International Project on Mathematical Attainment

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Singapore joined the International Project on Mathematical Attainment (IPMA) in January 1999. This project is a longitudinal and international one (Burghes, 1998a). At present Brazil, Czech Republic, England, Finland, Greece, Holland, Hungary, Ireland, Japan, Norway, Poland, Russia, Singapore and United States of America are participating in the project. The aim of this project is to monitor the mathematical progress of children from their first year of schooling throughout primary school. It hopes to study the various factors that affect that progress with the ultimate aim of making recommendations at an international level for good practice in the teaching and learning of mathematics.

A total of 1016 pupils studying in three primary schools in Singapore are participating in the IPMA. The subjects are entire cohorts of Primary One pupils studying in these schools in 1999. At the beginning of the school year in 1999, these pupils were tested on their knowledge of numbers. The test administered to the pupils comprised of seven items. It was constructed by the IPMA team (Burghes, 1998b) in UK. The following is a description of the tasks.

Item 1: to complete the picture so that it has 7 dots.
Item 2: to identify the number marked on the number line.
Item 3: to complete addition and subtraction number sentences: finding the sums, differences, second addend, first addend which is zero, and subtrahend.
Item 4: to order a given set of numbers less than 20 from small to big, and to identify the odd numbers among them.
Item 5: to locate positions from left and right; to recognise a triangle.
Item 6: to add with sums less than twenty; to subtract with minuends less than twenty; to locate the answers on the given number line.
Item 7: to find the next term in a given simple number pattern (arithmetic progressions).

In each school all the primary one pupils were given the test scripts at the same time. Their teachers read through the test prepared on overhead transparencies, question by question, allowing sufficient time for pupils to answer the question before proceeding to read the next item. Teachers were allowed to paraphrase the items so that pupils' performance was not affected by language competency. The whole exercise took about 30 – 40 minutes. The researchers scored the rest scripts. The answers were marked either right or wrong. A score of one was given to a correct response and zero for an incorrect response. The maximum test score was twenty.

Results of the Test:
The mathematical knowledge of a typical child at the beginning of Primary One as revealed by the test may be described as follows:
- able to count to 20
- whose knowledge of ordinal numbers does not lag far behind counting but finds it relatively more difficult to name the relative position from the right than from the left
- able to distinguish triangle from other basic shapes such as circles, squares and pentagons
- able to compare and order numbers but is confused when there are too many numbers to compare and order simultaneously
- unlikely to know what is an add or even number
- able to use counting-based strategy (e.g., using fingers) to find the correct sums and differences but tends to view ‘=’ as an activity rather than equivalence. Hence, finds it easier to complete number sentences such as 2 + 3 = , 6 - 4 = than 2 + = 5, + 3 - 5, - 4 = 2 and 7 - = 5.
- has no difficulty finding the sums and differences of numbers less than 20 if no renaming is required but performance deteriorates when renaming is required, especially in subtraction
- whose ability in skip counting is not as well developed as addition and subtraction.

The test also shows that an atypical child in Primary One can be one who has mastered all the above skills or one who has relatively little arithmetic knowledge. Though the two or three years of pre-school education seems to give children a head-start in mathematics in school, teachers teaching Primary One must be aware of the diversity in children's pre-school mathematics knowledge. They must build on pupils' experience and differential teaching may therefore be necessary.
Family Violence: Attitudes and Beliefs - A Cross-Cultural Comparison Among Hong Kong, Singapore and Australian Human Service Workers.

This collaborative research project is being undertaken with Dr Kurt Lushington, Professor Freda Briggs, Dr Greg Ireland and Ms Josie Luscri of the University of South Australia and Masters in counselling students at the University of Hong Kong.

This study explores the attitudes and beliefs about family violence held by persons working in human services (e.g. teachers, social workers, nurses, psychologists) in Singapore, Hong Kong and Australia.

The aims of this study are to explore the attitudes and beliefs about family violence held by those who work in human service professions with a view to identifying necessary support and professional programs for members of the communities and the workers.

Family violence is a costly problem both socially and economically. The social impact of family violence is unequivocal. It has a negative effect on psychological, family and community well-being. It also has a direct economic cost to the community. Government bodies in Australia spend in excess of 226 million dollars each year directly dealing with incidence of family violence. A better understanding of the factors that contribute to family violence will result in social and economic benefit.

Governments in Hong Kong and Singapore have recently identified this as an area of need. While there are many parallels between the experiences of Hong Kong Singapore and Australia, it is well recognised that family violence occurs within a cultural context where certain behaviours are considered acceptable while others are considered unacceptable. To what extent the cultural norms on family violence in Hong Kong, Singapore and Australia converge, is not known. This knowledge is important because policy makers in each country are increasingly looking outside of their own experience to better inform practice and this process is clearly informed by cultural norms. A useful starting point to begin a comparison between cultural norms on family violence is to examine the attitudes and beliefs held by those in the human service profession; there is a paucity of information about this. Moreover, cross-cultural comparisons of attitudes and beliefs are yet to be explored.

At the time of writing this article a questionnaire on attitudes and beliefs about family violence has been administered to human service workers in Australia and Singapore and will be administered in Hong Kong later this year. This questionnaire contains statements obtained previously from interviews with Australian professionals, perpetrators and victims of family violence. Participants are asked to rate how strongly they agree or disagree with the statements. To control for "faking good", participants are also asked to complete the Marlowe-Crown Social desirability scale which will be used to validate responses on the attitudes and beliefs questionnaire. Data obtained from this study will be used to establish the psychometric properties of the questionnaire, to establish normative values and enable comparisons between Australia, Hong Kong and Singapore human service workers.

Principle component analysis will be used to explore the underlying commonalities between items in the questionnaire. This will be performed separately for Parts A, B and C. Part A focuses on sexual abuse, Part B on emotional abuse and Part C on family violence. Initially, data from the three countries will be combined. This will enable the identification of the factor structure of the questionnaires and further refinement of construct validity. Factor scores will then be compared between Australian, Hong Kong and Singaporean groups. Principle component

References
Burghes, D. (1998b) International Project on Mathematical Attainment - Test 1. United Kingdom: University of Exeter (Centre for Innovation in Mathematics Teaching). This project is funded by the Academic Research Fund, National Institute of Education, Nanyang Technological University, Singapore UP 21/98 BK and the University of Exeter, UK.