Published in final edited form as:

J Educ Psychol Consult. 2018 ; 28(2): 164–189. doi:10.1080/10474412.2017.1323222.

Relationships between Home Literacy Practices and School Achievement: Implications for Consultation and Home-School Collaboration

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Abstract

In a five-year longitudinal study of typical literacy development (grades 1 to 5 or 3 to 7) relationships were examined between (a) parental responses to questionnaires about home literacy activities and ratings of children's self-regulation at home, both completed annually by the same parent, and (b) children's reading and writing achievement assessed annually at the university. Higher reading and writing achievement correlated with engaging in more home literacy activities. Parental help or monitoring of home literacy activities was greater for low achieving than high achieving readers or writers. Children engaged more minutes per week in reading than writing activities at home, but parents provided more help with writing and reported computers were used more for homework than school literacy instruction. Parental ratings of self-regulation of attention remained stable but executive functions—goal-setting, hyperactivity and impulsivity tended to improve. Results are translated into consultation tips for literacy learning and best professional practices.

Currently schools are expected to use evidence-based assessment and instructional practices. The current study was grounded in the authors' commitment to school psychologists engaging in proactive problem solving consultation with parents and teachers and other educational professionals to create positive, constructive home-school collaborations to facilitate the literacy development of all students. That is, both what educators do during the school day and what parents do at home may contribute to children's literacy development. Research has documented these relationships between home literacy activities and school literacy achievement in the pre-school and kindergarten years and P-K and K-1 transitions (Blatchford, 2014; Evans, Shaw, & Bell, 2000; Purcell-Gates, 1996; Walton, 1995; Whitehurst & Lonigan, 1998). Research has also established the predictive validity of early home literacy activities for future academic achievement (deJong & Lesemen, 2001; Senechal, 2006; Senechal, LeFevre, Thomas, & Daly; Storch & Whitehurst, 2002; Wagner et al., 1997). For example, five influences in family settings contribute to literacy acquisition: value placed on education, press for achievement, availability and instrumental use of

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Conflict of interest: The second author is the author of the *PAL II Reading and Writing Diagnostic Test*.

reading materials, reading with children, and opportunities for verbal interaction (Saracho, 2002).

Considerable research has shown that these relationships between home literacy and school literacy achievement may be due in large part to parental participation in the literacy activities in the home (Baker & Scher, 2002; Gutman & McLoyd, 2000; Hill, 2001; Hill & Taylor, 2004; Lamb Parker, Boak, Griffin, Ripple, & Peay, 1999; Senechal & Le Fevre, 2001; Senechal, Le Fevre, & Thomas, 2002; Suizzo & Soon, 2006). Moreover, the roles parents play in language learning may change as children master some skills and work toward developing others (Whitehurst & Lonigan, 1998). Also, parental perceptions about their involvement may change as children become more independent (Drummond & Stipeck, 2004). In addition, parental expectations and aspirations, particularly in high school students, influence literacy achievement (Hill et al, 2004; Jodl, Michael, Malanchuk, Eccles, & Sameroff, 2001; Spera, 2006). Thus, in the current study parents were asked annually from grades 1 to 5 or 3 to 7 about the nature of literacy activities their child participated in at home and the help they provided for their child's literacy learning at home. After completion of the five year longitudinal study what the parents shared was coded and analyzed.

At the same time, literacy learning is facilitated by the learner and not just parents and teachers. Although self-regulation of literacy learning (e.g., Evans et al., 2000; Senechal et al., 1998) has been investigated both at school and at home, these studies have tended to focus on word reading rather than reading comprehension, written expression, or other writing skills. In contrast, the goal of the current study was to examine how home literacy practices may relate to an array of writing and reading skills and self-regulation of learning these varied skills. Four research questions were addressed as follows.

1. Do concurrent relationships exist at each grade level 1 to 5 or 3 to 7 between parents' self-reported home literacy activities of their children and their children's reading and writing achievement at school?
2. Does the number of minutes per week a child spends at home engaged in literacy activities vary longitudinally from grades 1 to 5 or 3 to 7 and differ between reading and writing skills?
3. Does reported presence or absence of parental assistance with home literacy activities vary longitudinally from grades 1 to 5 or 3 to 7 and differ between the reading and writing?
4. Do parental ratings of self-regulation in the home vary longitudinally from grades 1 to 5 or 3 to 7, and are these ratings uniquely related to school achievement in specific reading or writing skills?

To facilitate translation science for applying research findings to best professional practices in school-home consultation and collaboration, the answers to these research questions were then translated into five Consultation Tips for School Psychologists and Other Educational Practitioners. These tips were designed to use in facilitating positive, constructive school-home collaborations in which the participation of parents is actively sought and valued.

Method

Participants

The sample was recruited from one of the largest urban school districts in the country (and the largest in the state where the research was conducted) through a letter sent at the end of kindergarten or second grade to all parents of children entering first or third grades in the fall in each of the 51 elementary schools in the district. The letter announced the opportunity to participate in a 5-year longitudinal study of reading and writing. Parents interested in having their children participate contacted the research study coordinator for additional information. Parents of 241 children gave informed consent and enrolled their children who gave assent per the approved institutional review board (IRB) at the university where the research was conducted in accordance with the ethical guidelines of the American Psychological Association. For the most part the children attended different schools; or if they attended the same school, they were not in the same class at their grade level in a given year or across years of the study and some moved to other schools in the district during the study. Classroom instruction, just like home environment, varied independently across participating children. Attrition across the five years was low (on average 3.5 per year in cohort 1 and 3.75 per year in cohort 2) and mainly due to moves out of the district.

The sample reflects the ethnic diversity of the urban area from which it was recruited near the university. In year 1, 6.3% of first graders and 9.7% of third graders were African American; 23.4% of first graders and 21.2% of third graders were Asian American; 64.8% of first graders and 65.5% of third graders students were European-American; 1.6% of first graders and 0.9% of third graders were Native American; and 2.3% of first graders and 2.7% of third graders were other or their parents did not report ethnicity. Because attrition was relatively low over the years, ethnic diversity did not change significantly across the years. Of the 91% parents reporting level of education in year 1, approximately 7% had less than a high school education, about 11% had more than a high school education but less than a college education, 40% had an undergraduate education, and 33% had completed graduate degrees. Parental level of education also did not change significantly across the years. The same parent, who with rare exceptions was a mother with legal educational decision making authority, consistently completed the home literacy questionnaire annually.

Measures

Home literacy questionnaires.—The parent questionnaire given in years 1 to 5 consisted of open ended questions about the child's feelings about reading or writing, minutes engaged in reading or writing per week at home, nature of reading or writing activities in which the child engaged at home, the nature of reading or writing help the parent provided, and minutes of helping child in reading or writing each week. The Appendix lists all the coded items observed in the parental open-ended responses as well as those that involve self-reported number of minutes per week. For year 1 the questionnaire did not differentiate home literacy activities that were school-related and non-school-related, but in years 2 to 5 in which this distinction was made, based on what was learned from year 1 reports. The Year 5 questionnaire (completed by parents of students in grades 5 or 7) also asked if the student used keyboarding, and if the child's typing was fluent or dysfluent.

Parent rating of self-regulation.—A parental rating scale for self-regulation (Thompson et al., 2005) was also given every year. Each of 18 items required choosing a rating along a 5- point Likert scale (0 to 4, with a lower score indicating fewer problems). Items were converted to one of four factors for inattention, executive functions—goal-setting, hyperactivity, or impulsivity based on Thompson et al.’s confirmatory factor study. Results were not used to diagnose ADHD.

Reading achievement measures.—The *Wechsler Individual Achievement Test-Second Edition* (WIAT-II) *Word Reading*, *Reading Comprehension*, and *Pseudoword Decoding*, which are scored for accuracy, were administered. For *WIAT- II Word Reading* (Wechsler, 2001) first graders identify letters and sounds, recognize initial and ending sounds and rhyming sounds in words, blend sounds to decode words, and read high frequency real words on a list; second graders complete phonological awareness and word reading activities; and third graders and above pronounce real words on a list. For *WIAT-II Pseudoword Decoding* (Wechsler, 2001) students apply letter-sound correspondences to decode pronounceable nonwords without meaning. For *WIAT-II Reading Comprehension* (Wechsler, 2001) students read a series of individual sentences or passages of text within a grade-appropriate item set and answer questions about what they have read. Questions require identifying the main idea, supporting details, and vocabulary in the read material.

Writing achievement measures.—For *WIAT II Spelling* (Wechsler, 2001), scored for accuracy, students spell single dictated words. Subtests of *WIAT-II Written Expression* (Wechsler, 2001) include *Alphabet* (grades 1 and 2), *Word Fluency* (grades 1 and above), *Sentence Combining* (grades 1 and above), and *Paragraph Composing* (grades 3 and above); all subtests at a grade level contribute to the total score. For Alphabet, students print in manuscript format the letters of the alphabet from memory, in order, in lowercase letters; it is scored for number of letters generated within 15 seconds which are legible and are in correct alphabetic order. For Word Fluency students write as many words in response to a verbal prompt as possible within 60 seconds. For Sentence Combining students combine two sentences into a single sentence that expresses all the ideas in the separate sentences. For Paragraph Writing students write a paragraph using a story prompt. Sentence and Paragraph Writing are scored on basis of spelling, grammar, and punctuation; scoring for Paragraph Writing also considers vocabulary.

Procedures

Administration and scoring.—All testing measures were individually administered by supervised graduate students during an annual assessment during the third or fourth month of a given school year. Scoring of tests was double checked by two graduate research assistants (RAs) before and after entering scores into the data base. Parent questionnaires included items in which parents were asked about their child’s feelings toward reading and writing, amount of time spent reading and writing at home per week, the nature of the reading and writing activities at home, if the parent provided help with reading and writing, and if so, the minutes of help per week and nature of the help provided. Teams of two RAs, who coded the responses to open-ended items on the parent questionnaires, discussed inconsistencies in their coding until reconciled. See the Appendix for the final coded

categories for the items. Because in year 1 parents reported both school-related and non-school related reading and writing activities at home, in years 2 to 5 the parent questionnaire included items about both. See Appendix. The RAs also tallied annual parent ratings of children's self-regulation at home for each of the four factors—inattention, goal-setting, hyperactivity, and impulsivity.

Data analyses.—Multiple methods were used. The parent questionnaires were designed to collect self-reported, open-ended responses from parents, which then were coded to characterize them. This method is similar to what school psychologists use in interviewing parents about their child's developmental history and their family history. Pearson product moment correlations were also computed between each of the coded items on the home literacy parent questionnaires and the normed reading and writing achievement measures for the current school year. Mixed Analyses of Variance (ANOVA) compared differences in means for domain (reading or writing) and time (grade levels 1 to 5 or 3 to 7), within participant variables, and cohort (1 or 2), a between participant variable, for (a) minutes per week child engaged in school-related or non-school related literacy activities, and (b) self-reported parental help (coded dichotomously with 0 indicating no help and 1 indicating some form of help). Mixed ANOVAs were also used to assess developmental changes over grade levels in the parental ratings of self-regulation for inattention, goal-setting, hyperactivity, and impulsivity for each cohort. The parental ratings of self-regulation were also correlated with assessed reading and writing achievement.

Results

Descriptive findings organized by cohort and longitudinally ascending grade levels across five years beginning with grade one (cohort one) or grade three (cohort two) are summarized in the main text. Inferential statistics for significant correlations, after Bonferroni corrections to control for multiple comparisons, between reading or writing achievement measures and specific kinds of parent-reported home literacy activities are reported in Table 1. Inferential statistics for ANOVAs for evaluating developmental changes in parent-reported home literacy practices are reported in Tables 2, 3, and 4.

Longitudinal Narrative of Home Literacy Activities

Cohort 1 Grade 1.—Most parents reported reading to their first grader (77%) and helping their first grader with reading (99%). From most to least frequent, help included listening to the child read, encouraging the child to read, going to the library for books, buying books, or reading. In parallel First graders read books, displays on computer monitors, school material, games, signs, and comics, and engaged in writing letters, notes, stories, journal entries, and songs.

Cohort 1 Grade 2.—The most frequent school-related reading and writing activities at home involved reading (75%) and writing (93%) homework but non-school related reading activities (range 6% to 66% across items in Appendix) and writing activities (range 13% to 47% across items in Appendix) were also reported. Second graders read books, games, computer monitor displays, magazines, comics, newspapers, and environmental print; most

of their writing involved homework. Parents helped second graders with school-related reading (79%) and writing (79%).

Cohort 1 Grade 3.—The most frequent school-related activities were homework for reading (80%) and writing (86%). Parents also reported non-school related reading activities (range 1% to 38% across items in Appendix) and writing activities (range 15% to 30% across items in Appendix) but continued to assist their third graders in school-related reading (79%) and writing (79%).

Cohort 1 Grade 4.—The most frequent school-related activities involved homework for reading (72%) and writing (93%). Parents also reported non-school-related reading activities (range 5% to 48% across items in Appendix) and writing activities (range 9% to 39% across items in Appendix). Fourth graders read books, games, computer monitor displays, magazines, and comics. Parents assisted their fourth graders in reading (72%) and writing (74%).

Cohort 1 Grade 5.—The most frequent school-related activities involved homework for reading (96%) and writing (99%). Non-school related reading activities (range from 33% to 90% across items in Appendix) and writing activities (range from 12% to 69% across items in Appendix) were reported. Fifth graders read many of the same kinds of materials as in the earlier grades, but also entertainment/story tapes. Parents assisted their fifth graders in reading (69%) and writing (64%). Parents reported that at home 74% of the fifth graders used keyboarding for school-related writing activities and 60% used keyboarding for non-school related writing activities. Parents reported that 19% were fluent and 65% were dysfluent on school related keyboarding, and 16% were fluent and 53% were non-fluent on non-school related keyboarding.

Cohort 2 Grade 3.—One in three parents still read to their third grader. The most frequent writing activity at home was writing letters for correspondence or notes, followed by stories and journal entries. Both non-school reading activities (ranged from 6% to 55% across items in Appendix) and non-school writing activities (ranged from 16% to 47% across items in Appendix) were reported. Children read books, magazines, computer displays on monitors, comics, and games.

Cohort 2 Grade 4.—The most frequent school-related activities involved reading (79%) and writing (86%) homework. Non-school related reading activities (range 1% to 61% across items in Appendix) and writing activities (range 10 % to 46% across items in Appendix) were reported. Fourth graders read books, games, computer monitor displays, magazines, comics, and environmental print. Parents assisted fourth graders in school-related reading (72%) and writing (77%).

Cohort 2 Grade 5.—The most frequent school-related activities involved reading (84%) and writing (85%) homework. Non-school related reading activities (range 2% to 48% across items in Appendix) and writing activities (range 10 % to 46% across items in Appendix) were reported. Parents assisted fifth graders in school-related reading (57%) and

writing (68%). Fifth graders read many of the same kinds of materials as younger students, but also environmental print.

Cohort 2 Grade 6.—The most frequent school-related activities involved reading (74%) and writing (83%) homework. Non-school related reading activities (range 1% to 56% across items in Appendix) and writing activities (range 6 % to 43% across items in Appendix) were reported. Sixth graders read many of the same kinds of materials as younger students, but also environmental print. Parents assisted sixth graders in school-related reading (43%) and writing (59%).

Cohort 2 Grade 7.—The most frequent school-related activities involved reading (98%) and writing (99%) homework. Non-school related reading activities (range 6% to 82% across items in Appendix) and writing activities (range 13 % to 70% across items in Appendix) were reported. Parents assisted their seventh graders in school-related reading (60%) and writing (64%). Seventh graders read the same kinds of materials as younger students. Parents reported that at home 76% of the seventh graders used keyboarding for school-related writing activities and 55% used keyboarding for non-school related writing activities; 53% were fluent and 40% were dysfluent on school-related keyboarding, and 47% were fluent and 28% were dysfluent on non-school related keyboarding.

Themes in the narratives.—Children engaged in more reading than writing activities at home, but parents provided more assistance with writing, much of which involved homework. At home children engaged in school-related and non-school related activities and the school-related reading and writing activities included homework for a very high percentage of the children. The non-school related reading and writing activities varied. In fifth or seventh grade, the only year parents were asked directly about use of computers, the majority of parents of fifth graders reported that their children were fluent by pen but not by keyboard, whereas the majority of parents of seventh graders reported that their children were fluent on both. None of the parents reported that their child used computers at school during literacy instruction.

Concurrent Correlations between Literacy Achievement and Home Literacy

Table 1 summarizes all the correlations organized by cohort and grade level so that they can be examined within a cohort across grade levels or across cohorts at a given grade level. The positive correlations show that the home literacy activity is associated with higher school literacy achievement and the negative correlations show the home literacy activity is associated with lower school achievement. The significant correlations should not be given causal interpretations, but do show concurrent relationships between home literacy activities and school reading and writing achievement. Yet, the exact nature of these concurrent relationships changed across the grades, consistent with literacy learning being a dynamic process. Many correlations involved a reading-writing relationship, consistent with many school assignments requiring integrated reading-writing.

Longitudinal Changes in Home Literacy Activities

Amount of time engaged in literacy activities across adjacent grade levels.—

For year 1, when the questionnaire did not differentiate whether the activity was school-related or not, all items were treated as school-related. Years 1 to 5 were included in the school-related analyses; but only years 2 to 5 were included in the non-school related. The standard error of measurement (SEM) is reported along with confidence interval for purposes of estimating the reliability of the findings for main effects. Eta square is an indicator of effect size.

As shown in Table 2, for parent reported minutes spent on **school-related literacy activities**, there were significant main effects for domain, time, and cohort—with effect size modest for domain and time but low for cohort. More time (in minutes) at home was spent reading ($M=227.29$, $SEM=9.08$, 95% confidence interval 209.31 to 245.27) than writing. ($M=140.32$, $SEM=7.07$, 95% confidence interval 126.33 to 154.31). The amount of time spent at home on reading and writing activities increased over the grades from year 2 ($M=127.77$, $SEM=6.64$, 95% confidence interval 114.62 to 140.93) to year 3 ($M=146.32$, $SEM=8.28$, 95% confidence interval 129.93 to 162.70) to year 4 ($M=156.50$, $SEM=7.57$, 95% confidence interval 141.51 to 171.49) to year 5 ($M=304.63$, $SEM=20.15$, 95% confidence interval 264.73 to 344.527). Overall the older cohort ($M=205.19$, $SEM=11.12$, 95% confidence interval 183.17 to 227.21) engaged for more minutes in school-related literacy activities than the younger cohort ($M=162.42$, $SEM=10.17$, 95% confidence interval 142.29 to 182.55). None of the two-way or three-way interactions was significant for amount of time spent on school-related literacy activities.

As also shown in Table 2, the main effects for domain, time, and cohort were also significant for amount of time spent on **non-school related literacy activities**; effect size was again modest for domain and time but low for cohort. More minutes were spent reading for non-school related activities ($M=241.72$, $SEM=15.74$, 95% confidence interval 210.55 to 272.88) than were spent writing for non-school related activities ($M=62.56$, $SEM=4.38$, 95% confidence interval 53.89 to 71.22). Minutes engaged in non-school related literacy activities increased across year 2 ($M=119.98$, $SEM=9.24$, 95% confidence interval 101.69 to 138.26) to year 3 ($M=120.86$, $SEM=9.99$, 95% confidence interval 101.08 to 140.63) to year 4 ($M=127.02$, $SEM=11.31$, 95% confidence interval 104.62 to 149.42) to year 5 ($M=240.69$, $SEM=17.05$, 95% confidence interval 206.94 to 274.45). Compared to the older cohort ($M=168.35$), the younger cohort ($M=136.50$) did not engage in as many non-school related literacy activities ($SEM=13.55$, 95% confidence interval 141.53 to 195.17).

Two interactions were significant for **non-school related reading and writing activities**:

The two-way interaction between domain x time; and the three way interaction among cohort x domain x time. The amount of time spent on non-school related reading activities steadily increased from year 2 ($M=191.35$) to year 3 ($M=200.72$) to year 4 ($M=215.52$) to year 5 ($M=359.27$). In contrast, the amount of time spent on non-school related writing activities decreased from year 2 ($M=48.60$) to year 3 ($M=40.99$) to year 4 ($M=38.51$), but then sharply increased in year 5 ($M=122.12$). The amount of time spent on non-school-related reading activities in the younger cohort decreased from grade 2 ($M=163.94$) to grade

3 ($M=159.52$), but then increased in grade 4 ($M=212.47$) and again in grade 5 ($M=350.56$); in contrast, in the older cohort, it increased between grade 4 ($M=218.75$) and grade 5 ($M=241.92$), decreased in grade 6 ($M=218.58$), and then sharply increased in grade 7 ($M=367.98$). The amount of time spent on non-school related writing activities in the younger cohort decreased from grade 2 ($M=37.11$) to grade 3 ($M=35.96$) to grade 4 ($M=32.82$) followed by a sharp increase in grade 5 ($M=95.00$); in contrast, in the older Cohort it decreased from grade 4 ($M=60.10$), to grade 5 ($M=46.02$), to grade 6 ($M=44.21$) followed by a sharp increase in grade 7 ($M=149.23$).

To summarize, for school-related literacy activities at home, the amount of time children engaged in home reading and writing activities steadily increased across the grades from 2 through 7; more time was spent on reading than writing; and the older cohort spent more time overall than the younger cohort in literacy activities, possibly due in part to beginning at a later grade. However, although the amount of time spent on non-school related reading activities increased, the time spent on non-school related writing activities decreased over the grades. Developmental trajectories differed for reading and writing in each cohort (see Figures 1 and 2).

Longitudinal changes in parent reported help with home literacy activities.—

As shown in Table 3, parental reported help (a dichotomous variable for help versus no help at home) showed significant main effects for domain, time, and cohort. The effect size was modest for time, but low for domain (reading or writing) and cohort (1 or 2). Overall the amount of help decreased over time from year 1 ($M=0.96$, $SEM=.01$, 95% confidence interval .93 to .98), to year 2 ($M=0.80$, $SEM=.03$, 95% confidence interval .74 to .87), to year 3 ($M=0.73$, $SEM=.03$, 95% confidence interval .67 to .80) to year 4 ($M=0.65$, $SEM=.04$, 95% confidence interval .58 to .73) to year 5 ($M=0.62$, $SEM=.04$, 95% confidence interval .54 to .70). Still over half were providing help in fifth or seventh grade (year 5). A greater proportion of parents reported helping their child with writing ($M=.78$, $SEM=.02$, 95% confidence interval .73 to .83) than with reading ($M=.73$, $SEM=.03$, 95% confidence interval .68 to .78). More help was provided for the younger cohort who began in grade 1 ($M=0.82$, $SEM=.03$, 95% confidence interval .76 to .88) than the older cohort who began in grade 3 ($M=0.68$, $SEM=.03$, 95% confidence interval .62 to .75).

Two-way interactions between domain and time and between domain and cohort occurred. For both reading and writing, amount of parental help decreased each year from grade 1 to 5 or grade 3 to 7, but overall decrease was greater for reading (from $M=.97$, year 1, grades 1 or 3, to .58, year 5, grades 5 or 7) than for writing (from $M=.95$, year 1, grades 1 or 3, to .65, year 5, grades 5 or 7). Overall the younger cohort did not differ much in the amount of parental help for reading ($M=.83$) and writing ($M=.82$), but the older cohort received more help for writing ($M=.74$) than reading ($M=.63$). The 3-way interaction among domain x time x cohort was also significant. For reading, in the younger cohort parent help remained relatively constant from grade 1 ($M=.98$), to grade 2 ($M=.87$), to grade 3 ($M=.81$), to grade 4 ($M=.79$) until grade 5 ($M=.68$) when the decrease was relatively large; but in the older cohort the decrease occurred earlier from grade 3 ($M=.96$) to grade 4 ($M=.73$), to grade 5 ($M=.53$), to grade 6 ($M=.43$) to grade 7 ($M=.49$). For writing, both cohorts tended to receive help from the beginning and decrease in help was more gradual, but even more so in the

younger cohort from grade 1 ($M=.97$) to grade 2 ($M=.85$) to grade 3 ($M=.87$) to grade 4 ($M=.74$) to grade 5 (.66) than in the older cohort from grade 3 ($M=.92$) to grade 4 ($M=.76$) to grade 5 ($M=.73$) to grade 6 ($M=.65$) to grade 7 ($M=.65$). See Table 3.

To summarize, parental-reported help with literacy varied significantly across the grade levels studied, across the domains of reading and writing, and across the two cohorts. The main effects are qualified by interactions that indicate a more complex developmental pattern in parental help for reading than for writing. For the younger cohort, help with reading declined gradually until fifth grade when it declined sharply, whereas for the older cohort help with reading showed a consistent gradual decrease from third to seventh grade. For both cohorts, the help with writing showed a consistent decrease that was more gradual in the younger cohort, but the older cohort reached asymptote at a level amount in sixth and seventh grade.

Longitudinal changes in parent ratings of self-regulation.—As shown in Table 4, the main effect for the four factors for parental ratings of self-regulation and the interaction of the self-regulation factors and time were significant. Higher ratings reflect greater problems. Parental ratings of **inattention** remained relatively constant across the years from grade 1 ($M=1.83$), to grade 2 ($M=1.88$) to grade 3 ($M=1.82$) to grade 4 ($M=1.89$) to grade 5 ($M=1.87$) in cohort 1 and from grade 3 ($M=1.85$) to grade 4 ($M=1.88$) to grade 5 ($M=1.87$) to grade 6 ($M=1.82$) to grade 7 ($M=1.81$) in cohort 2. Parental ratings of **executive function**—**goal-setting**—in cohort 1 showed a trend toward somewhat greater problems across the grades from grade 1 ($M=1.64$, $SD=.381$) to grade 2 ($M=1.72$, $SD=.52$) to grade 3 ($M=1.65$, $SD=.52$) to grade 4 ($M=1.76$, $SD=.53$) to grade 5 ($M=1.83$, $SD=.57$) in cohort 1 and stability from grade 3 ($M=1.78$, $SD=.53$) to grade 4 ($M=1.75$, $SD=.58$) to grade 5 ($M=1.80$, $SD=.63$) to grade 6 ($M=1.76$, $SD=.57$) but then marked improvement in grade 7 ($M=.82$, $SD=.59$) in cohort 2. Parental ratings of **hyperactivity** improved slightly from grade 1 ($M=1.65$) to grade 2 ($M=1.62$) to grade 3 ($M=1.51$) to grade 4 ($M=1.53$) and grade 5 ($M=1.51$) in cohort 1, and from grade 3 ($M=1.61$) to grade 4 ($M=1.50$) to grade 5 ($M=1.48$) to grade 6 ($M=1.45$) to grade 7 ($M=1.42$) in cohort 2. Parental ratings of **impulsivity** improved gradually in cohort 1 from grade 1 ($M=1.76$) to grade 2 ($M=1.74$) to grade 3 ($M=1.66$) to grade 4 ($M=1.60$) and grade 5 ($M=1.61$) in cohort 1 from grade 3 ($M=1.66$) to grade 4 ($M=1.64$) to grade 5 ($M=1.53$) to grade 6 ($M=1.49$), with a slight increase in grade 7 ($M=1.53$).

Some correlations between parental ratings of attention, goal-setting, hyperactivity, or impulsivity (interpreted as indicators of self-regulation) were related significantly to reading or writing achievement, but not at every grade level. No significant correlations between parental ratings of self-regulation and reading or writing achievement were reported for cohort 1, grade 1. For cohort 1, grade 2, *WIAT II Reading Comprehension* scores correlated with parental ratings of inattention, $r = -.28$, $p < .003$; and *WIAT II Written Expression* correlated with parental ratings of setting goals, $r = -.20$, $p < .03$. For cohort 1, grade 3 *WIAT II Pseudoword Decoding* scores correlated with parental ratings of hyperactivity, $r = -.20$, $p < .028$; *WIAT II Spelling* scores correlated with parental ratings of self-regulation, $r = -.27$, $p < .004$; and *WIAT II Written Expression* scores correlated with parental ratings of inattention, $r = -.28$, $p < .003$; parental ratings of goal-setting, $r = .62$, $p < .001$; and parental

ratings of hyperactivity, $r = .61$, $p < .001$. For cohort 1, grade 4, *WIAT II Spelling* scores correlated with parental ratings of inattention, $r = -.28$, $p < .006$; *WIAT II Written Expression* scores correlated with parental ratings of inattention, $r = -.37$, $p < .001$, and parental ratings of impulsivity, $r = -.27$, $p < .008$. For cohort 1, grade 5, none were significant.

For cohort 2, grade 3, none were significant. For cohort 2, grade 4, *WIAT II Reading Comprehension* scores correlated with parental ratings of inattention, $r = -.25$, $p < .013$. For cohort 2, grade 5, *WIAT II Written Expression* correlated with parental ratings of inattention, $r = -.29$, $p < .004$. For cohort 2, grade 6 *WIAT II Written Expression* correlated with parental ratings of inattention, $r = -.38$, $p < .001$ and parental ratings of goal-setting, $r = -.34$, $p < .002$. For cohort 2, grade 7, *WIAT II Reading Comprehension* scores correlated with ratings of goal-setting, $r = .29$, $p < .006$.

Discussion

Limitations and Contributions to Scientific Foundations of Education

The research team did not have the resources to observe literacy activities in the homes of the over 200 participating children annually for five years. They were only able to collect and analyze parents' self-reported description of their metacognitions of what they thought was the nature of literacy activities at home for their child, the estimated amount of time per week they and/or their child participated in these literacy activities, their children's feelings about these literacy activities, and the nature and amount of parental assistance provided for literacy learning outside school in the home. Those self-reported parental meta-cognitions about home literacy were, however, shown to be related to reading and writing achievement on normed measures, although in dynamic, changing ways across the early and upper elementary and middle school grades. Nevertheless the approach of reaching out to parents, asking about home literacy activities, and listening to what they share is a feasible approach schools can use because they too typically do not have the resources to visit every child's home. Use of parent questionnaires to learn from parents about home literacy activities for individual students provides an important first step in initiating consultation to improve collaboration between schools and homes to facilitate those students' reading and writing acquisition.

Another limitation was that the sample was representative of one region of the country but not of all student populations. More research is needed on the nature of home literacy activities and practices from a longitudinal perspective in diverse populations for parents of a variety of ethnic groups and levels of parents' educational levels and socioeconomic status (Berninger, McHale-Small, Dunn, & Alston-Abel, 2016; Berninger & Morphy, 2015; Kohl, Lengua, & McMahon, 2000; Okagaki & Fransch, 1998), all of which can influence parents' levels of involvement with school (Lee & Bowen, 2006), and parents of children with specific learning disabilities and other disabilities. Moreover home literacy should be conceptualized and studied regarding the use of reading and writing in math literacy in the STEM era. Despite these limitations the results of this longitudinal study do contribute to advancing knowledge and translating that knowledge into educational practice. As the results of the current study show, parent-self-reported assistance at home was related to

achievement on nationally normed tests. However, parents' ratings of students' self-regulation of attention, goal-setting, level of activity, and impulsivity were also correlated with literacy achievement. Thus, learning results not only from what teachers do at school and parents do at home but also from what learners contribute via self-regulation of their own learning.

Interestingly, children were less likely to engage in non-school writing activities than school-related writing activities, most of which was related to homework. Reasons for that and ways to create better support for writing at home for pleasure might be explored in future research. Also enlightening were parents' reports that, although their children use computers at home for homework and playing games, their children did not receive instruction at school in using computers for literacy learning, for example, taking notes on read source material or heard teacher instruction, writing reports, and taking annual and other tests. Finally, the current study documented individual differences among parents in the nature of literacy activities and amount of assistance in learning provided in the home.

Significance for Translation Science Knowledge

The findings of the current study can be translated into consultation tips for educational practitioners. Each of these is described and discussed next.

Consultation Tip 1—Ask Parents about Home Literacy Activities and Listen to What They Share.—Go beyond only giving standardized and/or curriculum-based tests and ask the parent about home literacy activities and listen to what they share. What educational professionals learn about literacy learning in the home may be very relevant to helping a struggling student become more successful in literacy learning at school. School practitioners might also use parent questionnaires sent to parents of all students with questions in the parent questionnaire used in the current study and/or their own questions tailored to the students and families and professional communities with whom they work. In-person interviews with parents may be advisable after review of completed parent questionnaires depending on the case at hand. School practitioners should also share with researchers their own experiences and approaches to reaching out to parents to create school-home collaborations. Not only should practice be informed by research but also research should be informed by the voice of experience.

Consultation Tip 2—Pay Attention to Writing and Not Just Reading.—Literacy learning both at school and home involves writing as well as reading. School psychologists and other educational practitioners can make an important contribution in educating parents about the kinds of writing activities their child might engage in at home beyond completion of homework to support their learning at school.

Moreover, several findings pointed to early emerging reading-writing relationships across home and school. These reading-writing relationships should be explained and modeled for parents. However, some reading-writing correlations became negative in the later grades. When a child's home and school reading and writing skills do not develop in synchrony, it may be a sign that there is a mismatch between home and school literacy practices or that

the child is at risk for literacy learning problems and might benefit from comprehensive assessment to pinpoint why plus follow-up consultation with the classroom teacher.

Consultation Tip 3—Evaluate and Encourage Parent Involvement in Their Child’s Literacy Learning.

—A high level of parent involvement, which has been shown to have a positive effect on student learning outcomes (Hover-Dempsey, et al., 2005), was observed in both cohorts in this research study. However, in non-research school settings some parents may be under-engaged but open to suggestions as to what they could do to help their struggling child with literacy learning. Also relevant is whether parents reduce amount of assistance when it is no longer needed. Some parents may be over-engaged in their child’s learning and may or may not readily reduce involvement once their child becomes more accomplished. For example, after children become proficient with sounding out words, focus can shift to reading comprehension (Katzir et al, 2009); and early focus on handwriting and spelling can later shift to composing (Lin, Monroe, & Troia, 2007) and planning, organizing, reviewing, and revising for composing (Olinghouse, 2008). School psychologists, teachers, and other educational practitioners can consult with parents about changing the nature and amount of literacy assistance as needed for individual students across the grades.

Consultation Tip 4—Find the Balance between Parental Assisting and Monitoring and Student-Initiated Literacy Activities.

—In the current study considerable parental help was self-reported for homework; however, it was not clear whether the homework could be completed by the students alone without assistance from the parent. Student self-generated and self-regulated literacy activities at home may be as valuable as homework; for example, spending time reading or writing for pleasure may improve a child’s sense of competence and attitude toward reading or writing and as a result improve self-regulation and ultimately literacy achievement (Baker & Wigfield, 1999). School psychologists, teachers, and other educational professionals can work collaboratively to find an appropriate balance between school-related homework for which there is an articulated, personalized learning goal for an individual student, and independent reading and writing activities of a student’s choosing for pleasure. As children become more competent with reading and writing they are likely to spend more time doing it, whether it is school-related or solely for pleasure, and thus continue to learn and improve (Baker & Wigfield, 1999; Nolen, 2007).

Consultation Tip 5—Balance Explicit Instruction in Literacy Skills with Self-Regulation Strategies.

—For some students, even though they do not qualify for a diagnosis of ADHD, their self-regulation of attention, goal-setting, activity level, and impulsivity, may be underdeveloped and interfering with their literacy learning. Through other-regulation, adults at school and home can teach students strategies for self-regulation of both attention and behavior (see Borkowski & Burke, 1996). Parental report of monitoring children’s literacy activity was not reported until fifth grade and never was reported for writing. It was not until grades 5 and 6 that parents’ reports of monitoring their child’s home reading activities began to show significant relationships with reading achievement. During parent-teacher conferences practical suggestions can be shared with

parents about monitoring their child's home reading and writing activities. However, it is not just what parents do with their children at home but also their relationships with professionals at school that can have impact on their child's academic achievement outcomes (Hill, 2001; Hoover-Dempsey et al., 2005). School psychologists can help parents to build positive and constructive relationships with teachers for supporting their child's literacy learning.

Future Directions and Conclusions

Future research on parent questionnaires might investigate how parents structure home literacy environments with questions such as these: Is there a specified time and/or place for homework to be done in your home? Is there a specified time and/or place in your home for reading or writing for pleasure? Parent interviews might be added to supplement questionnaires so the interviewer can clarify answers on the spot, rather than relying on written information that at a later time may not be clear. Home literacy environments of the most successful students and the less successful students in reading and writing could be compared. Finally, future research should also investigate how the quality of relationships and communication between parents and schools may improve students' literacy achievement and can be supported to do so.

In conclusion, school practitioners engaged in problem solving consultation with students' families can draw on current findings and other research findings and best practices in school consultation (Erchul & Martens, 2002; Erchul & Sheridan, 2014) in their own practice. They can also share their experiences in doing so, along with their own ideas and contributions to effective consultation, with researchers to evaluate empirically for scale-up. One of the unfortunate consequences of special education legislation in the United States is that many parents think they have to hire attorneys and sue schools in order to advocate for their children with special needs. The current study supports an alternative approach in which school psychologists and other educational practitioners reach out proactively to parents to create and support positive, constructive, proactive school-home consultation and collaboration.

Acknowledgements:

This research was supported by HD P50HD071764 and HD25858 from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) at the National Institutes of Health (NIH).

APPENDIX

Parent Questionnaire Completed in Years 1 to 5 Parent Self-Reported open-ended responses to questions about the child's feelings about reading and writing, amount of time spent reading and writing at home, nature of the reading and writing activities, provision of parental help and if so how much time and nature of it. Most items below resulted from the coding of the nature of the parent reported reading or writing activity at home.

Child's feelings about reading
Minutes of reading per week
Reads books
Reads computer
Reads games
Reads comics
Reads magazines
Reads newspaper
Reads other
Reads signs
Reads for school
Child read aloud
Read/ look at books
Read to child
Encourage child to read
Library/buy books
Parent help reading
Parent help reading – mins
Other help reading
Reads Independently
Reading instruction Listen to child read
Alt. method reading
Parallel reading
Read in school
Child's feelings about writing
Minutes of writing per week
Writes journal
Writes letters
Writes lists
Writes other
Writes songs
Writes stories
Parent help with writing--minutes
Other help with writing
Writes independently

Additional Non-School Home Literacy in *Parent Questionnaire* in Years 2, 3, 4, and 5 ^a

Non-School Read Minutes Per Week
Non-school read books
Non-school read computer/video
Non-school read entertainment/story tapes
Non-school read general/library
Non-school read parent assist
Non-school read comics
Non-school read magazines
Non-school read newspaper
Non-school read other
Non-school read environmental print
Non-school read to
Non-school write mins per week
Non-school write general
Non-school write parent assist
Non-school write journal
Non-school write letter
Non-school write list
Non-school write other
Non-school write story

Additional School-Related Home Literacy *Parent Questionnaire* in Years 2, 3, 4, and 5

School read mins
School read books
School read computer
School read games
School read general
School read parent assist
School read comics
School read homework
School read magazines
School read newspaper
School read other
School read environmental print
School read to
School write minutes
School write handwriting
School write parent assist

School write homework
School write journal
School write letter
School write list
School write other
School write reports
School write story

Reads for school
Child read aloud
Read/ look at books
Read to child
Encourage child to read
Library/buy books
Parent help reading
Parent help reading – mins
Other help reading
Reads Independently
Reading instruction Listen to child read
Alt. method reading
Parallel reading
Read in school
Child's feelings about writing
Minutes of writing per week
Writes journal
Writes letters
Writes lists
Writes other
Writes songs
Writes stories
Parent help with writing--minutes
Other help with writing
Writes independently

Additional Non-School Home Literacy in *Parent Questionnaire* in Years 2, 3, 4, and 5 ^a

Non-School Read Minutes Per Week
Non-school read books

Non-school read computer/video
Non-school read entertainment/story tapes
Non-school read general/library
Non-school read parent assist
Non-school read comics
Non-school read magazines
Non-school read newspaper
Non-school read other
Non-school read environmental print
Non-school read to
Non-school write mins per week
Non-school write general
Non-school write parent assist
Non-school write journal
Non-school write letter
Non-school write list
Non-school write other
Non-school write story

Additional School-Related Home Literacy *Parent Questionnaire* in Years 2, 3, 4, and 5

School read mins
School read books
School read computer
School read games
School read general
School read parent assist
School read comics
School read homework
School read magazines
School read newspaper
School read other
School read environmental print
School read to
School write minutes
School write handwriting
School write parent assist
School write homework
School write journal
School write letter

School write list
School write other
School write reports
School write story

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Figure 1.
Developmental Trajectory of Domain (Reading and Writing) and Time (minutes engaged) in Cohort 1 for Non-school Related activities.

Figure 2.
Developmental Trajectory of Domain (Reading or Writing) and Time (minutes engaged) in Cohort 2 for Non-school Related activities.

Table 1

Summary of Correlations between Reading or Writing Achievement and Parent-Reported Home Literacy Activity Organized Longitudinally by Grades Levels in Cohort 1 (Grades 1, 2, 3, 4, and 5) and in Cohort 2 (Grades 3, 4, 5, 6, and 7). See Table Notes.

<u>Cohort</u>	<u>Grade</u>	<u>Literacy Achievement</u>	<u>Home Literacy Activity</u>	<u>Correlation</u>
1	1	<i>Word Reading</i>	reads independently	.32***
			reads magazines	.31***
			parent-assisted school-related reading	-.32***
		<i>Word Decoding</i>	reads independently	.26**
			parent-assisted school-related reading	-.29**
			school related reading to the child	-.27**
			parental reading help	-.26**
		<i>Comprehension</i>	writing letters to send to others	.30***
		<i>Spelling</i>	reads independently	.38**
			non-school related minutes of reading	.31**
			parent-assisted school-related reading	-.30**
			writing lists	.26**
		<i>Written Expression</i>	reading independently	.27**
1	2	<i>Comprehension</i>	minutes of non-school related reading	.28**
1	3	<i>Word Reading</i>	non- school book reading	-.28**
		<i>Decoding</i>	other school-related reading	-.32***
		<i>Spelling</i>	non-school related reading to the child	-.31***
1	4	<i>Comprehension</i>	minutes school-related parent-assisted writing	-.31**
		<i>Spelling</i>	school-related reading to the child	-.25**
		<i>Written Expression</i>	school-related reading to the child	-.30**
1	5	<i>Word Reading</i>	school-related reading of books	.27**
			non-school related reading of magazines	.34***
			school-related writing homework	.27**
			non-school related writes letters	.34***
		<i>Decoding</i>	non-school related reading of books	.39***
			non-school related reading of newspapers	.33***
			non-school related writing letters	.31***
		<i>Comprehension</i>	non-school related reading of books	.39***
			non-school related reading humor	.26**
			non-school related minutes of reading	.29**
			non-school related writing letters	.30***

Cohort	Grade	Literacy Achievement	Home Literacy Activity	Correlation
1	5	<i>Spelling</i>	child's feelings about reading	.77***
			number of minutes of reading	.33***
			reading of books	.30***
			parental assistance with reading	-.37***
			reading to child	-.28**
		<i>Written Expression</i>	child's feelings about reading	.59***
			number of minutes of reading	.36***
			number of minutes of writing	.28**
			child's feelings about reading	.74***
			minutes per week of reading	.38***
2	3	<i>Word Reading</i>	school-related computer reading	-.35***
			parent-assisted reading	-.33***
			number of minutes of reading per week	.30***
			others reading to child	-.30***
			non-school related reading to the child	-.32**
		<i>Decoding</i>	listening to the child read	-.28**
			child's feelings about reading	.58**
			number of reading minutes per week	.31***
			number of minutes of writing per week	.30**
			school-related computer reading	-.48***
2	3	<i>Comprehension</i>	school-related reading to the child	-.34***
			child's feelings about reading	.77***
			number of minutes of reading	.33***
			reading book	.30***
			parent-assisted school-related reading	-.33***
		<i>Spelling</i>	reading to child	-.28**
			parent reading help	-.37***
			child's feelings about reading	.59***
			number of minutes of reading	.36***
			number of minutes of writing	.28**
2	4	<i>Word Reading</i>	school related reading to the child	-.26**
2	5	<i>Word Reading</i>	parent monitored school-related minutes of writing per week	-.29**
			school-related minutes of reading per week	.31**
		<i>Decoding</i>	non-school minutes of reading per week	.28**
			school-related minutes of reading per week	.30**
			parent-monitored school-related minutes of reading	-.28**

Cohort	Grade	Literacy Achievement	Home Literacy Activity	Correlation	
2	6	Comprehension	parent-monitored non-school related minutes of writing per week	-.32**	
			parent-monitored school-related minutes of reading	-.29**	
		Spelling	minutes per week of parent assistance for school-related reading	-.29**	
			school-related writing	-.39***	
		Written Expression	non-school related parent-assisted minutes of reading	-.32**	
			school-related minutes of parent-assisted reading	-.32**	
			school-related, parent-assisted minutes of writing	-.41***	
	7	Word Reading	parent-monitored non-school minutes of reading	-.36***	
		Comprehension	school-related writing homework	.31**	
		Spelling	non-school related, parent-assisted minutes of reading	-.35**	
		Written Expression	school-related writing for homework	.31**	
		7	Word Reading	school-related reading of newspapers	.32**
			Decoding	school-related reading of newspapers	.32***
non-school related reading of newspapers	.30**				
7	Comprehension	non-school related reading books	.37***		

Table Notes. All literacy achievement measures were from *WIAT II*. Word Reading is for real words on list without context clues. Decoding is for list of pseudowords. Comprehension refers to reading comprehension. Spelling is dictated spelling, Written Expression is for composing. See Text.

* .05,

** .01,

*** .000.

Table 2.

Number of Minutes Parents Reported for Domain (Reading or Writing) That Is School-or Non-School Related, Time across Grades (2 to 4 or 4 to 7), and Cohort (Younger or Older).

	<i>F</i>	<i>df</i>	<i>p</i>	η^2
School-Related				
Domain	200.79	1,121	.001	.62
Time	29.98	3,119	.001	.43
Cohort	8.06	1,121	.005	.06
Time x Domain	0.53	3,119	.660	.01
Time x Cohort	0.24	3,119	.867	.01
Domain x Cohort	1.31	1,121	.254	.01
Time x Domain x Cohort	0.44	1,121	.254	.01
Non-School Related				
Domain	148.63	1,121	.001	.55
Time	19.70	3,119	.001	.33
Cohort	3.31	1,121	.071	.03
Time x Domain	4.00	3,119	.009	.09
Time x Cohort	2.08	3,119	.107	.05
Domain x Cohort	0.28	1,121	.599	.00
Time x Domain x Cohort	3.10	1,121	.030	.07

Table 3

Parental Help (Provided or Not Provided) in Literacy for Domain (Reading or Writing), Time across Grades (1 to 5 or 3 to 7), and Cohort (Younger or Older).

	<i>F</i>	<i>df</i>	<i>p</i>	η^2
Domain	6.55	1,111	.012	.06
Time	19.81	4,108	.001	.42
Cohort	9.81	1,111	.002	.08
Time x Domain	3.92	4,108	.005	.13
Time x Cohort	2.39	4,108	.055	.08
Domain x Cohort	8.22	1,111	.005	.07
Time x Domain x Cohort	2.96	4,108	.023	.10

Table 4

Repeated Measures ANOVA for Time (Years 1 to 5, Self-Regulation (Attention, Executive Function—Goal Setting, Hyperactivity, and Impulsivity) and Cohort (Younger or Older).(Higher ratings, Less Self-Regulation.)

	<i>F</i>	<i>df</i>	<i>p</i>	η^2
Time	2.06	4,123	.090	.06
Self-Regulation	46.42	3,124	.001	.53
Cohort	0.19	1,126	.662	.00
Time x Self-Regulation	4.34	12,115	.001	.31
Time x Cohort	1.09	4,123	.363	.03
Time x Self-Regulation x Cohort	0.84	12,115	.615	.08