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ABSTRACT

In some Western countries, it has been found that studying in schools of high-average ability has negative effects on one's self concept due to social comparisons with high-ability classmates. This has been metaphorically described as the big-fish-little-pond effect (BFLPE). To explore this phenomenon, the perceived school status as a measure of the assimilation effect was examined among 10,366 secondary school students in Hong Kong. In the study, the BFLPE and the effect of perceived school status on self-concept and academic achievement were examined. Students were administered tests in mathematics, English, or Chinese and students' subject-specific academic achievement were examined. Information on students' prior self-concept at Grade 6 was also collected. Multilevel regression analyses showed that for students with initial similar ability, those studying in schools with high-average ability would subsequently have relatively lower self-concept. Those student in high-average schools would possibly have higher academic achievement in some academic subjects than those in schools with lower average ability, and students perceiving their own schools to be of higher status tended to have a more positive self-concept. The results are explained and discussed using social-cultural factors and the frame of reference model. (Contains 54 references.) (MKA)

Chinese Students' Self-Concept and Academic Performance:

Big-Fish-Little-Pond Effects and the Role of Perceived School Status

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Abstract

In some western countries, it has been found that studying in schools of high average ability has negative effects on one's self-concept due to social comparison with high ability classmates. This has been metaphorical described as the big-fish-little-pond effect (BFLPE). The BFLPE has been proposed to account for the net effect of two opposing tendencies on self-concept -- a negative contrast effect due to comparison with high ability classmates and a positive assimilation effect of being in a high average ability school. As both effects operate simultaneously, typically only the net effect can be observed. As previous studies consistently demonstrated a net negative school effect on academic self-concept, the contrast effect is obvious. However, the assimilation effect on self-concept in attending schools of high average ability has not been delineated and empirically demonstrated. The present study extended previous studies by conceptualizing perceived school status as a measure of the assimilation effect. Such positive effect would be expected to be greater in the Chinese culture in which face is important. Thus, the honor gained as students in high ability schools may overcompensate the negative effect due to within class social comparison. In the present study, the BFLPE and the role of perceived school status on self-concept and academic achievement were examined. Ten thousands Chinese junior secondary school students in Hong Kong were tested with standardized academic tests in mathematics, English or Chinese in Grade 8. Students' subject specific academic self-concept and perceived status on own school were also measured. Information on students' prior achievement at Grade 6 was collected. Multilevel regression analyses showed that (1) for students with initially similar ability, those studying in schools with high average ability would subsequently have relatively lower self-concept but possibly higher academic achievement in some academic subjects than those in schools with lower average ability and (2) students perceiving own schools to be of higher status tended to have more positive self-concept. The results were explained and discussed using social-cultural factors and the frame of reference model.

Chinese Students' Self-Concept and Academic Performance:

Big-Fish-Little-Pond Effects and the Role of Perceived School Status

Many parents believe that their children are always benefited by attending schools of high average academic performance. Contrary to this belief, a number of studies have shown that students' self-concept and educational aspiration are actually impeded in such schools. It is therefore better, at least for one's self-concept, to be a big fish in a little pond. In the Chinese culture, however, where one's public reputation is a major concern, attending schools of high status may tremendously raise one's self-concept. Such benefit may overcompensate the loss in self-concept due to the unfavorable comparison with high ability classmates. The present study investigated the generalizability of the western big-fish-little-pond effect (BFLPE) and other major characteristics of self-concept in a large sample of Chinese students. The role of perceived status of own school on self-concept and academic performance was also examined.

Multidimensionality, Subject Specificity and Frame of Reference

High self-concept has been considered both as a desirable outcome and an important mediator in enhancing other positive psychological or academic achievement (see review Marsh, 1993). As one of the main channels, students formulate their self-concept by comparing their ability with others in their immediate environment (e.g., classmates). Thus, high ability students tend to more positive self-concept than their classmates. Prior to 1980's, self-concept was usually considered as a unidimensional, general, and global construct. However, there has been growing recognition to take into its multidimensional and content specific nature. For example, recently much stronger relationships (r =.45 to .70) have been found between self-concept and achievement of matching subject areas, such as between science self-concept and science achievement (Marsh 1992; Skaalvik & Rankin, 1990, 1995; Tay, Licht & Tate, 1995).

As academic achievement and self-concept of matching areas are substantially correlated (e.g., about .5 between mathematics achievement and mathematics self-concept) and verbal and mathematics achievement are generally strongly related (.5 to .8), it is expected that verbal and mathematics self-

concepts will also be highly correlated. However, empirical research shows that these two self-concepts are typically uncorrelated. The seemingly paradoxical result have been explained by Marsh (1986, 1990a) using an internal/external frame of reference model. He postulated that students compared their verbal ability against that of other students (external comparison) as well as against their own mathematics ability (or other abilities, internal comparison). The former external comparison leads to a positive relation between verbal and mathematics self-concepts whereas the latter internal comparison implies a negative one. The joint effects, as demonstrated in studies in Australia, Canada, and the USA based on responses to a variety of different instruments, are: (i) strong positive path from verbal ability to verbal self-concept (matching subject relation), (ii) weak negative path from verbal ability to mathematics self-concept (cross-subject relation), and (iii) close to zero relation between verbal and mathematics self-concepts (Marsh, 1991a).

Big-Fish-Little-Pond Effect and Assimilation Effect

The frame of reference model suggests that students' self-concept is formulated through comparison with classmates as well as with own other abilities. Particularly due to the former form of comparison, research results showed that attending schools of high average ability might have negative effects on students' self-concept (Marsh, 1987, 1991b; Marsh, Chessor, Craven & Roche, 1995; Marsh, & Rowe, 1996). For students of equal ability, those attending schools with high average ability will have lower self-concept than the ones studying in a low ability one. This is because students in high average ability schools are comparing unfavorably their ability with other high ability classmates (contrast effect). In empirical studies, the BFLPE has been demonstrated as a negative effect of school-average ability on students' academic self-concept (Bachman & O'Malley, 1986; Marsh, 1987, 1991b; Marsh & Parker, 1984).

Despite the above possible negative contrast effect, attending schools of high average ability may have potentially positive impact on self-concept through assimilation/identification (Felson & Reed, 1986). This is because schools of high average ability are socially valued and favored by many parents. Being a student in these schools is an indication of high academic ability and perhaps even

of high social status as well. There has been ample evidence showing that people enjoy "Basking in the reflected glory" of successful others by merely showing their associations with honorable people or their membership of highly valued social groups (Brown, Novick, Lord, & Richards, 1992; Cialdini, Borden, Thorne, & Sloan, 1976; Cialdini & Richardson, 1980; Sigall & Landy, 1973; Snyder, Lassegard & Ford, 1986). It is argued that people who value their social group highly would take into consideration the performance of their social group in self-evaluation. (McFarland & Buehler, 1995; Tajfet & Turner, 1986). The identification with schools of high average ability may thus have a positive effect on one's self-perception.

Culture may also have an impact on the assimilation and contrast effects. It has been demonstrated that people high in collective culture heritage are less susceptible to the negative BFLPE and have higher tendency to value their social group than those with individualistic orientation (McFarland & Buehler, 1995). If Chinese students do value strongly being a member of a high average ability school (stronger assimilation effect) and that their collective orientation reduces the attention to the undesirable social comparison (weaker contrast effect), the negative BFLPE may disappear or be substantially reduced. One purpose of the present study is to examine whether the negative BFLPE stills apply to the Chinese students.

The Perceived Status of School

For students studying in high average ability schools, the negative contrast effect acts simultaneously with the positive assimilation/identification effect on students' self-concept (Felson & Reed, 1986; Marsh, 1987, 1990a, 1991b). The BFLPE is thus a net result of the two effects, which in previous western studies has been generally negative indicating a stronger contrast component to most students. In the present study, we attempted to operationalize perceived school status as a measure of the assimilation effect.

Average academic standard and reputation are important characteristics of a school. The former is usually measured by students' public examination results or the accomplishments of the graduates (including university admission rate). The latter refers to the public appraisal of the school

in terms of their curriculum, school discipline and the school ethos or atmosphere. In general, school-average academic performance and school reputation are substantially positively correlated. In the present study, we measured students' ratings on how other people perceived their school academic standard and status. We hypothesized that students perceiving their schools as higher in status would also have more positive self-concept.

School status has often been a main criterion in parental choice of schools. Parents consider academic standard (e.g., public exam results) and school reputation as important as, if not more so than, other social-related factors (e.g., students will be happy, friends will be there) (David, 1993; Hammond & Dennison, 1995; Glatter, Woods & Bagley, 1997; OECD, 1994; Smedley, 1995; Tatar & Benyamini, 1992; West, 1992; West, David, Hailes & Ribbens, 1995). Such value is passed on from parents to their children. Hence, students would be proud of being members of these high status or high ability schools. In the Chinese culture where one's face--the reputation gained through success and ostentation--is of great concern (e.g., Ho, 1976), the gain in status and face of attending a high-ability school may possibly overcompensate the loss in prestige due to comparison with high ability classmates. Thus, the net BFLPE in Chinese students could be less negative or even become positive.

Effect of School Average Ability on Academic Achievement

The negative effect of school-average ability has been shown not only on academic self-concept, but on a wide range of performance and motivation related constructs, including Grade Point Average (GPA), standardize achievement tests, educational aspirations and career aspirations (e.g. Alwin & Otto, 1977; Davis, 1966, Marsh, 1987, 1991b). This effect on GPA has been explained by a school-based 'Grade on curve' practice. It is argued that most schools tend to give grades or marks to students according to a relatively universal (e.g., normal) distribution. There are always certain relative fixed percentages of excellent and borderline passers irrespective of the school absolute ability in the whole student population. Consequently students attending high average ability schools tend to get lower grades than equally bright students studying in low ability schools.

Despite the observation of the BFLPE on self-concept, GPA and possibly standardized achievement tests (Marsh, 1987, 1991b), there is also another set of literature and debate on and ability grouping and tracking (e.g., Gamoran & Nystrand, 1994; Gamoran, Nystrand, Berends, & Lepore, 1995; Slavin, 1987, 1990). Some of these studies argue with evidence that students assigned to higher-ability tracks learn and perform better than those in the lower-ability tracks. This is because in the higher-ability tracks, more advanced topics are sometimes covered in a faster pace and the teachers are comparatively more enthusiastic (Oakes, 1985). In the present study, we would investigate the BFLPE effects on both students' self-concept and achievement in standardized tests.

Chinese Students and the Examination System in Hong Kong

Hong Kong was a British colony but has become a special administrative region of the People Republic of China since July 1, 1997. It is a prosperous commercial and international financial center where the Chinese culture and values are still strongly felt and emphasized. There seems to be converging evidences suggesting that Chinese students in Hong Kong as well as in other societies attribute their examination results more to effort than to ability and that they concentrate on own improvement than on comparison with other students as determinants of academic achievement (Hau & Salili, 1991, 1996). Taken to the very extreme, the total concentration on internal comparison and disregard of other students' performance would suggest (i) the interrelations among different specific academic self-concepts would be negative and (ii) the negative BFLPE on self-concept and achievement would not be found among Chinese students. These hypotheses would be examined in the present study.

Nine-year compulsory and free education up to junior secondary, Grade (G.) 9, has been enforced since 1978. Secondary school places are allocated according to parental choice in the order of students' internal examination results moderated by a public examination. In the internal school examination, students' results in most subjects (other than Physical Education and Biblical Knowledge) in three G.5 and G.6 school examinations are first aggregated. In order to moderate the variation in ability across schools, all G.6 students take two public unified aptitude tests on Chinese

verbal reasoning and numerical reasoning. The moderation is at the school level in the sense that students' aptitude test results are used to reflect the ability profile of individual schools. However, the aptitude test result will not directly enter and become part of each student's school examination mark in the secondary school place allocation exercise.

All students will be ranked according to the moderated school examination performance into five broad bands of equal size (20% in each group). Students in the higher ability bands are allocated by their parental choice first. However, for students within the same band, they are allocated randomly rather than on academic merit. This will guarantee a certain mix of ability even within the most popular schools. In the past prestigious schools may take in students in the top few percents of ability. Now, even the best school can only take a random sample from the top 20% of students. Understandably, schools which have a longer history, better public examination results, higher rate in being admitted to universities, a good reputation among parents in general, will attract the better students. Due to the above school place allocation mechanism which bases largely on academic merits, it is not surprising to find that Hong Kong secondary schools are highly segregated in terms of students' ability as compared to a lot of western countries (Lo, Tsang, Chung, Cheng, Sze, Ho & Ho, 1997). That is, there is a relatively small within school variation in ability, whereas the between school variation is extremely large.

In the present study, we investigated the effects of ability grouping on students' self-concept and academic achievement in Hong Kong. Specifically, we examined the subject specificity, the internal/external frame of reference, the BFLPE, and the role of perceived school status on self-concept and academic achievement.

Method

Subjects and Instrument

The present study was conducted as part of a larger investigation on the effects of medium of instruction on students' learning in Hong Kong. Specifically, 10366 Chinese secondary students were sampled from fifty schools, which were slightly biased towards the lower ability end in the student

population. There were approximately equal number of males (52.7%) and females (47.3%). The mean ability band of the students was 3.71 (SD=1.1)(1=highest ability, 5=lowest ability) and represented a lower ability than the expected mean of 3.00. The average students' ability varied markedly across schools; mean band for each school ranged from 1.24 to 4.87 (SD=.91), with theoretical extremity of 1.00 and 5.00.

The sample covered a very diversified type of schools in terms of religious background, mode of government subsidy, and gender grouping. Specifically, there were 5(10%) government operated, 42(84%) government subsidized, and 3(6%) private schools. In terms of the religious background, 9(18%) of the schools were Catholic, 17(34%) were Protestant, 3(6%) were Buddhist, 3(6%) were Taoist, 1(2%) was Confucian, 1(2%) was Islamic, and 16 (32%) were non-religious. Among these schools, 6(12%) were boys only, 5(10%) were girls only while the remaining 39(78%) were co-educational. The schools could also be classified as grammar (N=41, 82%), technical (N=3, 6%), and prevocational (N=6, 12%) categories. All the above sample characteristics were generally in line with the secondary student population in Hong Kong.

The study was conducted in the latter half of the second term in Grade 8 (Year-2). Students were randomly assigned to take a 40-minute standardized achievement tests in either Mathematics, English, or Chinese. These three academic subjects were chosen because of their great importance in the Hong Kong school curriculum. The students also completed a questionnaire in Chinese on academic self-concept, perceived school status, and other related constructs. Three subject specific (Chinese, English, and Mathematics) components of self-concept were measured by items adapted from the Self Description Questionnaire-II (SDQII, Marsh, 1990b). The original mathematics scale was entirely adopted whereas the verbal scale was revised to give two parallel sets of items on English and Chinese respectively. The distinction of the English and Chinese self-concepts was necessary to reflect the bilingual emphasis in Hong Kong school curriculum. Four self-constructed items were used to measure students' perception of school status: "My school has a good reputation", "The academic standard of my school is high, many students want to get in", "It is well known that my school gets

good results in public examinations", and "The academic standard of my school is high, our graduates are very popular". All the items were in a 6-point scale ranging from 1 (false) to 6 (true).

Students' prior academic achievement information was obtained from the Education Department, including (i) Year-0 (G.6) mathematics - score on a standardized aptitude test on numerical reasoning, (ii) Year-0 (G.6) Chinese ability - score on a standardized aptitude test on Chinese verbal reasoning (iii) Year-0 (G. 6) English ability- school examination mark moderated by public aptitude test scores, and (iv) Year-0 (G.6) general academic achievement - aggregated scores of all subjects moderated by standardized aptitude test scores. These indicators were the best available information for students' academic performance at Year-0 (G.6) in Mathematics, Chinese, English, and general academic ability respectively.

Data analyses

All responses were coded so that high scores represented positive self-concept and perception of school status. Confirmatory factor analyses with LISREL 8 (Joreskog & Sorbom, 1993) were used to examine the construct validity of the self-concept measure. The analyses were based on item pairs similar those reported in previous studies (Marsh, 1990b). We investigated whether there was a distinct 3-correlated factor structure. This model was compared with (i) a two-factor model in which Chinese and English self-concept items were combined into one Language Factor, (ii) a one-factor model with all indicators loading on the same factor. In the evaluation of models, we judged on the parameter estimates and a number of goodness-of-fit indices including χ^2, the nonnormed fit index (NNFI), the comparative fit index (CFI), and the root-mean-square error of approximation (RMSEA) (Browne & Cudeck, 1993; MacCallum, Brown & Sugawara, 1996; Marsh, Balla & Hau, 1996; Marsh, Balla & McDonald, 1988).

The relationships among academic self-concept, school status, and academic achievement were investigated by multilevel regression analysis with the HLM software (Bryk, Raudenbush, & Congdon, 1996). Academic achievement, school average ability at Year-0, and perceived school status at Year-2 were used as level-1 and level-2 variables in predicting Year-2 academic achievement and self-concept.

As each student took test on only one of the three academic subjects at G.8 (Year-2), the analyses for each of these subjects were restricted to the respective subsamples only. Specifically, there were about 2660 students in each of the analyses involving Year-2 academic performance and about 8000 students in those involving Year-2 self-concept.

Results

Multidimensionality and Content Specificity

Confirmatory factor analysis of the self-concept items supported a three factor structure with high loadings on targeted factors (ranges from .62 to .86, with a median of .77) and satisfactory goodness-of-fit indices; $\chi^2(87)= 2578$, RMSEA= .054, NNFI= .96, CFI= .97. In contrast, in the two-factor (mathematics, language) and the one-factor (general academic achievement) models, the factor loadings were generally low and the fit was unsatisfactory; for the two-factor model, $\chi^2(89)= 17893$, RMSEA= .14, NNFI= .73, CFI= .77; for the one-factor model, $\chi^2(90)= 39928$, RMSEA= .21, NNFI= .40, CFI= .48. The results supported subject specificity and the clear distinction of mathematics, English and Chinese self-concepts. Reliability of the three scales as estimated by Cronbach's alpha were .92 (mathematics), .88 (English), and .84 (Chinese). In the above three-factor model, the correlations between mathematics self-concept and the two language self-concepts were slightly negative; r(mathematics, English) = -.03, r(mathematics, Chinese) = -.04, whereas that between the two languages was positive; r=.13.

The zero-order correlations among level-1 variables are shown in Table 1. Academic achievements in different subjects were highly correlated within the same year and across the two-years span; correlations among year-0 achievements, r ranged from .67 to .87, median = .73; correlations between year-0 and year-2 achievement, r ranged from .51 to .77, median = .65. Relations among the year-2 achievements were not available because students took only one of the three academic subjects. The correlations between achievement and self-concept were substantially higher in matching areas. For example, year-2 mathematics self-concept correlated at about .5 with year-2 mathematics achievement, but only at .07 and - .02 with year-2 English and year-2 Chinese achievement respectively.

This further supported the subject specificity of self-concept and the necessity to study the BFLPE in specific context.

Insert Table 1 About Here

Perceived School Status and Mean School Achievement

The perceived school status items were included as a fourth factor in the previous three-factor model of academic self-concept. Confirmatory factor analysis revealed that the school status factor was well defined with high factor loadings (.70, .64, .67, and .67). The overall fit of the model was good; $\chi^2(146)= 2990$, RMSEA= .044, NNFI= .96, CFI= .97. The reliability coefficient as estimated by Cronbach's alpha was .77.

Multilevel regression analysis was used to examine how students' academic achievement and the school mean ability affected their perception of school status. In the analysis, Year-0 specific academic achievement (Chinese, English or Mathematics) was the level-1 predictor, Year-0 school-mean general academic achievement was the level-2 predictor, whereas Year-2 perceived school status was the criterion. Results showed that Year-0 school-mean general academic achievement was positively related to perceived school status (γ= .473, SE= .043, $p<.01$), with schools having higher mean achievement being perceived as higher in status. In contrast, it was interesting to note that individual student Year-0 English and Mathematics achievement were negatively related to perceived school status, γ= -.121, SE= .023, $p< .01$; γ= -.225, SE= .017, $p< .01$ respectively. Taken together the results indicated that for students with similar ability, those attending schools of higher mean ability perceived their schools to have higher status than those in schools with lower mean school ability. However, for students within the same school, those with higher academic ability tended to rate their schools as lower in status. It is likely that high ability students were using more stringent criteria in evaluating their own schools.

In the multilevel regression, an variance component analysis of the Year-2 perceived school status showed that 80% of variance were accounted for at student level (level-1) and 20% at school level

(level-2). The variance at the school level could be predominantly explained by the mean school ability, whereas only 5% of the variance at the student level could be accounted by the individual students' academic ability. That is, a large portion of the variance of Year-2 perceived school status in the student-level was unexplained by students' own academic achievement..

Variability of Academic Achievement and Self-concept across Levels

The variance of academic achievement and self-concept was decomposed into the student (level-1) and school (level-2) components using multilevel analysis (Table 2). Results showed that about 60%, 43% and 61% of the variance of Year-2 mathematics, English, and Chinese achievement were associated with between student differences. This left 40%, 57% and 39% respectively of the academic achievement variability at the school level, with English having the largest between school variance.

In contrast to the pattern in academic achievement, the partition of self-concept variance showed a predominance of student level variation. This resulted in an extremely small variation at the school level. In fact, the variances of Mathematics, English and Chinese self-concepts at the school level were only 5.8%, 4.0% and 4.1% respectively.

Insert Table 2 About Here

Big-Fish-Small-Pond Effect and Internal/External Frame of Reference Effect

Effects on academic achievement. In separate multilevel regression analyses, Year-0 academic achievement (both level 1 and 2) and Year-2 perceived school status (both level 1 and 2) were used to predict Year-2 academic achievement and self-concept of each academic subject. Results for the analyses with academic achievement as the criterion demonstrated a strong association between Year-0 and Year-2 academic achievement in matching area (γ_S =0.360 to 0.446; Table 3). For non-matching academic domains, the corresponding effects were general slightly negative or close to zero, for example, γ = -038 (Year-0 Mathematics on Year-2 English), -0.068 (Mathematics on Chinese), -0.079 (English on Mathematics), and -0.073 (Chinese on Mathematics).

It was noted that the Year-0 general academic achievement had positive effects on the three Year-2 core subjects on and above the effect of the matching Year-0 achievement (γ_S =0.377, 0.081, & 0.201, for mathematics, English and Chinese, ps <0.01, 0.05, and 0.01, respectively). It was further observed that even with the effect of year-0 academic achievement being controlled, mean school ability was also positively and significantly related to year-2 academic achievement in English (γ_S= .311, $p < .01$). That is students in school with higher mean ability improved more in Year-2 English even taken into consideration their initially higher ability at Year-0.

Insert Table 3 About Here

Effects on self-concept. In the multilevel regression analysis on Year-2 academic self-concept, Year-0 academic achievement in matching area was a much stronger predictor than perceived school status and mean-school achievement; γ = .466, .614, and .317 for the mathematics, English and Chinese self-concept respectively, all $p < .01$. The Year-0 general academic achievement also had positive effects on Year-2 mathematics and Chinese self-concepts; γ = .341 and 166, respectively, both $p_S < .01$. Thus, students with better general and subject specific academic achievement tended to have more positive self-concept.

Student's perceived school status was not found to be related to academic achievement, but was positively and significantly associated with self-concept; γ = .187, .178, .136 for mathematics, English and Chinese self-concept respectively, all $p < .01$. This showed that students perceiving own school to have higher status would have more positive self-concept. But the more positive evaluation of school status did not necessarily lead to better academic achievement.

In congruence with previous internal/external frame of reference studies (e.g., Marsh, 1986, 1990a), the results of this study showed significantly negative effects of Year-0 academic achievement on Year-2 self-concept in non-matching academic areas. For example, Year-0 mathematics achievement had negative effects on Year-2 English and Chinese self-concepts; γ = -.101, -.224, both

$p<0.01$; whereas Year-0 English achievement had negative effects on Year-2 mathematics and Chinese self-concept; $\gamma = -.333, -.160$, both $p<0.01$.

In the examination of the possible BFLPE on self-concept, it was found that the Year-0 school mean ability substantively and negatively predicted the Year-2 academic self-concept; $\gamma_S = -.095, -.141, -.214$, for mathematics, English, and Chinese, $p_S < .01, .05$ and $.01$, respectively. The results strongly supported the generality of negative BFLPE in the Chinese culture. That is, for students with initially equal ability, those attending schools with high mean ability tended to have lower self-concept than the ones in schools of low mean ability.

Discussion and Conclusion

This study clearly supported the subject specificity and multidimensionality of academic self-concept. The relationship between academic achievement and self-concept is highly content specific, with strong relation between the two of matching domains and weak association when the two are non-matching. The close to zero correlations among various specific academic self-concepts, and the patterns of effects of achievement on self-concepts in matching and non-matching areas are consistent with previous findings and are explainable by the internal/external frame of reference model (Marsh, 1986, 1990a; Tay, Licht, & Tate, 1995). The strong and positive effects from achievement to self-concept in matching areas reflect an external reference frame in formulating one's self-concept; whereas the negative effects for corresponding non-matching domains indicate an internal reference frame. The joint effect of these two processes results in a close to zero correlation among various academic self-concepts. These findings suggest that Chinese students use both internal and external frames of reference in their self-concept formation.

Chinese students' use of the external frame is further demonstrated as a negative BFLPE on self-concept, similar to those reported in the western literature. In this study, students are negatively affected by within-class social comparison. Irrespective of their possible emphasis of effort attribution and learning goals, they are still using classmates as the main reference frame in self-concept formation. In other words, their self-concept is also negatively affected by a high average school ability. One way

to remedy, as suggested by Marsh, Chessor, Craven, and Roche (1995), is to further emphasize the pursuit of mastery or learning goals. Teachers should stress self-improvement rather than outperforming others (Kong & Hau, 1996). The main idea is to create a school and classroom climate which would foster skill and interest development rather than competition and social comparison. This is particular important for academically selective or elite schools where the negative contrast effect due to social comparison may be the largest.

The positive association between the mean school ability and the perceived school status suggests that students in schools of high average ability tend to view their schools more positively. In addition, the present study has shown that perceived school status is significantly related to students' self-concept. Attending high ability schools not only indicates better academic ability and higher status, but brings honors to the family as well. Such feeling has a positive effect on one's academic self-concept and self-worth. This effect may be particular important in the collective Chinese culture which emphasizes interdependence of social relationships among each other (Markus & Kitayama, 1991; Triandis, 1989).

Previous research on BFLPE has suggested the possibility of the simultaneous operation of a positive assimilation/reflected glory effect and the negative contrast effect in attending schools of high average ability (e.g. Marsh, 1987, 1990a, 1991b). However, such assimilation effect has not been operationalized and identified empirically. The present study attempted to operationalize the positive assimilation effect with the perceived school status construct and have successfully demonstrated its effect on academic self-concept. The present findings imply that school status and reputation are valuable asset, at least for the prestigious schools. School administrators can adopt strategies that emphasize the assimilation effect to enhance students' self-concept and counteract the negative social comparison effect. Furthermore, other school measures that provide information on the relative performance of the students over a broader normative population may help to minimize the negative effect of within-school comparison among higher ability classmates (Marsh, 1991b).

It is noted that a considerable large proportion of the variance of perceived school status at the student-level has remained unexplained by difference in students' achievement or in school-mean ability. This indicates that students are using a much wider scope of assessment criteria, other than their own academic performance or that of their school, in inferring the school status. Future studies can examine more closely as to what the major factors are in determining students' perception of the school status.

The partition of variance components of self-concept and academic achievement into between- and within-school levels shows quite dissimilar patterns across the two levels. In contrast to the relatively large variability in academic achievement across different schools, the variation in self-concept across schools is small. In other words, irrespective of the actual mean academic ability of the schools, there are similar distribution of high, medium, and low self-concept students in each school. This perhaps indicates that students are using mainly classmates and schoolmates, rather than students in other schools, as frame of reference in forming their self-concept. This pattern is consistent across all three academic subjects.

In conclusion, the multidimensionality, subject specificity, and frame of reference of self-concept of Chinese students are consistent with previous western findings. Chinese students still use their classmates or schoolmates as reference frame in their own self-concept formation. The present study has also successfully operationalized the assimilation effect as students' perception of school status, which helps to disentangle the positive assimilation from the negative contrast effects in attending schools of high mean ability.

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Table 1
Correlation among Level-1 Predictors, Academic Self-concept and Academic Achievement.

	1	2	3	4	5	6	7	8	9	10	11
1. Year-0 general academic achievement	1.00										
2. Year-0 mathematics	.76**	1.00									
3. Year-0 English	.87**	.58**	1.00								
4. Year-0 Chinese	.80**	.70**	.67*	1.00							
5. Year-2 perceived school status	.21**	.16**	.17**	.09**	1.00						
6. Year-2 mathematics self-concept	.17**	.32**	.03**	.07**	.21**	1.00					
7. Year-2 English self-concept	.16**	.03**	.28**	.09**	.15**	-.01	1.00				
8. Year-2 Chinese self-concept	.02*	-.04**	-.03*	.11**	.07**	-.03**	.11**	1.00			
9. Year-2 mathematics achievement	.65**	.65**	.51**	.52**	.19**	.46**	.08**	-.04*	1.00		
10. Year-2 English achievement	.76**	.55**	.77**	.66**	.17**	.07**	.34**	-.01	N.A.	1.00	
11. Year-2 Chinese achievement	.68**	.51**	.63**	.70**	.08**	-.04*	.12**	.18**	N.A.	N.A.	1.00

* $p<.05$; ** $p<.01$.

Table 2
Decomposition of Variance at Student and School levels (Random Coefficient Model, No Predictors Specified)

	Achievement (N=~2700)			Self-Concept (N=~8000)		
	Mathematics	English	Chinese	Mathematics	English	Chinese
Between-student	0.546	0.422	0.561	0.924	0.937	0.911
Between-school	0.360	0.561	0.352	0.057	0.039	0.039
Reliability estimates						
Between-school	0.968	0.984	0.966	0.897	0.855	0.859
Components of variance tests						
Between-school						
Chi-square	1679.66	3442.03	1507.66	490.08	356.31	374.38
df	49	49	49	49	49	49
p-value	0.001	0.001	0.001	0.001	0.001	0.001

Table 3 Predictors of Subject-specific Academic Achievement and Academic Self-concept

	Achievement (N=~2700)			Self-Concept (N=~8000)		
	Mathematics	English	Chinese	Mathematics	English	Chinese
	(Regression coefficient estimates, with standard error in parentheses)					
Predictors						
Student-level						
Intercept	n.s.	n.s.	0.113** (0.029)	n.s.	n.s.	n.s.
general academic achievement	0.377** (0.040)	0.081* (0.033)	0.201** (0.042)	0.341** 0.037)	-0.170** (0.030)	0.166** (0.039)
Mathematics achievement	0.360** (0.024)	-0.038** (0.018)	-0.068 (0.022)	0.466** (0.018)	-0.101** (0.016)	-0.224** (0.019)
English achievement	-0.079** (0.030)	0.433** (0.027)	0.133** (0.031)	-0.333** (0.030)	0.614** (0.028)	-0.160** (0.028)
Chinese achievement	-0.073 (0.022)	0.173** (0.021)	0.446** (0.022)	-0.265** (0.021)	n.s.	0.317** (0.019)
Perceived school status	n.s.	n.s.	n.s.	0.187** (0.014)	0.178** (0.015)	0.136** (0.015)
School-level						
Mean school achievement	n.s.	0,311** (0.042)	n.s.	-0.095** (0.035)	-.141** (0.037)	-0.214** (0.036)
Mean school perceived school status	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
	Variance components estimates					
Variance						
Between-student	0.393	0.277	0.371	0.735	0.802	0.840
Between-school	0.062**	0.053**	0.029**	0.034**	0.032**	0.037**

* p<.05; ** p<.01.

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