

# A longitudinal study of beginning reading achievement and reading self-concept

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**Background.** Although achievement-related self-perceptions are causally related to academic performance, it is not clear at what age this relationship starts to form, especially in terms of learning to read.

**Aims.** The aim of this longitudinal study was to examine the emerging causal interplay between reading self-concept and beginning reading performance.

**Sample.** One hundred and twelve children who started school at the age of 5 years participated in the study over a two and a half-year period.

**Method.** Path analyses were used to examine the relationships between reading-related skills and reading self-concept at the start of Year 1, the middle of Year 2, and the middle of Year 3.

**Results.** Reading performance emerged as causally predominant over reading self-concept between the middle of Year 2 and the middle of Year 3.

**Conclusions.** Initial reading-related experiences in school are associated with the development of reading self-concepts within the first two and a half years of schooling. This period may mark the time during which negative 'Matthew effects' develop for those who experience initial difficulties in learning to read.

Learning to read is the central learning activity undertaken by young children during the early elementary school years, and it is basic to success in school. A significant factor associated with the development of reading skills is the child's evolving self-system. The self-system includes a variety of related factors such as self-concept, self-efficacy, self-worth, attributions, and expectations (Borkowski, Carr, Rellinger & Pressley, 1990). These factors are thought to influence achievement mainly by means of their effect on motivation (e.g., Bandura, 1986; Borkowski *et al.*, 1990; Schunk, 1991) and the self-regulation processes of metacognition (Borkowski, Day, Saenz, Dietmeyer, Estrada & Groteluschen, 1992). In the context of reading, the motivational influence of the self-system is said to determine whether 'opportunities to read would be sought or avoided, the amount of effort that would be expended during reading, and the degree of persistence demonstrated in pursuing text comprehension' (Henk & Melnick, 1992, p. 111).

Considering the importance of learning to read and the influences of a child's self-system on reading behaviours, it is not surprising that reading-related self-perceptions have been

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viewed with increasing importance (e.g., Borkowski *et al.*, 1992; Chapman & Tunmer, 1995; Ehrlich, Kurtz-Costes & Loidant, 1993; Henk & Melnick, 1995; Paris & Oka, 1989; Wixson, Peters, Weber & Roeber, 1987). Indeed, teachers have ranked student motivation and creating an interest in reading as their first priority in teaching reading (O'Flahavan, Gambrell, Guthrie, Stahl, Baumann & Alvermann, 1992), and reading-related self-perceptions are now included in statewide and portfolio reading assessments (Henk & Melnick, 1992).

Despite this increasing understanding of the significance of reading self-perceptions in reading achievement, there is a dearth of research on their development in young elementary school children. Studies which have examined the relationship between elements of the self-system and reading achievement generally have included students who are beyond the Grade 1 level (e.g., Carr, Borkowski & Maxwell, 1991; Ehrlich *et al.*, 1993; Marsh, Walker & Debus, 1991; Shell, Colvin & Bruning, 1995; Strein, 1993). Relatively few studies have examined self-system variables specifically in terms of reading and reading-related behaviours in children younger than seven years (e.g., Chapman & Tunmer, 1995; Wagner, Spratt, Gal & Paris, 1989). Therefore, although it is commonly held that achievement-related self-perceptions play a significant role in learning outcomes (e.g., Shell *et al.*, 1995) it is not known whether young children form an initial set of reading-related self-perceptions around the time of school entry, and if they do whether these self-perceptions have any relationship with either early reading-related skills or subsequent reading performance. The major purpose of this study was to examine one aspect of initial and developing reading self-perceptions, namely reading self-concept, in relation to beginning reading skills and emerging reading achievement.

Numerous studies have shown that self-concept strongly influences achievement (e.g., Marsh, 1987, 1990; Song & Hattie, 1984). Such findings are consistent with self-enhancement theory in which self-concept exerts a significant causal influence over achievement (Kurtz-Costes & Schneider, 1994). A positive self-concept, according to this view, is an important prerequisite for managing difficulties in learning. In turn, an adaptive response to difficulties encountered in learning facilitates positive academic progress (Kurtz-Costes & Schneider, 1994).

Other research supports a skill development theory, in which self-concept is considered to be a consequence of achievement rather than a cause (e.g., Newman, 1984; Skaalvik & Hagvet, 1990). As early academic experiences develop into *patterns* of accomplishment or difficulty, they give rise to the achievement-related perceptions that form academic self-concept. Patterns of positive or negative experiences in school and achievement-related activities result from the extent to which children master important academic skills, their experiences of ease or difficulty with academic tasks, and the manner in which academic performance is interpreted by teachers to children.

These two views of achievement-related self-concept development led us to pose the following question: is there a stronger predictive relationship between initial reading self-concepts and subsequent reading achievement than between pre-reading skills at school entry and subsequent reading self-concepts?

We defined reading self-concept as the combination of three interrelated components: (1) perceptions of competence in performing reading tasks; (2) perceptions that reading activities are generally either easy or difficult, and (3) attitudes felt towards reading. These three components are relatively well differentiated among young children (Chapman & Tunmer, 1995).

We formulated three hypotheses regarding the causal interaction of early reading self-concepts and beginning reading behaviours. The first hypothesis was that during the first 18 months of schooling, reading self-concepts and early reading-related skills would show no meaningful causal relationship with each other. During this time, the initial reading self-concepts would likely be undergoing considerable developmental change, and evolving in response to early reading experiences (Shell *et al.*, 1995; Stipek, 1993).

The second hypothesis was that during the second and third years of schooling a significant causal relationship between reading performance and reading self-concept would emerge. We expected that by the middle of the third year of schooling reading performance would make a significant causal contribution to reading self-concept, but that reading self-concept would not make a significant causal contribution to reading performance. Schunk (1991) suggested that achievement-related self-perceptions initially develop in response to the appraisals by children of their performances in terms of perceived ability, task difficulty and effort requirements, amount of help received from others, 'number and pattern of successes and failures, their perceived similarity to models, and persuader credibility' (pp. 209–209). During the first few years of reading instruction, such appraisals are likely to be influenced by early reading performances. Thus, we anticipated that for young, beginning readers, the skill development theory of self-concept development would more likely be supported than the self-enhancement theory.

The third hypothesis was that emerging reading self-concepts would not be related to general verbal ability. Although verbal ability is a predictor of reading performance (e.g., Stanovich, Cunningham & Feeman, 1984), many studies have shown that achievement-related self-perceptions correlate more highly with measures of actual achievement than with ability-related measures (e.g., Boersma & Chapman, 1992; Hattie, 1992). During the initial years of reading instruction, it seems more likely that developing reading self-concepts begin to form an association with reading behaviours because of feedback associated with performances on early reading tasks, rather than with general verbal ability at school entry.

These three hypotheses were tested by means of two path models. Model 1 examined the causal influence of reading self-concept, pre-reading skills, and verbal ability at the beginning of the children's first year in school (Time 1) on reading self-concept and reading performance 18 months later (Time 2). Model 2 examined the causal interplay between reading and self-concept at Time 2 and 12 months later (Time 3) when the children were in their third year of schooling.

## Method

### *Sample*

At the start of the present two and a half year study, the sample comprised 152 5-year old children ( $M$  age = 5.11 years;  $SD$  = 0.07) who started school for the first time in February 1993. Children in New Zealand commence school on or around their fifth birthday, and formal reading instruction begins for each child almost immediately. These children were initially enrolled in 16 urban schools, located in a range of socio-economic areas. At the end of the study, there were 122 children remaining in the sample. These children were enrolled in the 16 original schools, as well as six additional schools. For the present study, there were 118 who had complete data for all scales administered on each of three testing occasions.

### *Instruments*

*Reading self-concept* was assessed by means of the Reading Self-Concept Scale (RSCS; Chapman & Tunmer, 1993). The RSCS comprises 30 items, all worded in question format (e.g., 'Are you a good reader?'), rather than the usual declarative format (e.g., 'I am a good reader'). This interrogative wording was chosen in order to reduce the linguistic complexity that young children face when they are required to verify declarative statements (Chapman & Tunmer, 1995). Children responded to each item along a five-point scale, which included 'Yes, always'; 'Yes, usually'; 'Undecided or unsure'; 'No, not usually'; 'No, never'. The 'undecided or unsure' response was represented by an indication that the child understood the item but was unable to select a definite response. The mid-point of the scale was selected for the 'unsure' responses in order to prevent the weighting bias that would result if these responses were recorded as missing, or allocated a value of zero. In other words, 'unsure' responses were given a neutral numeric weighting. The RSCS internal reliability estimates for children at the different age levels included in the present longitudinal study are as follows: 5 years,  $\alpha=0.85$ ; 6 years,  $\alpha=0.84$ ; 7 years,  $\alpha=.85$  (Chapman & Tunmer, 1995).

The RSCS was administered individually to children by one of three research assistants. The response requirements of the scale were taught to children by means of four examples and 10 practice items (see Chapman & Tunmer, 1995 for a detailed description). Considerable time was taken with these items to ensure that the response requirements were fully understood and that a range of responses was available.

When the administrator was confident that the child understood the response requirements, each of the 30 RSCS items was then read aloud. A 'yes' or 'no' response to each item was initially sought, and then probing took place to elicit the response qualifier, 'always' or 'usually'. Where a child did not respond, extensive probing was used in order to ensure that the child understood the item. If a child indicated an understanding of the item but still could not answer with 'yes' or 'no', a '3' was recorded because it was midway between the 'yes, usually' (4) and the 'no, not usually' (2) responses. Less than 1 per cent of all responses were scored with the mid-point value of '3'.

Total administration time was around 15 minutes. Some children completed the items in a shorter period of time, and some took longer but no child required more than 20 minutes to complete the RSCS.

Scores for each item ranged from 1 (low reading self-concept) to 5 (high reading self-concept). The full-scale score was calculated as the mean value of the 30 items and, therefore, ranged from 1 to 5.

*Pre-reading measures.* Measures of pre-reading abilities included a phoneme deletion task (PDT), a sound matching task (SMT), and a letter identification task (Letter ID). The PDT was an adaptation of a task developed by Calfee (1977). The task was to delete the initial consonant segment from a presented word, and to say aloud the vowel-consonant segment that remained. For instance, to the word *mice*, the proper response was 'ice'; to the word *rope*, the correct answer was 'ope'. The PDT comprised four training lists and six 'transfer' lists. The difficulty level increased through the lists. For the last two transfer lists, half of the words were real and half were synthetic (e.g., *kend*, *mox*, *jad*). Scoring was based on the number of correct responses to items presented in the six transfer trials, with a maximum possible score of 57.

The SMT was an adaptation of a task developed by Bryant and colleagues (Bryant, Bradley, Maclean & Crossland, 1989). The task comprised two parts, an onset matching

task and a rime matching task, where an *onset* is the initial consonant or consonant cluster of a syllable, and *rime* is the vowel and any following consonants.

In the onset matching task, the child was asked to indicate which two of three orally presented words sounded the same 'at the beginning' (e.g., *hair, pain, pig*). Practice items and picture support were also provided in this task. In the rime matching task, the child was asked to indicate which two of three orally presented words sounded 'the same' (e.g., *sail, nail, boot*). A series of practice items were included, and throughout the test picture support was provided in order to reduce the memory load of the task.

Scores for the SMT comprised the total number correct for the rime matching task (maximum score = 9) plus the total number correct for the onset matching task (maximum score = 9). The maximum possible score for the SMT, therefore, was 18.

The Letter ID task was selected from the Diagnostic Survey (Clay, 1985). Children were required to give the name or sound of 26 uppercase and 28 lowercase letters, two of which appeared in varying fonts. Scoring was based on the number of letters correctly identified by name or sound.

In order to generate a reading factor score to represent reading-related skills at Time 1, a factor analysis was performed on data for 149 children who had complete scores for these three pre-reading measures. The factor accounted for 63.6 per cent of the variance, and the factor loadings for the three components were as follows: Letter Identification, .70; Sound Matching, .84; Phoneme Deletion, .85.

*Reading performance.* Measures of reading performance were selected according to developmentally appropriate activities and included a context-free word recognition task, the Burt Word Reading Test, New Zealand Revision (Burt: Gilmore, Croft & Reid, 1981), a contextual priming task (CPT: Tunmer & Chapman, in press), and the Comprehension Subtest of the Neale Analysis of Reading Ability, Revised (Neale, 1988).

The Burt was used to assess word recognition at Times 2 and 3. Children were presented with a list of words of increasing difficulty and asked to look at each word and say it aloud. Testing continued until 10 successive words were read incorrectly or were not attempted. Scoring was based on the number of words read correctly, with a maximum possible score of 110.

The contextual priming task was an adaptation of a task developed by Adams & Huggins (1985) to assess children's ability to use sentence context to help identify unfamiliar words. The children were asked to read 80 irregularly spelled words (e.g., *money*) first in isolation and then, in another test session, in undetermining contexts that were read aloud by the experimenter (e.g., He couldn't find his *money*). Scoring was based on the ratio of contextual gain (i.e., the number of words recognised in context minus the number of words recognised in isolation) to *potential* improvement (i.e., the number of words presented in isolation minus the number of words recognised in isolation).

The Comprehension Subtest of the Neale Analysis of Reading Ability, Revised (Neale, 1988) provided a measure of reading comprehension ability. The children were asked to read aloud a series of short passages that were graded in difficulty. After completing each passage the children were presented with a series of questions relating to the passage. Standardised scoring procedures were used to derive an age-related measure of reading comprehension ability.

Factor analyses were used to form two additional factor scores for reading. The Time 2 reading factor comprised scores for the Burt and the CPT scales, and accounted for 90.6 per

cent of the variance. The factor loading for each of these two measures was .95 ( $M=134$ ). The Time 3 reading factor was derived from the scores for the Burt and Neale scales. The factor loading for each of these two instruments was .95 ( $N=122$ ), and the variance accounted for was 90.3 per cent.

*Oral vocabulary.* Raw scores from the Peabody Picture Vocabulary Test — Form M (PPVT: Dunn & Dunn, 1981) were used to assess oral vocabulary, which was used as an estimate of verbal ability at the Time 1 stage of school entry.

### *Procedure*

All scales were administered as part of a larger longitudinal study of language-related and cognitive-motivational factors in beginning reading. The Time 1 pre-reading and oral vocabulary scales (PDT, SMT, Letter ID, PPVT) were administered within the first four weeks of the academic year (February and March), that is, during the very beginning of the children's formal schooling. The RSCS was first administered after the children had been in school for six weeks. This period of time was considered sufficient for children to have had adequate experience of pre- and initial reading activities in order to respond to items on the scale. The Time 2 scales (Burt, CPT, RSCS) were administered during June and July of the children's second year in school. The Time 3 scales (Burt, Neale, RSCS) were administered 12 months later, that is during June and July of the children's third year in school.

## **Results**

A preliminary examination of the distributions of scores for the variables examined in the study was performed. Data from boxplots revealed that over the three assessment occasions six subjects obtained scores on the RSCS which were classified as outliers. Outliers were defined as scores that deviated more than 1.5 box lengths above the 75th percentile or below the 25th percentile (Norušis/SPSS Inc., 1993). In all cases, outliers in the present study were extreme scores at least 2.5 standard deviation units below the mean. These subjects were deleted from further analyses. All analyses, therefore, were conducted on data for 112 children.

Correlations among the variables across the three assessment times, along with means and standard deviations, are shown in Table 1. The reading factor scores are based on standardised  $z$  values, the PPVT data are based on raw scores, and the RSCS data are based on the mean scores of the 30 items that comprise the scale.

The concurrent correlations between the reading factors and reading self-concept show a steady increase across the three testing occasions ( $r=.11$ ,  $.21$ ,  $.35$  respectively). This finding suggests that a significant relationship between reading and reading self-concept starts to form during the second and third years of schooling.

Oral vocabulary was not significantly related to reading self-concept at either Time 1 or Time 2, but at Time 3 the correlation ( $.19$ ) reached a level of statistical significance ( $p<.05$ ). This developmental pattern likely results from the reciprocal relationship between reading and other skills, in this case, vocabulary and reading self-concept (Stanovich, 1986; Tunmer & Hoover, 1993).

**Table 1.** Means, standard deviations, and zero-order correlations of variables in the path analyses

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
<i>Time 1</i>									
1. Reading	0.08	1.01							
2. RSCS	3.76	0.58	.11	–					
3. OV	57.78	13.42	.52*	.10	–				
<i>Time 2</i>									
4. Reading	0.07	0.98	.72**	.19*	.49**	–			
5. RSCS	3.86	0.64	.15	.39**	.10	.21*	–		
<i>Time 3</i>									
6. Reading	0.03	1.00	.69**	.20*	.50**	.91**	.23*	–	
7. RSCS	3.89	0.61	.25**	.12	.19*	.36**	.49**	.35**	–

\* $p < .05$  \*\* $p < .01$ 

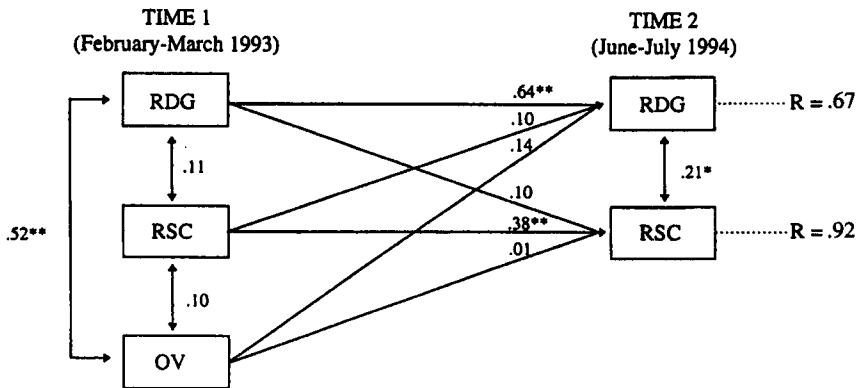
RSCS = Reading Self-Concept Scale. OV = Oral Vocabulary

Evidence for the relative instability of reading self-concept during these first three years of schooling can be seen from the RSCS correlations for Time 1 with Time 2 (.39), and Time 1 with Time 3 (.12). There is some indication that reading self-concept becomes more stable between Years 2 and 3 (Time 2 with Time 3  $r = .49$ ), but it is clear that these self-perceptions are still relatively unstable.

Reading-related behaviours, on the other hand, are more stable across the three assessment times: Time 1 with Time 2,  $r = .72$ ; Time 1 with Time 3,  $r = .69$ ; Time 2 with Time 3  $r = .91$ . The pre-reading skills of letter identification, sound matching, and phoneme deletion are strongly related to the subsequent reading behaviours of context-free word recognition, context-facilitated word recognition, and reading comprehension. Not surprisingly, word level skills are very highly related with each other over time and with comprehension.

Path analysis procedures were used to examine the causal interplay between reading and reading self-concept. Although path analysis has been criticised (e.g., Freedman, 1987), Cook & Campbell (1979) noted that the technique is appropriate when causal links can be proposed and tested on the basis of theoretical and empirical knowledge. The procedure is especially suitable for examining causal links among variables over time.

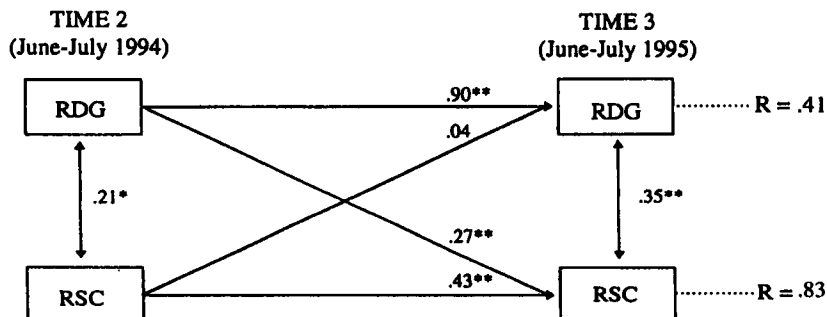
Two path models were tested by regression techniques. In Model 1, Reading, Reading Self-Concept, and Oral Vocabulary at Time 1 predicted Reading and Reading Self-Concept at Time 2. The Time 1 independent variables accounted for 55 per cent of the variability in Reading at Time 2,  $F(3,108) = 44.15$ ,  $p < .001$ , but only for 16 per cent of the variability in Reading Self-Concept at Time 2,  $F(3,108) = 6.96$ ,  $p < .001$ . Figure 1 illustrates the full path analysis for Model 1, and shows the standardised path coefficients ( $B$ ) from the Time 1 independent variables to the Time 2 dependent variables, and the residual path coefficients ( $R$ ). These residuals represent the square root of the unexplained variance in the dependent variables. In addition, the zero-order correlations among the Time 1 variables and among the Time 2 variables are shown adjacent to the double-arrowed paths.

**Figure 1.** Path model for Time 1 Reading (RDG), Reading Self-Concept (RSC) and Oral Vocabulary (OV) on Time 2 RDG and RSC

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

Only two path coefficients in Model 1 were significant: Reading from Time 1 to Time 2 ( $B = .64$ ,  $t = 8.44$ ,  $p < .001$ ), and Reading Self-Concept From Time 1 to Time 2 ( $B = .38$ ,  $t = 4.24$ ,  $p < .001$ ). All other paths were non-significant, suggesting that neither Reading nor Reading Self-Concept at Time 1 directly affected each other at Time 2. Further, Oral Vocabulary made no significantly unique contribution to the prediction of either Reading or Reading Self-Concept at Time 2. In other words, the causal influences of reading and reading self-concept to subsequent reading and reading self-concept were largely independent of verbal ability.

For Model 2, Reading and Reading Self-Concept at Time 2 accounted for 83 per cent of the variability in Reading at Time 3,  $F(2,109) = 271.30$ ,  $p < .001$ , and 31 per cent of the variability in Reading Self-Concept at Time 3,  $F(2,109) = 24.04$ ,  $p < .001$ . Figure 2 illustrates the full model, including the path coefficients, residual coefficients, and zero-order correlations.

**Figure 2.** Path model for Time 2 Reading (RDG), Reading Self-Concept (RSC) on Time 3 RDG and RSC

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



Of particular interest here is the significant path from Time 2 Reading to Time 3 Reading Self-Concept ( $B=.27$ ,  $t=3.31$ ,  $p=.001$ ), and the non-significant path from Time 2 Reading Self-Concept to Time 3 Reading ( $B=.04$ ,  $t=0.98$ ,  $p=.33$ ). Clearly, reading emerged as causally predominant over reading self-concept.

In terms of the autoregressive effects, Reading at Time 2 made a highly significant contribution to Reading at Time 3 ( $B=.90$ ,  $t=22.52$ ,  $p<.001$ ), and Reading Self-Concept at Time 2 made a moderate contribution to Reading Self-Concept at Time 3 ( $B=.43$ ,  $t=5.25$ ,  $p<.001$ ). Thus, during the second and third years in school, the predictive power of past reading performance on future reading performance reached a high level, whereas reading self-concept appears to be relatively unstable.

### Discussion

Stanovich (1986) observed that the exact timing of the point when self-perceptions interact with reading performance 'remains to be worked out' (p. 389). The present study clearly reveals that the interaction starts to occur during the second and third year of schooling. Not surprisingly, there was no significant relationship between pre-reading skills and initial reading self-concept soon after children first commenced school, and neither of these variables made a significant contribution to the prediction of each other midway during the second year of schooling. Considered together with the relatively weak path from initial reading self-concept to reading self-concept in the middle of Year 2, these data suggest that young children's emerging reading self-concepts are undergoing change, most likely in response to formal reading instruction and the associated developing patterns of accomplishment in reading and reading-related tasks (Shell *et al.*, 1995; Stipek, 1993).

The finding of a modest but significant correlation between reading and reading self-concept at the middle of the second year, when the children were 6 1/2 years old, is important. This observation suggests that the emergence of a relationship between a specific facet of achievement-related self-perceptions (reading self-concept) and actual achievement behaviour (reading) occurs sooner than other researchers have observed for more general achievement-related self-perceptions and performance outcomes (e.g., Nicholls, 1978, 1979; Stipek, 1993). Indeed, results from some previous studies have shown that a significant relationship between academic self-perceptions and achievement does not occur until around grade 3 (8 years old) (Nicholls, 1978, 1979). These findings have led to the view that young children are incapable of forming realistic achievement-related self-perceptions mainly because of the pre-school and early elementary school emphasis on intra-individual mastery of developmental skills, social behaviours, and work habits (e.g., Stipek, 1993). Although an emphasis on these elements of the learning environment is most likely characteristic of junior elementary school classrooms, stressing their importance may obscure the role played in reading self-concept development by the task-related cognitive demands of acquiring reading skills.

Despite the finding of an emerging relationship between reading and reading self-concept by the middle of the second year of schooling, the non-significant path from mid-Year 2 reading self-concept to mid-Year 3 reading indicates that these early reading-related self-perceptions have no direct causal influence on reading performance. On the other hand, the modest but statistically significant path from reading at the middle of Year 2 to reading self-concept at the middle of Year 3 suggests that reading self-concept is more a consequence than a cause of reading performance.

The early causal predominance of reading performance over reading self-concept is consistent with the skills development view of academic self-concept development. This view holds that for young children at least, achievement-related self-perceptions form in *response* to emerging patterns of accomplishment or difficulty with learning tasks (Helmke & van Aken, 1995; Skaalvik & Hagtvet, 1990).

The last important element of the results was that verbal ability did not make a significant independent contribution to prediction of subsequent reading performance or reading self-concept. Although our data show that oral vocabulary is correlated with pre-reading skills, it is children's performances on reading and reading-related tasks that are directly associated with the development of reading self-perceptions rather than verbal ability per se. These findings are consistent with many studies which show that a range of achievement-related self-perceptions usually correlate more highly with actual achievement than with measures of ability (e.g., Boersma & Chapman, 1992; Hattie, 1992; Wylie, 1979).

Overall, this study provides evidence that reading-related self-perceptions begin to develop an association with reading skills by the middle of children's second year of schooling, and then further develop, partly at least, in response to experiences with reading during the latter half of the second year and the first half of the third year. The point at which these self-perceptions begin to exert some causal influence on reading achievement, however, remains to be established. The findings from other studies suggest that academic self-concept may start to exert some causal influence on achievement between grades 3 and 5. Kurtz-Costes & Schneider (1994) for example, observed a reciprocal relationship between academic self-concept and achievement over a two-year period for children who were 8 years old when the study commenced. Similarly, Helmke (1992) observed reciprocal interactions between self-concept and achievement during grades 5 and 6. By the time children reach high school age, academic self-concept appears to become causally predominant over achievement (Marsh, 1987, 1990; Shavelson & Bolus, 1982). The causal interplay between academic self-perceptions and achievement, then, may follow a developmental trend that (1) begins with achievement being predominant over self-concept during the first few grades, (2) moves into a middle school phase during which the relationship is predominantly reciprocal, and (3) proceeds to the high school period when self-concept develops causal predominance over achievement.

The finding in the present study that reading self-concept forms a relationship with reading performance during the second and third years of schooling raises important implications for students who experience initial difficulties with reading. Stanovich (1986) noted that beginning readers who experience initial success can engage in reading for information as well as for pleasure, whereas those who experience initial difficulty and failure are usually encumbered by the less rewarding process of developing basic word-level competence. Initial and specific difficulties in reading may result in generalised deficits 'due to the behavioral/cognitive/motivational spinoffs from failure at such crucial tasks as reading' (p. 389). Stanovich refers to these negative spinoffs as 'negative Matthew effects' (p. 360); they are reciprocally compounding interactions of emerging negative self-beliefs and diminishing opportunities to acquire and refine the cognitive skills and strategies that are characteristic of proficient learners. Similarly, Spear-Swerling & Sternberg (1994) concluded that 'once children have entered the "swamp" of negative expectations, lowered motivation, and limited practice, it becomes increasingly difficult for them to get back on the road of proficient reading' (p. 101).

Given the subsequent negative effect on achievement of maladaptive personal-motivational factors (Borkowski *et al.*, 1992; Schunk, 1991; Stanovich, 1986; Spear-Swerling & Sternberg, 1994), and the suggestion that academic self-concept starts to exert some causal influence on achievement from the third year of schooling onwards (Kurtz-Costes & Schneider, 1994), intervention strategies designed to improve the reading performance of children who experience initial and persistent reading difficulties should include attention to the child's developing achievement-related self-system during the first few years of schooling.

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