocentrism factors were named “collegial distance”, “collegial contribution” and “collegial collaboration”. Collegial distance is about psychological distance and space between colleagues. Collegial contribution focuses on the importance of colleagues helping each other (Hui, 1988), for example the view that colleagues’ help is indispensable for individual success. Collegial collaboration is about the extent of preference for cooperation between colleagues.

*Research productivity*

Research productivity of academics was based on publications and measured using the criteria published in the Australian Department of Education Science and Training Higher Education Research Data Collection and the UNSW *Research and Publications Report* (University of New South Wales, 2002). One academic book, for example, was given five points and one chapter of a book was given one point. A total score for research activities was calculated for each respondent. This index of research productivity was designed to measure academics’ performance in the last five years, so the final research productivity score was obtained by dividing the total score by five, or for those employed for less than five years, the number of years employed in the university.

*Intercorrelations of variables*

Regression factor scores were calculated for all factors identified by the factor analysis and correlations are shown in Table IV. Most variables were correlated in the expected direction, that is, independence variables were negatively related to interdependence and allocentrism variables and relationships between interdependence and allocentrism variables were positive. Specifically, the independent self-construal factor self-concern, as expected, was significantly negatively related to co-worker

	1	2	3
<i>Factor 1: Collegial distance</i> ( $\alpha = 0.66$ )			
When I am among my colleagues, I do my own thing without minding about them	0.67	0.07	0.13
I have never loaned my camera/coat to any colleagues	0.53	0.32	0.11
It is inappropriate for a supervisor to ask subordinates about their personal life (such as where one plans to go for the next vacation).	0.53	-0.06	0.13
We ought to develop the character of independence among colleagues, so that they do not rely much on others’ help.	0.49	-0.12	0.25
<i>Factor 2: Collegial contribution</i> ( $\alpha = 0.62$ )			
I would help if a colleague at work told me that he/she needed money to pay utility bills	-0.02	0.70	-0.08
Colleagues’ assistance is indispensable to getting success	0.07	0.55	0.00
One needs return a favour if a colleague lends a helping hand	-0.03	0.54	-0.03
<i>Factor 3: Collegial collaboration</i> ( $\alpha = 0.47$ )			
Do you agree with the proverb “Too many cooks spoil the broth”?	0.21	0.04	0.69
In most cases, to cooperate with someone whose ability is lower than one’s own is not as desirable as doing the thing alone	0.13	-0.08	0.41

**Table III.**  
Principal axis factoring  
with Varimax rotation of  
co-worker allocentrism  
items



**Table IV.**  
Intercorrelations of  
variables

	1	2	3	4	5	6	7	8	9	10
1. Self expression	-									
2. Self concern	-	-								
3. Independent identity	0.16**	-	-							
4. Interdependence	0.14*	-	-	-						
5. Obligation	-0.19**	-0.33*	-	-	-0.18**					
6. Collegial distance	0.30**	-0.21**	0.28**	0.35**	-	-				
7. Collegial contribution	-	-0.19**	-	0.20*	-	0.23**	-			
8. Collegial collaboration	-	-	-	-	-	-	0.12*	-		
9. Self-efficacy in higher order research activities	-	-	-	-	0.20**	-	-	-	0.17**	-
10. Self-efficacy in lower order research activities	-	-	-	-	-	-	-	-	0.13*	-
11. Research productivity	-	-	-	-	-	-	-	-	-	-

**Notes:** \*  $p < 0.05$ , \*\*  $p < 0.01$

allocentrism factors, collegial distance, collegial contribution and collegial collaboration ( $r = 0.33$ ,  $r = 0.21$  and  $r = 0.19$ , respectively). Collegial contribution was significantly positively related to interdependence ( $r = 0.35$ ) and collegial distance related to collegial collaboration ( $r = 0.23$ ). Self-expression was negatively related to collegial distance ( $r = 0.19$ ).

Notwithstanding the above, it is interesting to note some unexpected correlations. Specifically, the independent self-construal factor self-expression has a moderate significant positive relationship with the co-worker allocentrism factor, collegial contribution ( $r = 0.30$ ), and mild positive relationships with interdependent self-construal factors, interdependence and obligation ( $r = 0.16$  and  $r = 0.14$ , respectively). These may be explained by the context of the study. Academic work in universities may require a certain degree of independence whilst still being embedded in an interdependent work culture. Consequently, what are, on the face of it, competing requirements may accommodate each other to some extent.

*Multiple regression with self-efficacy for higher order research activities as dependent variable*

Before other independent variables, the demographic variables were forced into the regression model in a pre-determined order, namely, gender first, then age, rank, tenure in higher education and finally discipline. The order was determined hierarchically. Two multiple regression models were ultimately established with self-efficacy in research as dependent variables to examine the relationships addressed in the hypotheses.

Table V shows the regression model with self-efficacy for higher order research activities as dependent variable. Gender was the strongest predictor, accounting for

Step	Variables	Mean	Adjusted $R^2$	$F$ (eqn)
1	Gender Male Female	$\Delta \text{adj } R^2 = 0.10$ 0.33 -0.27	0.10	28.72***
2	Age	$\Delta \text{adj } R^2 = 0.03$	0.13	1.48
3	Rank Lecturer Senior Lecturer Associate Professor Professor	$\Delta \text{adj } R^2 = 0.09$ -0.28 0.01 -0.07 0.52	0.22	7.94***
4	Tenure	$\Delta \text{adj } R^2 = 0.02$	0.24	1.53
5	Discipline Social sciences Sciences	$\Delta \text{adj } R^2 = 0.08$ -0.28 0.56	0.32	22.53***
6	Independent identity	$\Delta \text{adj } R^2 = 0.01$	0.33	4.80*

Notes: \* $p < 0.05$ , \*\*\* $p < 0.001$

**Table V.**  
Multiple regression with  
self-efficacy for higher  
order research activities  
as dependent variables  
and mean comparisons of  
categorical variables

10 percent of the variance. Mean comparisons revealed that male academics generally reported being more self-efficacious for higher order research activities than female academics. This is consistent with the finding that male members of faculty are more likely to have higher self-efficacy for carrying out research than females (Vasil, 1992). Rank was the second best predictor, explaining 9 percent of the variance. A Scheffe's *post hoc* test identified the significant differences. Professors scored significantly higher than lecturers, senior lecturers and associate professors. This result is consistent with the well-known link between rank and research activity.

The third significant predictor, discipline, accounted for 8 percent of the variance. Mean comparisons revealed that academics in the social sciences generally reported significantly lower levels of self-efficacy for higher order research activities than their colleagues in the natural sciences. Arguably, culture is likely to be more relevant for the social sciences than for the natural sciences (Parker, 1994). Collectivism in China may have a greater influence on research activities in the social sciences than those in the natural sciences, and it can be argued that research activities in the former generally require more independent thinking and acting, which are not promoted generally in a collectivist culture (Singelis, 1994).

The only non-demographic variable that entered the multiple regression model was independent identity, which accounted for a low but significant 1 percent of the variance. We should be very cautious about such a small effect size, but this result tentatively suggests the possibility that the more independently these academics thought and acted, the more efficacious they perceived themselves to be in research, and *vice versa*. However, this result needs to be replicated before we can be confident of it.

*Multiple regression with self-efficacy for lower order research activities as dependent variable*

Table VI shows the regression model with self-efficacy for lower order research activities as dependent variable. Age was the strongest predictor, accounting for 12 percent of the variance. A Scheffe's *post hoc* test found significant differences between academics below 30 and those aged 36-40, below 30 and 46-50, and 31-35 and 36-40. Academics below 30 tended to be less self-efficacious than those in the other groups. These findings are not surprising given most academics below 30 would have fewer mastery experience in research compared to older academics.

Gender was the second best predictor, explaining 9 percent of the variance. An examination of the mean scores revealed that male academics ( $M = 0.33$ ) reported higher levels of self-efficacy for lower order research activities than female academics ( $M = -0.25$ ). This is consistent with the result mentioned earlier that male academics have been found generally to be more self-efficacious than females in research activities (Vasil, 1992). The non-demographic variables in the model were collegial collaboration and independent identity, accounting for a low but significant 2 percent and 1 percent of the variance, respectively. Collegial collaboration is an allocentrism factor that represents the extent to which academics would like to work collaboratively with colleagues. It was found that the less inclined academics were to collaborate with colleagues, the more self-efficacious they perceived themselves to be in carrying out lower order research activities, and *vice versa*. However, it is important to again note that signs are small.

Step	Variables	Means	Adjusted $R^2$	$F$ (eqn)
1	Gender Male Female	$\Delta \text{adj } R^2 = 0.09$ 0.33 -0.25	0.09	27.82***
2	Age Below 30 31-35 36-40 41-45 46-50 51-55 56-60 Above 60	$\Delta \text{adj } R^2 = 0.12$ -0.34 -0.20 0.45 -0.02 0.60 0.45 0.63 0.51	0.21	6.02***
3	Rank	$\Delta \text{adj } R^2 = 0.01$	0.22	2.08
4	Tenure	$\Delta \text{adj } R^2 = 0.02$	0.24	1.54
5	Discipline	$\Delta \text{adj } R^2 = 0.00$	0.24	2.97
6	Collegial collaboration	$\Delta \text{adj } R^2 = 0.02$	0.26	5.82*
7	Independent identity	$\Delta \text{adj } R^2 = 0.01$	0.27	4.04*

Notes: \* $p < 0.05$ , \*\*\* $p < 0.001$

**Table VI.**  
Multiple regression with  
self-efficacy for lower  
order research activities  
as dependent variable  
and mean comparisons of  
categorical variables

## Conclusions

This study has some limitations, in particular related to the instruments, sample and methodology, which should be acknowledged. The sample is a relatively small subset of the population, which suggests we should be cautious generalizing this study to all academics in Beijing. It should also be emphasized that this research is correlational and relationships found between the variables do not provide causal explanations.

Neither of the self-efficacy factors was found to relate to research productivity, so *H1* ("Self-efficacy in research will be positively related to research productivity") was not supported. Some factors may undermine or even eliminate the predictive functioning of self-efficacy on performance (Bandura, 1997). One explanation for the outcome could be that in this case, research productivity is not equivalent to research performance. This study focused on the quantity of academics' research rather than quality because it was impractical to assess the quality of publications within the framework of this study. It may be argued that it is quality rather than quantity that really reflects the performance of researchers.

*H2* ("Self-efficacy in research will be positively related to independent self-construal and idiocentrism") was supported in so far as both self-efficacy for research measures were positively related to independent identity, albeit with a small effect size. The latter is about being unique, expressing one's inner attributes and asserting oneself (Markus and Kitayama, 1991). *H3* ("Self-efficacy in research will be negatively related to interdependent self-construal and allocentrism") was supported in so far as self-efficacy for lower order research activities was negatively related to collegial

collaboration. Contextual performance, referring to those behaviours that are not directly related to task performance, such as concern for others in the group, is more important than task performance in collectivist cultures (Goodman and Svyantek, 1999). Hence, allocentrics may be expected to favour cooperative behaviours. It is likely that academics who are less confident of conducting research may be likely to make contextual contributions to group research in exchange for a sharing of research achievement, which is acceptable in the context of the study.

Although this study has provided some evidence that self-efficacy was related to allocentrism (Lam *et al.*, 2002) and idiocentrism, it should be acknowledged that a number of allocentrism and idiocentrism factors were found not to predict self-efficacy in research in the expected way. Therefore, one may only cautiously conclude that allocentric academics were less likely to be self-efficacious in research than idiocentrics. Additionally, self-efficacy for lower order research activities was found to be positively correlated with obligation, an interdependent self-construal factor. It may be argued that only some characteristics of allocentrism and interdependent self-construal may play a role in the formation of self-efficacy for research. This is likely to also be the case with idiocentrism and independent self-construal.

Importantly, the study confirmed that gender and discipline were related to the level of self-efficacy for research, which should draw policymakers' attention to the generally lower self-efficacy for research among female academics. Enhancing female academics' self-efficacy for research is likely to be important for the overall quality of research activity since many females are employed in academic positions in Chinese universities. Female academics' self-efficacy may be enhanced by encouraging them to participate in more research activities and consequently, have mastery experiences, which is the most robust and effective source of self-efficacy (Bandura, 1997). Modeling may be another means of enhancing female academics' self-efficacy through exposure to female role models from similar backgrounds.

Future research is needed to examine what causes lower self-efficacy among female Chinese academics. Cultural factors (Earley, 1993), family expectations, inequitable incentive systems in universities (Deane *et al.*, 1996), or gender bias in the main social system (Bandura, 1997) could play important roles.

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