

Reducing the Negative Frame-of-Reference Effects on Academic Self-Concept in Academically Selective Schools

Abstract

Research in diversified settings and cultures showed that academic selective schools might have negative effects on students' academic self-concept. The big-fish-little-pond-effect (BFLPE) posits that the same student will have a lower academic self-concept in an academically selective school than in a nonselective school. Using two large data sets (the international PISA study with 103,558 students and 1950 Chinese students in Hong Kong), we examined a wide range of motivational (e.g., goals, interest, self-regulated learning) and individual background (e.g., socio-economic status, familial support) to see whether they would moderate the BFLPE. Though not very consistent and strong, we found some supports that students' self concept would be less negatively affected if they had stronger mastery goal and lower avoidance goals. (119 words, limit 200 words)

This importance of self-concept and related constructs is highlighted by the regularity and consistency with which self-concept enhancement is identified as a major focus of concern in diverse settings, including education, child development, mental and physical health, social services, organizations, industry, and sport (e.g., Marsh & Craven, 1997). In addition to being an important outcome variable, self-concept is an important mediating construct that facilitates the attainment of other desirable psychological and behavioral outcomes. The need to think and feel positively about oneself and the profound benefits of these positive cognitions on choice, planning, and subsequent accomplishments transcend traditional disciplinary barriers and are central to goals in many social policy areas.

In educational settings, Marsh, Byrne, and Yeung's (1999) review showed that prior academic self-concept had a positive effect on subsequent academic achievement (school grades and standardized test scores) beyond what could be explained by prior levels of academic achievement. More generally, individuals in all walks of life are likely to accomplish more if they feel competent in what they do, are self-confident, and feel positively about themselves.

Frame-of-Reference Effects in the Formation of Academic Self-Concept

Self-concept research continues to emphasize that self-concept cannot be adequately understood if the hierarchical, multidimensional, causal ordering (i.e., whether self-concept or achievement is the cause), and role of frames of reference are

ignored (see review, Marsh & Hau, 2003, 2004). In an educational context, Marsh (Marsh & Hau, 2003) proposed the Big-Fish-Little-Pond Effect (BFLPE) to encapsulate frame-of-reference effects posited in social comparison theory, and this is the focus of the present investigation.

The BFLPE hypothesizes that students compare their own academic achievements with the academic achievements of their peers and use this social comparison impression as one basis for forming their own academic self-concept. For example, if students with average levels of achievement attend a high-achievement school (i.e., a school in which the average achievement level of other students is high) such that their academic achievements are below the average of other students in the school, it is predicted that this educational context will foster social comparison processes that will lead to academic self-concepts that are lower than if the same students attended an average-achievement school. Thus, academic self-concepts depend not only on one's academic accomplishments but also on the accomplishments of those in the school that a student attends.

Empirical Evidences of the Frame-of-Reference Effects

Empirical support for this negative effect of school-average achievement on academic self-concept (the BFLPE) comes from numerous studies based on a variety of different experimental/analytical approaches (see review, Marsh & Hau, 2003). The BFLPE is very specific to academic self-concept but little or no BFLPEs on general self-concept or self-esteem.

The results of the BFLPE are important for understanding the formation of academic self-concept, testing theoretical models based on social comparison theory, and evaluating the effects of frames of reference. However, classroom teachers, policymakers, and parents might ask, "So what?" What are the consequences of attending high-achievement schools on other academic outcomes other than academic self-concept (see also similar debate Marsh, Hau & Rhonda, 2004)? Educators and particularly parents often assume that there are academic benefits associated with attending higher achievement schools. This naive analysis, however, fails to account for the initially higher achievement levels and other preexisting differences of students who attend academically selective high schools.

A better test would be to compare academic outcomes after controlling the preexisting differences. Marsh (1991) considered the influence of school-average achievement on a much wider array of outcomes in a very large, nationally representative, longitudinal study of U.S. high school students and showed that school-average achievement most negatively affected academic self-concept (the

BFLPE) and educational aspirations, but school-average achievement also negatively affected general self-concept, selection of advanced coursework, school grades, standardized test scores, occupational aspirations, and subsequent college attendance (for more detailed discussion, see Marsh & Hau, 2003, 2004).

Replication of the BFLPE in different countries provides strong support for its cross-cultural generalizability (Marsh, Kong & Hau, 2000). In perhaps the largest and strongest cross-cultural study of the BFLPE even undertaken, Marsh and Hau (2003) tested the theoretical predictions for nationally representative samples of approximately 4,000, 15-year olds from each of 26 countries (total $N = 103,558$), who completed the same self-concept instrument and achievement tests. Consistent with the BFLPE, the effects of school-average achievement were negative in all 26 countries (M beta = $-.20$, $SD = .08$). The study is particularly important, demonstrating the cross-cultural generalizability of the theoretical and empirical basis of the BFLPE.

Reducing the Negative BFLPE

It is also important to emphasize that the negative effects of school-average achievement in previous studies of BFLPE represented an average, across responses by all subjects attending a large number of schools. Hence, an important direction of research as pointed out by Marsh and Hau (2003) is the identification of conducive factors that can moderate or reduce the negative BFLPE. They asked, “Are there individual student or school characteristics that offset or negate the BFLPEs? Hence, an important direction for further research is to identify individual student characteristics that will predict students who may benefit from academically selective schools and to evaluate school policies that maximize benefits” (p. 375).

Though seldom demonstrated through empirical data, we believe such damaging effects on self-concept can be reduced if students are taught to concentrate more on their own performance than to compare their own performance with others (Marsh & Hau, 2003). That is, students in a school surrounded by higher achievers would have less defeat on their self-concept if they concentrate more on their own improvement. Particularly in the more recent formulation of the expectancy-value theory (Eccles and Wigfield, 2002) that encapsulates a much broader array of psychological and social/cultural determinants of students’ motivation, the analyses of the interplay among these situational and individual difference constructs are important. In the present study, we examined a wide range of potential moderator variables on BFLPE as measured in two large scale studies.

Method

Participants

The research consisted of 2 related studies. The first study was based on the large data base of 32 countries collected in the Program of Student Assessment (PISA) database compiled by the Organisation for Economic Cooperation and Development (see Organisation for Economic Cooperation and Development, 2001 for a description of the database and variables). Our analyses were based on students who completed the academic self-concept items on the Cross Curriculum Competencies questionnaire and standardized academic achievement tests that were developed specifically for the PISA. The self-concept items were from the highly regarded SDQII (Marsh & Craven, 1997). Although 104,186 students completed Cross Curriculum Competencies questionnaire, only 103,558 had complete data for the variables considered here (i.e., the sample size after listwise deletion for missing data, the basis of the present investigation).

The second study was based on data collected on a broader range of motivational constructs (Eccles & Wigfield, 2002) with 1950 Grade 7 Chinese students in Hong Kong. They came from very diversified school settings and competitiveness. Students filled in a questionnaire measuring a wide range of self-related constructs:

- (i) Expectancy related constructs: Self-concept, Self-efficacy;
- (ii) Achievement task values constructs: importance, interest, usefulness;
- (iii) Goals: mastery, performance, avoidance;
- (iv) Learning Strategies: elaboration, rehearsal, control, effort/persistence, cooperation, competitive;
- (v) subjective theories about ability, causal attribution.

These constructs and items were mainly taken and adapted from Eccles and Wigfield (2002) and the OECD (2001) PISA study.

Statistical Analysis

In the present investigation, individual student achievement and school-average achievement are related to academic self-concept. To evaluate the interaction between individual achievement and school-average achievement, we also included cross-product terms reflecting these variables in the analyses. Individual student self-concept is the main outcome (dependent) variable (e.g., math self-concept), whereas predictor variables were individual student achievement (e.g., math exam performance), school-average achievement (i.e., mean math achievement of all students in that school), the potential moderator construct, and the interaction between school-average achievement and the moderator construct in a procedure as described in Aiken and West (1991). While the negative effect, if any, of school mean achievement on self-concept would support the BFLPE, a significantly positive and

substantial interaction term would imply the new construct (e.g., mastery goal) moderates (i.e., reduces) the negative BFLPE.

Results

Study 1

For the PISA data set, a wide range of personal background and individual difference variables were examined. As described in the method section above, a construct would moderate the BFLPE if its interaction with mean school achievement was significant. However, analyses showed that none of the interaction terms of these variables was substantial and significant in predicting math and verbal self-concept: socioeconomic status (.02, .01 for math, verbal self-concept respectively), parental academic interest (.01, .01), parental social interest (-.01, .00), family educational support (-.01, -.01), family wealth (.03, .01), home educational resources (.02, .00), cultural activities of students (-.01, .02), family cultural possession (.01, .01), teacher support (-.01, .01), school disciplinary climate (.00, -.01), teacher-student relationship (.01, .01), achievement press(-.01, -.01), sense of belonging (.00, .00), enjoyment of reading (-.02, -.01), reading diversity (.00, .01), control strategies (-.02, -.01), effort and perseverance (-.01, -.01), memorization (-.03, -.02), self efficacy (.01, .01), control expectation (.02, .01), elaboration strategies (-.02, -.01), instrumental motivation (-.02, -.04), interest in math (.02, -.04), interest in reading (-.05, .00), competitive learning (.00, -.03), cooperative learning (-.03, .00).

Study 2

Similar analyses were conducted with the Hong Kong data. Similar to the results with the PISA data, most of the constructs did not interact with the mean school achievement in predicting the respective self-concept; they included: performance goal, cooperative learning, competitive learning, theory of ability, utility orientation, interest, importance and persistence. However, students with high mastery goal (.12, .25, .39 for Chinese, English and Math respectively) and low avoidance goal (-.08, -.12, -.11 respectively) were less affected by the negative BFLPE.

Discussion and Conclusions

In the study with the Hong Kong Chinese students, we did find some support for the possibility of constructs that could reduce the BFLPE. Specifically, students who are more mastery oriented and have lower avoidance goals are less affected by the BFLPE. It is understandable because these students have stronger concern on own improvement and they work hard not only to avoid failure.

However, the above results are not very consistent across all relevant constructs

in both studies. For example, we also speculated but did not find that students with stronger cooperative learning and weaker competitive learning orientations being less affected by the BFLPE. One possibility is that the items on these dimensions measured students' preference (e.g., "I prefer learning in a group") rather than the actual classroom competitive or cooperative learning atmosphere. In future studies, it may also be desirable to capture more classroom variables (e.g., "In this class, students are ...") in addition to the individual difference variables (e.g., "I am ...") measured in this research.

In view that elite schools with high achievers being grouped in the same school will still be around in our education system, it is paramount that we proactively reduce the negative social comparison that may hamper these students' self perception of own ability. The continuation of exploring important individual learning attitude (dispositional factors) and classroom learning atmosphere (situational factors) that cultivate students' immunity towards the negative side of the peer social comparisons is definitely an important agenda for teachers and administrators in these elite schools.

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