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Reading motivation and reading comprehension growth in the later elementary years [☆]

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Abstract

Reading motivation has been viewed as a multifaceted construct with multiple constituents. Our investigation of motivational multiplicity expanded on previous literature by including motivation constructs (interest, perceived control, collaboration, involvement, and efficacy), text genres, specific versus general contexts, and the self-versus other evidence sources about motivation. We expected that this multiplicity would influence the identification of reading comprehension growth predictors. We obtained pre- and post-interview data, teacher ratings, motivation self-reports, and reading comprehension scores. Interviews showed motivation constructs to be semi-independent. Students' reading motivations for narrative and information texts were not highly associated; and self-reports and other motivation reports were not highly associated, but situated and general reading motivations were correlated. Interview-based coding of motivation predicted reading comprehension growth, but reading comprehension did not predict motivation growth. Situated motivation for information books predicted general motivation growth according to multiple regression analyses. Implications for an engagement model of reading development were discussed.

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Keywords: Reading motivation; Motivation constructs; Reading comprehension; Situated motivation; General motivation

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27 1. Introduction

28 Teaching students how to comprehend different text genres is an important goal for the
29 elementary school years, especially for Grade 4 students and beyond, when students are
30 expected to read a wide range of materials to gain knowledge and literary experience
31 (Alexander & Jetton, 2000). A substantial correlate of reading comprehension in the later
32 elementary grades is reading motivation, according to a variety of investigators (Gottfried,
33 1990; Hidi & Harackiewicz, 2000; Wigfield & Guthrie, 1997). This study examined reading
34 motivation for its potential to explain students' reading comprehension and to predict stu-
35 dents' growth in comprehension over time (Stipek, 2002).

36 The theoretical perspective for this study was Guthrie and Wigfield's (2000) engagement
37 model of reading comprehension development, which posited that reading comprehension
38 is the consequence of an extended amount of engaged reading. Engaged reading is motivat-
39 ed, strategic, knowledge driven, and socially interactive; it is influenced by the kinds of
40 classroom practices students experience (Guthrie & Cox, 2001). In previous work related
41 to this model, we examined the nature of reading motivation, and also looked at how class-
42 room practices influence children's reading comprehension and motivation (e.g., Guthrie,
43 Wigfield, & Perencevich, 2004; Guthrie, Wigfield, Barbosa et al., 2004; Wigfield & Guthrie,
44 1997). An important finding from this work is that reading motivation is multidimensional
45 (see further discussion below). The present study builds on this work by both using inter-
46 view methods to examine children's multidimensional motivations for reading and looking
47 at how growth in reading motivation relates to reading comprehension growth.

48 The interview methodology allowed us to study reading motivation more in-depth than
49 has occurred in most previous research that primarily relied on student questionnaires.
50 With respect to the relations of reading motivation and reading comprehension, Guthrie
51 and Wigfield's (2000) theoretical model suggests that motivation influences reading com-
52 prehension growth. Although reading motivation and reading comprehension are correlat-
53 ed (Baker & Wigfield, 1999; Wang & Guthrie, 2004), and laboratory studies suggest that
54 motivational conditions can increase reading comprehension (Guthrie & Humenick,
55 2004), it is unknown whether reading motivation predicts reading comprehension *growth*
56 in classroom contexts. The present study investigated this issue.

57 We further extended previous work on reading motivation by examining the multiplic-
58 ity of children's reading motivation. This multiplicity encompasses (a) the reading of dif-
59 ferent text genres, (b) the motivation for reading specific books and students' more general
60 reading motivation, and (c) diverse perspectives on students' motivation as viewed by stu-
61 dents, interviewers, and teachers. The types of reading studied consisted of narrative (fic-
62 tion, chapter books, and novels) and information (trade books on science or history
63 topics) books. We focused on these genres because they have been shown to vary in attrac-
64 tiveness to students (Guthrie & Greaney, 1991), and the assumption is often made that
65 narrative books are more appealing to students. We were particularly interested in how
66 children's motivations for these different text genres relate to each other; these analyses
67 would provide further information about the dimensionality of children's motivation.

68 With respect to specific and general forms of motivation, following Hidi and Hara-
69 ckiewicz (2000), we assessed relations of children's 'situated' reading motivation (e.g.,
70 interest in a particular book at a particular time) to their more general motivation to read.
71 Finally, with respect to different perspectives on students' motivation, as noted earlier,
72 most research has relied on student self-reports measured on questionnaires. We went

73 beyond previous work by gathering the teacher ratings of students' motivations, and the
74 interviewer ratings of student motivation based on students' responses to the interview
75 questions. We assessed relations among these various sources of information about student
76 motivation.

77 Researchers using questionnaires have found that children's motivation is multidimen-
78 sional in the later elementary grades. Through factor analytic assessment, at least nine
79 components of reading motivation have been distinguished (Baker & Wigfield, 1999; Wig-
80 field & Guthrie, 1997). These components include (a) curiosity or interest, (b) preference
81 for challenge, (c) involvement, (d) self-efficacy, (e) competition, (f) recognition, (g) grades,
82 (h) social interaction, and (i) work avoidance. Several of these motivations are sufficiently
83 distinct and reliable that instructional interventions have influenced them separately. For
84 example, Wigfield, Guthrie, Tonks, and Perencevich (2004) showed that an intervention
85 supporting intrinsic motivations for reading increased curiosity, involvement, and prefer-
86 ence for challenge. Furthermore, the reading motivations that are more internal (such as
87 curiosity, preference for challenge, and involvement) have been distinguished in structural
88 equation modeling from the motivations that are more external (such as recognition, com-
89 petition, and grades) (Wang & Guthrie, 2004). The intrinsic motivation composite was
90 substantially associated with reading comprehension, with other variables controlled
91 (Wang & Guthrie, 2004). Given these results, we focused on interviewing children about
92 several of these motivations identified in previous research and central to the reading
93 engagement model.

94 Interest in reading is a motivational construct that has been described as a personal
95 investment (Alexander & Murphy, 1998) or a "relatively stable evaluative orientation
96 toward a certain domain" (Schiefele, 1999, p. 258). Highly interested readers have feelings
97 of involvement, stimulation, or enjoyment during reading, and tend to possess knowledge
98 in the domain of their interest (Renninger, 2000). Interest has been measured through rat-
99 ings of a specific text (Alexander, Jetton, & Kulikowich, 1995), or ratings of interest in a
100 domain that represent longer-term stable characteristics (Jetton & Alexander, 2001;
101 Schiefele, 1999). Interest has been shown to correlate with deep processing of individual
102 texts (Schiefele, 1999), reading grades for elementary school students (Sweet, Guthrie, &
103 Ng, 1998), and knowledge and strategies of college students within a course (Alexander
104 & Murphy, 1998). Renninger's (1992) research with elementary school-aged children on
105 reading interest showed that children recall passages more fully if the passages were inter-
106 esting to them. However, little is known about the characteristics of children's reading
107 interests, such as whether their interests are restricted to specific books, authors, or genres
108 (such as novels), or whether they are broader.

109 Perceived control over reading refers to students making choices or decisions about
110 reading, and being in control of their reading activities. Related empirically to Ryan
111 and Deci's (2000) construct of autonomy, perceived control as defined by Skinner
112 (1995) is an individual's "causal model about how the world works: about the likely causes
113 of desired and undesired events, about their own role in successes and failures, about the
114 responsiveness of other people, institutions, and social systems" (p. xvi). In this vein, a per-
115 son has internal control "if the person perceived that the event is contingent upon his own
116 behavior or relatively permanent characteristics" (Rotter, 1966, p. 1). A variety of studies
117 document that perceived control and choice in the later elementary grades are associated
118 with academic achievement in reading (Skinner, Wellborn, & Connell, 1990; Sweet et al.,
119 1998).

120 A third motivational aspect widely investigated is self-efficacy in reading. Based on
121 Bandura's (1977) definition, Schunk and Zimmerman (1997) defined self-efficacy as
122 applied to reading in the following way: "Self-efficacy refers to beliefs a person has about
123 his or her capabilities to learn or perform behaviors at designated levels" (p. 34). Central
124 to the process of developing and maintaining self-efficacy is self-evaluation of capabilities
125 and progress in skill acquisition. Positive self-evaluations lead students to feel efficacious
126 about learning and motivate them to continue to work diligently.

127 The fourth motivational aspect is students' involvement in reading. Following earlier
128 work, we define involvement as students' sense of immersion or absorption during
129 reading and the investment of many hours reading books and materials (Reed &
130 Schallert, 1993). The experience of high involvement in reading resembles the experi-
131 ence of "flow" (Csikszentmihalyi & LeFevre, 1989). Experience of flow frequently
132 occurs when a person's challenges (opportunities for action) are matched with the indi-
133 vidual's skills (capacities to act). Involvement in the later elementary grades can be
134 measured by such self-reported items as, "I feel like I make friends with people in good
135 books" (Wigfield & Guthrie, 1997, p. 432). Involvement is related to interest and other
136 internal aspects of motivation (Reed & Schallert, 1993; Wigfield & Guthrie, 1997), but
137 can be distinguished from interest because it refers more to experiential aspects of read-
138 ing and time spent reading. Further, involvement refers not only to depth of experi-
139 ence, but also to amount of reading. As shown by indicators of involvement such as
140 print exposure (Allen, Cipielewski, & Stanovich, 1992) and student self-reports of read-
141 ing volume (Wigfield & Guthrie, 1997), students' reading involvement is stable over
142 time and is correlated with achievement.

143 A fifth aspect is collaboration and social interaction in reading. In this study, we viewed
144 collaboration and social interaction in reading as a motivation construct referring to inter-
145 personal behavior patterns. Similar to Brown's (1997) usage in her investigations of com-
146 munities of learners, collaborative students enjoy participating in group activities for
147 reading, work effectively with others on reading and writing tasks, and enjoy talking about
148 reactions to books. These behavioral patterns are associated with students' reading grades
149 (Sweet et al., 1998) and test scores (Baker & Wigfield, 1999).

150 We built on earlier work by interviewing children about these aspects of reading moti-
151 vation to obtain their perspectives about the dimensionality of reading motivation. We
152 also included questions intended to give students an opportunity to express motivations
153 for reading that were unanticipated, and perhaps, new to us.

154 To investigate text-type as a source of the multiplicity of reading motivation, we
155 interviewed children about their motivations for narrative and information texts.
156 Many investigators who discuss elementary school-aged children's reading focus on
157 narrative texts (Schallert & Reed, 1997). This may be reasonable because narrative
158 texts are predominate in reading instruction for the primary grades (1–2), and are
159 supplemented by information books in the intermediate grades (3–5) (Duke, 2000).
160 We were interested in children's motivations for reading these two broad text genres,
161 and particularly how they might relate to each other. We are not aware of any thor-
162 ough empirical studies on the correlation of motivation for reading narrative versus
163 information books.

164 In adult studies, there is evidence that some adults are "fiction" readers, whereas other
165 adults are "nonfiction" readers (National Endowment of the Arts, 2004). Analyses of text
166 comprehension processes show that motivational knowledge and affective processes are

167 important in interpreting narrative texts (Gamez, 2001). Thus, affective responses to liter-
168 ature may contribute to comprehending narrative texts. It is plausible that adults who seek
169 affective experiences in reading may be drawn to narrative texts. On the other hand, Alex-
170 ander (1997) suggested that there are distinct motivations that may contribute to compre-
171 hending expository text. Because such text is information-rich, the reader's desire to
172 activate cognitive schema, and to expand the schema with new knowledge through read-
173 ing, may be central to motivation. This information-seeking disposition may be relatively
174 unique to reading expository text, and may energize the use of cognitive strategies for
175 understanding exposition. At the same time, the motivation to gain knowledge from infor-
176 mation text may not be as fully activated during narrative reading (Carr, Mizelle, & Cha-
177 rak, 1998). Thus, different internal motivations may drive the reading of information and
178 narrative texts, which was our rationale for interviewing students about these genres
179 separately.

180 We further examined the multiplicity of children's reading motivation by investigating
181 the relations of children's motivations for specific texts and their general reading motiva-
182 tion. We followed Hidi and Harackiewicz's (2000; see also Hidi, 1990) distinction between
183 situated interest and general interest. They argued that each type of interest has different
184 characteristics, with situated interest being more immediate and general interest being
185 more long-term. They also noted that situated interests sometimes turn into longer-term
186 interests. We wanted to investigate the relations between specific or situated motivations
187 for certain books and general reading motivation to see if these connections developed
188 across the course of the study.

189 The final part of our study of reading motivation multiplicity was to consider dif-
190 ferent sources of information on children's motivation, rather than obtaining only stu-
191 dent questionnaire responses. Some researchers have used observer ratings of children's
192 motivation for both primary (Onatsu-Arvilommi & Nurmi, 2000) and elementary-aged
193 children (Guthrie, Wigfield, Humenick, Perencevich, Taboada, & Barbosa, in press).
194 However, because no comparisons across these different kinds of data sources have
195 been made, we do not know whether students view their reading motivations in the
196 same way that other observers (teachers, parents, and outsiders) may perceive them.
197 Although teachers, for example, are obliged to infer the motivations from students'
198 behavior or speech, students report their motivations for reading directly. Of course,
199 teachers have many points of reference, such as other students, for making normative
200 judgments about students' motivation levels. Students, on the other hand, have direct
201 access to their own motivation, but much less opportunity for comparison of their
202 motivations (such as self-efficacy) to the motivations of other students. Therefore, stu-
203 dents' self-perceptions of motivation and teachers' perceptions of students' motivations
204 may be different.

205 Although understanding reading motivation is itself an important research goal, it
206 also is vital to investigate the relations of reading motivation to reading comprehen-
207 sion. The engagement perspective guiding this study proposes that when children are
208 motivated to read, they are more likely to be engaged in reading and, therefore, com-
209 prehend better. To assess this premise further, we investigated whether reading moti-
210 vation and reading comprehension relate to each other, and whether growth in one of
211 these constructs predicts growth in the other. Although the correlation of reading
212 motivation and reading achievement is well established for students in the later ele-
213 mentary grades (Gottfried, 1990; Wang & Guthrie, 2004), fewer investigations have

214 shown the extent that one of these variables is the precursor or antecedent of the
215 other. One exception is Gottfried (1990), who reported that reading achievement on
216 a standardized test at age 7 and age 8 predicted intrinsic motivation at age 9 (as
217 measured by responses to her intrinsic motivation questionnaire, the CAIMI). How-
218 ever, Gottfried (1990) did not find that motivation at ages 7 or 8 predicted reading
219 achievement at age 9.

220 For primary age students, Onatsu-Arvilommi and Nurmi (2000) reported reciprocal
221 relationships between motivation and reading achievement from preschool to age 7.
222 Preschool students who were rated low in decoding were rated lower in task orienta-
223 tion (enthusiasm for reading activities) and were rated higher in task anxiety than pre-
224 school students who scored higher in decoding. To complement this, preschool students
225 who scored low in task orientation, scored lower in decoding at age 7 than preschool
226 students who scored higher in task orientation. Guay, Marsh, and Boivin (2003) also
227 found reciprocal relations between early elementary school children's self-concepts of
228 academic ability for reading, writing, and math and their academic achievement (as rat-
229 ed by teachers), which was confirmed in the primary grades by Lepola, Salonen, and
230 Vauras (2000). However, few longitudinal studies have been conducted in the later ele-
231 mentary grades.

232 We examined the *growth* of reading achievement and motivation by comparing scores
233 from September pretests and December posttests of Grade 4 students. Our procedure was
234 similar to that of Allen et al. (1992) in examining the effects of print exposure on reading
235 achievement and Onatsu-Arvilommi and Nurmi (2000) in investigating motivation in pri-
236 mary reading. When reading achievement at Time 2 was statistically controlled for reading
237 achievement at Time 1, a third variable that was associated with achievement at Time 2
238 can be said to be a predictor of *growth* in reading achievement. In other words, when a
239 posttest is controlled for a pretest statistically, the (non error) variance remaining in the
240 posttest represents student change from pretest to posttest. If the mean change is positive,
241 we can refer to the change as *growth*. Under these conditions, an independent variable,
242 such as motivation, can be tested for its association with growth in reading comprehen-
243 sion. We assessed the relations of reading motivation and comprehension growth using
244 the different motivation data sources (e.g., interviewer report, student self-report) just
245 described.

246 To investigate reading motivation and its relation to reading comprehension growth, we
247 were guided by the following questions:

- 248 (1) What are the meanings and attributes, as expressed by fourth-grade children in inter-
249 views, of the following motivational constructs: interest, perceived control, self-effi-
250 cacy, involvement, and collaboration, and other unanticipated constructs?
251 (2) To what extent do these constructs relate to one another?
252 (3) How do children's motivations for reading narrative and information books relate to
253 each other?
254 (4) How do interviews, student self-reports, and teacher observations relate to one
255 another as sources of evidence about student motivation?
256 (5) How do students' motivations for situated and general reading relate to one another?
257 (6) To what extent does reading motivation predict reading comprehension growth, and
258 to what extent does reading comprehension predict growth of reading motivation,
259 using measures that vary according to text, source, and context?


260

261 2. Method

262 2.1. Participants

263 The study's participants were fourth-grade students ($N=31$) from 8 classrooms in two
264 mid-Atlantic state schools participating in a reading intervention (see Section 2.2). The
265 students were nominated for participation by their teachers, and participated with paren-
266 tal permission. The eight teachers were asked to select four students each, one of higher
267 than average reading ability for his/her class, one with lower than average reading ability,
268 and two with average reading abilities. In one class, the teacher nominated three students;
269 thus, the total sample size was 31. The participants were 16 girls and 15 boys. The sample
270 was 58% European American, 23% African American, 6.5% Asian American, 6.5%
271 Latino, and 6.5% were classified as "other."

272 2.2. Classroom context

273  Students in this study participated in the reading program called concept-oriented read-
274 ing instruction (CORI), an instructional program for elementary school children that
275 merges reading strategy instruction, science instruction, and a set of motivational practices
276 designed to enhance children's intrinsic reading motivation (Guthrie et al., 2004, 2004).
277 The 90-min daily reading intervention, implemented in the fall of the school year, was
278 the main reading/language arts program for a total of 12 weeks. The instructional practic-
279 es in CORI included the following: (a) emphasizing science content goals in a conceptual
280 theme for reading instruction to provide children with a meaningful and involving learning
281 environment; this included studying survival processes of diverse plants and animals in
282 woodland and wetland biomes. More specifically, the program teaches survival in wood-
283 land and wetland habitats with the processes of locomotion, competition, respiration,
284 feeding, predation, communication, defense, reproduction, adaptation to habitat, and
285 niche; (b) providing hands-on science activities to stimulate children's situational interest,
286 which included observations of carnivorous plants and experiments on preferences of bee-
287 tles; (c) using interesting texts (both informational and narrative) tied specifically to con-
288 ceptual themes; (d) affording students some choices of which books to read and which
289 activities to do; (e) promoting collaboration in reading instruction, and (f) teaching a
290 set of reading strategies documented to be effective in fostering children's reading compre-
291 hension, which included activating background knowledge, questioning, searching for
292 information, organizing graphically, summarizing, and structuring stories, consistent with
293 recommendations from the National Reading Panel in 2000. These six practices appear to
294 foster children's intrinsic reading motivation and their reading achievement (see Guthrie
295 et al., 2004, 2004; Wigfield et al., 2004), which may have enabled us to observe more moti-
296 vational phenomena than would have been possible in traditional classrooms.

297 2.3. Design and analyses

298 The overall study of the effectiveness of the reading intervention for increasing reading
299 comprehension and reading motivation was a pre-post equivalent groups design. Measures

300 of reading comprehension and reading motivation were given before and immediately
301 after the 12-week intervention to children in CORI (Guthrie, Wigfield et al., 2004; Guthrie,
302 Wigfield, Barbosa et al., 2004).

303 During the course of the reading intervention, the 31 participants in this part of the
304 study were interviewed on two occasions (once in the second week of the project and once
305 the eleventh week of the project). The purposes of the interviews were to examine char-
306 acteristics, patterns, and qualities of the students' motivations for reading, as expressed by
307 the students themselves. For the two interviews with all children we used the "standardized
308 open-ended interview" (Patton, 1990, p. 280) to optimize comparability across interviews.
309 The interviewers were four doctoral students who were familiar with the reading interven-
310 tion. The interviews were audiotaped and transcribed. To analyze the transcripts, we used
311 "analytic induction" (LeCompte & Preissle, 1993, p. 254), which is an iterative procedure
312 where the transcripts are inspected, categories are induced, the transcripts are re-inspected
313 with these categories in mind, and the categories are revised as appropriate. The aim was
314 to enrich our understanding of the students' internal reading motivations. As described in
315 more detail next, the interviews also were scored with respect to different levels of motiva-
316 tion expressed by each student in his/her responses to the interview questions. These scores
317 were used to examine correlations among the different aspects of motivation in question.
318 Multiple regression analyses were used to examine longitudinal relationships among the
319 identified motivational constructs and reading comprehension.

320 2.4. Procedure and measures

321 2.4.1. Semi-structured interviews

322 Semi-structured interviews explored reading motivation constructs that have received
323 extensive attention in the research literature: interest, perceived control, collaboration in
324 reading, self-efficacy, and involvement. As described previously, we primarily were inter-
325 ested in children's internal reading motivations, which characterize this set of constructs.
326 Students were asked to bring to each interview two books that they had read in class or at
327 home, one expository (i.e., informational) and one narrative (e.g., novel, chapter book, or
328 folktale) text. The interviewers asked questions that related to the particular books the
329 children brought, which provided indicators of their situated or specific motivations for
330 each book. They also asked more general questions about each aspect of reading motiva-
331 tion. The interview questions are presented in Appendix A.

332 The interviews were conducted in September and December, for a total of 62 interviews
333 with the 31 students. These dates were used because they matched the beginning and end
334 of the implementation of CORI in the schools, and we did not have access to students in
335 May. Each student was always interviewed by the same interviewer. The 30-min interviews
336 occurred during the language arts period, in a private area (i.e., conference room, isolated
337 section of library), and were tape-recorded. Technical difficulties with the tape recorders
338 resulted in the loss of data for six interviews; these students were balanced in gender
339 and reading level.

340 Each interview started with a few questions to build rapport, and then the students were
341 asked the questions about the constructs of interest, perceived control, collaboration,
342 efficacy, and involvement. For each construct, there were one or two questions asked
343 about each specific construct, and one or two about each general construct. When neces-
344 sary, the interviewers followed these questions with probes to get more detailed informa-

345 tion from the students. The same basic questions were asked in both the September and
346 the December interviews. After data collection, the audiotapes were literally transcribed,
347 with an average of approximately 9 pages per student for each interview, and an estimated
348 600 total pages of transcription.

349 2.4.2. *Reading comprehension and motivation assessment*

350 As part of the larger intervention study, students completed reading comprehension
351 and motivation assessments in September and December. Two reading comprehension
352 measures were used, an investigator-developed measure and the Gates-MacGinitie
353 Standardized Reading Comprehension Test. The investigator-developed assessment
354 involved students reading a set of self-selected reading passages from a 75-page packet
355 containing passages on the survival of plants and animals in different habitats. Stu-
356 dents initially wrote what they knew about the topic (to measure their background
357 knowledge), and then read the passages. After reading the passages, students wrote
358 (for 25 min) what they had learned to provide a measure of their comprehension.
359 Their writing was scored on a 1–6 rubric that indicated depth of their conceptual
360 knowledge gained from reading, with each rubric level indicating a deeper conceptual
361 knowledge. (See [Taboada & Guthrie, 2004](#), for a detailed description of this measure
362 and the scoring rubric; we do not describe them in detail here because they are not
363 the major focus of this study). In addition, students completed the Gates-MacGinitie
364 Reading Comprehension Test, Level 3 Form S, to have a standardized reading test as
365 part of our assessment.

366 Two measures of student motivation were obtained. Students completed a shortened
367 version of the Motivations for Reading Questionnaire (MRQ) ([Wigfield & Guthrie,](#)
368 [1997](#)) that included the curiosity, preference for challenge, involvement, and efficacy items.
369 This shortened version had a total of 18 items. Students responded to these items on a 1–4
370 answer scale, and a sum of their responses to these items was created for purposes of data
371 analysis. The rationale for this sum was that these individual scales were much less reliable
372 than the total scale, correlate relatively highly with one another, and do not correlate with
373 other variables, such as reading comprehension, as highly as the full scale which represents
374 internal motivation.

375 At the conclusion of the project, teachers completed the Reading Engagement Index
376 (REI) that asked them to assess each student's behavioral, cognitive, and motivational
377 engagement. The REI had eight items; one item assessed behavioral engagement, four
378 items assessed different aspects of motivation (intrinsic, efficacy, and social), and three
379 items assessed cognitive aspects of reading engagement (effort, strategies, and concepts).
380 Teachers rated each student on the 8 items, using a 1–4 scale from "Not true" to "Very
381 true." A composite of the 8 items was created to reflect the teachers' overall sense of stu-
382 dents' motivational engagement, and to create a reliable variable to be used in the relation-
383 al and predictive analyses.

384 These comprehension and motivation measures were examined for reliability and valid-
385 ity. On the multiple text reading comprehension task, concurrent validity of this measure
386 was estimated by a correlation of $r(110) = .58, p < .01$ with a computer-based passage
387 comprehension task that was part of the larger assessment battery used in the project.
388 Across-time correlation for the September and the December administrations of this mea-
389 sure was $r(108) = .63, p < .001$. For the MRQ, Cronbach's alpha was .75 for a composite

390 based on students' responses to the items and its correlation across time was $r(105) = .41$,
391 $p < .01$. For the REI, Cronbach's α was .92.

392 2.4.3. Student interview coding

393 To code students' responses to the interview questions, we developed a priori coding
394 attributes for each construct based on existing literature. For example, for self-efficacy,
395 two of these attributes were 'confident reader' and 'believes self is a good reader.' In addi-
396 tion, the investigators examined the interview transcripts to develop additional attributes
397 for each construct. These attributes were quite focused. For example, self-efficacy reflected
398 "belief in capacity for reading" and did not extend to constructs such as self-concept that
399 may include identity or relation of reading to other aspects of self, such as sports ability or
400 ethnicity. These attributes also reflected comments students made during the interview ses-
401 sions about the different motivation constructs. The final category list for each motivation
402 construct contained approximately 8–10 attributes that were a combination of the a priori
403 attributes and attributes emerging from the interviews. These attributes provided a sense
404 of the meaning of each motivation construct to the student, and are described in more
405 detail in the results section.

406 Using this category list, transcript coding was completed in multiple parts to establish
407 reliability among the coders. As noted above, an initial set of 12 transcripts was coded
408 independently by the four interviewers using "analytic induction" (LeCompte & Preissle,
409 1993, p. 254). The coders read numbered transcripts line-by-line and coded segments of the
410 lines using the a priori codes for each motivational construct. The line was used for con-
411 venience as a minimal unit of analysis to facilitate discussion among investigators. Often
412 students' statements spanned several lines, in which case the same code was applied to all
413 the lines. Multiple codes were sometimes used for the same line if the students' thoughts
414 represented more than one construct. Meetings were held to compare codes and discuss
415 any disagreements until consensus was reached, and also to develop new codes for each
416 motivation category. This process allowed the coding categories to be refined and clarified
417 to represent the motivational attributes of the fourth grade sample. Once consensus was
418 reached, the remaining 43 transcripts were coded independently, by their original
419 interviewers.

420 In addition, students' responses were coded with respect to their level of motivation for
421 each of the situated and general motivation constructs. Four levels of motivation were
422 defined for each situated and general construct for the narrative and informational books.
423 Coders used a quartile system to score students' levels on all constructs in relation to other
424 fourth graders. A rubric score of 1 was given to students who were judged to be in the bot-
425 tom 25% of fourth-grade students on a construct; 2 indicated low-middle, 3 indicated high-
426 middle, and 4 indicated the top 25%. This normative approach enabled us to optimize the
427 observed differences in motivation among the students, which created variance to be exam-
428 ined quantitatively. Also, among the four levels there were clear, criterion-referenced dif-
429 ferences that facilitated the assignment of the levels. For example, for situated interest,
430 codes were defined as follows: 4 = high positive affect for specific book; 3 = moderate
431 positive affect for specific book; 2 = indifference to specific book; and 1 = dislike of book.
432 For general interest, codes were defined as follows: 4 = high positive affect for reading in
433 general; 3 = moderate positive affect for reading in general; 2 = indifference to reading in
434 general; and 1 = dislike of reading. The interviewers and principal investigators rated each

435 student on each specific and general construct for both interviews. Differences in assign-
436 ment of codes were resolved through discussion.

437 During the coding, four post hoc coding categories emerged from the data. We report
438 them briefly here, but do not use them in the statistical analyses reported below. These
439 categories included: (1) knowledge and information, (2) reading competence motivation,
440 (3) extrinsic reading motivation, and (4) reading program regulation. Knowledge and
441 information as a motivation for reading consisted of students' reading to gain knowledge
442 or information about topics or activities, and 48% of the students voluntarily reported this
443 motivation for reading. Reading competence motivation emerged when students reported
444 reading for the purpose of becoming a better reading or increasing their reading skills, and
445 28% of the students voluntarily reported this motivation for reading. Extrinsic reading
446 motivation was operationally defined as externally driven reading, for instance to receive
447 a reward or recognition, and 8% of the students voluntarily reported this motivation for
448 reading. Reading program regulation referred to students' statements about reading to
449 comply with reading program requirements, and 17% of the students voluntarily reported
450 this motivation for reading.

451 *2.5. Scoring and variable creation*

452 We created reading comprehension and reading motivation variables for the quantita-
453 tive analyses, using children's responses to the reading comprehension measures, their
454 responses to the MRQ, teacher ratings on the REI, and children's answers to the questions
455 from the two motivation interviews.

456 *2.5.1. Reading comprehension*

457 Scores were created from the pretest (September) and posttest (December) reading com-
458 prehension assessments. As mentioned previously, children's written responses were
459 scored on a 1–6 knowledge rubric, so the range of scores was from 1 to 6. Each succeeding
460 level on the rubric represented deeper conceptual and factual knowledge presented by the
461 children's writings. The standardized scale score from the Gates-MacGinitie Reading
462 Comprehension Test was used in the analyses, as it is the most appropriate variable for
463 statistical analyses.

464 *2.5.2. Reading motivation questionnaire scores*

465 Scores consisting of the sum of 18 items on intrinsic motivation and self-efficacy from
466 the September and December administration of the MRQ were used in the statistical anal-
467 yses; these scores could range from 18 to 72. Scores from the REI (completed by teachers
468 in January) were created, which could range from 8 to 32. The rationale for using the full
469 scale is that it is reliable (consistent) and predictive, whereas individual items in the scale
470 are much less so.

471 *2.5.3. Motivation interview scoring*

472 General and situated motivation variables were created for the two interviews (Septem-
473 ber and December) completed with all students. The scores were the levels of reading moti-
474 vation previously described, which ranged from 1 to 4 for each of the five motivational
475 variables (interest, perceived control, efficacy, collaboration, and involvement). Scores
476 for the situated variables were obtained for both expository and narrative text; thus, there

477 were a total of 10 situated motivation variables in September and 10 in December. For the
478 general motivation variables, we did not construct separate scores for each text type
479 because the questions did not specify type of book; thus, there were five of these variables
480 in September and five in December.

481 For data analytic purposes, we created several composites from the situated variables,
482 to reduce the number of variables included in the analyses. The *situated motivation com-*
483 *posite* for September was the sum of all five situated motivation constructs for narrative
484 text, plus the sum of the five situated motivation constructs for information text for each
485 student in September, which ranged from 10 to 40. The *situated motivation for narrative*
486 *text composite* in September was the sum of all scores for the five situated constructs
487 for narrative books for each student in September, which ranged from 5 to 20. The *situated*
488 *motivation for informational text composite* in September was the sum of all scores for the
489 five situated constructs for information books for each student in September, which ran-
490 ged from 5 to 20. Two identical, situated measures were created from the December inter-
491 views. The rationale for creating these composites, rather than using individual variables,
492 was that the individual codes were based on relatively few statements from students, and
493 the codes for one motivation tended to be well associated with codes for other
494 motivations.

495 For the general motivation measures derived from the interview, we were most interest-
496 ed in examining their growth over time. Initial analyses of the five general motivation vari-
497 ables (interest, perceived control, efficacy, collaboration, and involvement) showed that
498 efficacy and involvement showed growth from September to December. Therefore, we cre-
499 ated *general motivation composites* for September and December that were a sum of the
500 general efficacy and general involvement scores from the student interviews, which ranged
501 from 2 to 8. The rationale for this composite was that both of these constructs of efficacy
502 and involvement showed significant change during the instruction, whereas none of the
503 other constructs changed significantly. To identify the predictors of motivation change,
504 we needed a measure that changed across the observed period of time in this study. This
505 composite made it possible to examine the prediction of change in motivation by other
506 measures, such as reading comprehension, and the situated motivation measures. We do
507 not assume that this composite completely depicts student motivation; it instead represents
508 those aspects of motivation that changed over time in this study.


509 3. Results

510 3.1. Attributes of reading motivation

511 The first question of the study was: What are the meanings and attributes, as expressed
512 by fourth-grade children in interviews, of the following motivational constructs of reading
513 motivation: interest, perceived control, involvement, collaboration, and self-efficacy? To
514 address this question, we attempted to identify critical features of the motivational con-
515 structs as expressed by the students. For each motivation construct, we describe attributes
516 and qualities of the motivation constructs that were coded from students' responses to the
517 interview questions, using some a priori coding categories and additional categories that
518 emerged from students' responses.

519 3.1.1. *Interest in reading*

520 Initially, the construct of interest was characterized as students' report or display of
521 positive interactions with text and high positive affect toward text, topics in text, authors,
522 and series. The examination of students' responses to questions about what interested
523 them about the books they brought to the interview revealed a number of characteristics
524 or attributes of interest in reading from the children's perspectives. Students with high
525 interest typically exhibited the following: (a) the display of high, positive affect for a book
526 or topic, such as saying they really liked the book, (b) statements of enjoyment of reading,
527 (c) high coherence in content recall of text, or being able to provide a clear description of
528 the contents of a book or books that they read, and (d) high detail in content recall of
529 books that they found interesting. Other attributes that were important, but less frequently
530 mentioned, included: (e) naming multiple topics, authors, or series of interest, which indi-
531 cated that the student had favorite books, topics, or authors that he/ she liked to read, (f) a
532 statement about rereading all or part of a book, (g) pursuing a topic or an author through
533 planning, or (h) connecting reading to personal experiences or feelings. Students coded as
534 four usually showed a large majority of the attributes presented at the beginning of this
535 section.

536 With respect to affect, the most highly interested students had positive affect toward
537 books, favored certain authors, and enjoyed favorite topics. In contrast, the least inter-
538 ested readers reported that they did not have a favorite book, did not enjoy any
539 authors, and always preferred other activities, such as bike riding or playing with
540 friends. A predominant feature of the high interest readers was that they held extreme-
541  well formed preferences for specific topics or genres. Some students preferred such
542 topics as reptiles, while others preferred series such as *The Magic School Bus* or *Harry*
543 *Potter*. Combined with their enthusiasm, these students displayed exceptional memory
544 for the broad landscape, as well as the vivid details in the books they had read. They
545 offered detailed plot lines or elaborated descriptions of such topics as animals, volca-
546 noes, or baseball players. One interviewer challenge was to move the students beyond
547 the extended narration of their favorite books into other motivational constructs of
548 importance to the investigation. These high interest readers typically reread all or
549 portions of books, pursued topics in and out of school, and connected reading to their
550 personal experiences or feelings.

551 Also salient was the students' deep comprehension and complex cognitive command of
552 these texts that accompanied their enjoyment and enthusiasm. Students with high positive
553 affect for a certain topic invariably had deep recollection of information or books about
554 the topic, whereas students with low affect for reading on a topic displayed little recall
555 and grasp of content. This suggests that high interest in reading is not limited to the
556 strong, positive affect surrounding books, but also to the high comprehension, recall,
557 and organization of knowledge in memory typical of these readers.

558 3.1.2. *Perceived control*

559 The construct of perceived control was defined initially as valuing choice related to
560 reading, enjoying pursuing reading independently, and often choosing one's own books
561 to read. Specific attributes and qualities of this construct expressed most frequently by
562 the children included: (a) choosing a specific book or books, (b) expressing preference
563 for personal choice of books, as compared to having books chosen for them by teachers
564 or other adults, (c) valuing choosing to read, and (d) frequently making choices about

565 books. Other attributes children mentioned included: (e) having strategies for finding or
566 choosing books, (f) believing that choice enabled the student to be independent with
567 respect to reading, (g) choice enabled students to find interesting books, (h) choice enabled
568 students to find topics, and (i) choice enabled ownership of certain books or reading more
569 generally.

570 Preferring to be in control and making their own choices about reading was character-
571 ized by a desire to select topics and books, to do so frequently. Students at the highest lev-
572 els of this construct preferred to choose their own books and to control their reading
573 activities. This control took the form of selecting topics, finding places to read, and read-
574 ing during free time in and out of school. Choice did not function in a vacuum for these
575 students, but was linked to the previously discussed attribute of interest. The purpose of
576 control, as expressed by students, was to enable them to maintain reading activity in
577 high-interest domains.

578 Not all students of this age preferred to choose their own books. Some expressed to us
579 that teachers and parents made better choices of reading materials for them, and that when
580 they were given opportunities to choose books they sometimes made mistakes. These stu-
581 dents preferred the guidance of adults, rather than their own autonomy, in selecting read-
582 ing materials. It would be interesting to see if this pattern changes as these students get
583 older. Finally, some students reported that they liked both choosing their own books,
584 and having close others choose books for them, showing that it is possible to be motivated
585 by both.

586 3.1.3. *Self-efficacy in reading*

587 Initially self-efficacy for reading was defined as the belief in one's capability to read well
588 and to understand hard parts in books. Attributes implicit in this definition and emerging
589 from students' responses to the interview questions were: (a) belief in oneself as a good
590 reader, (b) confidence in reading, and (c) knowledge and use of strategies in reading. State-
591 ments made by the students about how they knew they were efficacious (or were not effi-
592 cacious) in reading included statements of reading capacity regarding: (d) ability to
593 recognize most words, (e) ability to figure out the meaning of unfamiliar words, (f) a pref-
594 erence for challenging books, (g) statements about feedback from parents or teachers
595 about being a good reader, or (h) statements about oneself as reading well or better than
596 other students.

597 Thus, characteristics and attributes of self-efficacy in reading, as expressed by stu-
598 dents, included beliefs about their capabilities at reading different texts, preferences
599 for reading challenging books, and confidence in their reading skills. Students also
600 explained how they arrived at their judgments of efficacy. Teacher and parent feedback
601 were seen as key influences. In addition, students emphasized their ability at reading
602 difficult words and "figuring out the hard parts" of books as crucial to their sense
603 of efficacy. Somewhat surprisingly, only occasionally did understanding the book or
604 connecting the book to one's personal experience influence students' judgments of
605 efficacy. Thus, word skills and figuring out hard passages, rather than broader reading
606 comprehension skills, seemed to have the strongest impact on fourth-grade students'
607 self-efficacy for specific books.

608 Based on students' responses to the interview questions, it also appeared that general-
609 ized efficacy regarding "being a good reader" was a topic many students did not discuss
610 with elaboration. Reports for their situated efficacy that were linked to a particular book

612 were well formed and detailed. However, students did not appear to have well formed con-
613 ceptualizations of their generalized ability to read a wide variety of books in a wide variety
614 of situations. Although a student may have stated, “I am a good reader,” we found that
615 this usually referred to being competent in recognizing words in particular books. It did
616 not frequently refer to comprehending texts across a variety of topics for diverse purposes.
617 Perhaps a more general sense of efficacy develops later, after students have more experi-
618 ences with books and reading.

618 3.1.4. *Reading involvement*

619 The construct of involvement was defined as the experience of being absorbed in read-
620 ing, and spending extended amounts of time reading. Attributes of this construct emerging
621 from students’ responses included statements about: (a) reading a lot, (b) reading daily, (c)
622 getting lost (or absorbed) in books, (d) reading for a long amount of time, or (e) reading
623 for aesthetic purposes, such as the enjoyment of language, scenes, or fictional characters.
624 Some highly involved students stated that they had a regular time and/or place for read-
625 ing, made plans to read, read multiple books at the same time, and read a series of books
626 completely.

627 As with the other motivation constructs, students reported a wide range of involve-
628 ment experiences. That is, some students reported becoming deeply immersed in books
629 for long periods of time, while others reported that this simply has never occurred in
630 their lives. In this investigation, we distinguished between involvement and interest by
631 the students’ devotion of time to reading. Some students reported moderate to low
632 involvement (short amounts of time), even though they reported substantially high
633 interest in a specific topic. However, the reverse rarely occurred in which students
634 had high involvement and time spent, while expressing lower interest. At the highest
635 levels of involvement, these students planned for large of amounts of time reading,
636 had books available, and organized their personal activities to afford reading opportu-
637 nities. These students also appeared to be capable readers. The most involved students
638 read approximately $4\frac{1}{2}$ h per day in and out of school, according to our estimates. This
639 contrasts to the least involved who read approximately 30 min per day total in and out
640 of school (Guthrie, 2004).

641 3.1.5. *Collaboration*

642 This construct was defined as communicating orally or in writing with other individuals
643 or groups about reading. From this definition and student responses to the interviews, the
644 attributes of collaboration as a motivational construct included: (a) sharing or talking
645 about books with friends or family, (b) reading together with friends or family, (c) borrow-
646 ing books from friends or family, (d) talking about books with peers in class, (e) sharing
647 writing about books with others, (f) talking with the teacher about reading, and (g)
648 expressing enjoyment of reading books recommended by others. Some students also
649 expressed very positive affect about collaborating with others on reading or sharing books
650 with others.

651 Interacting socially and collaborating around reading occurred for some students,
652 but not for the majority. The most collaborative students read daily with their parents
653 and friends, usually outside of school. Some students enjoyed talking extensively with
654 their teacher about the content and drama of what they were enjoying. Note, however,
655 that this social and collaborative motivation for reading correlated least well with the

656 her motivational constructs. Many students who had high interests, substantial
657 involvement, and well formed self-efficacy were relatively solitary readers. Further, it
658 appeared from a number of the students' responses that the students' degree of social
659 connections to reading was influenced by the nature of their family relationships and
660 personal bonds with friends. For example, several children told us they took care of
661 younger siblings, and used reading as a way to pass the time with their brothers
662 and sisters.

663 3.2. Relations of aspects of reading motivation

664 The second question was: To what extent do aspects of reading motivation relate to one
665 another? For this research question, we focused on the five general motivation variables
666 derived from the interviews done in September and December (see Table 1). In September,
667 the correlations of the general motivation variables were uniformly statistically significant,
668 with the median point for the correlations at $r(24) = .66$ ($p < .01$). While significant, this
669 shows less than 44% of the variance shared among the motivations. In December, the
670 median point of the correlations was $r(24) = .45$ ($p < .01$). The main reason for this
671 decrease in the median point appears to be that the social motivation variable measured
672 in December did not relate significantly to any other December motivation variable. How-
673 ever, the other motivations were correlated with each other with a median of $r(24) = .64$
674 ($p < .01$). Thus, it appears that the constructs are moderately correlated and, thus, semi-
675 independent.

676 3.3. Relations of motivations for narrative and information books

677 The third research question was: How do children's motivations for reading narra-
678 tive and information books relate to one another? The relevant correlations are pre-
679 sented in Table 2; to reduce the number of correlations computed, the composite
680 situated variables for narrative and information text were used in these analyses, rather
681 than each individual variable. These motivations were fairly stable over time. Narrative
682 reading motivation correlated with itself at $r(24) = .72$ ($p < .01$) in September and
683 December, and information book reading correlated with itself at $r(24) = .68$
684 ($p < .01$) in September and December. However, within a time point, the two different
685 motivations did not correlate as highly with each other. In September, narrative and
686 information book reading motivations correlated at $r(24) = .57$ ($p < .01$), and in
687 December, narrative and information book reading motivations correlated at
688 $r(24) = .51$ ($p < .05$). These correlations were moderate, suggesting that motivations
689 for reading narrative and information books are somewhat distinct.

690 The distinctions between narrative and information reading motivation can further be
691 observed in these correlations with teacher ratings and reading achievement. In December,
692 the teacher ratings of students' motivation (REI) correlated significantly with narrative
693 reading motivation, $r(24) = .67$ ($p < .01$). However, the teacher ratings did not correlate
694 significantly with information book reading $r(24) = .37$ (ns). In September, the Gates-
695 MacGinitie Reading Comprehension Test scores correlated significantly with narrative
696 motivation, $r(24) = .52$ ($p < .01$), but not significantly with information motivation,
697 $r(24) = .37$ (ns). In December, the Gates-MacGinitie Reading Comprehension Test scores
698 correlated higher with narrative reading motivation $r(24) = .79$ ($p < .01$) than information

Table 1
Correlations among motivational constructs at two time points

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Gen. interest-Sept.	—														
2. Gen. choice-Sept.	.68**	—													
3. Gen. social-Sept.	.69**	.73*	—												
4. Gen. efficacy-Sept.	.68**	.39*	.58**	—											
5. Gen. involve-Sept.	.86**	.62**	.62**	.64**	—										
6. Gen. mot comp.-Sept.	.85**	.57**	.66**	.90**	.91**	—									
7. MRQ-Sept.	.23	.20	.23	.43*	.19	.34	—								
8. Gen. interest-Dec.	.79**	.63**	.42*	.69**	.78**	.81**	.18	—							
9. Gen. choice-Dec.	.59**	.67**	.24	.27	.46*	.40*	.28	.63**	—						
10. Gen. social-Dec.	.42*	.36	.40	.44*	.30	.40	.19	.29	.31	—					
11. Gen. efficacy-Dec.	.63**	.48**	.32	.75**	.54**	.71**	.18	.78**	.36	.30	—				
12. Gen. involve.-Dec.	.87**	.57**	.44*	.69**	.86**	.86**	.24	.84**	.54*	.35	.64**	—			
13. Gen. mot comp.-Dec.	.82**	.57**	.40	.79**	.77**	.86**	.20	.89**	.47*	.35	.91**	.91**	—		
14. MRQ-Dec.	.03	.06	.00	.18	.13	.16	.63**	.15	.03	.05	.17	.01	.06	—	
15. Teach. rating-Dec.	.72**	.77**	.37	.47*	.63**	.59**	.27**	.73**	.67**	.17	.38	.46	.45	.25**	—

Note. Gen., general.

Gen. mot. comp., general motivation composite.

Gen. involve., general involvement; Teach. rating = Teacher rating.



Table 2

Correlations among motivational and reading comprehension variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Gates-Mac.-Sept.	—														
Mult. text comp.-Sept.	.47*	—													
Gen. comp. mot.-Sept.	.59**	.37	—												
Sit. tot. mot.-Sept.	.50**	.33	.85**	—											
Sit. narr. mot.-Sept.	.52**	.30	.77**	.86**	—										
Sit. info. mot.-Sept.	.37	.26	.75**	.91**	.57**	—									
MRQ-Sept.	.52**	.13	.34	.31	.31	.25	—								
Gates-Mac.-Dec.	.75**	.60**	.69**	.60**	.60**	.44*	.49**	—							
Mult. text comp.-Dec.	.40	.47**	.47*	.37	.40*	.20	.08	.67**	—						
Gen. comp. mot.-Dec.	.63**	.47*	.86**	.80	.67**	.65**	.20	.71**	.52**	—					
Sit. tot. mot.-Dec.	.59**	.34	.89**	.83**	.74**	.71**	.37	.69**	.50*	.89**	—				
Sit. narr. mot.-Dec.	.75**	.43	.83**	.71**	.72**	.57**	.39	.79**	.48*	.75**	.85**	—			
Sit. info. mot.-Dec.	.32	.06	.72**	.71**	.55**	.68**	.29	.47**	.30	.78**	.89**	.51*	—		
MRQ- Dec.	.14	.09	.16	.09	.04	.13	.63**	.21	.06	.06	.18	.28	.12	—	
Teach. rating-Dec.	.37	.39**	.59**	.53*	.51*	.38	.27**	.71**	.45	.45	.56*	.67**	.37	.25**	—

Mult. text comp., multiple text comprehension.

Gen. composite mot., general composite motivation.

Sit. tot. mot., situated total motivation.

Sit. narr. mot., situated narrative motivation.

Sit. info. mot., situated informational motivation.

Teach. rating, teacher rating.

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

699 reading motivation, $r(24) = .47$ ($p < .05$). In sum, narrative reading motivation correlated
 700 highly with itself over time, with teacher ratings of students' motivation, and with stan-
 701 dardized reading comprehension. However, information reading motivation, although
 702 correlating well with itself over time, was much less well correlated with motivation for
 703 narrative, teacher ratings, and standardized reading comprehension.

704 3.4. Relations of multiple measures of motivation

705 The fourth question was: How do the students' interviews, student self-reports on ques-
 706 tionnaires, and teacher ratings relate to one another as sources of evidence about student
 707 motivation? The relevant correlations are presented in Tables 1 and 2. As discussed earlier,
 708 the general motivation variables related highly to one another at each interview time point
 709 (see Table 1). The situated variables related strongly to each other at each time point, and
 710 there was stability in their relations over time (see Table 2). Also, the General Motivation-
 711 al Composite (which is a combination of reading efficacy and involvement) in September
 712 and December correlated highly, $r(30) = .86$, $p < .01$, showing fairly high stability of these
 713 motivations across this time period. The General Motivational Composite correlated with
 714 the teacher ratings of students (Reading Engagement Index—REI) significantly in Septem-
 715 ber, $r(30) = .59$, $p < .01$, but only marginally in December, $r(30) = .45$, $p < .10$. The teach-
 716 er ratings also correlated significantly with many of the situated and general motivation
 717 variables measured in September and December (see Tables 1 and 2). Thus, these correla-

718 tions show concurrent associations between the teachers' ratings of reading engagement
719 and the interview ratings of students' motivations.

720 The students' self-reported motivations from the MRQ correlated significantly with
721 each other in September and December, $r(425) = .63$ ($p < .01$). In December, the students'
722 self-reported motivations correlated with the REI at a lower level, $r(425) = .25$ ($p < .01$).
723 However, MRQ scores did not correlate significantly with any of the general motivation
724 variables derived from the interviews as shown in Table 1, or with any of the situated
725 motivation variables shown in Table 2. Therefore, outside observer (interviewers and
726 teachers) ratings of students' internal motivation correlated well with each other, but
727 observers' ratings did not correlate with students' self-reports of their own motivations.

728 To examine whether this finding was a consequence of combining data across con-
729 structs of internal motivation, we performed a disaggregation. We identified three con-
730 structs on which we had teacher ratings, interviewer coding, and student self-reports
731 (interest, self-efficacy, and involvement) and correlated them (see Table 3). The correla-
732 tions within a method of measurement, and across constructs were moderate to high.
733 The median of 9 within-measure correlation coefficients was $r(24) = .58$ ($p < .001$). How-
734 ever, the correlations within a construct and across methods of measurement were relative-
735 ly low. The median of 9 within-construct across methods correlation coefficients was
736 $r(24) = .24$ (ns). The one across-method correlation that was significant was teacher rat-
737 ings and self-report of efficacy which was $r(24) = .26$ ($p < .05$). These results suggest that
738 based on a single rating, in the case of teacher ratings or interviewer coding, and single
739 scales in the case of self-report, the sources of evidence did not agree highly on the level
740 of student motivation on each of the three constructs. Because this could be due to unre-
741 liability of single-item measurement, and did not lead to clear patterns of correlation
742 across methods for the constructs, we believe it is best to use the composite data for most
743 analyses.

744 3.5. Relations of situated and general motivation

745 The study's fifth question was: How do students' motivations for situated and general
746 reading relate to one another? The relevant correlations are presented in Table 2; we used
747 the situated and general composites for these analyses rather than the individual situated
748 and general variables. As can be seen, in September, the situated composite correlated with
749 general reading motivation composite highly, $r(24) = .85$ ($p < .01$). Likewise in Decem-
750 ber, the situated composite was highly correlated with the general reading motivation

Table 3
Correlations across methods of measurement and reading motivation constructs

Variables	1	2	3	4	5	6	7	8	9
1. Interest (TR)	—								
2. Efficacy (TR)	.50**	—							
3. Involvement (TR)	-.47**	-.61**	—						
4. Interest (SR)	.02	.00	.07	—					
5. Efficacy (SR)	.18*	.26**	-.26**	.58**	—				
6. Involvement (SR)	.08	.17	-.14	.45**	.48**	—			
7. Interest (IC)	.24	.48	-.56	.29	.30	.26	—		
8. Efficacy (IC)	-.37	-.19	.00	.34	.40	.31	.78**	—	
9. Involvement (IC)	.11	.43	.51	.00	.08	.00	.84**	.64**	—

751 composite, $r(24) = .89$ ($p < .01$). Furthermore, the narrative situated motivation measure,
 752 and information motivation situated measure in September correlated with the December
 753 general motivation composite $r(24) = .67$ ($p < .01$) and $r = .65$ ($p < .01$) respectively, near-
 754 ly as highly as the narrative and information measures predicted the December general
 755 motivation composite $r(24) = .75$ ($p < .01$) and $r(24) = .78$ ($p < .01$), respectively. There-
 756 fore, the situated measures and the general measures in the interviews were highly
 757 associated.

758 3.6. Predicting reading comprehension and reading motivation

759 Our study's sixth question was: To what extent does reading motivation predict reading
 760 comprehension growth, and to what extent does reading comprehension predict growth of
 761 reading motivation, using measures that vary according to text, source, and context? This
 762 question was addressed with data represented in Table 4 and multiple regression analyses
 763 as shown in Tables 5 and 6. Two comprehension variables were used in these analyses, stu-
 764 dents' Gates-MacGinitie scores and students' scores on the multiple text comprehension
 765 measure. The motivation variables were general motivations from the September inter-
 766 views, consisting of interest, involvement, efficacy, choice, and social. We also used the
 767 General Motivation Composite consisting of the combination of self-efficacy and involve-
 768 ment based on the interview coding. This variable was used in these analyses because it
 769 showed growth from September to December.

770 In Analysis #1 of Table 5, the dependent variable was the Gates-MacGinitie Reading
 771 Comprehension Test score in December. The independent variable that was entered first in
 772 the regression was the Gates-MacGinitie in September, to control for students' initial
 773 reading comprehension. September Gates-MacGinitie scores predicted December Gates-
 774 MacGinitie scores significantly, $R^2 = .56$, $p < .001$. When this posttest was controlled
 775 for this pretest statistically, the (non error) variance remaining in the posttest represented

Table 4

Means and standard deviations of variables used in multiple regressions

Variable	<i>N</i>	<i>M</i>	<i>SD</i>
1. Gates-MacGinitie-Sept.	29	477.5172	46.49932
2. Multiple text comprehension-Sept.	423	2.58	1.067
3. General composite motivation-Sept.	30	5.5667	1.92414
4. Situated total motivation-Sept.	28	25.1071	6.41953
5. Situated narrative motivation-Sept.	31	13.0645	3.29581
6. Situated info. motivation-Sept.	28	12.0357	3.93919
7. MRQ-Sept.	461	59.0542	9.60589
8. Gates-MacGinitie-Dec.	29	497.41	49.441
9. Multiple text comprehension-Dec.	403	3.16	1.219
10. General composite motivation-Dec.	23	5.9130	1.95199
11. Situated total motivation-Dec.	22	24.8182	5.23392
12. Situated narrative motivation-Dec.	24	13.0000	2.79751
13. Situated info. motivation-Dec.	22	12.0000	3.22195
14. MRQ-Dec.	425	59.9271	9.35096
15. Teacher rating-Dec.	331	18.0604	4.54166
16. Gates-MacGinitie-grade equiv.-Sept.	29	4.4862	2.67551
17. Gates-MacGinitie-grade equiv.-Dec.	28	5.604	3.0641

Table 5
Multiple regressions of reading motivation and reading comprehension

Dependent variable	Independent variable	R	R ²	ΔR ²	F Cha	Sig. Cha
1. Gates MacGinitie Reading Comp. Dec.	Gates MacGinitie Reading Comp. Sept	.75	.56	.56	31.51	.000
	Interest motivation-Sept.	.82	.67	.12	8.48	.008
2. Gates MacGinitie Reading Comp. Dec.	Gates MacGinitie Reading Comp. Sept	.75	.56	.56	31.51	.000
	Choice motivation Sept.	.88	.77	.22	23.19	.001
3. Gates MacGinitie Reading Comp. Dec.	Gates MacGinitie Reading Comp. Sept.	.75	.56	.56	31.51	.000
	Involvement motivate. Sept.	.83	.68	.12	9.23	.006
4. Gates MacGinitie Reading Comp. Dec.	Gates MacGinitie Reading Comp. Sept	.75	.56	.56	31.51	.000
	Efficacy motivation Sept.	.78	.61	.03	2.03	ns
5. Gates MacGinitie Reading Comp. Dec.	Gates MacGinitie Reading Comp. Sept	.75	.56	.56	31.51	.000
	Social motivation Sept.	.80	.63	.06	3.53	ns
6. Gates MacGinitie Reading Comp. Dec.	Gates MacGinitie Reading Comp. Sept.	.75	.56	.56	31.51	.000
	Composite-Inv. Eff Sept.	.81	.65	.09	5.80	.024

Table 6
Multiple regressions of reading motivation and reading comprehension

Dependent variable	Independent variable	R	R ²	ΔR ²	F Cha	Sig. Cha
1. Mult. text comp.-Dec.	Mult. text comp.-Sept.	.75	.57	.57	31.25	.001
	Gen. mot. composite-Sept.	.77	.60	.02	1.32	ns
2. Gen. mot. composite-Dec.	Gen. mot. composite- Sept.	.85	.72	.72	51.06	.001
	Sit. mot. total-Dec.	.90	.81	.09	8.73	.008
3. Gen. mot. composite-Dec.	Gen. mot. composite-Sept.	.85	.72	.72	51.06	.001
	Sit. mot. info.-Dec.	.89	.78	.06	5.57	.029
4. Gen. mot. composite-Dec.	Gen. mot. composite-Sept.	.86	.73	.73	57.86	.001
	Sit. mot. narr.-Dec.	.86	.74	.01	.46	ns
5. Gen. mot. composite-Dec.	Gen. mot. composite-Sept.	.91	.83	.83	95.91	.001
	Sit. mot. total-Sept.	.91	.83	.00	.08	ns

Note. Gen. mot. composite, general motivation composite.

Mult. text comp., multiple text comprehension.

Sit. mot. info., situated motivation information.

Sit. mot. narr., situated motivation narrative.

776 student change from pretest to posttest. As the mean change was positive, we can refer to
 777 the change as *growth*. Therefore, the next independent variable entered in the regression
 778 was tested for the significance of its association with growth in reading comprehension.
 779 When interest was entered as the independent motivation variable, it explained 12% of
 780 the variance in reading comprehension growth, which was statistically significant
 781 ($p < .008$).

782 As shown in Analysis #2 in Table 5, the motivation variable of choice explained 22% of
 783 the variance in reading comprehension growth, which was statistically significant
 784 ($p < .001$). Involvement explained 12% of the variance in reading comprehension growth,
 785 which was significant ($p < .006$). The variables of efficacy and social did not explain a sig-

786 nificant amount of variance in comprehension growth. The General Motivation Composite
787 in September accounted for 9% of the variance, which was significant at ($p < .05$). This
788 verifies that these general motivation variables significantly predicted growth in reading
789 comprehension in these conditions (See Table 5.)

790 To examine the inverse, that reading comprehension would predict reading motivation
791 growth, we conducted a multiple regression with the General Motivation Composite from
792 the interviews in December as the dependent variable. The first independent variable was
793 the General Motivation Composite from the interviews in September, which predicted the
794 December scores significantly, $R^2 = .77$, $p < .001$. This afforded the opportunity to predict
795 *growth* of reading motivation. The second independent variable was the Gates-MacGinitie
796 Reading Comprehension Test score in September. This was not significantly associated
797 with the general motivation dependent variable in December. Therefore, reading compre-
798 hension did not predict *growth* in reading motivation with these measures and this time
799 period.

800 We further investigated whether motivation predicted comprehension growth using a
801 profile analysis. We inspected a matrix of all the general motivations in the pre-assessment
802 and post-assessment for all the students. It was evident that three profiles of students were
803 present. Profile A consisted of 11 students who entered the study with high interest (3 or 4
804 in the coding scheme) and retained high interest through to the post assessment. Profile B
805 consisted of 7 students who increased at least one level in either involvement or self-effi-
806 cacy during the course of the study from pre- to post-assessment. Profile C consisted of
807 6 students who were low (all motivations at 2 or lower) at both the pre-and post-assess-
808 ments. From Profile C, one outlier was removed.

809 We conducted an Analysis of Variance with group (Profiles A, B, and C) as the inde-
810 pendent variable, and reading comprehension (GatesMacGinitie) in December as the
811 dependent variable and GatesMacGinitie score in September as the covariate to investi-
812 gate whether these profiles were associated with reading comprehension growth. The main
813 effect was significant, $F(2/17) = 7.11$, $p < .006$. Post hoc tests showed that Profile A (high

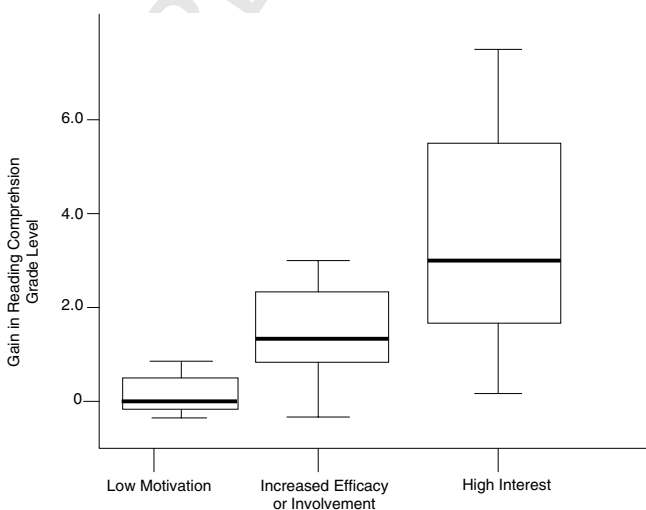


Fig. 1. Gain in reading comprehension associated with reading motivation profiles.

814 interest) had higher growth than Profile C (low overall motivation) ($p < .002$). Profile B
815 (motivation composite increase) had higher reading comprehension growth than Profile
816 C ($p < .012$). However, Profile A and B were not significantly different from each other.
817 Thus, the high interest profile group and the motivation composite gain group were both
818 associated with more reading comprehension growth than the low general motivation
819 profile. This is shown in Fig. 1.

820 Analysis #1 in Table 6 looked at how motivation predicted growth in reading
821 comprehension as measured by the multiple text comprehension variable; the predictive
822 relationship was not significant. We expect that this is attributable to the slightly lower
823 reliability of the multiple text comprehension task than the Gates-MacGinitie Reading
824 Comprehension Test. This result is consistent with the finding that the General Motivation
825 Composite in December correlated higher with the Gates-MacGinitie in December
826 ($r = .63$, $p < .01$), than with the multiple text comprehension score in December
827 ($r = .47$, $p < .05$).

828 Similar multiple regression analyses were done using motivation as measured by
829 student self-report on the MRQ. In the first, the Gates-MacGinitie score in December
830 was the dependent variable, and the Gates-MacGinitie score in September was entered
831 first as a controlling independent variable, and the September MRQ rating was
832 entered second as the predictor. The MRQ rating did not add a statistically significant
833 amount of explained variance. In the second analysis, the December MRQ rating was
834 entered first as a controlling variable, and the Gates-MacGinitie score in September
835 was entered as the predictor. The Gates-MacGinitie score did not add any statistically
836 significant amount of explained variance. The self-reported motivation data did not
837 yield any predictions of growth. Therefore, it is evident that the interview motivation
838 data predicted reading comprehension growth, but the self-report motivation did not
839 predict reading comprehension growth. This suggests that the multiplicity of source of
840 evidence in motivation should be taken into account in predicting reading comprehen-
841 sion growth.

842 We were also interested in the predictors of the general reading motivation variable
843 used in the previously described analyses. Because general reading motivation was associ-
844 ated with reading comprehension growth, it is valuable to examine the variables that may
845 be associated with general reading motivation. We focused on certain situated motivation
846 composites as possible predictors. In the first of these analyses (Analysis #2 in Table 6),
847 the General Motivation Composite in December was the dependent variable, and the Gen-
848 eral Motivation Composite in September was the first independent variable, which
849 accounted for 72 % of the variance ($p < .001$). We next entered the situated motivation
850 composite from December, which had an R^2 of .81, which meant that it accounted for
851 an additional 9 % of the variance beyond that accounted for by the September General
852 Motivation Composite. This was statistically significant at $p < .001$. This result suggests
853 that students who had relatively high situational motivation in December had increased
854 in general motivation more than students who had relatively lower situational motivation
855 in December. Note that multiple regression Analysis #1 in Table 6 showed that the situ-
856 ated motivation composite from September did not significantly predict growth in general
857 motivation from September to December. It was not whether students entered the instruc-
858 tion with situated motivation, but whether students completed the instruction with situat-
859 ed motivation that was associated with their growth in general motivation for reading.

860 The next two analyses looked at whether general reading motivation growth was better
861 predicted by the situated motivation for information books, or the situated motivation for
862 narrative books. Analysis #3 of Table 6, shows a multiple regression with the General
863 Motivation Composite in December as the dependent variable, and the General Motiva-
864 tion Composite in September the first independent variable; it accounted for 72% of the
865 variance ($p < .001$). The variable of Situated Motivation for Information Books from
866 December was entered next, which accounted for 6% of the variance, and was significant
867 at $p < .05$. Thus, students' motivation to read information books predicted growth in gen-
868 eral reading motivation.

869 In Analysis #4, a multiple regression was conducted with the General Motivation Com-
870 posite in December as the dependent variable, and the General Motivation Composite in
871 September as the first independent variable, which accounted for 72% of the variance
872 ($p < .001$). The next independent variable, Situated Motivation for Narrative Books mea-
873 sured in December, did not add significantly to the prediction of general motivation
874 growth. The final analysis (Analysis #5 in Table 6) looked at whether the Situated Moti-
875 vational total from September added to the prediction of General Motivation in Decem-
876 ber, beyond the variance predicted from the General Motivation Composite from
877 September. As can be seen, the situated total composite from September did not add pre-
878 dictive power to the equation. Therefore, it appears that students' situated motivation for
879 information books in December explained a significant amount of variance in general
880 reading motivation growth under the conditions of this study.

881 Our findings suggest that the multiplicity of situated reading motivation for different
882 texts is important in understanding how situated motivation predicted general motivation.
883 That is, motivation for reading information books predicted an increase in general moti-
884 vation, but motivation for reading narrative books did not predict the increase in general
885 motivation. Thus, understanding the text genre as a source of multiplicity in reading moti-
886 vation is useful for understanding the growth of reading motivation.

887 4. Discussion

888 Researchers increasingly are calling for studies of motivation in specific domains, rather
889 than treating motivation as a general phenomenon (Bong, 2004; Wigfield et al., 2004). This
890 study was designed to investigate characteristics and attributes of elementary school-aged
891 children's motivations. We studied multiple aspects of reading motivation, including moti-
892 vation for different types of texts, and varying sources of evidence for motivation. We also
893 looked at how growth of reading motivation related to growth in reading comprehension,
894 as well as how growth in reading motivation itself was predicted by multiple measures of
895 motivation.

896 With respect to the characteristics and attributes of motivation, we focused on students'
897 internal motivations including: (1) interest, (2) perceived control, (3) self-efficacy, (4)
898 involvement, and (5) collaboration. We chose these constructs because of their centrality
899 to the engagement model of reading development (Guthrie & Wigfield, 2000), and their
900 documented relations to reading comprehension. To date, little attempt has been made
901 to examine the multidimensionality of these constructs based on interviews. These inter-
902 views elaborated and enriched our understanding of the nature of children's reading moti-
903 vation as seen by the children themselves.

904 For interest, it was quite apparent from students' responses that interest and positive
905 affect for reading invariably were associated with high cognitive recall and comprehension
906 of text. Thus, when students were interested they were highly cognitively engaged, and stu-
907 dents' responses showed the interrelations of these two processes in ways that elaborate
908 our understanding of these relations. As [Renninger \(2000\)](#) suggested, students with high
909 interest are often quite knowledgeable in their preferred domain. They value the domain
910 and their interest grows as their information base and cognitive commitment to it increase.
911 This study illustrates the depth of these relations.

912 For perceived control, students at the highest level of this construct preferred to choose
913 their own books, valued such choices highly, and had elaborate strategies for selecting
914 books. Students for whom choice was important had ways of ensuring they had opportu-
915 nities to make choices. Interestingly, however, we found that many of the students thought
916 others, like parents and teachers, made better reading choices for them, and so they did
917 not have a strong desire to choose what they read. Moreover, some students expressed that
918 they like both making their own book choices, as well as having close, trusted others
919 choose books for them. This suggests that perhaps students can be motivated by both per-
920 sonal choice and choices made by close others ([Iyengar & Lepper, 1999](#)). Our study sup-
921 ports findings from other researchers showing that choice in the classroom is quite
922 complicated, and deserves to be investigated at a more micro- level ([Stefanou, Perencevich,](#)
923 [DiCintio, & Turner, 2004](#)).

924 Empirical literature refers to perceived control as the belief that one's behavior can
925 influence one's own experience or the external environment ([Skinner et al., 1990](#)). We
926 observed that while perceived control in reading is important to highly motivated readers,
927 such students do not engage in controlling behaviors for their own sake, but usually for
928 the purposes of finding books, affording themselves reading experiences, and enjoying
929 new authors who are personally relevant and linked to their knowledge of the world. Stu-
930 dents who preferred to choose their own books saw such choices as a way for them to
931 express their autonomy and ownership over their own reading, providing support for
932 [Ryan and Deci's \(2000\)](#) postulate that when students are autonomous they are intrinsically
933 motivated.

934 In the interviews, students appeared to define their reading self-efficacy with respect to
935 how well they handled difficult words and passages in books. Two additional findings were
936 particularly interesting. First, students did not define reading efficacy in terms of broader
937 reading comprehension skills, focusing instead on hard words or difficult passages. Thus,
938 they defined efficacy quite specifically. Second, many students did not seem to have a clear
939 sense of their general reading efficacy, or at least did not have a lot to say about it. Their
940 sense of reading efficacy was tied to their word and sentence level skills. These two findings
941 may have occurred because we interviewed fourth graders, who may still define their effi-
942 cacy primarily with respect to specific skills. It would be interesting to do a similar study
943 with older children to see if their sense of general reading efficacy is more clearly defined
944 and expressed, as [Bandura \(1997\)](#) might predict.

945 Students' involvement in reading was characterized by large amounts of time spent
946 reading, absorption in different books, and the importance of reading as an activity for
947 the students. Students highly involved in reading seem to define themselves as readers,
948 and devote much time and energy to reading. Finally, several interesting findings emerged
949 with respect to collaboration. First, a number of students reported that reading with oth-
950 ers was important to them, and they had strong positive affect associated with collabora-

951 tion. However, a number of other children who seemed highly engaged in reading said
952 they did not collaborate often. Some children also stated that their collaborations in read-
953 ing were defined by relationships, rather than collaborations leading to relationships with
954 others. Thus, collaboration with others did not appear a necessary condition for all chil-
955 dren to engage fully in reading.

956 Across these constructs, there were a number of connections in the interviews, most
957 notably those between interest and control or choice, and interest and involvement.
958 Children expressing a great deal of interest in reading liked choosing what they read,
959 and were highly involved in reading, whereas children less interested were not as
960 involved in reading or did not think choosing what they read was that important.
961 As just noted, collaboration in reading did not appear to connect as closely to the
962 other reading motivations.

963 These connections were corroborated by the moderate correlations among the motiva-
964 tions especially in September, but also in December. In December, social collaboration
965 failed to correlate significantly with the other motivations. From the standpoint of multi-
966 dimensionality, these motivations were moderately associated statistically. The moderate
967 association may be due to mutual effects. For example, a student with high involvement,
968 immersed in many reading activities, is likely to gain high efficacy for reading due to the
969 known effect of the amount of reading on reading competence (Cunningham & Stanovich,
970 1997). The associations among these five constructs suggest that they can be treated as
971 semi-independent. While having somewhat distinctive qualities, these different aspects of
972 internal motivation for reading can be combined in a composite in statistical analyses
973 of the relation of internal motivation with other variables such as reading comprehension.

974 Another way the interviews provided a more elaborated understanding of children's
975 motivation is by revealing motivational constructs that had not appeared in the previous
976 literature. We asked students about other reasons for their reading and aspects of their
977 connections to books beyond the primary set of motivation constructs addressed. A sub-
978 stantial proportion of students reported that knowledge and information was what they
979 were seeking in books. We did not create this as a formal construct nor place it in our rub-
980 ric, because we did not systematically ask all students about the extent that they read for
981 knowledge. However, many students volunteered that they wanted to learn about their
982 favorite topic, enjoyed gaining information, or liked being very well informed in certain
983 domains. Being knowledgeable was an explicit goal mentioned by many, and while it is
984 a commonsense purpose for reading, it has not been formalized quantitatively in prior
985 research as a motivational construct. We believe that reading for the purpose of knowl-
986 edge development is a vitally important motivational attribute for future investigation.

987 The second issue we addressed with respect to reading motivation was its multiplicity
988 across text genres. We examined children's motivation for reading narrative and informa-
989 tion books, asking about each book type in the interviews. Students' motivations for both
990 genres were reliable and stable (i.e., highly correlated) across time, but correlated with
991 each other in the low to moderate range. These findings show that these motivations
992 are semi-independent. We suggest that reading narrative texts is often affectively laden,
993 and that readers adopt affective goals for narrative reading. They seek excitement, emo-
994 tional relationship with characters, interpersonal drama, and a range of aesthetic experi-
995 ences. Reading information books, in contrast, is energized by goals of reading for
996 knowledge, seeking information, and the desire to explain our physical or cultural worlds.
997 Thus, motivations for reading narrative and information books should be distinguished in

998 studying how motivation develops or how it relates to other factors such as reading
999 comprehension

1000 Further, reading motivation for narrative texts correlated with teachers' ratings, and
1001 standardized reading comprehension, but reading motivation for information books did
1002 not correlate significantly with either of these other variables. This may be due to inacces-
1003 sibility of information books in classrooms and, thus, students cannot do wide reading of
1004 this sort. Therefore, students with this motivation do not have as much opportunity to
1005 learn key comprehension strategies, such as inferencing and self-questioning. Finally,
1006 teachers did not perceive this motivation for information books to reflect "real" internal
1007 motivation (judging from the non-significant correlation of teacher ratings and student
1008 self-report of motivation for information book reading) and, thus, may not have encour-
1009 aged it as much as narrative reading, which may result in slightly lowered comprehension.

1010 We further examined the multiplicity of motivation by looking at different sources or
1011 types of evidence about students' motivation. Do students' self-reports yield similar find-
1012 ings to reports of others, such as interviewers or teachers? We found some interesting pat-
1013 terns here. The teacher's rating of student motivation (REI) correlated positively with the
1014 interview-based general composite in September and December. As "others," teachers and
1015 interviewers concurred on the levels of students' motivations. The picture for self-reported
1016 motivations was different, however. Although the MRQ showed reliability by correlating
1017 with itself in September and December, the MRQ did not correlate significantly with the
1018 interview composite in September or December. The MRQ correlated modestly with the
1019 teacher ratings in September and December. It appeared that students' perceptions of their
1020 motivations were not associated highly with the interviewers' perceptions of students'
1021 motivations, or the teachers' perceptions of students' engagement in reading.

1022 This low association between self-reports and observer reports of students' motivations
1023 could be due to the normative vs. absolute basis for the reports. When asked about a moti-
1024 vation, such as interest in a narrative book, a student expressed an affect such as "it's excit-
1025 ing" or "it's boring." The expression was based on an absolute criterion of how they felt,
1026 and how strongly they felt. Individuals do not reference such statements about their inter-
1027 est, involvement, value of autonomy, or collaboration to the affects of other students.
1028 However, the observers in this study made normative ratings. They each rated students'
1029 levels of interest in reading, for example, in comparison to other students in the class.
1030 As a consequence, motivation as perceived by the self is not isomorphic with motivation
1031 as perceived by others. Thus, multiplicity of source of evidence appears to contribute to
1032 multiplicity of reading motivation.

1033 It is possible there is a difference between asking observers to rate student's on the char-
1034 acteristic of whether "I believe the child is confident or efficacious" or whether "I believe
1035 the child feels himself/herself to be confident or efficacious." The latter may correlate with
1036 children's self-report more highly than the former. If so, the different measures used here
1037 may have actually measured slightly different motivational constructs. It is also possible
1038 that the measures tapped the same construct, but some children's absolute scale is broader
1039 than others. That is, some students with strong affective responses may rate their reading
1040 motivation high and convert this motivation to broad and deep reading. Other students
1041 with relatively weaker affective responses may rate their reading motivation high, but
1042 do not devote a high amount of cognitive effort or volitional strategies to reading broadly
1043 or deeply. These issues appear to warrant further research. At present, it appears that
1044 when the purpose of measuring motivation is to relate it to achievement, then teacher

1045 or observer ratings are desirable, but when the purpose is to understand the students' felt
1046 affects, then self-reports may be advantageous.

1047 We attempted to investigate the growth of reading comprehension and reading motiva-
1048 tion, taking into account these observed sources of multiplicity. Our findings were that
1049 reading motivation from the interviews predicted *growth* in reading comprehension. That
1050 is, students' motivational level in September predicted their increases in comprehension on
1051 the standardized test from September to December. These data suggest that upon entering
1052 fourth grade, motivation was a contributor to comprehension growth in this time period.
1053 However, the inverse did not occur. Reading comprehension level of students measured
1054 from interview coding did not influence their motivation growth, according to the multiple
1055 regression analyses. Also, student self-reported motivation on the MRQ did not predict
1056 reading comprehension growth. Consequently, the source of evidence for motivation
1057 determined whether growth predictions were found. Thus, multiplicity with respect to
1058 source of data is important in studying growth patterns. We found that reading compre-
1059 hension growth was predicted by motivation as observed by interviewers, but not as self-
1060 reported by students. Note that one limitation of this study is that the number of students
1061 in these regression analyses was relatively low. This may limit the generalizability to other
1062 samples, and may also obscure some possible relationships. These relationships should be
1063 studied further in larger samples of children of different ages.

1064 For this age group, Gottfried (1990) previously reported that reading achievement on a
1065 standardized test at ages 7 and 8 predicted intrinsic motivation at age 9. From this it might
1066 be inferred that comprehension was a precursor, and perhaps a causal variable, influencing
1067 the development of motivation. The difference between our findings and those of Gottfried
1068 could be attributed to the different ages of the students in the two studies. Differences
1069 could also be due to the contrast in evidence for motivation. We used an interview,
1070 whereas she used student self-reports on a questionnaire to measure motivation. The stud-
1071 ies also differed in time span (we examined 3 months and she examined 12 months). Clear-
1072 ly, further research is needed on the topic of motivational and comprehension growth in
1073 this age group.


1074 We believe that the interviews shed light on the growth pattern that we observed. Our
1075 enriched understanding of the motivational attributes of students in this investigation
1076 points toward important cognitive and conceptual attributes or correlates, of the motiva-
1077 tional constructs. For example, students who had high interest, based on their positive
1078 affect and enthusiasm for specific topics or authors, also had high memory for plots
1079 and topics, which implies high comprehension for the books they read. Students with
1080 low interest had dramatically lower memory, and presumably lower comprehension, dur-
1081 ing their reading. A highly interested reader, in other words, does not merely have positive
1082 affective responses separable from other portions of his reading process. These students
1083 appear also to comprehend deeply. Therefore, as these highly involved, highly interested,
1084 highly efficacious students enter fourth grade, they are readers who consume a lot of books
1085 and comprehend them at relatively substantial levels. This high comprehension for a sub-
1086 stantial number of books plausibly leads to improvement in their reading comprehension.
1087 Furthermore, students highly interested in reading appeared to have strong, personal
1088 attachments to certain topics in reading and reading as an activity. They expressed own-
1089 ership over the topics, and personal relatedness to the characters in books.

1090 In contrast, the students with low involvement (low amounts of time spent reading),
1091 low efficacy (doubting their capability), and low interest (no favorite topics or authors)

1092 in September, were not likely to create for themselves the literacy opportunities that would
 1093 enable them to increase in comprehension. Their motivational attributes did not afford
 1094 enough encounters at sufficient depth to improve their reading comprehension.

1095 We also observed predictors of growth in students' general reading motivation. Our
 1096 finding was that students' level of situated motivation in December predicted their growth
 1097 in general motivation from September to December. The situated motivation referred to
 1098 the degree of involvement in particular books, time spent reading specific books of high
 1099 interest, and efficacy for reading specific texts that were brought to the interview. It is
 1100 important to note that this predictive measure occurred in December, but not in Septem-
 1101 ber. Students with situated motivation in September did not necessarily show more general
 1102 motivation growth. However, students with situated motivation in December showed
 1103 more motivation growth than students with lower situated motivation in December. This
 1104 suggests that if students had acquired a high-level involvement for specific books and effi-
 1105 cacy for specific books, then their general motivation growth had increased during the
 1106 time period of the investigation. Of course, these are correlational data and the direction
 1107 of causality is unknown. It is possible that students who increased in general motivation
 1108 were able to increase their own situated involvement and efficacy by finding books they
 1109 were confident in reading and spending a substantial amount of time with them. More
 1110 studies should be done to elaborate and explain this relationship between situated motiva-
 1111 tion and growth of generalized reading motivation. However, these findings provide one
 1112 possible way in which situated and general motivation may connect, and so provide an
 1113 empirical assessment of some of Hidi and Harackiewicz's (2000) expectations. It would
 1114 be interesting to build on this research by conducting interview studies with children at
 1115 different ages, to capture more fully their sense of their specific and general reading moti-
 1116 vations for different genres, and how they relate to reading comprehension.

1117 5. Uncited references

1118  Guthrie et al. (2006), Skinner and Belmont (1993).

1119 Appendix A. Interview questions

1120 Narrative Book:

1123 *Warm-up*

- 1124 1. Where did you get this book?
- 1125 2. What is it about?

1126 *Interest*

- 1127 3. Was this book interesting? Tell me more about that.
- 1128 4. What kinds of books are interesting to you?

1129 *Perceived control*

- 1130 6. Did you choose this book?
- 1131 7. Why did you pick this one?
- 1132 8. Do you like it more when someone else gives you a book or when you pick out a book
 1133 by yourself?

1134 *Collaboration*

1135

- 1136 10. Did you talk to anyone about this book?
1137 11. Did you read this book aloud with anyone?
1138 *Efficacy*
1139 13. Were you good at reading this book? What made you think that?
1140 14. Were there any hard parts in this book? What did you do when you came to those
1141 parts?
1142 *Involvement*
1143 16. About how long did it take you to read this book? How many days, and how many
1144 minutes each day?
1145 16a. When do you usually read?
1146 17. Was this book so good you couldn't stop reading it?
1147 Information Book:
1148 *Warm-up*
1149 19. Where did you get this book?
1150 20. What is it about?
1151 *Interest*
1152 21. Was this book interesting? Tell me more about that.
1153 *Perceived control*
1154 23. Did you choose this book?
1155 24. Why did you pick this one?
1156 *Collaboration*
1157 26. Did you talk to anyone about this book?
1158 27. Did you read this book aloud with anyone?
1159 28. Do you ever talk about or read books with other people?
1160 *Efficacy*
1161 30. Were you good at reading this book? What makes you think that?
1162 31. Were there any hard parts in this book? What did you do when you came to those
1163 parts?
1164 32. How do you know whether you are a good reader?
1165 *Involvement*
1166 34. About how long did it take you to read this book? How many days, and how many
1167 minutes each day?
1168 34a. When do you usually read?
1169 35. Was this book so good you couldn't stop reading it?
1170 36. How often do you spend a lot of time reading a book?
1171 *Broader Reading Questions*
1172 37. What is your all-time favorite book?
1173 38. What do you like best about reading?
1174 39. Do you think of yourself as a reader? Why or why not?
1175 40. Why do you spend time reading?
1176 41. Are there other things you like to read besides books?
1177 42. Is reading important to you? What makes you think that?
1178 43. What do you like to do for fun?
1179

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