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Self-esteem and Ability Grouping: a Hong Kong investigation of the Big Fish Little Pond Effect

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ABSTRACT *The aim of this paper was to test the strength of the relationships between student self-esteem, and the ability group of the school band and class stream they attend, as well as their self-perceived academic performance in a non-Western context. Responses of 280 Hong Kong secondary school students to the Chinese Adolescent Self-Esteem Scale were analysed by Performance × Stream × Band Multivariate Analysis of Variance. Statistically significant main effects for Performance and Stream, but not Band were found. Higher self-esteem was reported by students who perceived their academic performance as higher and who attended lower ability stream classes. The findings supported the Big Fish Little Pond effect of ability grouping within, but not between schools. Implications of the findings for school policies such as classes for the gifted and inclusion of children with learning difficulties are also discussed.*

How to organise students into schools and classes is an important policy decision faced by educational administrators around the world. As pointed out by Gamoran *et al.* (1995), grouping together students of similar abilities would seen to be a sensible way of coping with diversity as it would allow teachers to tailor their instructional methods so as to be most appropriate for the limited ability range of their students. This would seem to be a more logical educational organisational practice than expecting the classroom teacher to cope with a heterogeneous class from very bright to low ability students progressing at rather different paces and being to able to cope with rather different course difficulty levels. However, this practice can easily result in children in low ability classes receiving inferior instruction, and the gap between the achievement levels of the high and low ability students may well widen (Gamoran *et al.*, 1995). Research evidence of the benefits of ability grouping in terms of academic achievement is not clearcut either. Indeed, Slavin's (1987) best-evidence synthesis of such evidence

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at primary school level found no difference between ability and non-ability grouped classes. However, Slavin did find evidence that cross-grade ability assignment for selected subjects, such as maths, could improve academic performance provided the students were grouped according to ability in the particular subject.

Ability grouping can also have affective consequences. Thus, Kulik's (1985) meta-analysis concluded that when students are placed in classes streamed for ability, rather than unstreamed classes, high ability students tend to have lower self-esteem, whereas lower-ability students tend to have higher self-esteem.[1] Marsh & Craven (1997), who interpret these findings in theoretical terms as the Big Fish Little Pond (BFLP) effect, argue that currently popular policies such as separate classes or schools for the gifted and mainstreaming children with learning disabilities may have unexpected negative consequences on the students' self-conceptions.

To date there has been little research evidence of the relationship between ability grouping and self-esteem in a non-Western context. This would seem to be particularly needed as cross-cultural researchers have pointed out that Western conceptions of self may not be appropriate for non-Western persons (Markus & Kitayama, 1991; Triandis, 1989). The purpose of this paper is to report a test of the Big Fish Little Pond Effect in the highly ability-streamed context of Hong Kong secondary schools.

Self-esteem and Academic Achievement

Psychologists have long believed that school experiences such as academic successes and failures, social rejection or acceptance from classmates, and rewards and punishments from teachers have a major impact on the way a student perceives himself or herself. In particular, academic achievement has often been postulated as closely related to self-esteem. While the meta-analysis of 128 studies by Hansford & Hattie (1982) found only an average correlation between global self-esteem and achievement of 0.21; this rose to 0.42 when the relationship between academic self-esteem and achievement was considered. This, of course, is not surprising because a student's global self-esteem is likely to be affected by factors other than school achievement such as acceptance by friends and family relationships. It points to the need to utilise measures of specific self-facets if such inter-relationships are to be understood.

A major weakness of the studies reviewed in the Hansford and Hattie meta-analysis was the poor quality of the theoretical underpinnings and the lack of evidence of the reliability and validity of self-concept measures at that time. Major advances in self-concept measurement, many ushered in by the proposal of Shavelson *et al.* (1976) of a hierarchical, multifaceted model of self, have occurred since, however (Byrne, 1996; Hattie, 1992). More recent studies using such instruments have, indeed, tended to confirm a correlation of around 0.40 between academic self-concept and achievement, but the interpretation of the causal nature of this relationship has been controversial. However, the majority of studies using structural equation modeling have tended to support a reciprocal relationship (Byrne, 1986; Skaalvik & Hagtvet, 1990; Hattie, 1992; Marsh & Yeung, 1997).

Frames of Reference

As Hattie (1992) argued, a more fruitful line of research may be the nature of the mechanisms underlying self-appraisals. Social comparisons and frames of reference in

particular, have been identified as playing a crucial role in this regard (Marsh, 1986, 1991, 1994; Marsh *et al.*, 1988; Hattie, 1992).

Marsh (1986) proposed a dual system of frames of reference: internal and external (I/E). 'Internal reference', was used by Marsh to refer to the self-evaluation process by which a person compares his/her own competencies in two or more areas. For example, a student may compare her self-perceived (or actual) performance in Maths with that in English (internal reference) and/or with the performance of peers in these subjects (external reference). Marsh (1986, 1991, 1994) elaborated his ideas into what has become known as the big fish little pond (BFLP) effect. It is hypothesised that students use comparisons with the abilities of other students in their reference group as one basis for evaluating their academic self-concept. Big fish little pond theory predicts that a student will have a higher academic self-concept when comparisons are made to less able students, but a lower self-concept when comparisons are made to more able students. Marsh (1994) claims support for the BFLP effect from research using a number of experimental and analytical approaches. However, the most direct support comes from studies with Australian and US students (Marsh & Parker, 1984; Marsh, 1991, 1994). The latter two studies utilised large US data bases and concluded that attending schools where the average ability level of students is high is detrimental for academic self-concept.

These studies, however, utilised school average scores on a nationwide achievement test whose results were not available to the students, their teachers or their parents, and actual school grades. How a student perceives his or her actual academic performance in the classroom may well have an even stronger effect on self-esteem than organisational characteristics such as ability grouping whether at class and/or school level. Marsh's (1994) study also assessed students less than two semesters since enrolling at the school. It can be questioned whether this was sufficient time for the BFLP effect to operate. To what extent the BFLP effect influences non-academic facets of the self has also been relatively neglected.

The Hong Kong Context

A major limitation of current research on the BFLP effect and the related issue of ability grouping, is the lack of non-Western data. This may be a real weakness as recent reviews have questioned the relevance of a Western, individualistic model of the self for non-Western persons (Markus & Kitayama, 1991; Triandis, 1989). These theorists posit that a more interdependent, relational conception of the self is more appropriate in non-Western cultures. This, in turn, may lead to cross-cultural differences in the process of self-evaluation with Asian cultures placing more emphasis on the social context (Kitayama *et al.*, 1997). It may well be that social comparison theory and the BFLP effect in particular may be more salient for a non-Western culture such as Hong Kong. However, such a claim requires empirical test.

Hong Kong provides an excellent setting for testing of the frames of reference and BFLP theory because secondary school students in Hong Kong are formally classified into five equally sized bands within each school district according to academic ability as classified by public placement tests at the end of primary school. Schools are then assigned students from the same or an adjoining ability band. In most cases, moreover, classes within each school are then further classified into 'streams' ranked from highest to lowest according to the student's internal examination grades. Information of both

classification systems is known to students their teachers and their parents. The banding of schools is also widely known throughout the community.

According to the BFLP theory, two factors are crucial in determining an individual's self-esteem, namely, perceived state of one's competence and the frame of reference in which these perceptions are processed. Based on the high value traditionally placed on academic success in Hong Kong (Watkins & Biggs, 1996) and the rationale of the BFLP theory, we predicted that perceived classroom performance will have the strongest effect on students' self-esteem: students perceiving their academic performance as high will consistently have higher self-esteem than those perceiving low performance. This will be true even amongst students from a lower stream class or lower band school.

The research reported by Marsh and his colleagues tends to confound the effects of individual academic performance and ability grouping on self-esteem. The purpose of this research is to separate out these effects and search for interactions between these variables so providing cross-cultural evidence for the BFLP effect.

Hypotheses

We predicted that whatever the 'pond' (school band or class stream in our context) it is the individual's subjectively perceived high academic performance (being a 'big fish'), which will have the major impact on his or her self-esteem. This led to the first hypothesis:

Hypothesis 1: individuals having higher perceived academic performance will have higher self-esteem than those having lower perceived performance.

As 'stream of class' is the most relevant comparison frame in a student's day-to-day school lives and it is highly visible to others (including teachers and students of other classes), in line with BFLP theory we predicted that students of lower stream classes will tend to have higher self-esteem than those from higher stream classes. Another contextual factor for the social comparison process is the band factor. Similarly to class stream, band of school may have effects on self-esteem such that students from lower band schools will have higher self-esteem than those from higher band schools. However, as the band factor is more distant and detached from the student's day-to-day experiences, and as the same contextual factor is being shared by all fellow classmates, the effect of band may be much smaller than that of stream. This reasoning lead to the following two hypotheses:

Hypothesis 2: Students from lower stream classes will have higher self-esteem than those from higher stream classes. However, the size of the stream effect will be smaller than that of perceived performance.

Hypothesis 3: Students from lower band schools will have higher self-esteem than those from higher band schools. However, the size of the band effect will be smaller than that of stream.

According to the BFLP theory, a person's self-concept will be boosted by comparing his or her own achievement with a less demanding standard or will be lowered by comparing with a more demanding standard. In the context of this research, the band and stream main effects could be moderated by self-perceived performance so the possibility of significant interaction effect will be examined. All of the above hypotheses

should apply to both overall and specific facets of self-esteem. Given that the independent variables are directly related to the academic domain, we can anticipate that their effects will be greatest on academic self-concept, then on general self-concept, and will be rather smaller on other non-academic facets if significant at all.

Methods

Sampling

Four aided Anglo-Chinese co-educational secondary schools, typical of the majority of schools in Hong Kong, were chosen for this research. To help control socio-economic factors, the schools were chosen from similar areas of Hong Kong with families from middle to lower-class backgrounds. Two of the schools received Band 1 or 2 students, and are designated in this research as 'high band', while the other two schools were Bands 4 or 5 (and are here designated as 'low band'). Within each school a high-stream and a low-stream secondary three class (14–15 years of age) were selected. Students at that level had been at their school for over 2 years and were well acquainted with the streaming policy of their school. The final sample was composed of 145 high band and 135 low bands students, and there were virtually equal numbers of males and females in each group.

Instruments

Cross-cultural researchers have argued that self-esteem instruments need to be based on culturally appropriate dimensions and specific items relevant to the individuals concerned (Triandis, 1989; Markus & Kitayama, 1991). The main instrument utilised here, the Chinese Adolescent Self-Esteem Scale (CASES; Cheng, 1997), was designed to satisfy these conditions. CASES was developed after a series of qualitative and quantitative studies using the Chinese language. The final version of CASES, consisted of 60 items with a seven-point response scale tapping a General Self and six specific-self scales (Intellectual, Social, Family, Moral, Physical Attractiveness and Physical Abilities). Responses to the scales of CASES proved to have excellent internal consistency reliability estimates (alphas ranging from 0.80 to 0.89) and to fit well the proposed hierarchical, multifaceted model of self (Cheng & Watkins, in press). In this study responses to CASES scales also had high internal consistency (alphas varying from 0.79 to 0.91).

In addition, the questionnaires had a section asking the individuals to rate their performance overall academically and in extra-curricular activities, English, Maths and conduct on a 1–5 scale (from 1 = very poor to 5 = distinction). For this research the measure of self-perceived academic performance was calculated as the sum of their overall academic, English, and Maths ratings, and students whose average ratings were between 1.00 and 2.33, 2.34 and 3.66, and 3.67 and 5.00 inclusive were designated as 'poor', 'average' and 'good' achievers.

Results

The means and standard deviations of the CASES scale scores by self-perceived performance, stream, and band are shown in Table I and represented graphically for the Intellectual Self in Fig. 1. It can be seen that an almost linear positive relationship

TABLE I. Means and standard deviations (in parentheses) of self-esteem scale scores by self-ratings of academic performance, class stream and school band

	General self	Social self	Intellectual self	Moral self	Family self	Appearance Self	Physical self
High Band							
High Stream							
Good performance	35.65	44.85	45.93	38.68	37.90	30.78	30.87
($n = 40$)	(7.58)	(8.82)	(7.40)	(6.69)	(7.48)	(8.88)	(12.86)
Average performance	28.57	39.27	36.93	34.73	34.73	25.87	25.70
($n = 30$)	(7.36)	(11.24)	(5.21)	(5.87)	(7.66)	(6.17)	(10.75)
Poor performance	19.29	29.00	26.71	32.29	30.86	19.14	21.43
($n = 7$)	(5.88)	(14.26)	(10.34)	(12.45)	(8.30)	(9.82)	(10.80)
Low Stream							
Good performance	40.50	45.00	50.33	41.33	40.33	34.67	33.50
($n = 6$)	(3.39)	(11.70)	(7.53)	(5.09)	(7.50)	(3.93)	(11.59)
Average performance	30.57	39.51	38.77	36.51	36.63	27.34	28.63
($n = 35$)	(8.86)	(10.83)	(6.67)	(6.93)	(7.84)	(8.16)	(12.75)
Poor performance	28.80	43.64	33.92	37.64	31.40	24.80	37.64
($n = 25$)	(11.11)	(12.03)	(9.69)	(7.65)	(10.48)	(9.87)	(7.65)
Low Band							
High Stream							
Good performance	34.00	40.31	44.19	39.69	39.50	29.13	30.81
($n = 16$)	(6.20)	(5.42)	(7.40)	(5.63)	(6.16)	(7.11)	(10.50)
Average performance	32.26	41.43	39.66	37.94	37.37	28.40	30.77
($n = 35$)	(8.01)	(10.00)	(8.17)	(6.93)	(9.59)	(6.83)	(8.39)
Poor performance	25.70	37.30	27.20	33.30	32.40	24.00	21.60
($n = 10$)	(6.96)	(10.66)	(6.89)	(4.72)	(8.11)	(10.80)	(12.70)
Low Stream							
Good performance	39.92	44.83	49.83	39.92	40.17	34.92	35.42
($n = 12$)	(8.78)	(7.81)	(7.26)	(7.69)	(5.52)	(8.81)	(9.54)
Average performance	32.94	41.88	41.03	36.64	33.85	30.79	29.39
($n = 33$)	(7.49)	(8.61)	(6.61)	(5.54)	(9.18)	(7.22)	(11.70)
Poor performance	32.00	41.30	33.93	36.63	35.81	29.04	31.78
($n = 27$)	(5.56)	(8.68)	(7.22)	(7.75)	(8.47)	(6.04)	(11.62)

was found between academic performance level and intellectual self-esteem, but that the lower streamed classes seemed to have the higher intellectual self scores within each school band.

The CASES scores were analysed by Performance × Stream × Band Multivariate Analysis of Variance (because of the number of statistical tests involved the 0.01 level of significance is used in this paper to help minimise Type 1 errors). It can be seen from Table II that the main effects for Performance and Stream (Wilks Lambda = 0.64 and 0.91, respectively), but not for Band were statistically significant. Univariate *F*'s showed that the main effects for Performance were statistically significant ($p < 0.01$) for the General Self Intellectual Self, Appearance Self, Moral Self and Family Self scales, and for Stream for the General Self, Social Self, Intellectual Self, Appearance Self and Physical Self scales. None of the two-or three-way interactions were statistically significant.

As predicted the specific CASES scale most influenced by these variables was the Intellectual self. The effect size for Performance for this scale (0.55) was more than twice as strong as that for Stream (0.25), while that for Band (0.03) was very weak.

TABLE II. Summary statistics from perceived academic Performance × Band × Stream MANOVA of self-concept scales

Effect	Degrees of Freedom	F	Wilk's Lambda
Performance (P)	14,518	9.04*	0.64
Stream (S)	7,258	3.48*	0.91
Band (B)	7,258	0.94	0.98
P × S	14,516	0.95	0.95
P × B	14,516	0.89	0.95
S × B	7,258	0.40	0.99
P × S × B	14,516	0.65	0.97

*Indicates *F*-value is statistically significant at 0.01 level.

Discussion

The findings of this research in a non-Western setting supported the first and second, but not the third hypothesis. Students who perceived their school performance as poor tended to have lower self-esteem than those who perceived themselves as performing better (i.e. performance main effect) and students from lower streams (within school) tended to have higher self-esteem than students from higher streams (i.e. stream main effect). The performance main effect size was more than twice as strong than that of stream which was, in turn, much stronger than that of school band, which did not reach statistical significance. However, no interaction effects were statistically significant so it seems that the above effects were relatively independent of each other. As predicted the above main effects were stronger for academic facets of the self, but contrary to the findings of Marsh & Craven (1997), were also found for non-academic areas of the self, such as the moral, family and appearance.

The results suggest something more complex than the big fish little pond effect. While students from the higher ability classes (streams) did report lower self-esteem

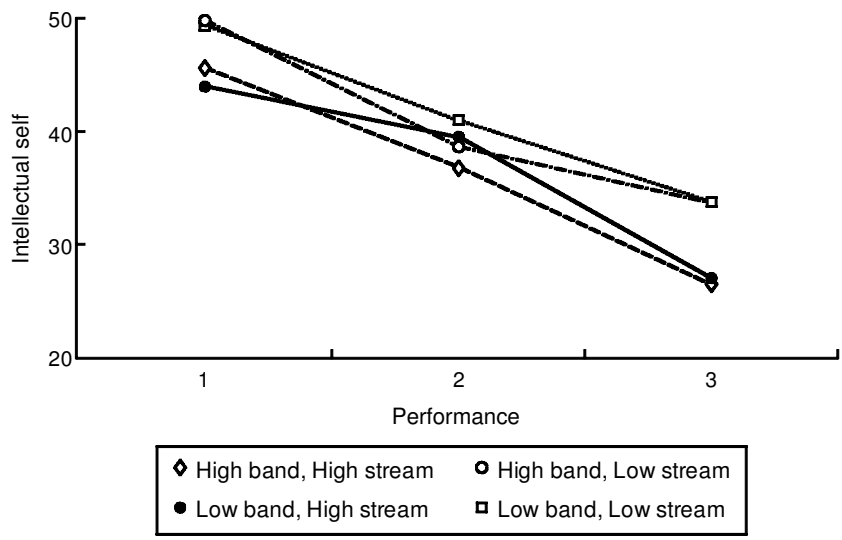

FIG. 1.

than the lower ability class students, school band had no effect. Moreover, as predicted, it was the actual academic performance as perceived by the students which had by far the greatest effect on self-esteem.

In the highly ability grouped context of Hong Kong secondary schools it seems that it is the within-class comparisons of actual performance which have the greatest impact on self-esteem. This, may well be due to their highly competitive environment where norm-referenced school tests are held regularly (usually at least weekly if not daily).

It seems likely that the generalisability of findings about the effects of ability grouping on self-esteem need to take the competitive nature of the classroom context into account. Whether policy changes to more cooperative learning, more criterion-oriented assessment, and less reliance on ability grouping (as is underway to some extent in Hong Kong) will limit any negative effect on self-esteem needs further research to determine. Certainly it seems from this research that, consistent with the claims of Marsh & Craven (1997), grouping together more able Hong Kong students may have unanticipated negative effects on their self-esteem. Presumably, if placed in heterogeneous ability classes, most of the weaker Band 1 students will perform comparatively well with a likely boost to their self-esteem, perhaps even beyond the academic sphere. Such potentially very able students are likely to contribute significantly to the intellectual life of Hong Kong students in the future. Of course, the likely effect on Band 5 students will be the opposite. As the purpose of any education policy should include maximising the potential of every student (including in the affective area) simply eliminating ability grouping may not be the answer. However, it is each school's rather than the system wide ability grouping which seems to have the greater impact on student self-esteem. How to balance the motivational benefits of a competitive environment, which boosts the self-esteem of able students, but does not destroy that of the less able is something that educational policy makers in Hong Kong and elsewhere need to consider carefully. However, the results of this study indicate that the current Hong Kong combination of highly ability grouped schools and classes together with highly competive classrooms may not be the best for maximising the affective learning outcomes of the able. At the other end of the ability spectrum more research is needed on the effects of mainstreaming children with learning difficulties. However, a group too often neglected is the average ability student. Indeed, the study of the BFLP effect by Cheng (1997) suggests that in Hong Kong it is students at average ability schools, particularly those in lower streams, whose self-esteem is most affected by ability grouping. It is for such students that changes to the assessment system which reward individual students for individual improvement may be most beneficial, at least for their self-esteem. Of course, further research is required to determine the effect of within- and between-school ability grouping on cognitive learning outcomes both in Hong Kong and elsewhere.

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NOTE

[1] In this paper, the term 'self-esteem' is used as the evaluative component of the more general term 'self-concept' (see Hattie, 1992).

REFERENCES

BYRNE, B.M. (1986). Self-concept/academic achievement relations: an investigation of dimensionality, stability, and causality. *Canadian Journal of Behavioral Science, 18*, pp. 173–186.

BYRNE, B.M. (1996). *Measuring self-concept across the life span: issues and instrumentation*. Washington DC: American Psychological Association.

CHENG, H.K.C. (1997). *The self-conceptions of Hong Kong adolescents: coneptual, measurement, and process perspectives*, Unpublished PhD thesis submitted to Faculty of Education at the University of Hong Kong.

CHENG, H.K.C. & WATKINS, D. (in press). Age and gender invariance of self-concept factor structure: an investigation of a newly developed Chinese self-concept instrument. *International Journal of Psychology*.

GAMORAN, A., NYSTRAND, M., BERENDS, M. & LEPORE, P.C. (1995). An organizational analysis of the effects of ability grouping. *American Educational Research Journal, 32*, pp. 687–715.

HANSFORD, B.C. & HATTIE, J. (1982). The relationship between self and achievement performance measures. *Review of Educational Research, 52*, pp. 123–142.

HATTIE, J. (1992). *Self-concept*. Hillsdale: Erlbaum.

KITAYMA, S., MARKUS, H.R., MATSUMOTO, H. & NORASAKKUNKIT , V. (1997). Individual and collective processes in the construction of the self: self-enhancement in the United States and self-criticism in Japan. *Journal of Personality and Social Psychology*, 72, pp. 1245–1267.

KULIK, C.L. (1985). Effects of inter-class ability grouping on achievement and self-esteem. Paper presented at the Annual Meeting of the American Psychological Association, Los Angeles.

MARKUS, H. & KITAYAMA, S. (1991). Culture and the self: implications for cognition, emotion, and motivation. *Psychological Review, 98*, pp. 224–253.

MARSH, H.W. (1991). Failure of high-ability high schools to deliver academic benefits commensurate with their students' ability levels. *American Educational Research Journals, 28*, pp. 445–480.

MARSH, H.W. (1994). Using the National Longitudinal Study of 1988 to evaluate theoretical models of self-concept: the self-Description Questionnaire. *Journal of Educational Psychology, 86*, pp. 439–456.

MARSH, H.W. (1996). Verbal and math self-concepts: an internal-external frame of reference model. *American Educational Research Journal, 23*, pp. 129–149.

MARSH, H.W. & CRAVEN, R. (1997). Academic self-concept: beyond the dustbowl. In G. PHYE (Ed.) *Handbook of classroom assessment: learning, achievement, and adjustment* (pp. 131–198) Orlando: Academic.

MARSH, H.W. & PARKER, J.W. (1984). Determinants of student self-concept: is it better to be a relatively large fish in a small pond even if you don't learn to swim as well? *Journal of Personality and Social Psychology, 47*, pp. 213–231.

MARSH, H.W. & YEUNG, A.S. (1997). Coursework selection: relations to academic self-concept and achievement. *American Educational Research Journal, 34*, pp. 691–720.

MARSH, H.W., BYRNE, B.M. & SHAVELSON, R. (1988). A multifacted academic self-concept: its hierarchical structure and its relation to academic achievement. *Journal of Educational Psychology, 80*, pp. 366–380.

SHAVELSON, R.J., HUBNER, J.J. & STANTON, G.C. (1976). Self-concept: validation of construct interpretations. *Review of Educational Research, 46*, pp. 407–441.

SKAALVIK, E.M. & HAGTVET, K.A. (1990). Academic achievement and self-concept: an analysis of causal predominance in a developmental perspective. *Journal of Personality and Social Psychology, 58*, pp. 292–307.

SLAVIN, R.E. (1987). Ability grouping and student achievement in elementary schools: a best-evidence synthesis. *Review of Educational Research, 57*, pp. 293–336.

TRIANDIS, H.C. (1989). The self and social behavior in differing cultural contexts. *Psychological Review, 93*, pp. 506–520.

WATKINS, D. & BIGGS, J. (Eds), (1996). *The Chinese learner: cultural, psychological, and contextual influences.* Hong-Kong/Melbourne: Comparative Education Research Centre/Australian Council for Educational Research.

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