

Long-term Effects of Male Reading Tutors, Choice of Text and Computer-based Text on Boys' Reading Achievement

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National and international test findings support anecdotal observations by teachers that boys' performance on tests of reading is lower than that of girls (Council of Ministers of Education Canada, 1999, 2001; Statistics Canada, 2003). Proficiency in reading is the strongest predictor of school success (Hoffert & Sandberg, 2001, O'Reilly & McNamara, 2007), and basic mastery of literacy skills is a protective factor against school failure. Furthermore, success in school and in reading is related to better life trajectories as measured by factors such as employment, health, and involvement with community activities (Statistics Canada, 2003), providing evidence that we would be wise to address the reading needs of boys.

Unfortunately, efforts to address deficits in some boys' reading has resulted in "quick fixes" that do little to address this complex issue (Foster, Kimmel & Skelton, 2001; Sokal, Katz, Adkins, Grills, Stewart, Priddle, Sych-Yereniuk, Chochinov-Harder, 2005). Recent initiatives in Canada, the United States, England, and Australia have supported using recuperative masculinity as a basis of addressing boys schooling needs. That is, some teachers, parents, policy-makers and scholars advocate creating boy-friendly practices that allow "boys to be boys" while at the same time learning to read. Such "boy-friendly" practices as hiring more male teachers, using more computer-based learning, and giving children more choice have all been advanced as solutions to addressing boys' learning needs.

In contrast, other scholars have attacked the essentialist underpinnings of gender-based reforms. Researchers in Canada, the United States, the United Kingdom, and Australia are quick to point out that other qualities, such as socio-economic status and minority ethnicity, play an important role in nuancing the category of boys (Alloway, 2007; Alloway & Gilbert, 1997; Francis & Skelton, 2005; Luke, Freebody & Land, 2000; Martino & Kehler, 2007) and advocate moving away from essentialist approaches to addressing boys' reading needs. These scholars argue that not all boys struggle with reading and that not all girls are proficient readers, facts that challenge the "one size fits all" approach to addressing boys' reading needs. Critics of the essentialist stance hold that generalized strategies aimed at all boys as a group are overly simplistic, a misdirection of funding, a dilution of impact, an approach that will direct attention toward many boys who are not at risk and may potentially harm some boys *and girls* (Alloway, 2007; White, 2007)

Despite these concerns, boy-friendly programming continues to burgeon. Often-advocated characteristics of "boy-friendly" practices include male reading tutors, computer-based reading, and providing choice in reading materials. These three variables are being embraced in many programs despite a lack of consensus in the research literature in terms of their effectiveness.

Three Variables Underpinning “Boy-Friendly” Practices

Male Teachers

Numerous large-scale and international studies have demonstrated that male students do not perform significantly better for male teachers than they do for female teachers (see Allan, 1993; Butler & Christianson, 2003; Carrington & Skelton, 2003; Carrington, Tymms, & Merrell, 2005; Coulter & McNay, 1993; Ehrenberg, Goldhaber, & Brewer, 1995; Froude, 2002; Martin, 2003; Sokal et al., 2005). In contrast, Dee (2006) recently found that 13-year-old boys (and girls) performed better for same-gender teachers. Based on the results of a large retrospective study of over 24,000 eighth-grade students, Dee predicted that one year with a male teacher of Language Arts would eliminate one-third of the 1.5 year reading gap between female and male students. It should be noted, however, that Dee’s findings were generated through post-hoc analysis of large databases rather than by experimental design or classroom observation. Furthermore, his findings were not based on random assignment: In fact, his data suggest that students are strategically assigned to specific teachers by gender. That is, male students with low achievement orientation may have been strategically assigned to a male teacher as a means of remediating students’ performance. Thus, there is little evidence to support strategically hiring more male teachers as a way to address boys’ reported underachievement.

Use of Technology

Another proposal for engaging boys in reading is to incorporate technology into the pedagogy used by classroom teachers. Use of computers has been shown to help increase boys’ achievement in school, especially in boys with low achievement (Bangert-Drowns, Kulik, & Kulik, 1985; Niemiec & Walberg, 1985). Comprehension, as measured by richness of story-retelling, is superior when children read from computer-based books as compared with traditional texts (Doty, Popplewell, & Byers, 2001; Mathews, 1996; Pearman, 2003).

Aside from achievement effects, use of computers is related to more positive attitudes in boys. Whitley (1997) conducted a meta-analysis of 82 studies and found that boys have more positive attitudes toward computers than do girls. Furthermore, boys are three times more likely to attend summer computer camp (Hess & Miura, 1985), perhaps indicating greater interest in computers. In a review of twelve studies, Sutton (1991) found that in all studies except one with a small sample size, male students perceived computers to be within the male domain. Furthermore, this trend is even stronger in minority male students (Campbell & Perry, 1989). Millard (1997) suggests that boys are “staking a claim to technology” and that this skill set makes them “differently literate.” Seeing as many Canadian boys and girls also view computer use as masculine (Sokal, 2002), it is reasonable to hypothesize that presenting reading materials, viewed by some boys as feminine, through a masculine format may “neutralize” feminine perceptions of the reading task.

It is important to note, however, that some researchers and educators hold reservations about using computers to support boys’ reading. Research shows that the positive achievement effects of computer use decline over time, suggesting that the novelty effect of computer-based instruction may be at work (Clark, 1985). Lewin (1996)

also cautions that while the interactive nature of computerized books creates greater interest in boys (Booth, 2002), it may foster over-dependence on features that decode words rather than fostering independent meaning-making skills and strategies in readers. Furthermore, Lefever-Davis and Pearman (2005) showed that “hot links” and animation features in CD-ROM books tend to distract readers and increase reading time, leading to reader fatigue.

Accompanying the concern about the effects of computer use on reading practices is a concern about what other lessons boys learn while using computers. Rowan, Knobel, Bigum and Lankshear (2002) suggest that the ‘techno-push’ to engage struggling male readers through use of technology must be examined. They suggest that the “kill and thrill” nature of some computer games teach boys lessons about societal expectations of masculinity and about gender roles. They suggest that computer use by males must be disaggregated to consider the implications both on girls and on other males and that the expectation that ‘boys + technology = learning’ is far too simple and ignores the relationships that nestle this equation in schools and in society.

Implicit in these observations is the understanding that the very nature of computer-based reading is multi-dimensional and includes a broad range of activities from simply reading a printed text from a screen to much more interactive activities including violent gaming. Collectively, however, computer-based reading, while having benefits, is not without its drawbacks in terms of boys’ reading and normative masculinity.

Providing Choice

The claim that providing children with choices in their reading materials enhances reading motivation and performance is another belief that has gone unquestioned until recently. According to Gambrell, the importance of providing children with choices of reading materials in order to intrinsically motivate them is well recognized (Gambrell, 1996; Gambrell & Marinak, 1997). Furthermore, research has shown that teachers agree with giving choices to students in their classes because they also believe that choices increase students’ effort, motivation, and learning (Baumann, Hoffman, Moon, & Duffy-Hexter, 1998; Flowerday & Schraw, 2000) especially with at-risk learners who have little interest in the task (Schraw, Flowerday, & Lehman, 2001).

Although some research supports the positive effects of choice on students’ enjoyment (Sweet, Guthrie, & Ng, 1998) and efficiency of learning (Reynolds & Symons, 2001), studies fail to support positive cognitive effects associated with choice (Parker & Lepper, 1992; Schraw, Flowerday & Reisetter, 1998). Overall, according to Flowerday and Schraw (2000) and other researchers, having choices positively effects students’ affective responses to text, but has no effect on cognitive responses. Flowerday, Schraw, & Stevens (2004) contend that the research designs used to study effects of choice have been confounded by the effects of interest. These authors believe that it is a reasonable conclusion that when readers are given choices in their reading materials, they tend to choose texts that interest them. Findings that some researchers have attribute to students’ opportunities for choice could, in reality, be the results of students’ interest in the texts they chose (Flowerday et al., 2004). Accordingly, they predict that providing children with a number of undesirable (uninteresting) choices will do little to motivate

them—a situation that challenges the claims of the intrinsic value of choice to children’s reading motivation.

Given the prevalence of these three approaches to addressing boys’ reading needs (hiring more male teachers, using more computer-based reading, and giving children choice in reading materials) we sought to examine their long-term effects on children’s reading comprehension achievement. We chose to work with grade three and four boys who were struggling readers. Short-term effects have been previously reported (Sokal & Katz, 2008; Sokal, Katz, Chaszewski, & Wojcik, 2007; Sokal, Monette, McBey & Wojcik, 2006), and indicated attitudinal differences yet no achievement differences based on any of the dependent variables. The current follow-up study examined the achievement scores of the boys two years after completion of the intervention. Moreover, the scores of the boys were compared to a comparison group whose initial reading scores were matched to those of the boys in the intervention group.

Methods

Participants

The participants ($N = 124$) included 62 third ($n = 32$) and fourth grade ($n = 30$) Canadian boys who had participated in a 22-week reading intervention two years prior (the participant group) and 62 anonymous boys who did not (the comparison group). The two groups were matched by gender, age, socio-economic status, and reading comprehension level at the time of the original study’s onset based on information provided by the boys’ schools. Data had been collected on these variables by their school division, and being as the data was confidential, the matching processes were conducted at the divisional offices by divisional psycho-metricists.

Reading achievement.

All members of the participant group in the original study had been identified as struggling readers by their classroom teachers. The school division’s annual assessment is called the *Comprehensive Assessment Program (CAP)*, and these scores were used to confirm the teachers’ identification of struggling readers in their classes. The CAP is a series of teacher-administered tasks that allow teachers to determine whether the children are performing below grade level, at grade level, or above grade level based on a criteria list for each grade. The CAP involves a series of tasks. The tasks related to reading comprehension relate to retelling of story details such as identifying the main characters, setting, main events, and relating the story to other stories or experiences. The students are marked as independent, developing, or needing assistance depending on the number of tasks successfully completed with or without prompting. These data were used to match the performance of the comparison group with the performance of the participant group at the time of the onset of the reading visits.

Socio-economic status.

The boys in the participant group came from homes with low incomes. Thirty-five percent of the families had incomes under \$20,000. Thirty-three percent had incomes between \$20,000 and \$39,999. Eighteen percent had incomes between \$40,000 and \$59,999, while only thirteen percent had incomes over \$60,000. The school division used this information to select the matches within the comparison group.

Recruitment.

Two years after completion of the original study, the school division supplied current school location information for all the boys who took part in the original study—the boys who had been identified as struggling readers while in third and fourth grade. Some boys had discontinued attending school. Most boys had changed schools. In fact, the boys from the original study had attended one of only 12 schools at the time of the study. Two years later, the boys were now spread over 34 schools—the results of migration as well as graduation from elementary to junior high schools. Not all of the new schools were receptive to the invitation to take part in the research follow-up study, and not all families agreed to allow access to their sons' current achievement reports. Of the 175 boys who took part in the original study, access to current achievement scores was granted by the parents of 62 boys. The school division supplied current achievement information for these boys as well as for an additional anonymous 62 boys who did not take part in the intervention. The two groups were matched by gender, age, socio-economic status, and reading comprehension level at the time of the intervention's onset. It was noted on the report from the division that nine of the 62 participant group boys had since been identified as having special needs ranging from developmental delays to severe emotional behavioural disorders.

Procedures and Instruments

Being as the current report is a follow-up to another study that occurred two years prior, details of the original study are reported. The original study entailed working with 180 inner-city struggling readers who attended grades three or four in twelve schools. Each child was randomly assigned to 1) work with either a male or a female reading tutor (RT); 2) read from either a computer screen or from printed texts; 3) choose his own texts or have texts chosen for him by the RT over the duration of the 22 weeks of the study.

The RTs were current students enrolled in the Faculty of Education. All had significant experiences working with children, and all were visited several times to ensure the consistency of experiences being provided to the participants. During the RT's weekly visits to the schools, the RTs read with individual boys for a period of 30 minutes. The texts used with each child were consistent across groups, and were based on research about books that hold high interest for some boys (Worthy, Moorman, & Turner, 1999). Some books were read from printed texts and others were read in *pdf*. format from a computer screen. No hot buttons or interactive software was used.

Procedure for the choice versus no choice groups related to who chose the book to read at the beginning of each session. In the 'no choice' group, the RT chose the book based on his or her understanding of the child's interests and reading capabilities. In the 'choice' group, the children were provided with all the texts at the beginning of each session and were allowed to choose the one(s) that interested them most. The children were allowed to change the books during any particular session only in the choice group. All RTs had access to the same 50 book titles during the study.

The thirty-minute sessions used Paired Reading, based on Topping's research (1987). In this program, the RT and child begin reading together in a duet fashion. Once the child feels confident to continue reading on his own, he provides a signal to the RT. The child then continues to read on his own until he makes an error. At that point, the RT

assists and scaffolds the child, and the cycle begins again. Evaluation of the use of the Paired Reading approach in several countries suggests strong gains in word identification and text comprehension result from use of this approach—the dependent variable in our study (Miller & Kratochwill, 1996; Northern Alberta Reading Specialists' Council, 1991; Pumfrey, 1986).

At the end of the project, all of the books used in the research, approximately \$7000 of high interest books, were donated to the participating schools. The children who participated in the project made the presentation to the schools, and the books are now housed in the children's classrooms for use by all the class members.

For the purposes of the current report, we wanted to see whether the boys who participated in the study had different current reading comprehension outcomes than boys who did not participate. Furthermore, we wanted to see whether any of the variables that the boys experienced (male or female RTs; print-based or computer-based reading materials; choice or no choice of reading materials) were associated with better reading comprehension over time.

Findings

In order to address the research questions, a pair of analyses was conducted. The first analysis sought to determine whether there was a significant comprehension score difference between the boys who participated in the intervention ($n = 62$) and a matched sample of those who did not ($n = 62$). Results of an independent samples t -test indicated that, two years after the original study, there were no differences in current reading comprehension scores between children who took part in the original study and those who did not, $t(122) = .03, p = .97$.

A subsequent ANOVA was conducted to determine whether there were reading comprehension score differences based on RT sex, use of technology, or choice of reading materials between groups of the children who participated in the original study. Results showed there were no differences in current CAP reading comprehension scores between children who worked with a male RT ($n = 30$) and those who worked with a female RT ($n = 32$), $F(1,61) = .07, p = .79$. There were also no differences in current CAP reading comprehension scores between children who worked with computers ($n = 14$) and those who did not ($n = 48$), $F(1,61) = 1.12, p = .30$. However, results indicated that there were significant differences in current CAP reading comprehension scores between children who chose their reading materials ($n = 21$) and those who did not ($n = 41$), $F(1,61) = 6.90, p = .01$. In order to ensure that the unequal cell sizes were not coupled with unequal variances, Levene's test of equality of variance was conducted. The p values ranged from .54 to .90, indicating insufficient evidence for rejecting the equality of variance assumption.

The coding system for achievement used by the division allocated approximately three units for each year of reading comprehension achievement. Examination of the means revealed that children who were not given a choice in their reading materials achieved gains of approximately 7.2 units while those who were given a choice of reading materials gained only 5.7 units over the two year period. The 1.5 unit difference is indicative of a reading comprehension score difference of one half of one year—the same duration as the Paired Reading activities. Please see Table 1.

Table 1

Mean Comprehension Scores for all Groups

Group	Start	2 years later	Mean Gain
Choice	15.95	21.66	5.71*
Comparison (choice)	16.72	22.57	5.85
No Choice	14.27	21.51	7.24*
Comparison (no choice)	15.00	20.69	6.69
Female RT	15.09	21.78	6.69
Comparison (Female RT)	16.72	21.28	4.56
Male RT	14.56	21.33	6.77
Comparison (Male RT)	14.39	21.16	6.77
Technology	16.26	22.71	6.43
Comparison (Technology)	17.88	20.93	3.05
No Technology	14.42	21.23	6.81
Comparison (No Technology)	14.79	21.32	6.53

* Difference is significant at the $p = .05$ level

Discussion

The findings of the current study are interesting in several regards: 1) in the demographics of the children two years after the intervention; 2) in the lack of effects for many of the variables proposed to address boys' reading needs; and 3) in the one variable found to be linked to higher reading achievement after a two-year period.

First, it was disconcerting that many of the boys who had been identified as struggling readers in third and fourth grade had left school by sixth or seventh grade. These boys, aged twelve and thirteen, had already given up on schooling. Furthermore, it was unsettling that nine of the 62 participant group boys had been diagnosed with special needs in the two years since the intervention. While it is true that learning disabilities usually occur in clusters, the high incidence (15 %) of special needs within this group calls into question whether earlier diagnosis and participant may have helped ameliorate some of the boys' reading problems.

Second, while initial reports at the midpoint and the endpoint of the intervention showed that some of the variables being studied had effects of the boys' self-perceptions

as readers (Sokal, , Katz, Chaszewski, & Wojcik, 2007) and views of reading as a feminine activity (Sokal & Katz, 2008), the follow-up analyses of their achievement effects were nil. While earlier reports had hypothesized that the short-term changes to reader self-perceptions may cause the boys to be more willing to read and in time become to better readers, these were not borne out. Given that the international concern with boys' reading outcomes is based on the gender *achievement* gaps rather than on *attitudes* toward reading or feminine views of reading, the proposed interventions are unlikely to address the achievement gap concern.

Perhaps most interesting is the one variable that was found to be associated with children's higher reading comprehension: not being provided with a choice of reading materials. While this finding seems counter-intuitive, it can be explained by further considering not only the child's interest in a given book, but also the likelihood that he would be able to successfully read and understand the book. Anecdotal reports from the RT indicated that the children in the choice group tended to choose books based on the titles of books they had heard other participant boys discuss in class. When individual boys asked to read these books, however, the books were sometimes at a reading level unattainable to the particular child. During the intervention, these choice group children were always given the opportunity to change books, and sometimes they did so. At other times, they struggled along with a book that was much too difficult for them.

In contrast, the boys in the no choice group had their texts selected for them by the RTs. Given that the RTs worked one-on-one with each boy individually for 22 weeks, the RTs got to know the boys, their interests, and their reading levels well. The RTs were directed to choose high interest books at a level of attainable challenge for the boys in the no choice group. More often than not, the boys in the no choice group were able to successfully read and understand their books. It is possible that the variable responsible for the higher reading comprehension in the no choice group is not the fact that they had no choice, but that they had weekly practice reading high interest books that were appropriate to their reading level. The choice group was not always provided with the same type of experience. This finding highlights the important role that adult play is helping children learn to read.

Theoretical support for this finding can be found within Vygotsky's theory of assisted learning. According to Vygotsky (1978), children possess a zone of proximal development. The zone of proximal development exists between the actual developmental level (usually viewed as tasks that the child can complete successfully on his/her own) and the level at which children can successfully complete tasks with assistance. While the actual developmental level represents developmental tasks that have been completed, the zone of proximal development represents the "buds" of new development. "Thus, the zone of proximal development permits us to delineate the child's immediate future and his dynamic developmental state, allowing not only for what already has been achieved developmentally but also for what is in the course of maturing" (Vygotsky, 1978, p. 85). Scaffolding is the process through which the mentor supports the child toward success. Paired Reading is based on the scaffolding process through its use of prompts and support. However, success at the task within the zone depends not only on the level of scaffolding but also on the difficulty of the task. For the children in our study who chose books at reading levels higher than their zone of proximal development, the scaffolding processes carried out in Paired Reading may have

been insufficient to scaffold the children to success. In these cases, Vygotsky's approach would indicate that the task level was not within the children's zones of proximal development. However, in the condition where the task difficulty was also considered—the participant group where the RTs chose books not only based on a specific boy's interest but also on that boy's ability level—the instruction would have been ensconced within the particular child's zone of proximal development. This latter condition would predict greater task success during the intervention and gives support to the need for teachers, parents, librarians and other concerned adults to ensure children have access to texts that not only interest the children but also are at appropriate reading levels.

As with any study, this research project has limitations. First, the children in the study were purposely selected because they represented the demographics of children who are frequently referred for reading interventions. That is, they were males from lower socio-economic circumstances who struggled with reading. The findings of the currently study should not be generalized outside this population.

Second, the children from the original who were still in school and therefore eligible to participate in the follow-up analyses may not be representative of all struggling readers. Without the inclusion of all the original participants, we cannot be sure that confounds were not in place that propelled some boys into continuing school and some into leaving and may have affected the results of the analyses.

Third, the intervention lasted one half of a school year. It is possible that a longer and sustained exposure to the study variables may have resulted in different findings. Moreover, the reading tutors were not the classroom teachers who taught the students on a daily basis. While the reading tutors did provide a variety of reading models, it is possible that the classroom teachers' effects were more salient to the children.

Considered together, the findings suggest that current initiatives such as hiring more male teachers, using more computer-based learning, and giving children more choice may be misguided. Despite findings of short-term gains in reader self-perceptions and decreases in views that reading is a feminine activity as previously reported, these short-term changes do not precipitate into better achievement in the long term. When considered alongside the sociological arguments against essentialist approaches, the lack of achievement results support the view that these types of interventions fall short of addressing boys' reading needs.

References

- Allan, J. (1993). Male elementary teachers: Experiences and perspectives. In C. Williams (ed.), *Doing "woman's work": Men in Non-Traditional Occupations* (pp. 113- 127). Newbury Park: Sage.
- Alloway, N. (2007). Swimming against the tide: Boys, literacies, and schooling- An Australian story. *Canadian Journal of Education*, 30(2), 582- 605.
- Alloway, N., & Gilbert, P. (1997). Boys and literacy: Lessons of Australia. *Gender and Education*, 9(1), 49- 58.
- Bangert-Drowns, R., Kulik, R., & Kulik, C. (1985). Effectiveness of computer-based education in secondary schools. *Journal of Computer-based Instruction*, 12, 59- 68.

- Baumann, J., Hoffman, J., Moon, J., & Duffy-Hexter, A.M. (1998). Where are teachers' voices in the phonics/whole language debate? Results from a survey of U.S. elementary teachers. *Reading Teacher*, 51, 636-652.
- Booth, D. (2002). *Even hockey players read*. Portland, ME: Pembroke Publishers.
- Butler, D. & Christianson, R. (2003). Mixing and matching: The effect on student performance of teaching assistants of the same gender. *Political Science and Politics*, 36, 781- 786.
- Campbell, N., & Perry, K. (1989, March). *Sex and ethnic group differences in high school students' computer attitudes and computer abilities*. Paper presented at the annual meetings of the American Educational research Association, San Francisco.
- Carrington, B. & Skelton, C. (2003). Re-thinking role models: Equal opportunities in teacher recruitment in England and Wales. *Journal of Educational Policy*, 12(3), 353- 265.
- Carrington, B., Tymms, P., & Merrell, C. (2005). *Role models, school improvement and the 'gender gap'-- Do men bring out the best in boys and women the best in girls?* Paper presented at the EARLI conference, University of Nicosia, Cyprus.
- Clark, R. (1985). Confounding in educational computing research. *Journal of Educational Computing Research*, 1, 137- 148.
- Coulter, R. & McNay, M. (1993). Exploring men's experiences as elementary school teachers. *Canadian Journal of Education*, 18, 398- 413.
- Council of Ministers of Education, Canada. (1999). *School Achievement Indicators Program (SAIP): Report on reading and writing assessment 1998*. Toronto, ON: Council of Ministers of Education, Canada.
- Council of Ministers of Education, Canada. (2001). *Measuring up: The performance of Canada's youth in reading, mathematics and science. The OECD PISA study*. Toronto, ON: Council of Ministers of Education, Canada.
- Dee, T. (2006). *Teachers and the gender gaps in student achievement*. [National Bureau of Economic Research Working Paper # 11660]. Available at <http://www.swarthmore.edu/SocSci/tdee1/Research/w11660revised.pdf>
- Doty, D., Popplewell, S., & Byers, G. (2001). Inter-active CD-Rom storybooks and young readers' reading comprehension. *Journal of Research on Computing in Education*, 33, 374- 384.
- Ehrenberg, R., Goldhaber, D., & Brewer, D. (1995). Do teachers' race, gender and ethnicity matter? Evidence form the National Education Longitudinal Study of 1988. *Industrial and Labour Relations Review*, 48, 547- 561.
- Flowerday, T., & Schraw, G. (2000). Teacher beliefs about instructional choice: A phenomenological study. *Journal of Educational Psychology*, 92(4), 634- 645.
- Flowerday, T., & Schraw, G., & Stevens, J. (2004). The role of choice and interest in reader engagement. *Journal of Experimental Education*, 72(2), 93- 114.
- Foster, V., Kimmel, M., & Skelton, C. (2001). "What about the boys?" An overview of the debates. In W. Martino & B. Meyenn (Eds.) *What about the boys? Issues of masculinity in schools*. Buckingham, England: The Open University Press.
- Francis, B., & Skelton, C. (2005). Reassessing gender and achievement: Questioning contemporary key debates. Abingdon, UK; Routledge.
- Froude, L. (2002). Study defies the 'boys need men' credo. *Times Educational Supplement*, 4471, 3- 9.

- Gambrell, L. & Marinak, B. (1997). Incentives and intrinsic motivation to read. In J. Guthrie & A. Wigfield (Eds.), *Reading Engagement: Motivating Readers through Integrated Instruction* (pp. 205- 217). Newark, Delaware: International Reading Association.
- Gambrell, L. (1996). Creating classrooms cultures that foster reading motivation. *The Reading Teacher*, 50(1), 14- 25.
- Hess, R., & Miura, I. (1985). Gender differences in enrollment in computer camps and classes. *Sex Roles*, 13, 193-203.
- Hoffert, S.I., & Sandberg, J.F. (2001). How American children spend their time. *Journal of Marriage and the Family*, 63(3): 295- 308.
- Lefever-Davis, S., & Pearman, C. (2005). Early readers and electronic texts: CD-ROM storybook features that influence reading behaviors. *The Reading Teacher*, 58(5), 446-454.
- Lewin, C. (1996). *Improving talking book software design: Emulating the supportive tutor*. Bradford, UK: Centre for Information Technology in Education, The Open University.
- Luke, A., Freebody, P., & Land, R. (2000). *Literate futures: Review of literacy education*. Brisbane, Queensland: Education Queensland.
- Martin, A. (2003). Primary school boys' identity formation and the male role model: An exploration of sexual identity and gender identity in the UK through attachment theory. *Sex Education*, 3(3): 257- 271.
- Martino, W., & Kehler, M. (2007). Gender-based literacy reform: A question of challenging or recuperating gender binaries. *Canadian Journal of Education*, 30(2), 406- 430.
- Mathews, K. (1996). The impact of CD-ROM storybooks on children's reading comprehension and attitudes. *Journal of Educational Multimedia and Hypermedia*, 5, 379- 394.
- Millard, E. (1997). *Differently literate*. London: Palmer Press.
- Miller, B.V. & Kratochwill, T. R. (1996) . An evaluation of the paired reading program using competency-based training. *School Psychology International*, 17(3), 269-291.
- Niemiec, R., & Walberg, H. (1985). Computers and achievement in elementary schools. *Journal of Educational Computing Research*, 1, 435- 440.
- O'Reilly, T., & McNamara, D. (2007). The impact of science knowledge, reading skill, and reading strategy knowledge on more traditional "high-stakes" measures of high school students' science achievement. *American Educational Research Journal*, 44, 161-196.
- Parker, L., & Lepper, M. (1992). The effects of fantasy contexts on children's learning and motivation: Making learning more fun. *Journal of personality and Social Psychology*, 2, 625- 633.
- Pearman, C. (2003). Effects of CR-ROM story books on the independent reading comprehension of second grade students (Doctorial dissertation, University of Arkansas, 2003). *Dissertation Abstracts International*, 64(07a) 2427.
- Pumfrey, P. (1986). Paired reading: Promise and pitfalls. *Educational Research*, 28(2), 89-94.
- Reynolds, P., & Symons, S. (2001). Motivational variables and children's text search. *Journal of Educational Psychology*, 93, 14-22.

- Rowan, L., Knobel, M., Bigum, C., & Lankshear, C. (2002) *Boys, literacy and schooling: The dangerous territories of gender-based literacy reform*. Buckingham: Open University Press.
- Schraw, G., Flowerday, T., & Lehman, S. (2001). Increasing situational interest in the classroom. *Educational Psychology Review*, 13(3), 211- 224.
- Schraw, G., Flowerday, T., & Reisetter, M. (1998). The role of choice in reader engagement. *Journal of Educational Psychology*, 90(4), 705- 714.
- Sokal, L. (2002). Temporal issues in gender schema inventories. *Canadian Journal of Infancy and Early Childhood*, 9(2), 91-96.
- Sokal, L., & Katz, L. (2008). Effects of technology and male teachers on boys' reading. *The Australian Journal of Education*, 52(1), 80- 93.
- Sokal, L., Katz, H., Adkins, M., Grills, T., Stewart, C., Priddle, G., Sych-Yereniuk, A., Chochinov-Harder, L. (2005). Factors affecting inner-city boys' reading: Are male teachers the answer? *Canadian Journal of Urban Research*, 14(1), 107-130.
- Sokal, L., Katz, H., Chaszewski, L., & Wojcik, C. (2007). Good-bye, Mr. Chips: Male Teacher Shortages and Boys' Reading Achievement. *Sex Roles: A Journal of Research*, 56(9-10), 651-659.
- Sokal, L., Monette, J., McBey, S., Wojcik, C. (2006 April). *Factors affecting boys' reading gains*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, California.
- Statistics Canada. (2003, November 25). *Education Indicators in Canada (Third Edition)*. Publication Number 81-852-XPE. Ottawa, ON: Author.
- Sutton, R. (1991). Equity and computers in the schools: A decade of research. *Review of Educational Research*, 61(4), 475- 503.
- Sweet, A, Guthrie, J., Ng, M. (1998). Teacher perceptions and student reading motivation. *Journal of Educational Psychology*, 90, 210- 223.
- Topping, K. (1987). Paired Reading: A powerful technique for parent use. *The Reading Teacher*, 40, 608-614.
- Vygotsky, L. (1978). *Mind in Society: The development of the higher mental process*. Cambridge, MA: Harvard University Press.
- White, B. (2007). Are girls better readers than boys? Which boys? Which girls? *Canadian Journal of Education*, 30(2), 554-581.
- Whitley, B. (1997). Gender differences in computer-related attitudes and behaviors: A meta-analysis. *Computers and Human Behaviour*, 13, 1- 22.
- Worthy, J., Moorman, M., and Turner, M. (1999). What Johnny likes to read is hard to find at school. *Reading Research Quarterly*, 34 (1), 12- 27.

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