

Reading and Writing Attitudes of Children: Conceptual Implications for Health Education and Health Literacy

Valerie A. Ubbes, PhD, MCHES
Associate Professor
Department of Kinesiology and Health
Miami University
Phillips Hall 204D
Oxford, OH 45056
Telephone: (513) 529-2736
Email: ubbesva@miamioh.edu

Rachel Dillhoff, MS, CHES, ACSM-CPT
6641 Hamilton Scipio Road
Okeana, OH 45053
Telephone: (513) 235-2691
Email: dillhor2@miamioh.edu

Waldemar Maldonado
101 East Wells A304
Baltimore, MD 21230
Telephone: (513) 593-1809
Email: maldonw@miamioh.edu

ABSTRACT

PURPOSE: *We investigated the reading and writing attitudes of children attending a recreational camp to gain insights into student motivations toward literacy. Two national surveys were used to study children's attitudes toward the skills of reading and writing for academic and non-academic purposes. We wanted to explore reading and writing attitudes as a possible bridge to the concept of functional health literacy. A secondary purpose of the study was to determine the differences in attitudes for recreational reading, academic reading, and academic writing between boys and girls.* ***METHODS:*** *Children (n = 102) aged 5 to 12 years responded to 30 questions read aloud by the research proctor from two national paper-and-pencil surveys. Students participating in at least two of the ten weeks of the summer camp were given a pretest and posttest of the Reading Attitudes Survey (RAS), Writing Attitudes Survey (WAS), and a Demographic Survey after completing the IRB requirements of active parent consent and student assent.* ***RESULTS:*** *Three findings emerged: 1) girls showed higher academic reading attitudes than boys; 2) girls showed higher recreational reading attitudes than boys, and 3) girls showed slightly higher writing attitudes than boys. Girls' (n=65) scores on the RAS averaged 31.84 (SD=6.58) when reading for recreation and 30.13 (SD= 6.53) when reading for academics. Boys' (n=37) scores on the RAS averaged 28.88 (SD=7.18) when reading for recreation and 25.14 (SD=8.42) when reading for academics. As girls' reading attitudes went up, boys' reading attitudes went down (r = -0.72 recreational reading; r = -0.85 for academic reading). Writing attitudes also differed between girls and boys. WAS scores averaged 63.22 (SD = 25.73) for 65 girls and 52.83 (SD = 25.91) for 37 boys (n = 37). As girls' writing attitudes went up, boy's writing attitudes went down (r = -0.85).* ***CONCLUSIONS:*** *Girls are more inclined than boys to read*

for fun and to have positive attitudes associated with reading and writing. Because a significant gap exists between what people know and what people do regarding health behaviors, this study may be the first to conceptualize reading and writing attitudes as a lens to understanding functional health literacy – the ability to read, write, and speak about health. ***RECOMMENDATIONS:*** *Future research is needed to explore how reading and writing attitudes relate to health literacy. Attitudinal studies between girls and boys are needed to investigate the complex role that functional health literacy plays as a determinant of health. If attitudes help to determine an intention to do a behavior and if one's intention is the key predictor of healthy behavior, then health education curricula should include reading and writing as possible determinants for shaping children's attitudes toward their health.*

KEYWORDS*: Reading attitudes, writing attitudes, functional literacy, functional health literacy, determinant of health*

INTRODUCTION

Reading and writing are essential skills for academic learning. For the past decade, American schools have focused daily instruction on raising academic achievement through reading and writing scores across all age groups.

The U.S. public health agenda entitled, *Healthy People 2020* (USDHHS, 2010), identified two national objectives that are the subject of this study: reading and attitudes toward academics. Specifically, *Healthy People* Objective 5.3 sets a goal for Americans to "increase the proportion of students (grades 4, 8, and 12) whose reading skills are at or above the proficient achievement level for their grades" and Objective 5.5 sets a goal "to increase the proportion of adolescents who consider their school work to be meaningful and important". Many educators are probably not aware of these national health objectives that address both reading and attitudes toward academic work. The fact that both of these variables are found in a public health document raises their importance for why there is a national need to explore reading and academic attitudes as key determinants for health literacy. According to the 2015 midcourse review of *Healthy People 2020*, the United States has improvements to make. Only 33.0 percent of 4th grade students attending public and private schools had reading skills at or above the proficient achievement level for their grade level, and only 35.6 percent of 8th grade students had proficient reading skills for their grade level.

Reading is fundamental to learning. Everything in education begins with reading because if children and youth cannot read, they cannot learn (Reading is Fundamental, 2018). Most reading experts now agree that "both skill and will" interplay in the making of an ideal reader (Applegate & Applegate, 2004). Intrinsically motivated readers are able to attain higher levels of reading achievement (Cipielewski & Stanovich, 1992) which correlates with higher grades in school (Sweet, Guthrie, & Ng, 1998). Specifically, reading attitudes are defined as "acquired predispositions to respond in a consistently favorable or unfavorable manner with respect to aspects of reading" (Liska, 1984, p. 285). In a meta-analysis of 32 research studies, elementary students reported a stronger association between reading attitudes and school achievement than middle school students (Petscher, 2010). Students reading at or above grade level have better attitudes toward different types of reading including recreational print, academic print, and academic digital text than students reading below grade level (Lupo, Jang, & McKenna, 2017).

Boys in elementary school have stronger reading skills and less decline of their academic grades when their mothers have greater school involvement (Kingdon, Serbin, & Stack, 2017). Internationally, girls receive higher grades than boys in all major subjects from elementary school to undergraduate schooling (Stoet & Geary, 2015; Voyer & Voyer, 2014). Girls are more likely than boys to enjoy reading (Clark, 2014), but boys' attitudes toward digital reading are more positive than girls (McKenna, Conradi, Lawrence, Jang, & Meyer, 2012). By middle school, attitudes toward recreational reading of boys and girls tend to decline and continue to decline (McKenna, Conradi, Lawrence, Jang, & Meyer, 2012).

The No Child Left Behind Act (2002) determined that the achievement gap in reading and writing between White and Black children was unacceptable and such disparity existed especially among boys from minority populations (Rothstein, 2013). A steady influx of immigrants into the United States has also increased the need for ongoing language instruction for English Language Learners (Martinez-Roldain, Colomer, & Arizpe, 2014), which highlight the need for evidence-based literacy programs that help students graduate high school (International Reading Association, 2006). Ongoing data from the U.S. Centers for Disease Control and Prevention (2017) have shown that students with the lowest grades will practice more risky behaviors. As one way to foster increased school connectedness, a Whole School, Whole Community, and Whole Child framework was advanced across the country (Rooney, Videto, & Birch, 2015) to highlight multiple connections between health and academic achievement (Michael, Merlo, Basch, Wentzel, & Wechsler, 2015). The WSCC initiative is running parallel to the revised Every Student Succeeds Act (U.S. Department of Education, 2015a) with the potential "to put education policies into place that connect health and learning" (Healthy Schools Campaign, 2017).

For many years, school administrators in some U.S. school districts have purchased health education curricula and offered teacher professional development workshops on new curriculum adoptions by using federal Title I money which funds teaching specialists in reading and writing to support children who lag behind their grade-level peers (U.S. Department of Education, 2015b). In addition to Title I teachers who have certificates in reading endorsements, all early childhood and elementary teachers are educated in how to develop reading and writing skills of all students: reading fluency, reading prosody, reading comprehension, and writing outcomes such as filling in missing words in a passage (The Access Center, 2011).

Literacy demonstrated in the context of health behaviors is called *health* literacy. Health literacy is defined as the degree to which an individual has the capacity to obtain, communicate, process, and understand basic health information and services to make appropriate health decisions (USDHHS, 2000). This definition differs from the National Health Education Standards (Joint Committee on National Health Education Standards, 2007). As a curriculum guide to health education teachers, the standards promote health literacy as "the ability of students to access valid information and products and services" and include the need for students "to comprehend concepts related to health promotion and disease prevention to enhance health".

The Calgary Institute on Health Literacy Curricula (The Centre for Literacy, 2008) defines health literacy as "the use of a wide range of skills that improve the ability of people to act on information in order to live healthier lives...These skills include reading, writing, listening, speaking, numeracy, and critical analysis, as well as communication and interaction skills".

We would like to point out that current literacy research seems to make two glaring errors. The first is that the attitudes and motivations leading up to health literacy have not been discussed. The second is that health literacy skills by definition do not address the relationship between reading and writing as essential building blocks to comprehension. It may be a leap of faith to assume that people, either young or old, who can *already* read and write, are able to comprehend health-related information or will even care to focus on the facts of such information to improve their health. Hence, if reading and writing skills are integral to health literacy, we must also be willing to investigate the attitudes and emotions (and even the beliefs) behind what individuals know or do not know about a health behavior.

The differentiation between functional health literacy and interactive health literacy (Sorensen, Van den Broucke, Fullam, Doyle, Pelikan, Slonska, & Brand, 2012; Nutbeam, 2000) is important in realizing the cognitive-motor and/or perceptual-motor skills necessary for personal literacy before we assume that health behavior will naturally flow from these physical abilities. True, children across all academic grades need to read and write about "something" in the process of reading and writing – and we argue that it might benefit individuals and their social peers the most if that "something" is health-related information. However, it is faulty logic to overlook the extensive trial-and-error processes that develop over time in the learning of literacy skills. Reading research (Boulware-Gooden,

Carreker, Thornhill, & Joshi, 2007; Mokhtari & Sheorey, 2008) is full of examples on how too much energy used in decoding new vocabulary and lack of fluency skills during reading and writing will keep the brain too preoccupied, which can also compromise one's ability to comprehend a written passage to be read or thought about in a meaningful (metacognitive) way. Similar effects are seen with struggling writers who use more brain energy when physically manipulating writing tools when trying to put their thoughts into words and sentences. Because comprehension suffers until a certain level of reading and writing fluency is mastered, health educators should be aware of curricular approaches that promote the reciprocal development of reading and writing skills for the development of fluency (Tankersley, 2005). The coupling effects of reading AND writing may be useful in the development of health literacy research for preK-12 children and youth.

Ongoing health education instruction in emotional health and feelings identification may be needed in preK-12 health education through narrative story books and informational media materials. At the minimum, a literature-based instructional environment may help children to manage their feelings and express their emotions through character identification. When upper elementary students lack an ability to manage and communicate their feelings, they may be at a higher risk in middle and high school years for misuse of substances, bullying, and addictions to mask or cover their perceived weaknesses (American Psychological Association, 2002). Health communication message designers often employ emotional appeals like fear, guilt, and humor to promote a health message (Turner, 2012), but youth may not have adequate practice time of life skills to interpret and use the information to enhance their health. Unfortunately, emotional appeals may actually impose additional stress and conflicts for youth leaving them to feel overwhelmed and more challenged. Research that addresses emotional health shows promise when connected to social applications. However, we identified that attitudes and feelings are minimally listed as performance indicators in the National Health Education Standards (Joint Committee on Health Education Standards, 2007). Only two performance indicators were found in the early grades: 1) Curriculum Standard 2.5.5 focuses on students in grades 3 through 5 who will be able to explain how media influences their thoughts, feelings, and healthy behaviors, and 2) Curriculum Standard 4.2.1 focuses on students in grades pre-Kindergarten through grade 2 who will be able to demonstrate healthy ways to express their needs, wants, and feelings. These two standards are invaluable in interactive health literacy (Nutbeam, 2000; Sorensen, Van den Broucke, Fullam, Doyle, Pelikan, Slonska, & Brand, 2012) which enhances "the capacity of individuals to influence social norms and interact with social groups". If a person is not able to accomplish the skills of reading and writing for functional health literacy, then one could argue that the social capacity of interactive health literacy through interpersonal communications and media interactions on digital devices may be challenged.

PURPOSE

The purpose of the study was to gain a better understanding of how girls and boys vary in their attitudes toward reading and writing and to assess if reading for fun (recreational reading) and reading for academics varies across gender. Three research questions framed the study: 1) What is the role of attitudes in reading for academics versus reading for recreation? 2) What are the differences in reading attitudes between girls and boys? and 3) What are the differences in writing attitudes between girls and boys? The two main research hypotheses were: 1) There will be no differences in reading attitudes between girls and boys on the Reading Attitude Survey, and 2) There will be no differences in writing attitudes between girls and boys on the Writing Attitude Survey.

METHODS

This research was one part of a larger study that assessed functional movement of children, pre-Kindergarten to grade seven, who participated in a daily physical activity circuit for one week or more at a recreational summer camp offered through a university in the Midwest.

Participants

The summer recreational camp involved 235 participants from which 102 (43%) children, ages 5 to 14, served as a convenience sample. The recreation camp began one week after school dismissal for summer vacation in June. During week 1 of summer vacation, 19 children (n = 13 girls; n = 6 boys) agreed to complete the

surveys. During week 2, 24 children (n=13 girls; n=11 boys) agreed to complete the surveys. During week 3, 23 children (n=15 girls; n=8 boys) agreed to complete the surveys. And during week 4, 36 children (n=24 girls; n=12 boys) agreed to complete the surveys. Participants were drawn from a Midwestern college town surrounded by a rural setting.

Instrumentation

Two national attitudinal surveys available in the public domain were used (McKenna, Kear, & Ellsworth,1995). The Reading Attitude Survey (RAS) contains 10 questions assessing *recreational* reading attitudes and 10 questions assessing *academic* reading attitudes on a scale of 1=very unhappy to 4=very happy. Sample recreational reading questions included: "How do you feel when you read a book on a rainy Saturday? And "How do you feel about reading during summer vacation?" Sample academic reading questions included: "How do you feel about learning from a book?" and "How do you feel when it's time for reading class?" (Kazelskis, Thames, Reeves, Flynn, Taylor, Beard, & Turnbo, 2005). Reliability was obtained by measuring the internal consistency of the two attitude scales with alpha coefficients ranging from .74 to .89.

The Writing Attitude Survey (WAS) contains 28 questions which assess the writing attitudes of children in grades 1-12. Children rate their attitudes toward writing on a scale of 1=very unhappy to 4=very happy. When all 28 questions are answered, scores are totaled then compared to national percentile rankings based on grade level. National averages were determined from a previous study of over 900 students from 19 school districts (Kear, Coffman, McKenna & Ambrosio, 2000).

Procedures

The study was approved by the university's Institutional Review Board prior to data collection with students. Active parental consent was sought and only those students whose parents returned the consent forms were granted participation in the study. Participants completed the Reading Attitude Survey (RAS) and the Writing Attitude Survey (WAS) in one testing session at the end of each week of camp. Researchers read a verbal script to students before the surveys were distributed to invite each student to participate in the study. Students signed the assent form before any surveys were administered. Students were encouraged to join camp counselors if they did not sign the form for any reason. If during the survey session, a child decided not to continue answering the questions, he or she placed the survey back into the manila testing envelope and was encouraged to sit quietly and do reading or writing work until the data collection session ended.

Children were given a manila envelope with three items: 1) assent form, 2) Reading Attitudes Survey, and 3) Writing Attitudes Survey. After the assent form was read aloud and signed by participants, students removed the first survey from the envelope and listened to the research proctor read the practice question aloud from the Reading Attitude Survey. The practice question involved looking at a 4-point Likert Scale ranging from very unhappy to very happy while observing the Garfield® cat visual depicting a frown, a blank stare, a happy face, and a very happy face. After brief instructions, the survey was read aloud one question at a time by the research proctor as the students followed along. After each question was read, the research proctor reminded the students to answer each question by circling the "answer that matches how they feel toward the reading situation".

The 20 questions were completed in approximately 15 minutes. Students placed their Reading Attitude Survey back into the manila envelope and removed the second survey. The same procedure was followed for the Writing Attitude Survey. Students took 20 minutes to complete the 28 questions. As before, the research proctor read each question aloud followed by a pause for students to circle the "answer that matches how they feel toward the writing situation". Students placed their Writing Attitude Survey back into the manila envelope and sealed the clasp. Upon exiting the room, students left the research envelope on the top of their desks.

RESULTS

Data were analyzed by SPSS Statistical Software using basic descriptive statistics. Means, median, and modes were calculated for the total sample then frequencies were run by gender and by grade level. Pearson Product Moment correlations were calculated to compare results by gender.

Table 1 shows grade-level frequencies by gender over the four weeks of camp. Grade level frequencies are reported for pre-kindergarten, kindergarten, grade 1, grade 2, grade 3, grade 4, grade 5, grade 6, and grade 7. Over the course of the four weeks, patterns emerged by grade level. We had nearly equal participation numbers from students at a grade level, with pre-kindergarten and grade 7 being outliers. When totaling girls and boys by grade levels, there were 16 surveys collected for kindergarteners, 17 surveys collected for second graders, 15 surveys for third graders, and 15 surveys for fourth graders. A total of 13 surveys from girls and 9 surveys from boys were collected for fifth, sixth, and seventh graders. Because the survey was read aloud to students by a research proctor, readability was probably higher because the research proctor read the question with fluency and fluidity which increases comprehension (Rasinski, Reutzel, Chard, & Linan-Thompson, 2011).

The Reading Attitude Scores for girls and boys are shown in Table 2 and Table 3, respectively. Scores on the Reading Attitude Survey are listed first for recreational reading followed by attitude scores for academic reading. When recreational scores and academic scores are combined, a total score is obtained. The mean recreational reading score for 65 girls equaled 31.84 and the mean academic reading score equaled 30.14 for a total combined score of 61.98. In contrast, the mean recreational reading score for 37 boys equaled 28.88 and the academic reading score equaled 25.14 for a total score of 54.03. For recreational reading attitudes, the Pearson Product Moment correlation for girls and boys over the four weeks was r = -0.72. For academic reading attitudes, the Pearson Product Moment correlation for girls and boys over the four weeks was r = -0.85. Hence, as girls' reading attitudes went up, boys' reading attitudes went down.

Table 4 shows the scores of the Writing Attitude Survey taken by students at the end of each week of camp. The mean writing scores for girls (n=65) equaled 81.31 which computed to a 63.22 percentile comparison against national norms. In contrast, the mean writing scores for boys (n=37) equaled 76.67 which computed to a 52.83 percentile comparison against national norms. Results show a weak negative correlation between girls and boys. Girls scored higher when compared to the national writing attitude norms than the boys. Girls scored moderately high (63rd percentile) compared to the national scale. The boys scored average (53rd percentile) when compared to the national average. Between the two groups, girls scored higher than boys by 10 percentile points on the Writing Attitude Survey. The Pearson Product Moment correlation for girls and boys over the four weeks was r = -0.39 for writing attitudes. For writing attitude percentiles against the national norms, the correlation for girls and boys over the four weeks was r = -0.63. Hence, as girls' writing attitudes went up, boys' writing attitudes went down.

Table 5 shows the summary of Pearson Product Moment Correlations for the Reading Attitude Survey and Writing Attitude Survey by Gender.

DISCUSSION

The goal of this study was to assess the reading and writing attitudes of children in pre-Kindergarten to grade 7 using national surveys that asked how students felt about different reading and writing scenarios. Three findings emerged from the data: 1) girls showed higher academic reading attitudes than boys; 2) girls showed higher recreational reading attitudes than boys, and 3) girls showed slightly higher writing attitudes than boys. Should these gender differences cause any concerns for educators and health education specialists in particular?

Recreational reading has other names in the literature: pleasure reading, voluntary reading, independent reading, and leisure reading (International Reading Association, 2014, p. 2). All of these terms refer to a reader who has developed pleasurable reading habits during leisure time. Leisure reading improves reading comprehension (Cox & Guthrie, 2001), vocabulary (Angelos & McGriff, 2002), and positive attitudes toward reading (Allington & McGill-Granzen, 2003). This is important because vocabulary and reading for meaning (comprehension) are the best predictors of reading success (Zimmermann & Brown, 2003).

Attitudes and Literacy

Attitudes toward reading and writing have been explored in depth by McKenna and Kear (1990) and McKenna, Kear, & Ellsworth (1995). This study posits that the possible determinants of reading and writing behaviors may be

explained by attitudes associated with reading and writing. In health behaviors, a significant gap exists between what people know and what people do. This gap involves the exploration of attitudes in determining what is intended and what is actually performed as a health-related behavior. Motivation stimulates the interest of a person in an activity. An individual must be motivated to make meaning out of reading and writing exercises and then be able to translate the information into different life situations and contexts. The educational literature tends to look at motivation as a general trait (Malloy, Marinak, Gambrell & Mazzoni, 2013), but some health education research looks at motivation through the Theory of Reasoned Action.

According to the Theory of Reasoned Action (Fishbein & Ajzen, 2010), attitudes and beliefs are determinants of intentions to do a behavior. Yzer (2012) claims that beliefs drive intentions to do the behavior. Attitudes are a person's evaluation of how favorable and unfavorable his or her performing a particular behavior would be. Attitudes toward reading and writing behaviors can be favorable or unfavorable depending upon the children's beliefs.

Attitudes are a generalized evaluation of favorable *feelings* and unfavorable *feelings* toward something (Yzer, 2012). Attitudes differ from emotions which are rooted in neurobiological chemicals for the human expressions of happy, depression, shame, fear, and anger (Lindquist, Wager, Kober, Bliss-Moreau, & Barrett, 2012). Attitudes may help to initiate behavior. In the Integrative Theory of Behavioral Prediction (Yzer, 2012), attitudes are one of three determinants of intentions.

In this study, attitudes served as key determinants of feelings toward reading and writing. Children were asked questions on whether they would perform the intended behavior of reading in certain situations organized on the scoring rubric as recreational reading (reading for pleasure or fun) or academic reading (reading for different purposes at school). Attitudes about reading and writing were elicited through a Garfield® character showing feelings ranging from very happy to very sad. Attitudes and feelings were interrelated for determining children's responses to questions. By reasoning out how they think and feel about situational reading and writing actions, the participants are providing their attitudes toward these skills.

The National Health Education Standards (Joint Committee on National Health Education Standards, 2007) do not use the words attitudes or emotions in their guidelines for health education teachers. Instead the words "feelings, wants, and needs" are outlined for elementary-aged children as a performance indicator in health instruction. Would this be considered adequate in the current high-stakes testing environments of schools and the media-saturated environments depicting high-risk behaviors? If attitudes help to determine an intention to do a behavior and if one's intention is the number one predictor of healthy behavior (Fishbein & Ajzen, 2010), we argue that health education curricula may need to be redesigned to address children's attitudes toward their health.

Reading and Writing as Skills for Functional Health Literacy

Functional health literacy is defined as "sufficient basic skills in reading and writing to be able to function effectively in everyday situations" (Nutbeam, 2000). Health education teachers could focus on using reading and writing as skills for health literacy because health content is understood by speaking and interacting with others AND by reading about health information. Even when information is read, an effective teacher will draw out from the reader what is being said and how it applies to one's life.

Role of Writing in Attitude Development

Writing is a key academic skill across the developmental lifespan. Students must write narratives and be able to mark test forms in order to be evaluated. Teachers have several choices for assessing student writing: 1) assess technical writing, grammar, spelling, and punctuation; 2) assess expressive writing and actions associated with the written response; and 3) assess health content and vocabulary chosen with the response.

Student attitudes toward written assessments may affect their motivation to learn (Forbes & Schmader, 2010). Writing can be used as a self-regulated human expression to figure out one's feelings and attitudes toward a health topic that was read or presented. Writing can help young people to reflect on personal health habits so

they can think about their attitudes, motivations, and/or beliefs toward their actions. For example, a second-grade student could write: I feel healthy when I run and play at recess. A fourth-grade student could write: I feel better when I eat an apple than when I eat a bag of chips. Or a sixth-grade student could write: I feel more alert when I get enough sleep than when I go to bed two hours later. Follow up "why" prompts and discussion of daily routines can help students to reflect on their actions.

A health teacher who asks students to write a paragraph on their feelings when saying "No" to a negative health behavior such as a tobacco offer may be helping students to reason out their current and future actions toward a health behavior. Students can also write about the cognitive skill or communication strategy that they would most likely choose during a tobacco offer, including the reasoned actions for doing so.

The U.S. Centers for Disease Control and Prevention (2009) has highlighted the fact that if adolescents feel connected to schooling, they are more apt to have higher grades and lower health risk behaviors. Conversely, if adolescents get higher grades, they demonstrate a higher health status. Topics like feeling connected to schooling and understanding how to handle a variety of emotions are vital to health status and can be further clarified when students practice the functional health literacy skills of reading, writing, and talking about their health. For example, by writing about a personal health topic that is shared only between the learner and the teacher, a student may think more in-depth about their health beliefs or actions. Writing helps to slow thinking down and to express feelings related to those thoughts, including beliefs associated with those ideas. In the process of writing, the individual must not only function in print (functional health literacy) but be able to interact with others who may ask questions requiring the formation of a written or spoken response. Research suggests that oral language in the form of discussions may facilitate the writing task and that written language is an important complement to reading (Shanahan, 2008). Therefore, when children read along with questions being asked on a questionnaire that is presented orally to them, the result becomes a multisensory response that is oral (auditory), visual, and kinesthetic in scope.

Writing is a cognitive-motor skill that requires coordination of cognitive thoughts and feelings into a motor performance. Writing is also a highly evaluated skill in academic environments which can increase or decrease one's motivation to do it based on the feedback given from teachers, parents, and peers. Writing is similar to drawing because we want students to reflect personally about health topics and use writing and drawing to help them "make sense" and meaning about many health-enhancing behaviors. Generally, people cannot separate their attitudes from health-related actions because it is the attitude itself that may motivate a person to share an authentic response or not.

Role of Literacy Environments in Reading and Writing

Health professionals can help to focus on literacy-related objectives to improve the health status of children, youth, and adults (USDHHS, 2010). Cunningham (2005 & 2008) found that environmental conditions play a key role in academic achievement. If students learn in impoverished environments, they have less role models and less encouragement from social supports. Poor social norms may also contribute to lower academic skills of reading and writing. Cunningham (2008) found that literacy environments affect children's attitudes toward reading and writing. Bailey (2016) also found that classroom environments have an impact on adolescent's attitudes and test scores in reading. The National Health Education Standards 1 and 2 support this. Standard 1 states that students in grades 6 through 8 should be able to analyze how their environment affects personal health. And Standard 2 states that students in grades 6 through 8 will be able to describe how their classmates influence their healthy and unhealthy behaviors.

In stressful academic situations, there may be an increased need for emotional regulation of youth through sports, music, art, and other embodied communications requiring some talking and writing. Some studies have shown that art-related programs play a role in youth development and may help to negotiate high-risk behaviors (Charmaraman & Hall, 2011). Classroom teachers and health education specialists can play helpful communication roles in setting up focused literacy environments for health. Taking time for students to write in health class is important because writing helps students to take needed time to think about their

health habits and form their thoughts and feelings. Educators can teach students how to write advocacy letters, health pamphlets, and prevention posters to help students sort out their feelings about health-related issues in their lives. Students also need time to express their written ideas through oral language, because it is through speaking out loud that individuals may find clarity in self-expression with additional information learned by listening to feedback from others.

Health education teachers are important gatekeepers of curriculum content and should help students to read and write for meaning and understanding. Teachers should encourage the use of visual-textual material that helps students to learn the facts about health, but to also take the learning into action steps to do the health behavior. The translation of thoughts into actions for health remains a key determinant of health behavior. Teachers can also help students understand their motivations for doing (or not doing) a health behavior, possibly triggered by words that are read, written, or spoken out loud.

Health care professionals in school-based health clinics can also provide print materials in the form of posters, pamphlets, and magazines in waiting rooms so students can read valid and reliable information about health. Health teachers can teach students how to read for comprehension and use critical thinking skills to analyze media, both print and electronic forms, so students know the difference between positive and negative message design. By having students write their own media messages, they will learn the motivations behind a health-related message and write messages that align to their thinking and persuasion. Feedback from teachers, peers, and health care providers can be instructive in exploring the beliefs behind the messages and the differences between positive and negative attitudes in message design.

National Health Education Standard 7 suggests that "students should be able to practice health enhancing behaviors to reduce and avoid health risks" (Joint Committee on National Health Education Standards, 2007). In situations like sunscreen and oral health care, low reading abilities are related to less sunscreen use and oral hygiene (Zullig, Ubbes, & Mann, 2013). These health risk behaviors may be dependent upon students being able to read the labels on the self-care products. This may also help to justify the important fact that health class could emphasize reading and writing as important communication skills for health literacy. Much health content is also understood by speaking and interacting with others. Each new skill or task that is learned has behavioral elements of increasing difficulty, including attitudinal motivations that are positive or negative.

Limitations

There were many limitations to this preliminary study on reading and writing attitudes. First, the Reading Attitude Survey and the Writing Attitude Survey are not able to point to causal reasons for positive and negative attitudes toward reading and writing**.** Second, we did not investigate the effect of grade level on boys' and girls' attitudes toward reading and writing. This has been previously studied showing that attitudes toward reading and writing tend to decrease as grade levels go up and students get older (McKenna, Conradi, Lawrence, Jang, & Meyer, 2012; Kear, Coffman, McKenna, & Ambrosio, 2000; McKenna & Kear, 1990; Kush & Watkins, 1996). This is important because the U.S. Centers for Disease Control & Prevention (2017) has outlined the critical relationship between high school graduation rates and high-risk health behaviors, especially data showing trends that youth with poorer academic grades report more high-risk behaviors. Studies showing literacy trends and health habits over the developmental life span will be useful to health education specialists across multiple work settings, and not just preK-12 health education teachers, when planning and implementing interventions for young people. Hence, health educators need to develop quantitative assessment tools and qualitative interview studies to elaborate on the relationship of grade levels and attitudes toward health literacy, especially the relationship between functional literacy and functional health literacy.

Third, the current study used self-report when eliciting student responses to the RAS and WAS surveys. Specifically, students had to be able to read a picture and read words related to reading and writing scenarios before they circled their chosen response. During data collection, the research proctor orally read survey questions to the participants while they read along. Another researcher walked around the room to respond

to any student questions or to make sure they were staying with the tempo of the questions as they were read. We cannot be sure that students were able to follow the multimodal approach to survey implementation, but we reasoned from previous experience with children, that the ability to hear and to think about the questions and the ability to see and to read the questions, would assist most participants who were completing the surveys. Nonetheless, self report – and whether students provided honest answers - remains a limitation of the study.

Fourth, we have coupled reading and writing skills together for the sake of clarity in this paper. However, the practice inherent in reading skills and writing skills are obviously quite different and should not be assumed to be the same developmentally. Future studies should focus on either reading or writing skills in developing children's attitudes toward literacy and health literacy. There is some evidence that reading and writing are reciprocal skills and can assist students to learn one skill while doing the other (Graham & Hebert, 2010).

Fifth, a final limitation of the study is that we used a convenience sample of students and not a random selection of students. Small sample sizes may have resulted in Type II errors.

CONCLUSIONS

Girls are more inclined than boys to read for fun and to have positive attitudes associated with reading and writing. Attitudinal trends for reading and writing seem to persist into the first four weeks of summer vacation for children in pre-Kindergarten to grade 7. This study explored attitudes of children toward different literacy situations to investigate how they function as readers and writers and for what purposes, e.g., academic literacy and/or recreational literacy. Because a significant gap exists between what people know and what people do regarding health behaviors, this study may be the first to investigate reading and writing as ways to conceptualize functional health literacy through the lens of attitudes. Our survey results provide preliminary insights into children's attitudes toward reading and writing which need further development in the bridge to adopting and practicing health behaviors.

RECOMMENDATIONS

Health education curricula should emphasize more reading and writing skills so that youth can communicate and advocate for personal, family, and community health (e.g., National Health Education Standard 8) and practice their expressions of feelings, attitudes, beliefs, and intentions to do a health behavior. Could reading and writing attitudes help to predict literacy behaviors that form the basis for functional health literacy? When analyzing the personal and sociocultural influences of attitudes toward health behaviors across the developmental lifespan, more health-related assessments on reading and writing attitudes may move the profession forward.

Survey development in reading attitudes and health literacy is needed to advance the research agenda. Survey questions could ask about reading experiences at home and at school, including the level of enjoyment that students associate with reading about health. Future studies might use the Survey of Adolescent Reading Attitudes (SARA) instead of the Reading Attitude Survey (RAS) used in this study. SARA goes beyond attitudes toward academic and recreational reading to also include attitudes toward print reading and digital reading with reliability coefficient of .86, .80, .78, and .82 for the four subscales, respectively (Conradi, Bryant, Jang, Craft, & McKenna, 2013).

Qualitative interviews are needed to understand the range of feelings associated with academic reading and recreational reading among children and youth. The current study used emoticons in the form of a Garfield® cartoon figure to elicit the feelings of Happy to Sad. In-depth interviews with selected students may help us to know the range of feelings, including salient beliefs, regarding their ability to read for enjoyment or not. Although handwritten samples of student signatures were obtained, no analysis was done on the steadiness and legibility of their calligraphy. Studies show that handwriting is a viable assessment tool for interpretation of certain diseases, e.g., Parkinson's, balance and hearing loss (Smits, Tolonen, Cluitmans, Van Gils, Conway, Zietsma & Maurits, 2014). Hence, reading and writing should be studied more as critical determinants of one's functional health.

Qualitative research that queries the reading attitudes of children from different grade levels, ethnicities, and socioeconomic status are missing in the literature. Focus group discussions advocated by Garces-Bacsal & Yeo (2017) seem especially useful for health education, because participants could be asked about their reading attitudes (toward health), including the perceptions of themselves as readers (of health information), and the time they devote to reading (valid and reliable health information).

We recommend that teachers, librarians, and parents help children and youth to choose reading materials for fun and enjoyment leading to increased recreational reading. Health-related stories where characters have made healthy decisions, set personal goals for health, communicated effectively, managed their conflict, and managed their stress would be especially useful for developing student agency and empowerment. More curricula, like eBooks for Oral Health Literacy (Ubbes, 2018), may be templates for determining if reading can "prompt" individuals to perform an intended behavior – leading to research that investigates a bridge between health literacy and health education.

A variety of health-related materials for recreational reading need to be available to children during school and summer vacations to build ongoing content knowledge and vocabulary for health. Functional health literacy depends on the basic skills of reading, writing, and speaking about health. Inclusion of boy and girl role models who describe and explain positive attitudes and salient beliefs toward a variety of health habits may help to build recreational (leisure) reading and academic reading that advances health literacy.

Although the current study looked at attitudes toward reading and writing modeled after a national study by McKenna, Kear, and Ellsworth (1995), future studies will need to ask participants more focused questions about health literacy, specifically attitudes toward health-related reading and writing. Development of an assessment tool for measuring attitudes toward health-content reading and health-content writing might be an important development for health education. Such information could help to uncover participants' ability to read and write in a functional way, including how positive and negative attitudes toward their health habits may be shaped and communicated through written words composed by an author that are read versus words that are written and composed personally by participants themselves.

Finally, teacher preparation programs in health education should explore the findings of Applegate and Applegate (2004) who have stated that "faculty in teacher preparation programs cannot assume that all their students, even the most academically prepared, are enthusiastic readers". This is true even of graduate students who are practicing or prospective teachers (Nathanson, Pruslow, & Levitt, 2008). If reading and writing are determinants of functional literacy, more research in health education teacher preparation programs should be conducted to explore the motivations of health education teachers and health education specialists in advancing attitudes toward reading and writing as potential determinants of functional health literacy.

REFERENCES

American Psychological Association. (2002). *Developing adolescents: A reference for professional*. Washington, DC. Retrieved from http://www.apa.org/pi/families/resources/develop.pdf

Allington, R.L., & McGill-Franzen, A. (2003). The impact of summer reading setback on the reading achievement gap. *Phi Delta Kappan, 85(1),* 68-75.

Angelos, S., & McGriff, N. (2002). Tracking students' reading progress. *Knowledge Quest, 30(5),* 44-46.

Applegate, A.J., & Applegate, M.D. (2004). The Peter Effect: Reading habits and attitudes of preservice teachers. *The Reading Teacher, 57(6),* 554-563.

Bailey, K.S. (2016). Classroom environment and effects on adolescents' attitudes and test scores in reading. *School of Education Student Capstones and Dissertations.* Retrieved from http://digitalcommons.hamline.edu/hse_all

Boulware-Gooden, R., Carreker, S., Thornhill, A., & Joshi, R.M. (2007). Instruction of metacognitive strategies enhances reading comprehension and vocabulary achievement of

third-grade students. *The Reading Teacher, 61(1)*, 70-77.

Charmaraman, L., & Hall, G. (2011). School dropout prevention: What arts-based community and out-of-school-time programs can contribute. *New Directions for Youth Development (Supplement, 1)*, 9-27. Retrieved from http://doi.org/10.1002/yd.416

Clark, C. (2014) *Children's and young people's reading in 2013: Findings from the 2013 National Literacy Trust's annual survey*. London, England: National Literacy Trust.

Cipielewski, J., & Stanovich, K.E. (1992). Predicting growth in reading ability from children's exposure to print. *Journal of Experimental Child Psychology, 54,* 74-89.

Conradi, K., Jang, B.G., Bryant, C., Craft, A., & McKenna, M.C. (2013). Measuring adolescents' attitudes toward reading: A classroom survey. *Journal of Adolescent & Adult Literacy, 56(7),* 565-576.

Cox, K.E., & Guthrie, J.T. (2001). Motivational and cognitive contributions to students' amount of reading. *Contemporary Educational Psychology, 26(1),* 116-131.

Cunningham, D.D. (2008). Literacy environment quality in preschool and children's attitudes toward reading and writing. *Literacy Teaching and Learning*, *12(2)*, 19-36.

Cunningham, D.D. (2005). *Relating quality of urban, public school, preschool classroom environments to the language and literacy development of at-risk preschool children.* Unpublished doctoral dissertation, University of Missouri, St. Louis.

Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.

Forbes, C.E., & Schmader, T. (2010). Retraining attitudes and stereotypes to affect motivation and cognitive capacity under stereotype threat. *Journal of Personality and Social Psychology*, *99*(5), 740-754. http://doi.org/10.1037/a0020971

Garces-Bacsal, S., & Denise Yeo, D. (2017). Why and what they read when they don't have to: Factors influencing the recreational reading habits of gifted students in Singapore, *Journal for the Education of the Gifted, 40(3)*, 247-265.

Graham, S., & Hebert, M. (2010). *Writing to read: Evidence for how writing can improve reading.* New York, NY: Carnegie Corporation.

Healthy Schools Campaign. (2007). Retrieved October 16, 2017 from http://healthyschoolscampaign.org

International Reading Association. (2006). *Standards for middle and high school literacy coaches*. New York, NY: Carnegie Corporation.

International Reading Association. (2014). *Leisure reading: A joint position statement of the International Reading Association, The Canadian Children's Book Centre, and the National Council of Teachers of English*. Developed by the Leisure Reading Board Task Force (2013-2014). Newark, DE: Author.

Joint Committee on National Health Education Standards. (2007). *National health education standards: Achieving excellence*. Atlanta, GA: American Cancer Society. Available at https://www.cdc.gov/healthyschools/sher/standards/index.htm

Kazelskis, R., Thames, D., Reeves, C., Flynn, R., Taylor, L., Beard, L.A., & Turnbo, D. (2005). Reliability and stability of Elementary Reading Attitude Survey (ERAS) scores across gender, race, and grade level. *The Professional Educator*, *27(1 & 2)*, 29-37.

Kear, D.J., Coffman, G. A., McKenna, M. C., & Ambrosio, A.L. (2000). Measuring attitude toward writing: A new tool for teachers. *The Reading Teacher, 54(1)*, 10-23.

Kingdon, D., Serbin, L.A., & Stack, D. M. (2017). Understanding the gender gap in school performance among low-income children: A developmental trajectory analysis. *International Journal of Behavioral Development*, 41(2), 265-274.

Kush, J.C., & Watkins, M.W. (1996). Long-term stability of children's attitudes toward reading. *The Journal of Educational Research, 89(5)*, 315-319.

Lindquist, K. A., Wager, T. D., Kober, H., Bliss-Moreau, E., & Barrett, L. F. (2012). The brain

basis of emotion: A meta-analytic review. *Behavioral and Brain Sciences*, *35*(03), 121-143.

Liska, A. E. (1984). A critical examination of the causal structure of the Fishbein/Ajzen attitude-behavior model. *Social Psychology Quarterly, 47*, 61-74.

Lupo, S., Jang, B.G., & McKenna, M. (2017). The relationship between reading achievement and attitudes toward print and digital texts in adolescent readers. *Literacy Research: Theory, Method, and Practice, 66,* 264-278.

Malloy, J.A., Marinak, B.A., Gambrell, L.B., & Mazzoni, S.A. (2013). Assessing motivation to read. *The Reading Teacher*, *67(4)*, 273-282. doi: 10.1002/trtr.1215

Martinez-Roldain, C., Colomer, T., & Arizpe, E. (2014). *Visual journeys through wordless narratives: An international inquiry with immigrant children and the arrival.* New York, NY: Bloomsbury Academic.

McKenna, M.C., & Kear, D.J. (1990). Measuring attitude toward reading: A new tool for teachers. *The Reading Teacher, 43*, 626-639.

McKenna, M.C., Kear, D.J., & Ellsworth, R.J. (1995). Children's attitude toward reading: A national survey. *The Reading Teacher, 30*(4), 934-955.

McKenna, M.C., Conradi, K., Lawrence, C., Jang, B.G., & Meyer, J.P. (2012). Reading attitudes of middle school students: Results of a U.S. survey. *Reading Research Quarterly, 47,* 283-306. doi:10.1002/RRQ.021

Michael, S.L., Merlo, C.L., Basch, C.E., Wentzel, K.R., & Wechsler, H. (2015).Critical connections: Health and academics. *Journal of School Health, 85,* 740-758. doi:10.1111/josh.12309

Mokhtari, K., & Sheorey, R. (2008). *Reading strategies of first and second language learners: See how they read.* Norwood, MA: Christopher-Gordon Publishers.

Nathanson, S., Pruslow, J., & Levitt, R. (2008). The reading habits and literacy attitudes of inservice and prospective teachers: Results of a questionnaire survey. *Journal of Teacher Education, 59(4),* 313-321.

No Child Left Behind Act. (2002). Retrieved May 31, 2005 from www.ed.gov/nclb/landing.jhtml?src=pb

Nutbeam, D. (2000). Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International*, *15*, 259-267.

Petscher, Y. (2010). A meta-analysis of the relationship between student attitudes towards reading and achievement in reading. *Journal of Research in Reading, 33(4),* 335-355.

Rasinski, T.V., Reutzel, C.R., Chard, D., & Linan-Thompson, S. (2011). Reading fluency. In M.L. Kamil, P. D. Pearson, P. Afflerbach, & E. B. Moje (Eds), *Handbook of Reading Research*, Volume IV, pp. 286-319, New York, NY: Routledge.

Reading is Fundamental. (2018). Retrieved August 5, 2018 from https://www.rif.org/

Rooney, L.E., Videto, D.M., & Birch, D.A. (2015). Using the whole school, whole community, whole child model: Implications for practice. *The Journal of School Health*, *85*(11), 817-823. http://doi.org/10.1111/josh.12304

Rothstein, R. (2013). For public schools, segregation then, segregation since: Education and the unfinished march. *Economic Policy Institute.* Retrieved from http://www.epi.org/files/2013/Unfinished-March-School-Segregation.pdf

Shanahan, T. (2008). Relations among oral language, reading, and writing development. In C.A. MacAuthur, S. Grahm, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 171-183). New York, NY: The Guilford Press.

Smits, E.J., Tolonen, A.J., Cluitmans, L., van Gils, M., Conway, B.A., Zietsma, R.C., Leenders, K.L., & Maurits, N.M. (2014). Standardized handwriting to assess bradykinesia, micrographia and tremor in Parkinson's disease. *PLOSOne, 9(5)*. e97614

Sorensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, G., Slonska, Z., & Brand, H. (2012). Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health*, 12, 80.

Stoet, G., & Geary, D.C. (2015). Sex differences in academic achievement are not related to political, economic, or social equality. *Intelligence, 48,* 137-151. doi:10.1016/j.intell.2014.11.006

Sweet, A.P., Guthrie, J.T., & Ng, M.M. (1998). Teacher perceptions and student reading motivation. *Journal of Educational Psychology, 90(2)*, 210-223.

Tankersley, K. (2005). *Literacy strategies for grades 4-12: Reinforcing the threads of reading*. Alexandria, VA: Association for Supervision and Curriculum Development.

The Access Center. (2011). Early reading assessment: A guiding tool for instruction. *Reading Rockets.* Retrieved from http://www.readingrockets.org/article/early-reading-assessment-guiding-tool-instruction

The Centre for Literacy. (2008). *Health literacy: Calgary Charter*. Retrieved from http://www.centreforliteracy.qc.ca/health_literacy/calgary_charter

Turner, M.M. (2012). Using emotional appeals in health messages. In H. Cho (Ed.), *Designing Messages for Health Communication Campaigns: Theory and Practice* (pp. 59-71). Thousand Oaks, CA: Sage.

Ubbes, V.A. (2018). *eBook for oral health literacy curriculum*. Accessed on the Digital Literacy Partnership website @ https://dlp.lib.miamioh.edu/Accessed on August 5, 2018.

U.S. Department of Education. (2015a). *Every Student Succeeds Act (ESSA)*. Available at https://www.ed.gov/ESSA. Accessed on October 19, 2017.

U.S. Department of Education. (2015b). Improving basic programs operated by local education agencies (Title I, part A). Available at http://www2.ed.gov/programs/titleiparta/index.html

U.S. Department of Health and Human Services. (2010). *Healthy People 2020*. Washington, D.C.

U.S. Department of Health and Human Services. (2000). *Healthy People 2010*. Washington, DC: U.S. Government Printing Office. Originally developed for Ratzan SC, Parker RM. 2000. Introduction. In *National Library of Medicine Current Bibliographies in Medicine: Health Literacy*. Selden, C.R., Zorn, M., Ratzan, S.C., Parker, R.M., Editors. NLM Pub. No. CBM 2000-1. Bethesda, MD: National Institutes of Health, U.S. Department of Health and Human Services. Available at https://health.gov/communication/literacy/quickguide/factsbasic.htm Accessed on October 19, 2017.

U.S. Centers for Disease Control and Prevention. (2009). School connectedness: Strategies for increasing protective factors among youth. Atlanta, GA: U.S. Department of Health and Human Services. Retrieved from https://www.cdc.gov/healthyyouth/protective/pdf/connectedness.pdf

U.S. Centers for Disease Control and Prevention. (2017). Health and academics. Atlanta, GA: U.S. Department of Health and Human Services. Retrieved from https://www.cdc.gov/healthyyouth/health_and_academics/index.htm

Voyer, D., & Voyer, S.D. (2014). Gender differences in scholastic achievement: A meta-analysis. *Psychological Bulletin*, 140(4), 1174-1204.

Yzer, M.C. (2012). The integrated model of behavioral prediction as a tool for designing health messages. In H. Cho (Ed.), *Designing Messages for Health Communication Campaigns: Theory and Practice* (pp. 21-40). Thousand Oaks, CA: Sage.

Zimmerman, J., & Brown, C. (2003). Let them eat more than phonics. *Phi Delta Kappan, 85*, 603-605.

Zullig, K.J., Ubbes, V.A., & Mann, M. (2013). Early adolescent literacy influences, reading ability, and preventative health behaviors. *American Journal of Health Studies*, *28(3)*, 134-141.

Table 1: Grade Level Frequencies of Girls and Boys per Week

Grade Level	Week 1 Girls	Week 2 Girls	Week 3 Girls	Week 4 Girls	All Weeks Girls
Pre-K	0	0	0	0	0
K	2	6	3	1	12
1	1	1	1	5	8
2	2	3	3	4	12
3	1	1	1	3	6
4	4	1	2	5	12
5	1	0	1	1	3
6	1	1	3	3	8
7	1	0	1	0	2
Total	**13**	**13**	**15**	**24**	**65**

Grade Level	Week 1 Boys	Week 2 Boys	Week 3 Boys	Week 4 Boys	All Weeks Boys
Pre-K	1	1	1	0	3
K	1	0	1	2	4
1	0	2	1	1	4
2	0	2	1	2	5
3	2	2	2	3	9
4	0	2	0	1	3
5	2	1	1	2	6
6	0	1	0	1	2
7	0	0	1	0	1
Total	**6**	**11**	**8**	**12**	**37**

Table 2: Reading Attitudes Survey (RAS) Scores for Recreational Reading, Academic Reading, and Total Reading Scale for Girls (n = 65)

Reading Attitude Survey for Recreational Reading - GIRLS					
Week	**Number of Girls**	**Mean**	**Median**	**Standard Deviation**	**Range**
1	13	32.23	33.00	05.97	19
2	13	32.77	35.00	05.54	15
3	15	34.53	34.00	04.47	13
4	24	27.83	30.50	10.34	38
Total	65	31.84	33.13	06.58	21
Reading Attitude Survey for Academic Reading - GIRLS					
Week	**Number of Girls**	**Mean**	**Median**	**Standard Deviation**	**Range**
1	13	30.69	31.50	04.73	15
2	13	32.08	31.00	05.53	16
3	15	30.73	31.00	06.15	25
4	24	27.04	30.00	09.68	40
Total	65	30.14	30.88	06.52	24
Reading Attitude Survey for Combined Total Scale - GIRLS					
Week	**Number of Girls**	**Mean**	**Median**	**Standard Deviation**	**Range**
1	13	62.92	63.46	10.22	34
2	13	64.85	66.00	10.10	29
3	15	65.27	63.00	08.87	33
4	24	54.87	60.00	19.62	77
Total	65	61.98	63.12	12.20	43

Table 3: Reading Attitudes Survey (RAS) Scores for Recreational Reading, Academic Reading, and Total Reading Scale for Boys (n = 37)

Reading Attitude Survey for Recreational Reading - BOYS					
Week	**Number of Boys**	**Mean**	**Median**	**Standard Deviation**	**Range**
1	6	29.50	28.00	05.09	12
2	11	26.10	28.00	10.10	04
3	8	28.50	31.00	07.58	25
4	12	31.42	33.00	05.96	19
Total	37	28.88	30.00	07.18	15
Reading Attitude Survey for Academic Reading - BOYS					
Week	**Number of Boys**	**Mean**	**Median**	**Standard Deviation**	**Range**
1	6	24.30	24.50	04.93	15
2	11	24.00	24.00	10.24	39
3	8	25.75	26.50	07.59	23
4	12	26.50	26.50	10.92	40
Total	37	25.14	25.38	08.42	29
Reading Attitude Survey for Combined Total Scale - BOYS					
Week	**Number of Boys**	**Mean**	**Median**	**Standard Deviation**	**Range**
1	6	53.83	52.50	06.79	19
2	11	50.10	53.00	19.75	19
3	8	54.25	57.00	12.53	36
4	12	57.92	59.50	14.05	44
Total	37	54.03	55.50	13.28	30

Table 4: Writing Attitude Survey (WAS) Scores for Girls and Boys

Writing Attitude Survey Scores - GIRLS					
Week	**Number of Girls**	**Mean**	**Median**	**Standard Deviation**	**Range**
1	13	85.00	87.00	08.27	32
2	13	86.54	87.00	11.46	42
3	15	80.13	81.00	10.21	38
4	24	73.58	80.00	23.29	96
Total	65	81.31	83.75	13.31	52
Writing Attitude Percentile National Norms - GIRLS					
Week	**Number of Girls**	**Mean**	**Median**	**Standard Deviation**	**Range**
1	13	69.90	74.00	24.09	83
2	13	63.57	63.00	32.10	91
3	15	61.50	69.00	23.89	84
4	24	57.90	60.00	22.83	85
Total	65	63.22	66.50	25.73	86
Writing Attitude Survey Scores - BOYS					
Week	**Number of Boys**	**Mean**	**Median**	**Standard Deviation**	**Range**
1	6	71.83	69.50	10.50	29
2	11	77.27	84.00	17.93	58
3	8	80.25	76.00	11.12	30
4	12	77.33	77.00	09.56	29
Total	37	76.67	76.63	12.28	37
Writing Attitude Percentile National Norms - BOYS					
Week	**Number of boys**	**Mean**	**Median**	**Standard Deviation**	**Range**
1	6	34.25	26.50	24.21	54
2	11	60.20	61.50	27.75	89
3	8	66.17	70.50	24.69	55
4	12	50.70	42.50	26.98	80
Total	37	52.83	50.25	25.91	70

Table 5: Pearson Product Moment Correlations for RAS and WAS by Girls and Boys

Pearson Product Moment Correlations for Reading (RAS) by Girls and Boys	***r* =**
RAS -Recreational Reading: Correlation of mean scores weeks 1-4 for girls and boys	**-0.72**
RAS -Academic Reading: Correlation of mean scores weeks 1-4 for girls and boys	**-0.85**
RAS - Total Combined Scale: Correlation of mean scores weeks 1-4 for girls and boys	**-0.83**

Pearson Product Moment Correlations for Writing (WAS) by Girls and Boys	***r* =**
WAS: Correlation of mean scores weeks 1-4 for girls and boys	**-0.39**
WAS: Correlation of mean scores weeks 1-4 for girls and boys	**-0.63**