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Jeff McQuillan

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I. Introduction

Mc Kenna, Kear, and Ellsworth (1995) observe that student attitudes toward reading are important for at least two reasons. First, attitude may influence reading proficiency by affecting the amount of reading students engage in (Greaney & Hegarty, 1987). Students who read more typically read better, a finding that has held true for both first (Anderson, Fielding, & Wilson, 1988) as well as second language (Elley, 1991) readers. Second, attitude is important in understanding students who are proficient readers but choose not to read, sometimes known as *aliteracy*. Despite the professed importance of attitude in determining reading success, there is little known about how attitudes toward reading change over time and across dimensions for students in middle and secondary school. Large-sample surveys have previously focused on younger students (grades 1-6) (e.g. Mc Kenna, Kear, & Ellsworth, 1995; McKenna, Stratton, Grindler, & Jenkins, 1995) or have not had the benefit of a multi-dimension instrument to measure different types of attitudes displayed by students (e.g the National Assessment of Educational Progress (NAEP)). This study examines data on reading attitudes and beliefs among a large sample of urban middle and secondary age students, analyzing differences by grade level, gender, and self-reported reading achievement.

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II. Background

a) Theoretical Approaches to Reading Attitudes

The development of *reading attitudes* has received considerable attention at the theoretical level. One of the most comprehensive models is that of Mathewson (1994), whose model of attitude formation consists of three central elements: feelings about reading, readiness to engage in the act of reading, and beliefs about reading. This tripartite construct of attitude combines three approaches commonly taken toward the definition of attitude in the psychological literature--affective, conative, and cognitive--and has it roots in a longer philosophical tradition. According to Mathewson, reading attitudes are part of a causal system in which they affect and are affected by a number of variables. Attitude, for example, is influenced by two other factors. The first is what Mathewson calls "cornerstone concepts," consisting of personal values, goals, and self-concepts. The second factor is labeled "persuasive communications," and consists of both "central route" persuasive messages, such as the teacher telling students that reading will lead to demonstrated benefits, and "peripheral route" persuasive messages, such as an attractive book cover. Central route persuasive messages are thought to be more permanent, since they involve some change in the students' cognitive belief system. In any case, students' reading attitude are a function of both the cornerstone concept and the persuasive messages they encounter, both of which are to some extent under the control of larger school and home environments.

Reading attitude indirectly affects reading behavior by way of one's *intention to read*. The path between attitude and behavior is not direct, in Mathewson's view, because attitudes are not always able to be operationalized into action. Intention to read is required, which itself may be vague and weak, and therefore unlikely to lead to action, or firm and strong, resulting in the commencement or continuation of the reading act. You may, for example, be sitting in a

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waiting room with favorable attitudes toward reading. But you must form, according to Mathewson, an intention to read that particular issue of the news weekly laying on the table in order for actual reading to result.

Influenced by work by Fishbein, Ajzen, and Liska (Ajzen & Fishbein, 1980; Liska, 1984), McKenna (1994) proposed an alternative model of reading attitude acquisition to compensate for the weaknesses he perceived in Mathewson's formulation. McKenna argued that a more complete model of attitude formation must show how evaluative beliefs (the cognitive leg of Mathewson's tripartite definition of attitude) affect attitude as a *separate* construct. In addition, McKenna noted that the Mathewson model does not sufficiently address how attitudes develop over time, nor does it provide sufficient attention to the impact of subjective norms in the decision to read.

In McKenna's model, beliefs about reading are distinct and causally antecedent to reading attitude. Attitude is re-defined without a cognitive component, and instead is considered primarily affective in nature. The model posits two types of beliefs that influence attitude: (a) a reader's beliefs about the outcomes of reading in light of his/her perceived desirability of those outcomes; and (b) beliefs about the expectations of others in view of one's own desires to conform to those expectations. (Beliefs about one's ability to perform an action--what Bandura (1977) calls "self-efficacy"--are not an explicit part of Mc Kenna's system (see below)). Another difference in McKenna's model involves the relationship among attitude, intention to read, and reading behavior. Unlike Mathewson's model, the McKenna model claims that the ultimate decision to read is affected directly by attitude, unmediated by intention. Intention to read is still present in McKenna's model, but now appears as a separate, direct influence on reading behavior, in addition to subjective norms. McKenna hypothesizes that these three causal influences on reading behavior--attitude, intention to read, and subjective norms--do not influence each other directly.

How do these reading attitudes develop over time? McKenna's model predicts that a person's belief about the outcomes of reading will be influenced by the two antecedent beliefs noted above (normative beliefs and beliefs about the outcomes of reading), as well as by a third "feedback" loop from the results of specific reading experiences. According to this view, beliefs related to the outcomes of reading (pleasurable, dull, exciting) are formed in reference to competing activities and their subsequent outcomes. Thus, as a child grows older, the possibility of engaging in other, more desirable pastimes may have a negative effect on beliefs about reading, and subsequently on attitude. Similarly, the social norms surrounding reading behavior, influenced by both cultural and gender-related practices, may influence one's attitudes toward reading. Finally, negative experiences while reading will also cause more negative attitudes to develop toward reading, such that poor readers will develop more negative attitudes as a result of their frustration or boredom.

All models of attitude formation are predicated upon some definition of the object of the attitudes being examined. The object of reading attitudes is often thought to consist of a hierarchy ranging from general to specific reading interests. In a factor analysis of a reading attitude survey, McKenna and Kear (1990) found that there appear to be two dimensions to reading attitudes among elementary students, one recreational and one academic. McKenna states that it is likely there is also a global attitude toward reading which is correlated with these specific types of reading, since the decline of global attitudes toward reading over time is similar to the decline in the number of reading interests (McKenna, 1986).

b) Self-Efficacy, Attitudes, and Reading Motivation

Models of reading attitude formation have not typically included any explicit mention of *motivation* as a separate construct in explaining the decision for students to engage in reading. For Mathewson, "motivation" is defined as a function of intention; to say that a students is "motivated to read" means that he or she "has developed firm intentions to read for a variety of reasons" (Mathewson, 1994, p. 1139). Mc Kenna believes that attitude affects reading decisions directly, without any further mediating variables.

Other theorists, such as Wigfield and Guthrie (1997), have analyzed the cognitive and affective variables involved in reading through traditional and emerging constructs related to motivation (e.g. Csikszentmihalyi, 1990; Deci & Ryan, 1992; Dweck & Leggett, 1988). One variable that forms part of this broader view of motivation is *self-efficacy*. Self-efficacy has been defined as "people's judgments of their capacities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). Central to this capacity for organization and execution is one's belief in one's ability to perform the task at hand (Bandura, 1977). Those with a strong sense of self-efficacy will have positive expectations about their success in performing a task, and therefore will be more likely to choose to engage in it, to persist when difficulties arise, and to be more successful in coping strategies necessary for task completion (Bandura, 1977). Research on self-efficacy has found that it is related to a diverse range of behaviors both in and out of school, affecting one's choice of activities and persistence in task performance (Bandura, 1986; Schunk, 1991).

With respect to reading, Wigfield, Guthrie, and other researchers have posited that self-efficacy and attitude are two aspects of a larger, multifaceted

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construct of *reading motivation*, which in turn has a direct influence on one's decision to read (see also Wigfield, 1997; 2000). In this view, Mc Kenna's set of processes for attitude formation becomes a subset of a more comprehensive model in which both affective components (such as attitude) and cognitive components (such beliefs about outcomes, social expectations, and competency) are seen as contributing to motivation and, ultimately, to reading behaviors. Supporting this broader view is research showing that both attitude and self-efficacy have been found to correlate significantly with students' reading behavior (Mc Kenna, Kear, & Ellsworth, 1995; Wigfield & Guthrie, 1997). As such, it seems reasonable to examine both concepts together when looking at the larger process of what Guthrie and Anderson (1999) call "reading engagement," a complex set of relationships involving motivation, strategies, conceptual understanding, and social interactions.

c) Previous Studies of Reading Attitudes and Behavior

Previous studies of elementary-age children have confirmed McKenna's key predictions regarding reading attitudes. Attitudes toward reading do tend to become more negative over time, from grade 1 through grade 6. McKenna, Kear, and Ellsworth's (1995) study of a national sample of elementary school children from a variety of socio-economic and ethnic/racial backgrounds found that the overall developmental trend in reading attitudes was steadily negative, beginning in grade 2. While the size of the drop from year to year was not large, the cumulative effect was substantial. McKenna, Stratton, Grindler, and Jenkins (1995) noted similarly large drops across grade levels for a sample (N = 1,146) of elementary school children, regardless of the type of instruction they received ("whole language" or "basal"). Kush and Watkin's (1996) longitudinal survey of 190 children in grades 1 through 4 over a three year interval showed an overall decline on the ERAS as well, confirming cross-sectional evidence found in McKenna's studies. Similar drops were found in studies of elementary-age students by Anderson, Tollefson, and Gilbert (1985), Barnett and Irwin (1994), Parker and Paradis (1986), and Ross and Fletcher (1989).

Studies among elementary and middle school students also seem to confirm that poor readers have more negative attitudes toward reading, and their attitude toward reading becomes more negative more quickly as they grow older. Greaney and Hegarty's (1987) study of Irish 5th graders found that reading attitude was correlated significantly with achievement, and similar correlations were noted in Askov and Fischbach's (1973) study of first and third graders (see also Martin, 1984; Swanson, 1982; and Wallbrown, Vance, & Prichard, 1979). McKenna, Kear, and Ellsworth (1995) found further that the gap in recreational reading attitudes between high- and low-achieving students widened over time, although not in academic reading attitudes.

Girls tend to have more positive attitudes toward reading than boys (Stevenson & Newman, 1986), although this situation is confounded by the fact that girls tend to be slightly better readers than boys as well. Nevertheless, even after removing the effects of achievement, Askov and Fischbach (1973) found that girls had significantly more positively attitudes toward reading than boys in the early grades. Indeed, almost every study that has measured attitudes and gender has found that girls are more favorably disposed to reading than boys are (Anderson, Tollefson, & Gilbert, 1985; Barnet & Irwin, 1994; Greaney & Hegarty, 1987; Kush & Watkins, 1996; McKenna et al., 1995; Ross & Fletcher, 1989; Shapiro, 1980; Swanson, 1982; Wallbrown & Levine, 1981).

While the trends predicted by McKenna hold true for students in the elementary grades, it is still unclear whether they are true at the higher grade levels among a large sample of students. Small scale surveys of older students have provided mixed support for some of McKenna's predictions. Anderson, Tollefson, and Gilbert's (1985) survey of gifted students revealed that while there was a drop in positive attitudes toward leisure reading after grade 4 on some items of their survey, there was not on others. Ley and Trentham's (1987) survey of nearly 400 gifted students found no drops from grades seven to eight, but Ley, Schaer, and Dismukes' (1994) study of students from a broader range of abilities did report a decline in positive attitudes between grades six and eight, consistent with McKenna's model. Mitchell and Ley (1996) found a small but steady *increase* in positive attitudes toward reading for students in grades nine through twelve, with grade 12 students having significantly higher scores than their peers in grade 9. It is not known, however, whether this is due to less-motivated students dropping out in the upper grades, leaving a more select sample by grade twelve.

As in the lower grades, girls in secondary schools have been found to have more positive attitudes toward reading than boys did. Longitudinal surveys such as Stevenson and Newman (1986) found that girls continue to express greater enjoyment of reading through high school, a finding replicated in other studies (Anderson, Tollefson, & Gilbert, 1985; Mitchell & Ley, 1996; Ley & Trentham, 1987; Kennedy & Halinski, 1975). Smith (1990) found that this gender difference appears to continue through adulthood. Among his sample of 84 adults, women had more positive attitudes toward reading than men did.

Martin (1984) provides confirmatory evidence of McKenna's model for junior high students when it comes to attitude and achievement interactions. His study of 124 sixth, seventh, and eighth grade students found that attitude was strongly related to achievement:

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high-achieving students were more likely to have positive attitudes toward reading than their low-achieving peers. No data were reported on changes across grade levels, however. Mitchell and Ley (1996) found that higher achieving students had more positive attitudes, again consistent with other research, although the possible interaction between achievement and grade level was not analyzed. Similar results on the link between achievement and attitudes are reported in studies of high school students by Kennedy and Halinsky (1975) and Shannon (1980).

d) Previous Studies on Reading Self-Efficacy and Behavior

Many similarities with the findings on reading attitudes can be found in the research on self-efficacy and reading, although there are some important differences as well. Wigfield and Guthrie (1997) surveyed 105 fourth- and fifth-grade children and found that self-efficacy declined as children grew older. When self-efficacy was combined with measures of "curiosity" and "involvement" to form a scale for "intrinsic motivation," Wigfield and Guthrie found that those who scored in the upper third on the intrinsic motivation scale read more and read with greater breadth than those in the bottom two-thirds. Indeed, those who scored high in intrinsic motivation read nearly three times as much as those who scored in the lowest third. These results can be seen as complementary to the findings on reading behavior for those with more positive attitudes toward reading--more self-efficacy is related to greater amounts of reading. No measures of reading achievement or self-reported achievement were administered in the Wigfield and Guthrie's study, so we cannot say whether higher achievement levels were correlated with higher levels of self-efficacy. Other studies have made such a link, however (see Schunk & Zimmerman, 1997, for a review), including Pintrich and De Groot's (1990) examination of seventh graders' self-efficacy in English class and academic performance, where positive correlations were noted between the two variables. In addition, there is considerable research to suggest that avid readers have higher levels of reading proficiency (Author, 1998; Krashen, 1993), so it appears likely that high-achieving students also have higher levels of self-efficacy than low-achieving students, as has been found in other academic areas and with a broader construct sometimes thought to encompass self-efficacy, "self-concept" (Bandura, 1977; Wigfield & Karpathian, 1991; Schunk, 1991). Also consistent with previous findings on reading attitude and beliefs, Wigfield and Guthrie found that girls had a higher sense of self-efficacy than did boys.

Wentzel (1996) examined the link between self-efficacy and reading, this time in a longitudinal design which followed over 200 middle school children from grade six through grade eight. Wentzel surveyed students at the end of their sixth and eighth grade years, and had available language arts/English class grades for each student. Self-efficacy was significantly correlated with English grades in grades six and eight, confirming that reading achievement is linked to beliefs about reading competence. Gender differences were also noted; girls reported higher levels of self-efficacy than boys, as in Wigfield and Guthrie (1997). Unfortunately, Wentzel does not report longitudinal comparisons of self-efficacy scores between grades six and eight, but such evidence is provided by a large-sample study by Marsh, Craven, and Debus (1999), who found that children's assessment of their competency in reading declined steadily from elementary grades to junior high school, as well as by Wigfield et al. (1991), who noted declines in students' self-concept regarding English from the fall of grade six to the spring of grade seven.

Despite some similarities between the findings on reading attitudes and reading self-efficacy, large-scale, cross-sectional studies of adolescents on the more multi-dimensional construct of self-concept have produced results not entirely consistent with those that might be predicted by models of reading attitude formation. In terms of developmental trends, academic self-concept beliefs have been found to decline in the elementary years, but not necessarily continue to decline as children grow older (Eccles, Midgley, & Adler, 1984; Eccles et al., 1989; Stipek & MacIver, 1989). Some have posited that self-concept takes on a "U" shape in the adolescent years: Student beliefs about their competence in academic subjects may drop in the elementary and junior high grades, only to rebound in the upper grades of high school or in early adulthood (Marsh, 1989). Wigfield and Karpathian (1991) review several studies showing that middle school-age adolescents, for perhaps a variety of reasons related to their physical and emotional transition to adulthood, have lower self-concepts than those students who are older and younger. Other researchers have found that these declines tend to be subject specific. Eccles, Midgley, and Adler (1984), for example, found that while perceived competence in math class decline from grades five through twelve, no such decline was noted for English class. Wigfield and Karpathian also note that there are few documented interactions between grade level and gender in the literature on self-concept, again unlike some of the findings on reading attitudes or what might be predicted by reading attitude formation models (Mc Kenna, Kear, & Ellsworth, 1995). The reversal or stemming of the decline in self-concept among older children and adolescents leads to the speculation that, to the extent that self-efficacy and self-concept beliefs have an influence on attitude formation, reading attitudes may not continue to decline through the high school years, and may even become more positive in the upper grades.

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Thus, while McKenna's model of attitude formation for reading receives some support from previous small-scale studies in terms of gender and achievement at the middle and high school level, there is no large-scale study showing that attitudes toward reading become more negative over time, and little data on the interactions among attitude, time, and achievement in the upper grades. Similarly, more evidence on the role of self-efficacy in reading motivation, how it changes over time, and how it is influenced by achievement and gender differences is needed to confirm previous studies on the nature of self-concept among adolescent readers. The current study seeks to address these gaps in the literature through the use of a large-scale survey among junior and senior high school students in a diverse, urban school district.

III. Purpose of the Study

The current study seeks to examine how reading attitudes and beliefs change among a large sample of urban middle and high school students. Changes across grade levels, gender, and self-reported English and reading academic performance are analyzed for attitudes toward academic and recreational reading, as well as for beliefs about one's competency as a reader. The specific research questions addressed are:

1. How do attitudes toward and self-efficacy beliefs about reading change over time among junior and senior high school students?
2. How does the development of attitudes toward and self-efficacy beliefs about reading interact with gender and self-reported reading achievement among junior and senior high school students?

IV. Method

a) Sample

Students for the study were drawn from a large, urban school district located in southern California, grades 7 through 12. The cross-sectional data were collected by the district as part of a larger examination of reading curriculum and achievement, and were provided to the researcher *post-hoc* for additional analysis. The demographics of the district closely matched those of other major urban centers in the Southwest United States in terms of ethnicity and first language background. The ethnic composition of the district is heavily Latino/Hispanic (over 70%), with large proportion of students coming from families where a language other than English is spoken. This may, of course, influence the results of the study and limit its generalizability to other populations. Of the more than 17,000 students who were administered the questionnaire, 14,315 provided surveys that contained complete data on gender, grade, and all 20 items of the instrument. Table 1 shows the breakdown by gender and grade level for the final sample. There were slightly more girls than boys in the sample, with fewer students at grades 11 and 12 than in the lower grades.

Table 1 : Descriptive Statistics for Sample (N = 14, 315)

	Boys		Girls		Total	
Grade	n	%	n	%	n	%
7	1,255	50.4	1,237	49.6	2,492	17.4
8	1,284	48.7	1,353	51.3	2,637	18.4
9	1,273	48.9	1,328	51.1	2,601	18.2
10	1,205	47.5	1,331	52.5	2,536	17.7
11	991	46.5	1,128	53.5	2,129	14.9
12	867	45.2	1,053	54.8	1,920	13.4
Total	6,875	48.0	7,440	52.0	14,315	100

b) Instrument

The BJP Middle/Secondary Reading Attitude Survey (Baldwin, Johnson, & Peer, 1980) used in this study is a 20 item, 4-node instrument intended for junior and senior high school students. While the instrument is intended to measure reading attitude, current theories on reading attitude formation as well as previous research (McKenna, Kear, & Ellsworth, 1995) suggest that attitudes are multi-dimensional and distinct from beliefs about reading. On the BJP Survey, some items appear to measure some beliefs or self-efficacy, some general attitudes toward reading, and some self-reported grades. No previous research was found on the instrument with a large sample of students (Scott Baldwin, personal communication, December 15, 1999) to test hypotheses about appropriate scale construction as recommended by Gorsuch (1983). For this reason, an exploratory rather than a confirmatory factor analysis was used to identify possible latent constructs measured by the survey (see Gorsuch, 1983; McDonald, 1985; Pedhazer & Schmelkin, 1991; also, Gene Glass, personal communication, January 25, 2000).[1] Negatively worded items (Items 1, 2, 5, 6, 9, 10, 13, 14, 18, and 19, see Table 2) were recoded to reflect a total score which indicated a positive attitude toward reading and favorable beliefs about reading achievement.

c) Procedure

The BJP Survey was administered to students at all 17 schools in the junior (grades seven and eight) and senior (grades nine through twelve) high school

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district by their individual classroom teachers in October of 1998. English language learners received additional assistance and clarification from their teachers for items on the survey that presented difficulty. Students filled out the surveys anonymously, and indicated only their grade level and gender. No individual classroom or teacher information was collected, although the surveys were coded by school site. This anonymity was thought to increase teacher participation in the project, which was nearly unanimous, as well as decrease the likelihood of socially desirable responses by the students.

V. Analysis and Results

a) Factor Analysis

The items on the survey were tested to see if any were badly skewed in their distribution; no significant problems were found. Since it was unlikely that the variables were error-free or the variance of all variables could be predicted from the factors, a type of common factor analysis (image analysis) was used for extracting the factors rather than a component method (Gorsuch, 1983). Common factor methods such as image extraction also have the advantage of producing more conservative loadings on the resulting factors than does component analysis. Since it also appeared likely from previous research that factors related to attitudes and beliefs would be correlated with each other, oblique (direct oblimin) transformation with Kaiser Normalization was chosen over an orthogonal rotation (SPSS, 1997). Alternative common factor extractions and oblique transformations were also performed, producing results consistent with those shown here. Results of the factor analysis are shown in Table 2.

Table 2 : Summary of Factor Loadings for Oblimin Solution for BJP Middle/Secondary School Reading Attitude Survey

	Factor loading			
Item	1	2	3	4
12. I like to take library books home.	**.70**	-.02	-.21	-.01
7. I enjoy going to the library for books.	**.70**	-.01	-.22	-.02
3. Reading is one of my hobbies.	**.67**	.08	-.08	.01
5. Reading is almost always boring.*	**.62**	.34	.13	.04
2. Reading is a waste of time.*	**.61**	-.01	.15	-.04
11. I would like to belong to a book club.	**.60**	-.06	-.20	-.01
20. I like to read before I go to bed.	.60	.05	-.08	.03
18. Reading gets boring after about ten minutes.*	**.58**	.39	.13	.05
17. I like to have time to read in class.	**.57**	.01	-.02	.07
1. Library books are dull.*	**.53**	-.02	.03	.01
13. Teachers want me to read too much.*	**.43**	.01	.14	.04
9. I don't have enough time to read books.*	**.42**	.01	.06	-.08
15. Books can help us to understand other people.	.37	-.01	.03	.05
14. You can't learn much from reading.*	.22	.14	.17	.04
10. I believe that I am a poor reader.*	.02	**.56**	.05	.02
4. I believe that I am a better reader than most other students in my grade.	.02	**.51**	-.08	.08
6. Sometimes I think kids younger than I am read better than I do.*	-.07	**.49**	.07	.02
19. Sometimes I get bad grades in reading and English.*	-.01	.01	.02	**.58**
16. I almost always get A's and B's in reading and English.	.05	.04	-.06	**.57**
Factor Correlations				
Factor 1	---			
Factor 2	.35	---		
Factor 3	.01	.17	---	
Factor4	.37	.73	.09	---

Note. Boldface indicates highest factor loadings (greater than .40). * = Items which were re-coded to reflect affirmative/positive response. Factor 1 = General Reading Attitude; Factor 2 = Reading Self-Efficacy; Factor 4 = Self-Reported Language Arts Grades.

The four factor solution that resulted (using an Eigen value cut-off of 1) produced three factors with loadings above .40 on most items. The items for Factor 1 appear to reflect wide range of general reading attitudes or behaviors indicative of attitude, including both school and recreational aspects. Items loading on Factor 2 are belief statements that reflect reading self-efficacy (e.g. "I believe I am a poor reader"). Factor 4 had only two items with high loadings, both relating to self-reports of reading achievement in school ("Sometimes I get bad grades in reading and English" and "I almost always get A's

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and B's in reading and English"). No items had a high loading for Factor 3, which, following Gorsuch's (1983) recommendations, was not used in subsequent analysis. Factor scores for the three factors with loadings above .40 (Factors 1, 2, and 4) were computed and used in all further analysis. The three factors were labeled according to the items contained in them that had salient loadings--"General Reading Attitude," "Reading Self-Efficacy," and "Self-Reported English Grades."

Correlational analysis (Table 2) found that General Reading Attitudes correlated positively and moderately with Reading Self-Efficacy and with Self-Reported English Grades, as might be expected. Reading Self-Efficacy was strongly correlated to Self-Reported English Grades, which is again an expected finding. In order to determine how reading attitudes and reading self-efficacy differed among self-reported achievement levels, a median split was performed on the Self-Reported English Grades factor, producing two equal groups, "high achievers" and "low achievers." These groups were used in subsequent ANOVA analysis.

b) General Developmental Trends

Overall developmental trends (by grade) were tested with two separate one-way ANOVAs on the factors scores of General Reading Attitudes and Reading Self-Efficacy by grade. Means for these scores appear in Tables 3 and 4, and are displayed in Figures 1 and 2. The *F*-tests for both scales were significant (General Reading Attitudes: $F_{(5,\ 14,315)} = 62.73$, $p < .001$; Reading Self-Efficacy: $F_{(5,\ 14,315)} = 6.73$, $p < .001$). Post-hoc Scheffe tests were computed to determine if changes across grade levels were statistically significant. General Reading Attitude dropped significantly from grade 7 to 8 ($p < .05$), but experienced no other significant successive drops across the other four grade levels. Scores for the Reading Self-Efficacy factor were stable from grades 7 to 10, then rose significantly in grade 11 ($p < .05$). No other significant changes were noted.

Table 3 : Means and Standard Deviations of General Reading Attitudes Factor Scores by Grade Level and Gender

Grade	Gender	Self-Reported English Grades		All Achievement Groups
		High	Low	
7	Boy	.471	-.227	.087
		(.90)	(.84)	(.94)
	Girl	.758	.007	.452
		(.79)	(.77)	(.85)
	Total	.629	-.096	.268
		(.85)	(.83)	(.91)
8	Boy	.057	-.548	-.293
		(.91)	(.81)	(.90)
	Girl	.391	-.277	.081
		(.82)	(.77)	(.87)
	Total	.248	.-.424	-.101
		(.87)	(.80)	(.90)
9	Boy	.047	-.519	-.293
		(.86)	(.77)	(.87)
	Girl	.435	-.252	.116
		(.81)	(.75)	(.86)
	Total	.274	-.399	-.084
		(.85)	(.77)	(.88)
10	Boy	.072	-.582	-.303
		(.86)	(.80)	(.87)
	Girl	.441	-.259	.122
		(.82)	(.78)	(.87)
	Total	.288	-.431	-.079
		(.85)	(.81)	(.91)
11	Boy	.029	-.494	-.252
		(.82)	(.79)	(.85)
	Girl	.473	-.242	.183
		(.77)	(.71)	(.83)
	Total	.294	-.377	-.019
		(.82)	(.76)	(.86)

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Grade	Gender	Self-Reported English Grades		All Achievement Groups
		High	Low	
12	Boy	.092	-.459	-.206
		(.89)	(.71)	(.85)
	Girl	.555	-.156	.280
		(.74)	(.74)	(.82)
	Total	.378	-.318	.061
		(.83)	(.74)	(.86)
All Grades	Boy	.136	-.473	-.209
		(.89)	(.80)	(.89)
	Girl	.506	-.191	.004
		(.80)	(.77)	(.86)
	Total	.352	-.344	.003
		(.86)	(.79)	(.89)

Table 4 : Means and Standard Deviations of Reading Self-Efficacy Factor Scores by Grade Level and Gender

Grade	Gender	Self-Reported English Grades		All Achievement Groups
		High	Low	
7	Boy	.552	-.604	-.085
		(.47)	(.60)	(.79)
	Girl	.599	-.603	.064
		(.49)	(.55)	(.79)
	Total	.578	-.604	-.011
		(.48)	(.58)	(.79)
8	Boy	.536	-.547	-.090
		(.47)	(.62)	(.78)
	Girl	.529	-.553	.027
		(.47)	(.54)	(.74)
9	Boy	.553	-.524	-.094
		(.48)	(.55)	(.75)
	Girl	.548	-.492	.066
		(.48)	(.54)	(.73)
	Total	.551	-.510	-.013
		(.48)	(.55)	(.74)
10	Boy	.584	-.598	-.094
		(.49)	(.63)	(.82)
	Girl	.563	-.563	.051
		(.48)	(.56)	(.77)
	Total	.572	-.582	-.018
		(.49)	(.60)	(.79)
11	Boy	.589	-.583	-.042
		(.49)	(.61)	(.81)
	Girl	.618	-.508	.161
		(.48)	(.52)	(.75)
	Total	.606	-.548	.067
		(.48)	(.57)	(.78)
12	Boy	.567	-.570	-.047
		(.51)	(.59)	(.79)
	Girl	.587	-.542	.150
		(.50)	(.49)	(.74)
	Total	.579	-.558	.061
		(.50)	(.55)	(.77)

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All Grades	Boy	.562	-.569	-.078
		(.49)	(.60)	(.79)
	Girl	.573	-.545	.082
		(.49)	(.54)	(.75)
	Total	.569	-.558	.005
		(.49)	(.57)	(.78)

Figure 1 : Overall Developmental Trends for General Reading Attitude by Grade Level

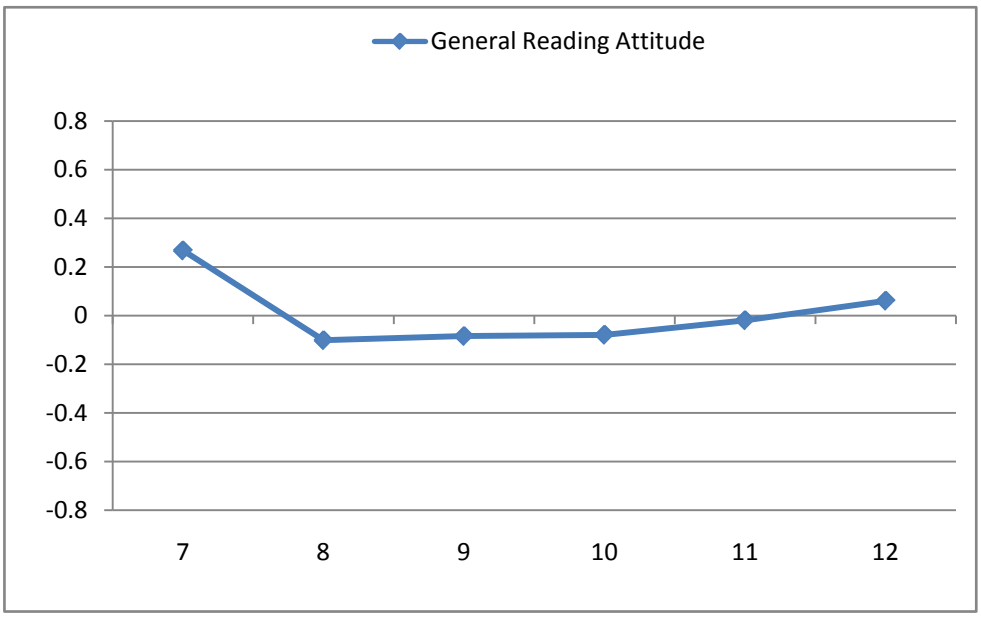
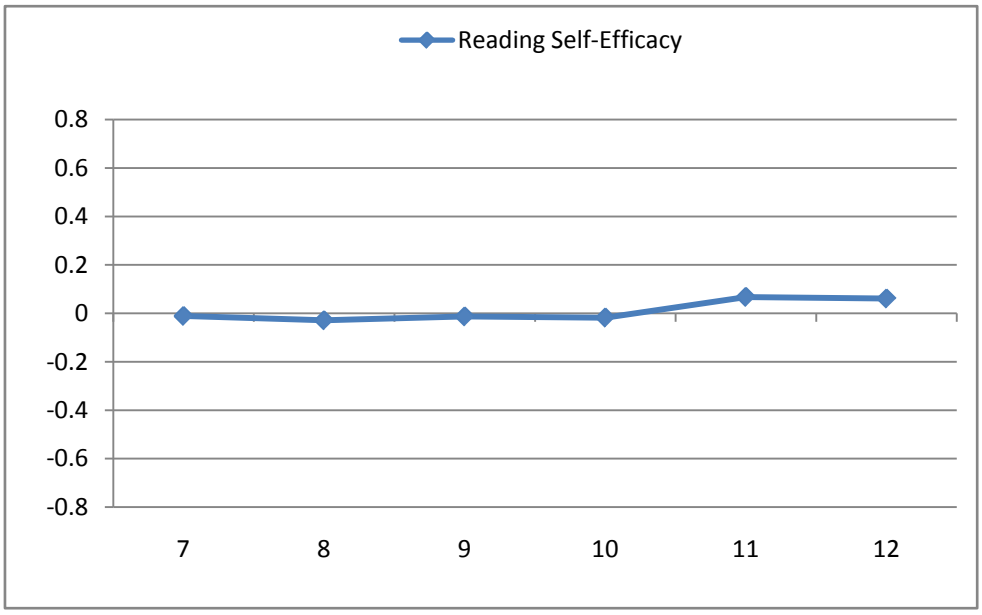


Figure 2 : Overall Developmental Trends for Reading Self-Efficacy by Grade Level



The magnitude of the drop in General Reading Attitudes between grade seven and eight can be expressed in terms of the percentile ranking of eighth grade students on the distribution of seventh grade scores. The average eighth grade student would rank at the 34th percentile of the seventh grade distribution, indicating a considerable decline. The rise in Reading Self-Efficacy scores between grades ten and eleven was much smaller. Eleventh graders

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would rank at the 54th percentile on the tenth grade distribution of self-efficacy scores.

The results in the overall developmental trends indicate some divergence: reading attitude scores declined early but then stabilized, while reading self-efficacy scores were stable and then increased in the upper grades. Trend analysis indicated significant linear components for both General Reading Attitude, $F_{(1, 14,315)} = 33.87$, and Reading Self-Efficacy, $F_{(1, 14,315)} = 20.75$. Significant quadratic components were also found for General Reading Attitude, $F_{(1, 14,315)} = 213.82$, and for Reading Self-Efficacy, $F_{(1, 14,315)} = 6.05$. These trends are confirmed by the post-hoc Scheffe tests, which, as noted above, found that there were no declines or increases in factor scores after a significant drop from grades 7 to 8. Similarly, Reading Self-Efficacy experienced only 1 significant increase, as noted above, from grades 10 to 11, but was otherwise stable.

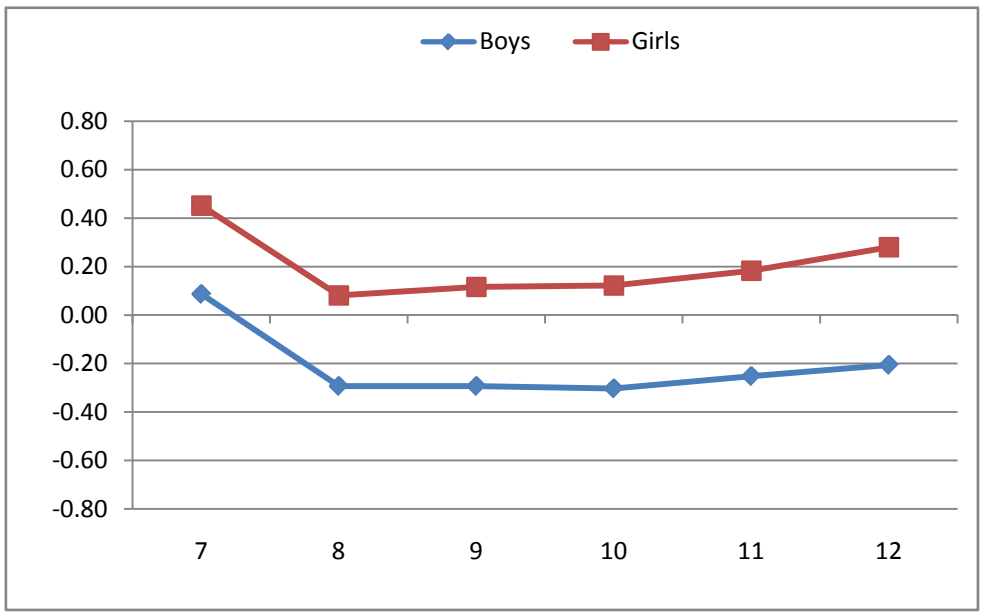
VI. Gender

a) *General Reading Attitude*

Significant main effects for General Reading Attitude were noted for both gender, $F_{(1, 14,315)} = 812.39$, $p < .001$ and grade level, $F_{(5, 14,315)} = 68.42$, $p < .001$. Interaction terms of grade level and gender were not significant, however ($F_{(5, 14,315)} = 1.42$, n.s.). Girls' scores on the General Reading Attitude factor were significantly higher than boys' scores at all grade levels, but, unlike previous studies, the gap did not widen with age (see Figure 3). For girls, both the linear ($F_{(1, 7,440)} = 8.36$, $p < .01$) and quadratic ($F_{(1, 7,440)} = 120.91$, $p < .001$) components were statistically significant. The drop in scores from grade seven to grade eight was statistically significant, followed by no statistically significant changes through grade twelve. Similarly, trend analysis for the boys' scores indicated that both linear ($F_{(1, 6,875)} = 47.06$, $p < .001$) and quadratic ($F_{(1, 6,875)} = 100.23$, $p < .001$) components were statistically significant. Identical to the pattern found among girls, only the decline from grade seven to eight was statistically significant, with no other significant changes through grade twelve. For both boys and girls, General Reading Attitude scores at grade seven were higher than all other grades. Taking the mean scores across grade levels, the average boy would rank at the 33rd percentile of the girls' distribution of scores on the General Reading Attitude measure.

The established relationship in the research literature between gender and reading achievement favoring girls suggests that girls' more positive attitudes toward reading may be an artifact of their superior reading proficiency. To test this hypothesis, the interaction between gender and Self-Reported English Grades was tested by means of a one-way ANOVA. Unlike the case of previous research on elementary school-age students (McKenna, Kear, Ellsworth, 1995), the interaction was significant for General Reading Attitude, $F_{(1, 14,315)} = 10.01$, $p < .001$, indicating that the more favorable attitudes held by girls toward reading in this sample were due to in part to their higher self-reported English grades. A regression analysis of both gender and Self-Reported English Grades on General Reading Attitude factor scores indicated that indeed gender accounted for a significant but relatively small amount of the variance (F Change = 463.24, $\Delta R^2 = .02$) in attitude scores after controlling for Self-Reported English Grades (F Change = 5242.90, $\Delta R^2 = .27$).

Figure 3 : General Reading Attitudes by Grade Level and Gender



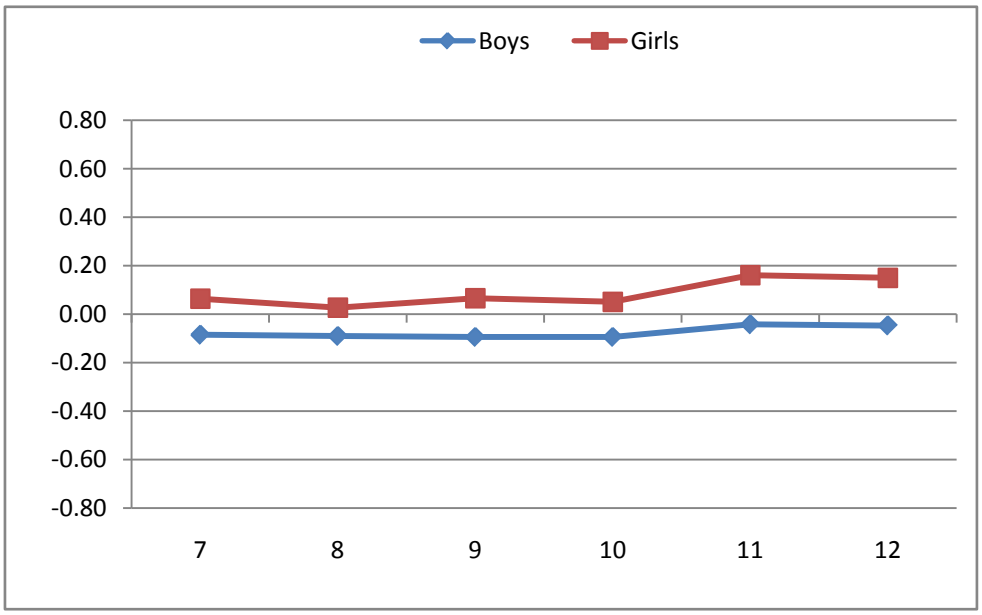
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b) Reading Self-Efficacy

Significant main effects for both gender, $F_{(1, 14,315)} = 155.06$, $p < .001$, and grade level, $F_{(5, 14,315)} = 5.79$, $p < .001$, were also found for Reading Self-Efficacy. The interaction term of grade level and gender was not significant, $F_{(5, 14,315)} = 1.02$, n.s. Girls had significantly higher levels of reading self-efficacy overall, and at all grade levels, but the gap did not widen over time (see Figure 4). Both the linear ($F_{(1, 7,440)} = 19.18$, $p < .001$) and quadratic ($F_{(1, 7,440)} = 5.02$, $p < .05$) components were statistically significant for girls. Post-hoc Scheffe tests indicated that self-efficacy scores among girls increased significantly between grade ten and eleven, and were stable before and after that point. For boys, however, neither the linear nor the quadratic trend analysis indicated any significant changes. There were no successive changes between grade levels at any point. In terms of percentile ranks, the differences between boys and girls, while statistically significant, was small: The average boy would rank at the 51st percentile of the girls' distribution. The rise in girls' scores from grade ten to eleven was similarly slight. Girls in grade eleven would rank at the 54th percentile of the girls' tenth grade distribution.

As in the case of reading attitudes, the interaction between gender and self-reported grades on self-efficacy was tested to see whether girls' more positive beliefs about their reading competence were due to superior academic performance in reading. The results of a one-way ANOVA indicated that there was no significant interaction, $F_{(1, 14,315)} = .64$, n.s. Unlike the case of reading attitudes, then, the higher levels of reading self-efficacy demonstrated by girls was not an artifact of their self-reported academic performance.

Figure 4 : Reading Self-Efficacy by Grade Level and Gender



VII. Self-Reported Achievement

a) General Reading Attitude

The effect of self-reported reading achievement as measured by English grades on general reading attitude was analyzed for both grade level and gender. Descriptive results are reported in Table 3. A significant main effect was found for Self-Reported English Grades ($F_{(1, 14,315)} = 2244.63$, $p < .001$), but not for the interaction of English grades with grade level ($F_{(5, 14,315)} = .84$, n.s.). While students who reported higher grades in English had more favorable attitudes toward reading than students of lower English grades, this difference did not change across grade levels, as is indicated in Figure 5. Self-reported high performing students had significantly higher scores on the General Reading Attitude scale at all grade levels than students with low Self-Reported English Grades. The size of this difference, as expressed in percentile ranks, was substantial, especially compared to that of gender noted above. Those with high self-reported English grades would rank at the 81st percentile on the distribution of students with low self-reported grades. As noted above, there was also a significant interaction between achievement and gender, indicating that the advantage girls have over boys in General Reading Attitude is due in part to their higher self-reported academic performance in English class. Figure 6 shows the trends for girls and boys for both high and low self-reported grades in English and reading. The

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three-way interaction of achievement, gender, and grade level was not significant ($F_{(5\ 14,315)} = .758$, n.s.).

Trend analysis on high self-reported achievement scores by grade level indicated significant linear ($F_{(1,\ 7,157)} = 32.49$, $p < .001$) and quadratic ($F_{(1,\ 7,157)} = 101.07$, $p < .001$) components. Post-hoc Scheffe tests confirmed that there was a significant drop from grade seven to eight, followed by no changes between successive grade levels. Trend analysis for low self-reported reading grades by grade level found, as in the case of high achieving readers, significant linear ($F_{(1,\ 7,158)} = 32.67$, $p < .001$) and quadratic ($F_{(1,\ 7,158)} = 97.14$, $p < .001$) components, with a significant drop in scores between the seventh and eighth grade, followed by no other changes across grades nine through twelve.

Four separate one-way ANOVAs were run for high- and low-performing students' attitude scores by gender. All results were consistent with those reported on achievement by grade level. Only the drop between grades seven and eight was significant, with significant linear and quadratic components in all four trend analyses. Boys with high self-reported English grades had significantly higher attitude scores at all grade levels than boys with low self-reported achievement. The same was true of the differences between high and low self-reported achievement for girls at all grade levels. Girls of both high and low self-reported achievement had more positive attitudes toward reading than boys of similar achievement levels at all grade levels, reflecting the overall gender differences reported above (see Figure 6).

Figure 5 : General Reading Attitude by Grade Level and Self-Reported English Grades

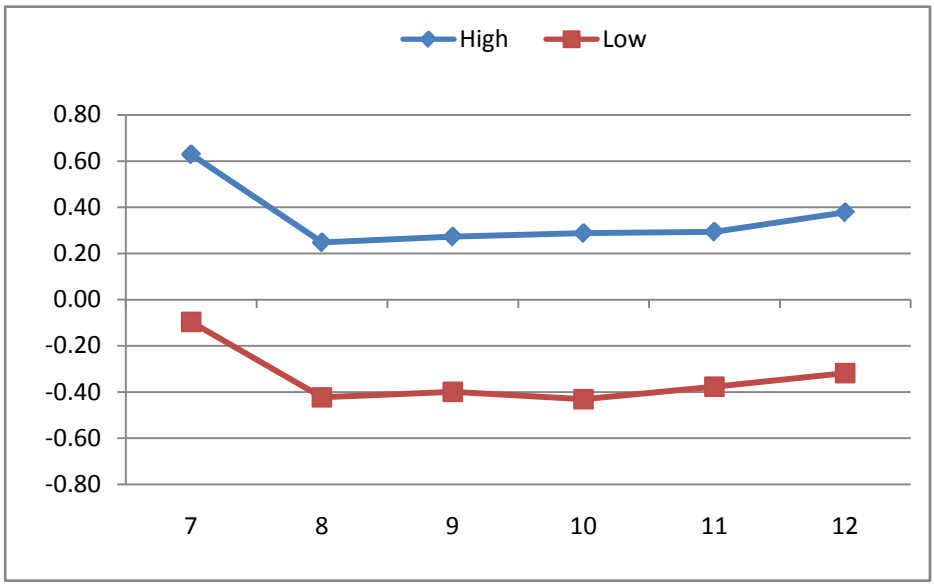
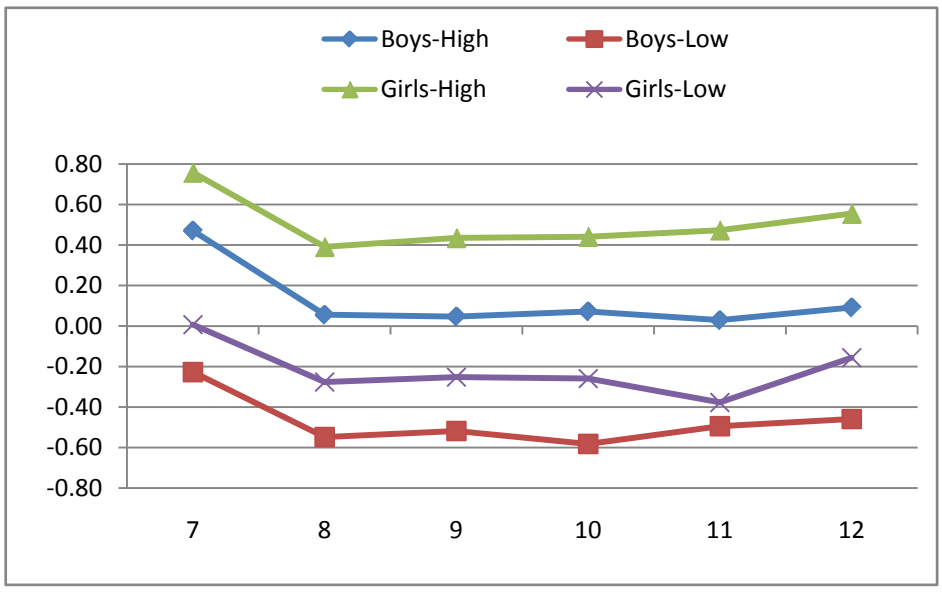


Figure 6 : General Reading Attitude by Grade Level, Self-Reported English Grades, and Gender

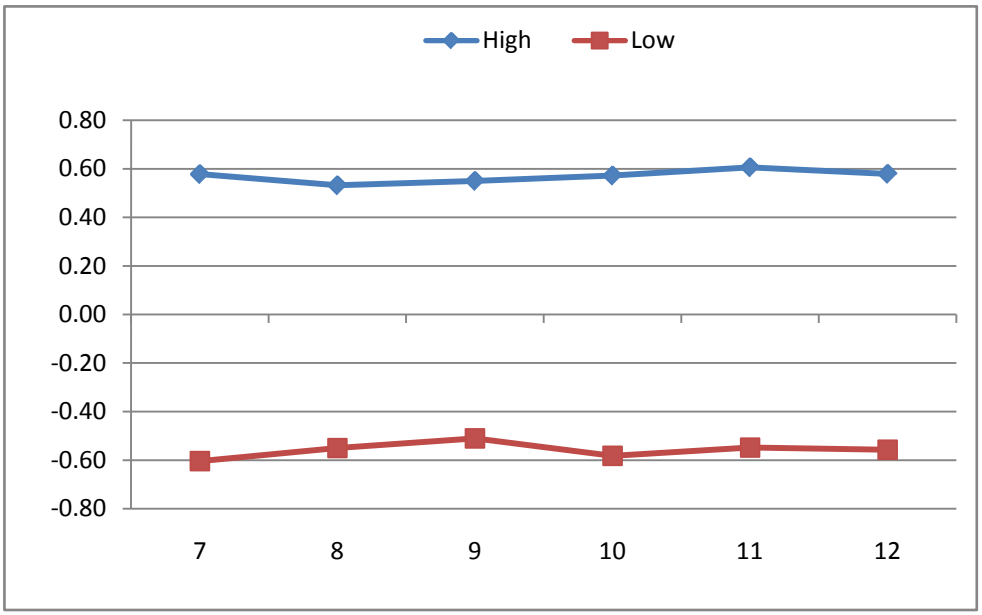


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b) Reading Self-Efficacy

Significant main effects on Reading Self-Efficacy scores were found for Self-Reported English grades (($F_{(1, 14,315)}$ = 15,510.011, p <.001), and for the interaction of grade level and achievement ($F_{(5, 14,315)}$ = 4.662, p <.001). Students who reported higher English grades had higher Reading Self-Efficacy scores than students of lower English grades at all grade levels, as seen in Figure 7. These differences were dramatic: the average high-achieving student would rank at the 97th percentile of the low-achieving students' distribution. There was no significant interaction between grade level and gender for Reading Self-Efficacy, as noted previously. The three-way interaction of achievement, gender, and grade level was not significant ($F_{(5, 14,315)}$ = .758, n.s.).

Figure 7 : Reading Self-Efficacy by Grade Level and Self-Reported English Grades

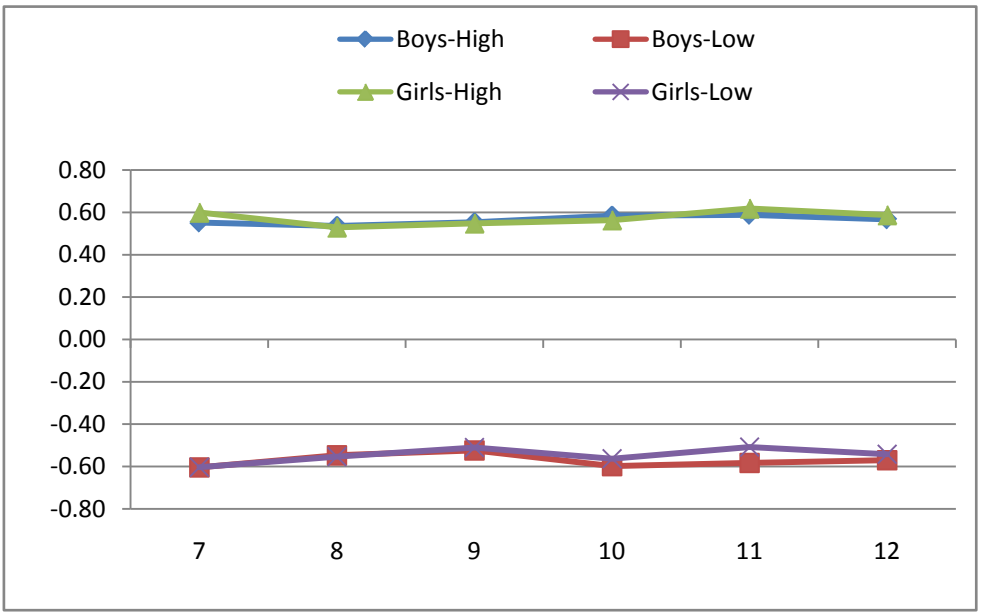


Trend analysis for self-reported high-achieving students indicated a significant linear ($F_{(1, 7,157)}$ = 4.416, p <.05) component, but not a quadratic one ($F_{(1, 7,157)}$ = 1.863, n.s.). Post-hoc Scheffe tests found no successive grade level changes for high-achieving readers. Results were just the opposite for low-achieving readers: the linear component was not significant ($F_{(1, 7,158)}$ = 1.416, n.s.), but the quadratic component was ($F_{(1, 7,158)}$ = 5.643, p < .05). Post-hoc Scheffe tests found that self-efficacy scores among low-achieving readers in grade nine were significantly higher than those in grade seven; no other significant differences were observed.

Separate one-way ANOVAs for high- and low-proficiency readers for both boys and girls were conducted (see Figure 8). For low-achieving boys, there were no significant components in the trend analyses; for low-proficiency girls, the quadratic component only was significant. For high-proficiency boys, there were again no significant components; for high-proficiency girls, only the quadratic component was significant. Post-hoc Scheffe test found none of the successive changes in grade level significant for either boys or girls at either high or low levels of proficiency. No differences were found in Reading Self-Efficacy scores between boys and girls at the high achievement level at any grade level. For low-proficiency students, only the difference in grade eleven was significant, with girls having higher scores than boys.

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Figure 8 : Reading Self-Efficacy by Grade Level, Self-Reported English Grades, and Gender



VIII. Summary and Discussion

Contrary to the results reported in national and local sample surveys of elementary school students, reading attitudes do not get progressively worse or become more negative in middle and high school, at least among the large sample of urban students surveyed here. The downward trend in reading attitudes documented in previous studies of elementary school students does continues through grade eight, but then a plateau is reached, marking an essentially stable level of attitudes throughout the rest of the secondary school years. These results appear to run counter to McKenna's predication regarding age and attitude formation. Results on the development of self-efficacy over time are roughly the same as those conducted previously on self-concept, with stability across grade levels and a slight increase in the upper grades, particularly among girls, as they move from adolescence to the transition to adulthood.

In McKenna's view, children become more negative in their views of both recreational and academic reading as they grow older in part because their beliefs about the outcomes of reading change over time. Greater opportunities in leisure options may lead to a relative devaluing of reading as children progress through school, even among good readers. In addition, the normative beliefs about reading may also change as children move through school. The social context of schooling may promote a more negative view of reading from which students make certain judgments about the value of literacy in general. Despite the presumably increasing opportunities for students to engage in other leisure pastimes during adolescence and the potentially negative social context surrounding reading, however, students in the current study did not indicate a continued drop over time in reading attitudes after grade eight.

What explains these differing developmental trends among secondary students? Several plausible explanations exist. First, it may be that the particular sample used in the current study, students from a relatively low-achieving, largely Latino/Hispanic urban district, may exhibit patterns of reading attitude and self-efficacy that differ significantly from the population at large. In McKenna, Kear, and Ellsworth's (1995) national sample of elementary school children, however, differences across ethnic groups were slight (differences in socio-economic status and urban vs. suburban/rural location were not measured), so it is not easy to predict how the current sample would differ from a more representative one. Students in the current sample had markedly lower standardized reading test scores than the average U.S. student, so it may be that this factor alone skewed the results. Yet low performing students in McKenna's studies tended to decline in reading attitude more precipitously than high achieving students, so if this pattern held true for older students, we may expect to see more decline over time, not less.

Second, the difference in instruments used across studies to measure reading attitudes may explain the divergent findings. McKenna's research relies on the Elementary Reading Attitude Survey (ERAS) (McKenna & Kear, 1990), while the current study used the more age-appropriate but not necessarily comparable BJP Survey. Further, the ERAS has two clear sub-scales, one each for recreational and academic reading, while a factor analysis of the BJP Survey produced only one general

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reading attitudes scale. Disaggregating these dimensions may produce different results from those presented here.

A third possible reason for the rise of scores in the later grades in Reading Self-Efficacy, as well as the small but not significant increase for General Reading Attitudes in grade ten, may have a more straightforward explanation: Students with more negative attitudes and a lower sense of self-efficacy may be dropping out altogether after grade ten, thus biasing scores upward in grades eleven and twelve. A closer inspection of Table 1 shows that the number of total students at each grade level does drop dramatically after grade ten. But this explanation falls short when gender differences in drop-outs are accounted for. It appears that boys dropped out in disproportionate numbers to girls in the current sample, and it would be expected that low-achieving boys would be more likely to drop out than high-achieving ones. This should raise the scores of the remaining (more highly-achieving) boys. Yet this does not take place. It is *girls'* scores on the self-efficacy measure that increase in grade eleven, not the boys' scores. As such, drop-outs cannot be a major reason for increases in self-efficacy scores and the failure of reading attitudes to continue their decline.

Finally, it may be that students have, in effect, "bottomed out" in terms of their reading attitudes by eighth grade, with no further decline likely or possible. McKenna's model could be developmentally correct up through middle school, after which there is no further room for students to decline, despite increased opportunities and changes in their social milieu. It should be noted that the failure of scores to decline was not due to any obvious floor effects on the attitude measure itself with the current sample, however. The means raw score for the twelve items that loaded most heavily on the General Reading Attitudes factors was 30.5 (SD = 7.2) out of a possible 48 (range: 12-48), with no pronounced skew in the distribution.

With the exception of the drop in reading attitudes between grades seven and eight, then, the current study found similar trends for both attitudes and self-efficacy. The stabilization of reading attitudes scores in the upper grades is consistent with what has been found previously in research on academic self-concept among adolescents. Indeed, the developmental pattern for both self-efficacy and reading attitudes is nearly identical for both younger and older students: declines in elementary and middle school, followed by stable or rising scores in high school. This suggests that the two constructs may be linked.

Researchers of self-concept have attempted to explain these patterns by examining how students define the domains of their ability and the criteria they use to judge competence. Studies of young children has found, for example, that they tend to see academic ability as undifferentiated and related strongly to social behavior, work habits, and conduct rather than any external or comparative measures of academic performance (Stipek & Tannatt, 1984; Stipek & MacIver, 1989). Young children believe that effort and practice alone are sufficient to increase ability. This often results in what we may term a "Lake Wobegon Effect," where, as in the humorist Garrison Keillor's fictional small town, "all the children are above average." Stipek (1981) and Stipek and Tannatt (1984) noted, for example, that that nearly all of the kindergarten and first grade children they interviewed thought that they were "smart." As children move through school, however, they begin to differentiate aspects of academic ability, and assess those abilities based upon external information, such as their own and their peers' academic performance as measured by grades, tests, and the like (Marsh, 1989; Stipek & MacIver, 1989). As such, originally high, perhaps inflated, self-concepts decline, accelerated by the social and maturational changes that are part of adolescence, where perceptions of ability reach a low point. Another possible source for this decline in self-concept and beliefs about competency relates to the classroom environment students experience as they move through school. As children grow older, teachers tend to place greater emphasis on competitions and comparisons among students. As Wigfield (2000) notes, this pressure "may lead children to focus too much on how their skills compare to those of others," which in turn can "deflate many children's competence beliefs" (p. 144).

As students then make the transition from adolescence to adulthood in the upper grades of high school, the potentially negative social influences felt in the junior high years appear to lessen, resulting in a more positive (and perhaps realistic) view of ability in reading, math, and other areas. Studies measuring the development of general self-esteem have found steady, significant increases from high school through early adulthood (O'Malley & Bachman, 1983).

If this general account of how self-concept develops among children and adolescents is correct, and, as hypothesized above, attitudes toward reading are linked to one's perceived reading ability, then the results of the current study complement previous results on reading attitude among elementary age students, providing a more nuanced portrayal of attitude development. This would also call for a modification of McKenna's model for attitude formation, such that, along with beliefs about the outcomes of reading and the expectations of others, beliefs about self-efficacy also influence reading attitudes. McKenna's model already incorporates a

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"feedback" loop, with prior reading successes or failures having a direct influence on reading attitude. In light of current evidence, this loop may need to be modified such that, rather than exert a direct effect on attitude, prior experiences affect beliefs about competence, which in turn influence reading attitude. Consistent with the broader theory of self-concept formation, children's actual reading experiences increasingly become the basis for judgment of reading competence as they grows older, and that this (increasingly negative) belief about efficacy in turn influences attitude through middle school and early adolescence. These perceptions of ability become more realistic as students move through high school, resulting in a stabilization of attitudes. In this modified McKenna model, the role of increased opportunities to participate in activities other than reading is less influential on reading attitudes than self-efficacy beliefs.

Unlike in previous studies among elementary students, there was a significant interaction between gender and achievement for the reading attitudes measure. The superiority of girls over boys in reading attitude was in part due to their higher self-reported reading grades. A regression analysis confirmed that achievement appears to be a much more powerful predictor of reading attitudes than gender for secondary students. This interaction was not found for the self-efficacy measure, however, indicating that the higher sense of self-efficacy for girls in reading was not merely due to higher levels of achievement. It is not clear why this interaction, found among younger students on reading attitude measures, should not be present here.

Another difference between the current findings and previous work was in the interaction between grade level and achievement for reading attitudes. In McKenna, Kear, and Ellsworth's national survey, the gap in reading attitudes between high and low proficiency readers grew wider as students got older, a gap thought to constitute another form of the "Matthew's effect" (Stanovich, 1986) for reading ("the rich getting richer"). Low-achieving students in the elementary grades become progressively worse than their high achieving counterparts. The current study failed to replicate this finding for either reading attitudes or self-efficacy. The gap between high and low achieving students on these variables did not increase during the six years of secondary school. Again, this may be due to one of the reasons proposed above for the differences in overall developmental trends (i.e. sample, instrumentation, floor/ceiling effects), or due to differences in how adolescents progress in reading attitudes and beliefs over time versus younger children. Similar to the current study, Wigfield et al. (1991) did not find a significant interaction among sixth- and seventh-grader students for ability, time, and English academic self-concept.

Some findings of the current study do confirm previous research on reading attitudes and self-efficacy. Gender differences found in McKenna's surveys and others were also noted among the current sample of secondary students, with girls demonstrating more positive attitudes toward reading and a greater sense of reading self-efficacy than boys at all grade levels. The current findings are also consistent with other studies on reading self-efficacy and self-concept and gender (Marsh, 1989; Wigfield et al., 1991). In addition, students who reported a high level of reading achievement had significantly more positive attitudes and greater sense of self-efficacy in reading than those with lower levels of self-reported proficiency, consistent with McKenna's findings and studies of self-concept of ability in English class (Wigfield et al., 1991). These differences between high- and low-achievement levels were large for both General Reading Attitudes and Reading Self-Efficacy.

If the results of the present study hold true across a more representative sample of secondary students, then the stabilization of reading attitudes and beliefs about reading competence among adolescents may be considered good news, if these variables are indeed strong influences on reading motivation and behavior. Given that many readers fail to develop their reading proficiency beyond that obtained by the end of elementary school (Francis et al., 1994), however, there is still a need for encouraging changes in the positive direction, and not be content with mere stability. Guthrie and his colleagues (Guthrie et al., 1996; Guthrie & Anderson, 1999) have proposed that "concept-oriented" reading instruction holds the promise of deepening students' engagement with reading and reversing the decline of reading motivation as students move through school. Other intervention programs that stress pleasure reading also appear to be effective in promoting more positive attitudes toward reading, especially among students in urban schools like those surveyed in this study (Author, 1998; Author et al., in press; Pilgreen, 2000). Reading motivation among adolescents may also be a function of access to appropriate reading resources (Worthy, Morman, & Turner, 1999). This problem is particularly acute for students in low-income school districts such as the one surveyed here, where the type and variety of reading materials are indeed extremely limited (Allington et al., 1995; Author, 1998; Author et al., in press).

There are a variety of approaches to studying reading attitudes and self-efficacy. Qualitative approaches such as those recommended by McKenna, Kear, and Ellsworth (1995) and others are certainly worthy of attention among older students as

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well. Several variables not included in the current study, including ethnicity, socio-economic status, and instructional approach, may have important influences in how reading attitudes and beliefs develop over time. Future study of these issues should attempt to take these factors into account in coming to a more complete picture of how attitudes and self-efficacy change over time among secondary school readers.

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[1]Pedhazur and Schmelkin (1991) note that EFA is appropriate when "no information regarding the internal structure of the [existing] measure is available" (p. 69). Gorsush (1983) similarly states that EFA is the appropriate method of analysis when scale development or refinement are required, as in the case here where the scale has no previous, well-defined scales.

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