

# THE LETTER

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## BIG FISH little pond Effect

One of the purposes of THE LETTER is to review publications, books, articles or monographs that focus on the research and theory that provide scientific support of the work of The Pacific Institute. Central to Albert Bandura's social cognitive theory, the work of The Pacific Institute, and the substance of Marsh and Hau's study, is the concept of Self-Efficacy, both individual and collective (organizational).

Much research has been performed showing the power of a favorable self-concept on many types of behavior. Many of these studies, however, have been performed on relatively small groups of participants, which can restrict the accuracy of generalizations to populations not included in the research. Marsh and Hau's study, however, is distinguished by the large number of participants, from twenty-six countries. It is, in fact, a cross-cultural study. We need many more such large scale, cross-cultural studies to indicate that self-concept (or self-efficacy) is universally important. We can, and do, report the results of studies performed by our clients in

different countries, which strongly suggest the power of self-efficacy on human performance. However, the methodologies of these studies are often somewhat different, a fact that suggests that the outcomes may, in some instances, be a function of different methods employed by the researchers.

### Definition of Self-Concept

The meaning of self-concept as used in this study is similar in some respects to Bandura's definition of self-efficacy. Both are based on social cognitive theory, and both focus on the importance of confidence and the belief that individuals and organizations can acquire an ability to control certain aspects of their behavior or performance. Also, both self-concept and self-efficacy are task-specific. In other words, we may have a high level of confidence that we can perform well in some tasks, perhaps not so well in others, and poorly on still others. Marsh (2002) found that high "physical self-concept contributed to the performances of elite swimmers at international events, beyond what could be explained in terms of their previous performance."

This issue of The LETTER is a review of an article in the current issue of the *American Psychologist* by Herbert W. Marsh of the University of Western Sydney and Kit Tai Hau of The Chinese University of Hong Kong. "The Big Fish-Little Pond Effect on Academic Self-Concept," May 2003, Volume 58, Number 5.



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## A MESSAGE FROM LOU & DIANE TICE

Just a short word about The LETTER.

We believe that The LETTER is accomplishing the goal of keeping us informed about studies, theories and trends in cognitive psychology and efficacy theory. As is the case with respect to all of what we do to assist our project directors and staff in their marketing efforts, we search constantly for improving everything we do. Accordingly, we welcome your suggestions about how we can make The LETTER even more helpful.

At this point in time, each edition of The LETTER is available from our website at [www.thepacificinstitute.com](http://www.thepacificinstitute.com) as downloadable PDF files. Additionally, a call or email to The Pacific Institute will have the file sent directly to you.

Our editor, Dr. Glenn Terrell, has had numerous conversations with Institute associates about the usefulness of The LETTER, and its applicability to your issues. Please let us know how we can best assist you in this regard.

*Lou & Diane Tice*

In an organizational setting, Parker (1998) summarized research showing that "employees who feel more able to perform particular tasks will actually perform better in these tasks, will persist in the face of adversity, and will cope effectively with change." Judge and Bono (2001) in a meta analysis (an analysis that includes many studies), also report that subjects with a favorable self-concept will perform better on tasks, "will persist in the face of adversity, and will cope more effectively with change."

### **The Big Fish-Little Pond Effect**

One of the purposes of this review is to explain the meaning of the Big Fish-Little Pond Effect (BFLPE) in the Marsh and Hau study. The phrase refers to students whose self-concept may be raised when

they are in a relatively small, non-selective school, but find that their self-concept may be lowered by their inability to compete successfully with the higher performing students in large, selective schools. In this study, the emphasis is on the affect of academic achievement on academic self-concept. I remind the reader, however, of the reciprocal relationship between achievement concept and self-concept, as shown by Bandura (1986) and Marsh and Craven (1997).

### **Self-Confidence and Academic Performance**

For purposes of this review, your author will consider self-concept, self-confidence and self-efficacy as interchangeable terms. Marsh and Hau, more often than not, used the term "self-concept." As

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indicated above, the importance of a favorable self-concept or self-efficacy to the attainment of performance goals cannot be over-emphasized according to many studies, including Branden (1994) and Marsh and Craven (1997). In fact, Brookover and Lezotte (1979), proposed “academic self-confidence and self-reliance, and academic achievement as the major outcome variables for schools to foster in their students.”

## Self-Confidence and University Attendance

Marsh (1991) found that high academic self-concept is important not only because it helps make students feel good about themselves, but because it contributes to “accomplishments, persistence and educational decisions” such as whether or not students attend a college or university.

## Methodology of the Marsh and Hau Study

Four thousand 15 year olds, from each of twenty-six countries totaling 103,558 subjects, were selected randomly for this study. As mentioned earlier, this is one of the largest samples I have ever encountered. As also mentioned earlier, this is one of the strengths of the study, since one can generalize the results with greater confidence because of the large controlled sample, and its cross-cultural composition.

For the purposes of this study, the students were given two instruments: 1) an achievement test (PISA), an instrument developed by the Organization for Economic Development; and 2) a Cross Curriculum Competencies questionnaire (SDQII) that included self-concept items. Scores on these two tests provide data that allow us to determine relationships between academic achievement and self-concept in a culturally diverse population.

## Theoretical Underpinnings

The authors use the BFLPE as one of the bases for the predicted outcomes of this study. I would rather say that the BFLPE

and Festinger’s (1954) Social Comparison Theory are the theories being tested in this study. Festinger’s theory is cognitive in nature and the one of greater interest to The Pacific Institute. In their self-talk, learners compare their performance with that of their classmates in forming their academic self-concept, or in Bandura’s terms, their self-efficacy.

As mentioned above, Marsh and Hau identify student self-concept as the main outcome variable, whereas individual student achievement is the predictor variable. The predictor variable is performance for the achievement test (PISA), while the outcome variable is performance on the Cross Curriculum Competencies Questionnaire (SDQII). In other words, does academic achievement affect the development of self-efficacy? Further, is the effect of achievement on self-efficacy similar in the twenty-six cultures investigated in this study?

## Results

As revealed in the data in Table 1 (see next page), for the column headed “Individual Achievement,” the authors report that, “In each of the twenty-six countries, the affect of individual achievement on academic self-concept was statistically significant, and varied from .14 to .63 for all countries.” This is the most significant finding of the study in terms of the main interest of The Pacific Institute. These and other analyses of the data in Table I provide very convincing evidence of the power of academic achievement on the development of individual self-concept, or self-efficacy.

*It is interesting to note from the data of Table I, from the column “School Average Achievement,” that School Average achievement is negatively related to the development of academic self-concept in all twenty-six nations. The authors attribute this finding to the BFLPE effect.*

**Table 1**

Country	No. of Students	No. of Schools	Reliability of academic self-concept	Individual student achievement-linear	Individual student achievement-quadratic	School Average achievement (BFLPE)
1. Australia	4,916	223	.74	.28*	.05*	<b>-.23*</b>
2. Austria	4,444	163	.77	.40*	.08*	<b>-.23*</b>
3. Belgium	3,715	119	.70	.14*	.04*	<b>-.12*</b>
4. Brazil	4,015	258	.73	.35*	.06*	<b>-.26*</b>
5. Czech Republic	4,785	189	.77	.40*	.03*	<b>-.24*</b>
6. Denmark	3,973	199	.80	.48*	.07*	<b>-.17*</b>
7. Finland	4,768	153	.84	.52*	.11*	<b>-.14*</b>
8. Germany	4,815	208	.78	.38*	.06*	<b>-.30*</b>
9. Hungary	4,526	147	.72	.27*	.09*	<b>-.05</b>
10. Iceland	2,991	83	.81	.63*	.08*	<b>-.18*</b>
11. Ireland	3,785	136	.77	.39*	.03*	<b>-.24*</b>
12. Italy	4,931	163	.74	.43*	.04*	<b>-.36*</b>
13. Korea	4,913	134	.78	.41*	.13*	<b>-.02*</b>
14. Latvia	3,552	128	.66	.33*	.04*	<b>-.06*</b>
15. Liechtenstein	297	9	.76	.27*	.03	<b>-.20*</b>
16. Luxembourg	3,009	24	.74	.32*	.06*	<b>-.17*</b>
17. Mexico	4,231	158	.70	.32*	.07*	<b>-.08*</b>
18. Netherlands	2,480	100	.76	.26*	.05*	<b>-.26*</b>
19. New Zealand	3,473	152	.79	.39	.11	<b>-.26*</b>
20. Norway	3,863	162	.84	.62*	.09*	<b>-.18*</b>
21. Portugal	4,528	147	.73	.42	.08	<b>-.18*</b>
22. Russia	6,316	217	.72	.49*	.05*	<b>-.21*</b>
23. Sweden	4,325	149	.81	.42*	.07*	<b>-.33*</b>
24. Switzerland	5,522	213	.74	.26*	.06*	<b>-.17*</b>
25. United Kingdom	2,264	89	.74	.28*	.07*	<b>-.23*</b>
26. United States	3,121	126	.78	.45*	.04*	<b>-.26*</b>
<i>M</i>	3,983	148	.76	.38	.07	<b>-.20</b>
<i>Mdn</i>	4,123	150	.76	.39	.06	<b>-.20</b>
<i>SD</i>	1,190	57	.04	.11	.03	<b>.08</b>

Note: A separate multilevel analysis was done for each country in which academic self-concept was predicted on the basis of individual student achievement (linear and quadratic components) and school-average achievement. Consistent with a priori predictions, the effects of individual student achievement are consistently positive, whereas the effects of school-average achievement (the big-fish—little-pond effect [BFLPE], presented in bold) are consistently negative. N = 103,558 \* p < .05.

**Discussion**

There are several features of this study that contribute to the primary finding of the influence of success in school as an important source of a favorable self-concept:

- a. The cross cultural composition of the participants
- b. The random selection of participants from the twenty-six countries; 3,849 schools; a total of 103,558, fifteen year olds.
- c. The use of the two highly regarded instruments to measure achievement and self-concept: The Program of Student Assessment (PISA), and the Cross Curriculum Competencies questionnaire which included measure of self-concept ( SDQII).

- d. The theory based character of the study – Festinger’s Social Comparison Theory
- e. The sophisticated design and statistical analysis of the data

The authors themselves mentioned several items that could have changed the results of the study:

- a. As is true about all studies reporting correlation, the data do not prove the relationships between achievement and the self-concept. High correlation between two or more variables reveals the statistical probability of a cause and effect relationship. This limitation is not true for social science alone. Much scientific research in other disciplines (for example, the biological sciences) has the same limitation.

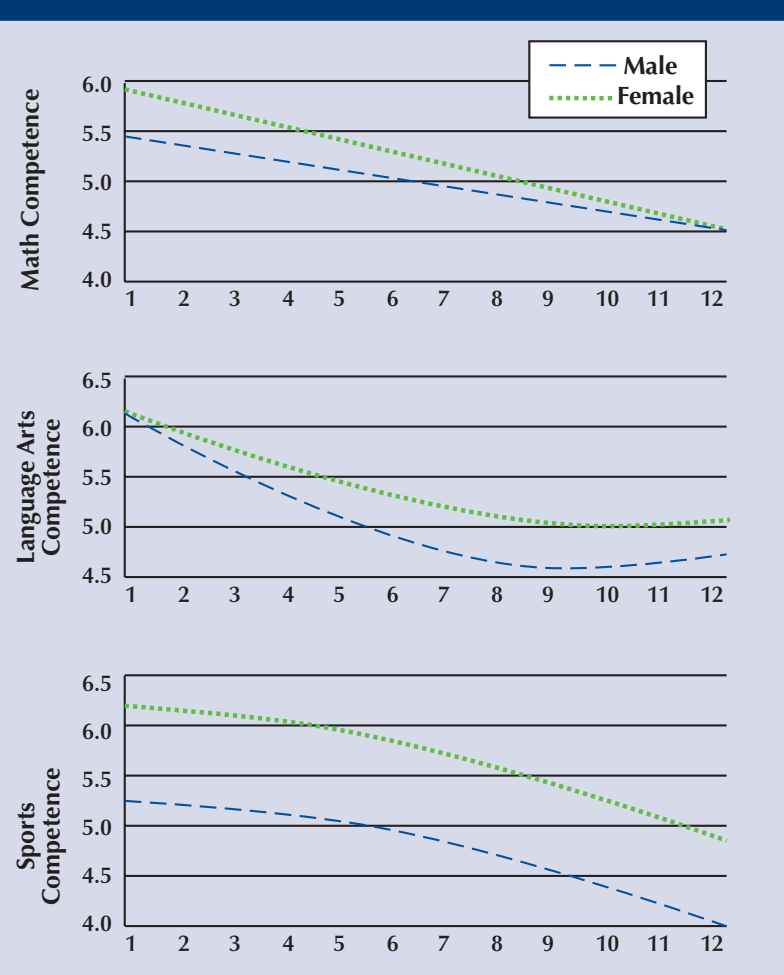
- b. The authors suggest that the relationship between academic achievement and self-concept probably would have been stronger if the measures of academic achievement and self-concept had been grades in school, or "high stakes achievement tests that have important implications for students' future education and career paths."

This study poses a dilemma for the placement of academically superior and inferior students, because of the findings of the Big Fish-Little Pond Effect. But that is another outcome of the present study that merits further consideration. As mentioned earlier, our main interest at The Pacific Institute is directed toward how we can capitalize on the fact that self-concept is substantially determined by the students' performance in school. The word "substantially" is the key to the latter statement. The Pacific Institute has the "tools" and dedication to be helpful to students. And we have demonstrated our ability to teach concepts that, indeed, have helped develop an effective self-concept. The knowledge provided by the Marsh and Hau study leaves us with no doubt that we are needed by the public and private schools of our nation, and other countries as well. There is abundant evidence that self-concept (self-efficacy) is influenced by many factors not associated with a student's school performance, factors that are inherent to the school environment that contribute to the decreasing confidence of students as they progress through our elementary and secondary schools (Jacobs et al, 2002).

The Spring 2002 issue of *The LETTER* contains a description of the Jacobs et al study which demonstrated that children experience a decreasing loss of confidence in their ability to meet school academic requirements in mathematics, language arts and sports as they progress from grades one through twelve. [See Table 2 below.]

The reports of the Marsh and Hau, and Jacobs et al, issues of *THE LETTER* illustrate in graphic terms the need of schools for the proven capability of The Pacific Institute to assist students and teachers in the development of confidence and efficacy. Furthermore, our work with schools comes as close as possible to meeting our goals as expressed in our mission statement. For that reason, nothing gives me more personal pleasure than reporting the evidence of our effectiveness in working with schools – both students and teachers.

**Table 2**



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