

Perceptions versus performance during the transition from primary to secondary school: Effect of gender, school type and contribution from significant others.

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#### ABSTRACT

Early adolescence has been identified as a time when children are cognitively appraising their competence. The outcome of such an appraisal appears to strongly influence the child's overall feelings of worth as a person. Children's self-definition is based on how they see themselves as well as their perceived appraisal from significant others. Previous research has shown that gender differences in self-concept of ability are quite prevalent in early adolescence. This appears to be reinforced by: parental beliefs, education in general (a major contributing factor is attendance at either single-sex or coeducational schools) and treatment by and the beliefs of teachers. Although previous research data have found a relationship between positive attitudes towards Mathematics and better performance on Mathematics tests, researchers have expressed doubt concerning whether positive attitudes determine performance or vice versa. The present study investigates the relationship between children's perceived abilities and standardised achievement test scores in the Mathematics and English domains. It also examines changes in perceptions of abilities and test scores during the transition and whether differences resulting from gender and school type are evident. The study also investigates the influences of parents, teachers, classmates and close friends on children's perceptions of their Mathematical and English abilities during the transition from primary to high school.

Results from this longitudinal research project and their implications for the development of self-esteem will be outlined as well as recommendations for appropriate interventions and directions for future research.

The present longitudinal study addresses two research questions:

(1) What factors predict early adolescents' perceptions of their Mathematical and English abilities before and after the transition from primary to high school ? and

(2) Is there a relationship between early adolescents' change in perceptions (of their Mathematical and English abilities) and change in performance (in standardised Mathematics and English tests) before and after the transition from primary to high school ?

The transition from childhood to adolescence corresponds with the progression from primary school to high school. Early adolescents are cognitively appraising their competence and the outcome of such appraisals appear to influence strongly their overall self-esteem

(Harter, 1990; Eccles, Adler, Futterman, Goff, Kaczala, Meece & Midgley, 1983). Influential variables affecting children's perceptions of their competence may come from several sources. Perceptions of competence may be influenced by parental and/or teacher expectations, the child's perceived support obtained from significant others (parents, teachers, close friends, class mates) and/or by the child's performance within the school setting. These factors will be investigated in this study and are briefly discussed below.

Studies investigating parental and teacher expectations on early adolescents' perceptions of competence do not generally include all three sources (that is, mother, father and teacher expectations). Most research has contrasted the expectations of mothers and fathers. For instance, research on Mathematics achievement has found that mothers, rather than fathers, have a stronger influence on children's behaviour, beliefs and attitudes (Eccles et al, 1983). Studies which examined teachers' expectations were inconsistent, some reported that the expectations of teachers were significantly related to perceived competence (Entwisle et al, 1987; Phillips, 1984), others found a major decline in the significance attributed to teachers by adolescents (Juhasz, 1989).

Susan Harter (1990) investigated how children's perceptions of competence may be influenced by their perceived support from significant others. She believes that children's self-definition is based on how they see themselves as well as their perceived appraisal and support from significant others. Harter (1985) identified four different sources of positive support: parents, teachers, classmates and close friends. These sources of support are examined in this study.

Research investigating relationships between perceptions of abilities and performance have found a relationship between positive attitudes towards Mathematics and better performance on

Mathematics tests ( Tsai & Walberg, 1983; Armstrong, 1980). However, researchers have expressed doubt concerning whether positive attitudes determine performance or vice versa (Lockheed, Thorpe, Brooks-Gunn, Casserly and McAloon, 1985; Berryman, 1983). This study will explore the relationship between early adolescents' change in perceptions (of their Mathematical and English abilities) and change in performance (in standardised Mathematics and English tests) before and after the transition from primary to high school.

When considering perceptions of abilities/achievement, Bornholt, Goodnow & Cooney (1994), raised an interesting methodological question. They discussed the notion of specific and general perceptions of achievement and questioned whether the 'same' gender differences were evident when children are asked to describe their perception of a recent performance on a specific task (for example, a test) as opposed to reporting their general perceptions of performance, be it current or future. Several studies have confirmed that questions emphasising a specific or a general basis to a judgement can result in different perceptions of self (Bornholt et al, 1994; Alasker, 1989). Bornholt et al's (1994) study required children to predict their performance on a test (specific perceptions of achievement). This study proposes to adopt the 'general' stance and invite children to report upon their general perceptions of their Mathematical and English abilities and performance.

## METHOD

### Sample:

The sample consisted of 241 Year 6 children (mean age 12.1 years; S.D.=0.7; 40% female) and the same students were followed up the following year, when they were in Year 7 (mean age 13.1 years; S.D.=0.4), their parents and classroom teachers. 135 "intact" families (that is, both mother and father) participated in the study. Year 6 teachers ( n=8), Year 7 Maths teachers (n=12) and Year 7 English (n=12) teachers also participated. Students, their parents and teachers were recruited from three non-selective schools in the Sydney Metropolitan area (N.S.W., Australia). School type consisted of a male single-sex, a female single-sex and a coeducational school. Teachers indicated that all students in the sample were of an evenly distributed range of abilities. Families were of comparable socioeconomic status (predominantly middle-class and Anglo-Saxon). Of those students approached to participate in the study, 92% obtained parental permission.

## Instruments

Two modified Harter (1985; 1986) questionnaires were used. These scales displayed a highly interpretable factor structure (Harter, 1985; 1986) and are briefly described below.

### Student Questionnaires

(i) A modified version of the Self-Perception Profile for Adolescents (SPPA) was used to assess adolescents' self-perceptions (Harter, 1986). A detailed description of this instrument, including the theoretical rationale, a description of the domains and the empirical analyses, is found in Trent, Russell & Cooney (1994).

(ii) Evaluation of the adolescents' perceived regard and support from significant others was gauged by a modified version of the 16-item self-report scale called "People in my Life" (Harter, 1985). This scale comprised four domains, which included the child's perceived support from: parents, teachers, classmates and close friends. The same scale structure, format and scoring procedure was used as in the SPPA.

(iii) Adolescents' academic performance was assessed using two standardised tests. Mathematics ability was measured using the ACER (Australian Council of Educational Research) Mathematics Profile Series. There were 35 items presented in multiple choice format with two additional items for practice. English ability was also assessed by 35 items in multiple choice format (plus two additional practice items), entitled "Using My Study Skills". These items came from a Study Skills Test, developed by the Queensland Department of Education as part of the Primary Testing Program (Study Skills, Level 7, Form X). Permission was obtained by ACER and the Queensland Department of Education for the tests to be used.

### (b) Parent Questionnaires

Parent's perceptions of their child's abilities in relation to their performance in primary and high school were assessed by the "Self-Perception Profile for Adolescents" (Harter, 1986). This

parent questionnaire was constructed to parallel the content and format of the student versions so that measures between parents and children would be comparable.

### (c) Teacher Questionnaire

A 16-item self-report questionnaire known as the "Teachers' Rating Scale" (Harter, 1986) was completed by the teacher for

each student in the class. It was used to measure the teacher's appraisal of the child's competence in the following domains: scholastic competence and their Mathematical and English abilities. Items paralleled the SPPA and the same question format and scoring procedure was administered.

### Procedure

Data were collected in November of each year from students, their parents and teachers. The student questionnaires were administered during a regularly scheduled class period. Standardised instructions were read aloud to students and several practice examples were given. Each item was read aloud to facilitate accurate understanding and ensure careful consideration. Students were encouraged to ask questions for clarification. The parent questionnaires were sent home with the students and returned to the school three weeks later. In a letter sent home with the questionnaires, parents were asked not to discuss their responses with either their child or their spouse. Teachers were asked to complete a questionnaire for each child and these questionnaires were also collected after three weeks.

### RESULTS

Results are presented in terms of the two research questions: (1) What factors predict early adolescents' perceptions of their Mathematical and English abilities before and after the transition from primary to high school? and (2) Is there a relationship between early adolescents' change in perceptions (of their Mathematical and English abilities) and change in performance (in standardised Mathematics and English tests) before and after the transition from primary to high school?

#### Factors Predicting Early Adolescents' Perceptions of Their Mathematical and English Abilities.

Means, standard deviations and internal consistencies of all the SPPA scales are described in detail in Trent, Russell & Cooney (1994).

A series of multiple regressions was conducted to determine which subset of child, mother, father and teacher variables contributed towards Mathematical and English self-concepts. The independent variables, described in the previous section, comprise parent related (expectations, perceived support), teacher related (expectations, perceived support), peer related (perceived support from close friends and perceived support from classmates) and performance variables (Mathematics and English results on standardised tests).

Partial F tests were used to determine the best subset of predictor variables for each of the two dependent variables (perceptions of Mathematics and English competence) at the end of

Year 6 and at the end of Year 7. The regression equations controlled for performance and separately examined the contributions of mothers, fathers, teachers and peers.

Table 1: PROPORTION OF VARIANCE OF PERCEPTION ACCOUNTED FOR BY PERFORMANCE

	MATHEMATICS	ENGLISH
YEAR 6	27 %	2 %
YEAR 7	29 %	1 %

Table 1 shows the proportion of variance accounted for by performance for each area. Students' perceptions of their Mathematical abilities are relatively strongly related to their examination performances in that subject, in contrast to English where the relationships are minimal.

Table 2: ADDITIONAL EFFECT OF PARENTAL, PEER AND TEACHER VARIABLES FOR MATHEMATICS AND ENGLISH (% OF VARIANCE).

	MATHEMATICS			ENGLISH		
	TEACHER	PARENT	PEERS	TEACHER	PARENT	PEERS
YEAR 6	2.6	3.9	0.5	5.2	13.4 *	5.3
YEAR 7	6.1 *	3.8	6.8 *	2.9	5.6	13.9 *

(\* indicates that the % of variance is significant)

Table 2 indicates that perceptions of Mathematical ability, in Year 6, are not influenced by parental, peer or teacher variables. However, perceptions of Mathematical ability, in Year 7, are influenced by teacher and peer variables. Of the teacher and peer variables, teacher support and classmate support were significant; teacher expectations were not significant once student performance was controlled.

Children's perceptions of their English ability, in Year 6, are influenced by parental variables, this effect is largely due to mothers' expectations. In Year 7, children's perceptions of their English ability are influenced by peer variables. Peer support, from close friends and classmates, was considered

to be important.

#### Relationship Between Change in Perceptions and Change in Performance.

Separate 2(school type) x 2(gender) x 2(time) repeated measures analyses, with repeated measures on time, were carried out on Mathematics and English perceptions of abilities. Mathematics and English test scores at the ends of Year 6 and 7 were inserted as covariates, and varied at both time periods. Multivariate tests of significance for the within-subject terms of the model were carried out for: time, sex x time, school x time and school x sex x time.

The within cells results indicated that no relationship exists between changes in girls' and boys' perceptions and changes in performance in Mathematics and English. In addition, there were no significant gender, time or school type effects on Mathematics and English perceptions.

#### DISCUSSION

In summary, the study shows two strong results. The first is that early adolescents' perceptions of their Mathematical abilities are influenced entirely by their perceptions of their performance at the end of primary school (when in Year 6) and mostly by performance and marginally from teacher and classmate support at the start of high school (when in Year 7). In contrast, for English, mothers' expectations are important in Year 6, whereas peer support, from close friends and classmates, are significant to children's perceptions of their English abilities, in Year 7. The second major result was that changes in perceptions of Mathematical or English abilities are independent of changes in performance and in addition, there were no significant gender, time or school type effects on students' perceptions of their Mathematics and English abilities from Year 6 to Year 7.

The major difference between perceptions of Mathematics and English is that performance measures are strongly related to children's perceptions of their Mathematical ability and weakly related to children's perceptions of their English ability. Could this be due to more definitive measures of feedback available for Mathematics (for example, answers tend to be right or wrong, Mathematical tasks tend to involve computations at this stage, several practice examples can be used as illustrations and an incorrect response can result in more practice examples until an understanding of the concept is developed) as opposed to English which is far more subjective and less clear-cut (for

example, answers tend not to be right or wrong, English tasks tend to be more diverse i.e. reading, writing, comprehension, opinions, interpretations, etc.) ?

Why were expectations and/or support from significant others (mainly from teachers) not influential to early adolescents' perceptions of their Mathematical abilities at the end of primary school? In a submission to the Committee of Inquiry into the Teaching of Mathematics, Smith (1987) expressed concern about the effect of some female primary school teachers (many of whom were poorly qualified to teach Mathematics) on the attitudes of students (particularly girls) to Mathematics. Perhaps further research needs to be undertaken to examine this issue.

Peer support marginally influenced early adolescents' perceptions of their Mathematical and English abilities at the start of high school (when in Year 7). This may be evident because of the increasing importance attributed to the peer group during adolescence. According to Damon (1991) and Rosenberg (1979), the general peer group is the most critical source of information concerning the self-concept during this period.

Mothers' expectations are influential to early adolescents' perceptions of their English abilities at the end of primary school (when in Year 6). This finding is interesting in view of Russell and Russell's (1987) results that showed that mothers rather than fathers appear to be more involved in school achievement of children in middle childhood.

Results from this study indicate that perceptions of competence are stable across the transition (no school, time or gender differences) and according to Harter (1990) and Eccles et al

(1983), this finding would imply that self-esteem would also be stable across the transition. Trent (1992) confirmed this finding.

A broad implication of this study lends support for Marsh's (1990) findings that specific components of self-concept are more useful for understanding specific outcome measures (for example, academic self-concept). Results presented here suggest that general academic measures of self-concept should be replaced with Mathematics and English measures of self-concept. Since Mathematics and English self-concepts of abilities seem to be uncorrelated (Trent, 1992), it may be unjustified to subsume these two measures into a more general measure of academic self-concept. It appears that one should assume that self-perceptions are flexible within these domains and depend upon the aspect of achievement-considered (i.e. specific or general).

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