CALL IN THE REF: THE IMPACT OF AN INTEREST-REGULATING STRATEGY ON THE READING OF UNINTERESTING TEXTS

by

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ABSTRACT

The purpose of this quasi-experimental study was to determine the effectiveness of an instructional intervention designed to help high school students learn to regulate their interest when reading uninteresting texts. An intervention was developed utilizing current research on motivation and interest. The intervention included three components: Reminders to help students find initial motivation to read a text, Enjoyment to help students maintain interest over time and across a full text, and Focus to help students maintain cognitive effort over time and across a full text. Each component was tested as a single condition, and all three components were tested as an additional condition. The effectiveness of each component, as well as the whole, was evaluated and compared to an existing instructional approach on measures of effort, interest, and comprehension. Pre- and post-test data was collected to determine the impact of the strategy instruction on students' comprehension, effort, interest, and strategy use. A multivariate repeated measures analysis of variance was conducted; however, no significant differences were found in either the between-group variables of post-test treatment groups or the within-group variable of pre- and post-test scores. Several issues arose that potentially impacted the results of this study—namely, teacher buy-in, fidelity of implementation, measurement factors, and treatment length. Analysis of these findings offers possible directions for future research on interest regulation for adolescent readers.

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CHAPTER 1

INTRODUCTION TO THE STUDY AND LITERATURE REVIEW

Students, especially at the secondary level, are asked to read many texts in which they have little to no interest. The elements known to increase student interest in a text, such as vividness and storytelling (Schraw, Flowerday, & Lehman, 2001), are mostly missing in the textbooks and other materials students are asked to read in secondary schools. One consequence of this lack of interest is that students are unwilling to read their school-assigned texts. This leads to a vicious cycle—students stop reading, so teachers stop requiring reading, instead adopting a "pedagogy of telling," where teachers simply summarize reading assignments for students (O'Brien, Stewart, & Moje,1995; Wade & Moje, 2000). When students are not held accountable for their reading or are not required to read, their reading amount decreases, which can lower reading skills, reading stamina, and motivation in reading.

While adolescence is a difficult time for motivation, it is also a vital time for academic growth. First, students' beliefs about reading begin to solidify during adolescence. Eccles et al. (1989) found that motivation for reading stabilizes in middle school, and that students with positive or negative beliefs about reading will keep these beliefs. Second, adolescence is a crucial time to build literacy skills for college and

career readiness. In order to develop deep reading proficiency, students need to continue to develop complex reading skills in their junior high and high school years (Springer, Wilson, & Dole, 2014). However, Biancarosa and Snow (2006) suggest that up to 70% of adolescent students have some struggle with reading. Additionally, recent scores on the National Assessment of Educational Progress (NAEP) show that 4th- and 8th-grade reading scores have increased over the last several decades, but 12th-graders' reading scores have not (National Center for Education Statistics, 2013). Studies showed that students' reading levels were often several grade levels behind that of introductory college class texts (National Governors Association, 2010).

In order to address some of these concerns, the Common Core State Standards are designed to increase rigor in an attempt to bridge the gap between high school and college reading. However, without increased efforts to engage students in literate activities, students will be unmotivated to accomplish these cognitively challenging tasks. This problem comes to a head in college, when students are asked to do a majority of their reading and learning on their own. In college, up to 85% of reading and learning is completed independently (Nist & Holshuh, 2000). Students who are accustomed to faking their way through their high school class reading will find themselves without the necessary reading and self-regulation skills to master the required content in even their freshman coursework (NCEE, 2013).

While much focus has been placed in recent years on how teachers can motivate their students, such as increasing students' sense of control over their learning (Deci et al., 1991) and providing interesting texts (Hidi, 1990), less focus has been given to teaching students how to regulate their *own* interest in reading. There are times when

teachers cannot enhance students' motivation and interest in a task—for example, some important instructional topics are simply not interesting to students. Alvermann et al. (2013) offered a succinct, albeit tongue-in-check, assessment of this by paraphrasing Abraham Lincoln: "You can interest some of your students all of the time, you can interest all of your students some of the time, but you will never get all of them excited about the valence-shell electron-pair repulsion model at the same time." (p. 182). In these situations, teaching students to control their own motivation and interest may help students tackle boring or challenging literacy tasks (Sansone, Wiebe, & Morgan, 1999; Wolters, 1998).

Currently, there is very little research on teaching students how to generate and maintain their own motivation and interest in uninteresting texts they have to read independently. Although several researchers have noted the potential in teaching students how to control and regulate their own motivation and interest while reading (Fries, Dietz, & Schmidt, 2008; McCann & Turner, 2004; Nett, Goetz, & Hall, 2011; Oldfather, 2012; Wolters & Rosenthal, 2000), there have been no studies in which students are taught to use a motivation and interest regulating strategy independently. Such a strategy could provide an avenue for students who might normally be stymied by uninteresting reading tasks and who lack the stamina to persevere to the end of the task.

The purpose of this study, then, was to examine the efficacy of an intervention aimed at increasing students' ability to control their motivation and interest during independent reading of uninteresting informational texts. An intervention was developed utilizing current research on motivation and interest. The intervention included three components: *Reminders* to help students get motivated to read, *Enjoyment* to help

students maintain interest over time and across a full text, and *Focus* to help students maintain cognitive effort over time and across a full text. Each component was tested as a single condition, and all three components were tested as an additional condition. The effectiveness of each component, as well as the whole, was evaluated and compared to an existing instructional approach on measures of effort, interest, and comprehension.

Conceptual Framework and Literature Review

Motivation and interest contribute to the conceptual framework of the study and are the constructs under consideration in this study. Motivation is a vital component of all learning and is a key to reading proficiency (Hidi & Haraciewicz, 2000; Wigfield & Guthrie, 1997). Wigfield and Guthrie (2000) define motivation to read as "the individual's personal goals, values, and beliefs with regard to the topics, processes, and outcomes of reading" (p. 405). Research has shown that motivation is a complex, malleable construct that shifts globally as students mature and grow, but also locally as students encounter specific texts, tasks, and contexts (Hidi, 2001; Wigfield & Guthrie, 2000).

Most researchers argue that motivation is a broad and complex construct. By and large motivation to read develops slowly over time and decreases as students progress into middle and high school (Guthrie & Davis, 2003). Motivation to read a given text is influenced not only by students' general motivation to read but also by a number of other variables (Murphy & Alexander, 2000; Wigfield & Guthrie, 1997). For example, students' motivation to read a particular text is influenced by their sense of self-efficacy about reading, the amount of effort they put into the reading task as well as by the

interestingness of the text itself.

Related to the current study, students' motivation to read a given text is also influenced by their interest in the topic of the text, particularly when reading informational text. Most high school students reading about Justin Bieber will likely be more interested in reading the text than when reading about microns and electrons. Although motivation is a critical component of students' reading and will be measured in the current study, the primary construct of interest here is interest.

Interest is a construct that has been researched from various theoretical angles, since it affects how people learn in a wide variety of disciplines (Silvia, 2006). Because of the ubiquity of the term "interest," it is often vaguely defined, even in reading research. Conradi, Jang, and McKenna (2014) researched the use of terminology across 12 important motivational concepts and found that interest was the term most often undefined in research studies, and most often used in vague ways.

For the purposes of this study, Renninger and Bachrach's (2015) definition will be used. They define interest as "both the psychological state of a person during engagement with particular content (e.g., science) and the motivational predisposition to return to engagement with that content over time" (p. 59). According to this definition, *reading interest* encompasses an experience while reading that occurs as curiosity about certain content is piqued, as well as the likelihood that an individual will seek out that reading material in the future.

Types of Interest

Interest has been conceptualized as consisting of two basic types: individual interest and situational interest. These types have been characterized as "interestedness" of the person and "interestingness" of the situation (Clinton & van den Broek, 2012) and "motivating from within" or "motivating from without" (Alexander & Jetton, 2000). Ainley (2006) referred to these as "trait" and "state" perspectives—one a trait of a learner, the other a characteristic of the learning task.

Individual interest has been defined as "a relatively stable predisposition that develops over time and is associated with increased value, knowledge, and positive feelings" (Hidi, 2001, p. 194). Individual interest is characterized as "motivation from within." It is personal, internally oriented and long lasting (Alexander & Jetton, 1996). When students have individual interest in a topic, they are more likely to spend time pursuing it, they are more likely to have positive self-efficacy about their knowledge of that topic, and they are more likely to self-regulate their performance (Wigfield & Cambria, 2010). For example, students could have a well-developed interest in astronomy which would impact their willingness to seek out information about astronomy, their amount of learning about astronomy, and their own beliefs about their ability to understand texts about astronomy.

On the other hand, situational interest is "motivation from without" and arises from a particular context or learning event. This type of interest is not long lasting, nor is it developed over time. Rather, it is sparked from a particular context, whether it be a certain learning task or a favorable learning situation. For example, students may enjoy working with a friend, having their curiosity piqued by an eye-catching story title,

becoming intrigued as they read a particularly well-written story, or becoming excited by a technology-based activity. All of these activities would prompt interest based in a particular situation (Hidi & Harackiewicz, 2000; Schraw & Lehman, 2001).

Situational interest arises from a particular context, and an important point is that the level of intensity and duration of that situational interest varies. This has been conceptualized as triggered situational interest and maintained situational interest, or more memorably, the "catch" and the "hold" (Mitchell, 1993). "Catch" activities initially pique interest in a topic, while "hold" activities retain students' interest over a longer period of time. In Mitchell's (1993) mathematics classroom, he hypothesized that group work, computer work, and puzzles would catch students' interests, whereas enhancing meaningfulness and involvement would hold interest over time. He viewed situational interest as multifaceted and hypothesized that catch had to do with novelty and hold had to do with more meaningful notions like personal importance.

The focus of the current study is on helping students develop and regulate their own interest in informational texts when individual and situational interest are absent. In an average middle and high school classroom of 35+ students, students' motivation to read has already been established, and, for the most part, cannot be controlled. In addition, students' individual interests are varied and therefore difficult to identify and utilize in instructional materials. Teachers are not always available to develop situational interest in reading materials they want their students to read. As students progress in school, they have to independently read about and study all kinds of information that may not be interesting to them. Therefore, it makes sense to help students develop an interest-regulating strategy they can call up as a way of developing and regulating their own

interest in reading material when necessary

Before turning to the interest-regulating strategy used in this study, it is important to examine what is known about the role of interest in reading comprehension.

Interest and Reading Comprehension

Regardless of whether students have an individual interest in topics of to-be-read texts or whether teachers generate situational interest in to-be-read texts, interest and reading comprehension have been shown to be related. One of the earliest studies linking interest to reading comprehension for adolescents was conducted by Bernstein (1955) who found that those who were interested in a text had higher comprehension test scores. Bernstein used two short stories, rewritten to be purposefully interesting or boring stylistically, and administered them to 100 9th-graders. The interesting passage—"The Get-Away Boy"—had better comprehension scores and lower reading times.

Another classic study looking at interest and its relation to comprehension was conducted by Asher, Hymel and Wigfield (1978). They assessed 5th-grade students' comprehension of encyclopedia passages on topics of varied interest. Following rating their interest in certain reading topics using a picture inventory, students read five cloze passages, with every fifth-to-tenth word deleted. The low interest group received the passages they had the least interest in, and the high interest group read the passages they found most interesting. After the reading, students rated their interest in the passages. They found that students' interests in the texts were correlated highly with their interest in the topics of those texts, and the students in the high-interest group enjoyed their reading task more than the low-interest group. They also found better cloze scores on the

high interest reading materials.

Some researchers argue, however, that those results were simply due to the correlation between interest and background knowledge, suggesting that interest impacts comprehension because of prior knowledge. Baldwin, Peleg-Bruckner, and McClintock (1985) sought to further analyze the relations among interest, prior knowledge and comprehension, and particularly wanted to discover if interest had a separate impact on comprehension when prior knowledge was controlled. Their sample included 41 high-achieving middle school students who completed both an interest inventory and a prior knowledge test before reading and answering comprehension questions on various encyclopedia articles. They found that interest and increased comprehension were correlated, but did not find a correlation between prior knowledge and topic interest. Rather, they found that topic interest and prior knowledge had an "additive effect on reading comprehension" (p. 502). In fact, the difference on comprehension scores between the high knowledge/high interest group and the low knowledge/low interest group was almost one standard deviation.

Variables Impacting Interest and Comprehension

While an abundance of research shows that comprehension and interest correlate, the relation is not a simple causal one. The relation between interest and comprehension appears to be impacted by other variables. Researchers have found that cognitive, affective and volitional variables are all influenced by students' interest in reading material and can help explain the relation between interest and comprehension (Ainley, 2006; Alexander & Jetton, 1996; Hidi, 1990; Krapp, Hidi, & Renninger, 1992; Schiefele,

1992).

Cognitive engagement. Students with more interest in a reading task are likely to put more cognitive effort into their text comprehension, using more strategies and being more metacognitive than their uninterested peers (Hidi, 2001; Krapp, Hidi, & Renninger, 1992; Schiefele, 1992). For example, Renninger and colleagues (2002) found that students with more developed individual interest in a topic processed text on that topic differently. They found that interested students focused on the overall meaning, whereas less-interested students focused more on individual words. Schiefele (1992) found that interested undergraduates used more "learning techniques" than uninterested students, and later found that interest was correlated with deeper-processing learning strategies, such as elaboration. Hidi (2001) theorized that this cognitive engagement occurs because "interest activates text processing strategies that result in readers' engaging in deeper level processing" (p. 198). Nenniger (1992) similarly argues that interest is a "motivational antecedent" to the use of learning strategies.

The idea that interest acts as an antecedent to strategy use was tested by Jimenez and Duke (2011), who analyzed the impact of interest on cognitive strategies during reading. The 4th-graders participating in their study read about high and low interest topics and completed think-alouds as they read each text. Following the reading, the participants' recall was tested for each text. The researchers found that students used more comprehension processes and used them more often when they were reading about an interesting topic. Students also had higher recall scores for an interesting text, even when controlling for prior knowledge.

While interest has been found to positively correlate with cognitive engagement,

it is not yet entirely clear why this occurs. To better understand the impact interest has on cognition, several researchers have examined the role of attention and text processing. Anderson's selective attention model has been used to argue that people learn and remember important and interesting information better because they give more attentional resources to those elements (Shirey, 1992). Anderson and colleagues (1984) looked at attention allocation with elementary students and found that they spent more time reading interesting sentences, which they also learned better than information rated as uninteresting. Shirey and Reynolds (1988), however, found that older students also recalled interesting sentences better, and that their reading time was faster for sentences rated as interesting.

In response to this seemingly contradictory data, Hidi (1990) hypothesized that people will read more interesting texts faster because interest causes spontaneous attention rather than effortful attention. McDaniel, Waddill, Finstad, and Bourg's (2000) study corroborated these findings. The researchers tested 94 undergraduates' reading rate, reaction times, and interest. While they did not find a significant difference in recall between the more and less interesting stories, they did discover that more interesting stories "required fewer cognitive resources" and that less attention was needed to comprehend the texts that were more interesting.

More recently, the connection between cognitive engagement and interest was hypothesized to be the result of a lack of mind wandering and an increase in focus on the text at hand. Unsworth and McMillan (2013) found that topic interest influenced reading comprehension because it was associated with less incidents of mind wandering, which took students' attention away from the required text. Their research indicated that

interest impacts the amount of mind wandering participants did, which then impacts reading comprehension. They had similar results as Giambra and Grodsky (1989), who found that more mind-wandering incidents occurred with uninteresting texts than interesting texts.

Affect. Affect—the feelings, emotions, and moods experienced when reading—is another component impacted by interest (Ainley, Hidi, & Berndorff. 2002). When one thinks about an interesting reading experience, it is most likely the feelings of enjoyment and pleasure that first come to mind. Ainley, Hidi, and Berndorff (2002) researched the role that affect plays in interest and found that affect was a mediating variable between interest and comprehension. The sample for their study included 221 8th- and 9th-grade students. The researchers measured both general interest in learning and specific topic interest in the selected text. During reading, they measured affect as well as persistence, as students could choose to stop reading the text at three 250-word intervals. Following reading, students answered questions on the part of the text that they read. Based on their research data, the researchers theorized that topic interest influenced students' affect, which in turn influenced students' persistence in reading the text, which influenced students' overall comprehension score for that text.

This research highlights the importance of affective valences in reading comprehension, which are "positive or negative feelings that are linked to particular persons, objects, or events" (Alexander & Jetton, 1996; Renninger, 1992; Schiefele, 1991). While positive affect is associated with more long-term interest, it is not necessarily required for situational interest to occur (Hidi, 2001). Iran-Nejad (1987) summarized that phenomenon: "A snake can be interesting without being liked, and a

particular soft drink may be liked without being interesting" (p. 121). Hidi and Harackiewicz (2000) use the example of medical students dissecting cadavers—this may not be a positive experience, but is still potentially interesting to the participants. Renninger, Ewen, and Lasher (2002) differentiate interest from merely "liking" something, giving an example of a boy interested in fishing. The authors suggest that his interest in fishing is not just tied to his "liking" fishing, but is also tied to his knowledge about fishing, the value he places on fishing information, and his ability to problem solve about fishing.

Volition. Volition involves a voluntary sustained effort—"buckling down when we need to" (Corno & Kanfer, 1993, p. 301). Volition is more than simply compliance; it is not something that is forced by others. Students with volition choose to work on a task in order to achieve a goal, regardless of interest in the task or difficulty completing it (Boekarts, 1999).

Students' interest impacts their volition or effort in applying themselves to a comprehension task (Ainley, Hillman, & Hidi, 2002; Fulmer & Frijters, 2011; Fulmer &Tulis, 2013; Shiefele, 1992). Students who are more interested in a text they are reading are more likely to work through reading material, even when it is challenging.

Because of the relation between interest and volition or effort, several researchers have argued that interest is more important than traditional measures of readability for student comprehension (Anderson, Mason, & Shirey, 1984; Belloni & Jongsma, 1978; Estes & Vaughan, 1973; Fulmer, D'Mello, Strain, & Graesser, 2015; Renninger, Ewen, & Lasher, 2002). For example, Fulmer and Frijters (2011) and Tulis and Fulmer (2012) found that students with higher interest in challenging texts were more likely to persist in

reading tasks. Additionally, Renninger, Ewen, and Lasher (2002) showed similar results in a case study of "Cindy," an 11-year-old student who was able read a highly difficult piece of text on an interesting topic, regardless of her difficulty with decoding and vocabulary. Because interest energizes effort, students are more likely to persevere through challenging text with more success.

Motivational and Interest-Regulating Strategies

Adaptation in the face of uninteresting texts is one feature that the RAND Reading Study Group identifies as crucial for reading proficiency: "The proficient adult reader can read a variety of materials with ease and interest, can read for varying purposes, and can read with comprehension even when the material is neither easy to understand nor intrinsically interesting" (2002, p. xiii). Competent readers need to be able to regulate their reading experience, especially in the face of challenge, boredom, or lack of motivation. This type of self-regulation has been associated with effort, persistence, desire to seek out tasks, study strategies, and increased interest in the task (Sansone, Weir, Harpster, & Morgan, 1992; Wolters, 1998, 1999).

Thus, it behooves teachers to instill in their students self-regulation strategies to regulate important reading experiences in the face of "challenge, boredom or lack of motivation." The most reasonable way to foster interest is for teachers to teach students to regulate their own interest in literacy tasks.

Self-regulation, which has been widely researched in the last 30 years (Boekaerts, 1999; Zimmerman, 1990), is a large and complex construct. Researchers have attempted to narrow their focus to more specific components of self-regulation including volitional

regulation strategies, motivation regulation strategies, and interest regulating strategies. Each of these types of self-regulation gives insight into how to teach students to regulate their own motivation and interest in tasks. While there is very little research on teaching interest self-regulation strategies in literacy, strategies from other content areas can be used to inform strategy use in reading.

Motivation regulation strategies. The first self-regulating strategy students can use to control their responses to boring tasks is motivational regulation. Motivational regulation includes those "activities through which individuals purposefully act to initiate, maintain, or supplement their willingness to start, provide work toward, or complete a particular activity or goal" (Wolters, 2003, p. 190). When students engage in regulation of their motivation, they use strategies to impact their low motivation in the task.

In order to understand what students do when confronted with a motivational challenge, Wolters (1998) asked college students to imagine different scenarios and to write about what they would do to keep themselves motivated. After coding the students' responses, he found 14 distinct types of motivation regulation strategies, which were categorized into four basic categories. The first category, extrinsic regulation, included responses involving performance goals, such as focus on grades or scores, and extrinsic rewards, such as a treat or a break when the task was completed. Interestingly, extrinsic rewards were used most often when reading a boring textbook chapter. The next category, intrinsic regulation, included making the information more relevant, meaningful, or interesting. The third category, information processing, included cognitive strategies such as note cards and flashcards, and was the most often cited

strategy. The final category, volition, included manipulation of the environment, added focus and attention, emotional regulation, and sheer willpower. Wolters found that when material was boring, students were more likely to use a volitional strategy, like increasing their focus and attention on the given task.

Similar motivational regulation strategies have also been found when interviewing younger participants (8^{th}-10^{th} graders). These motivational categories were refined into five overarching motivation regulation strategies: performance self-talk, mastery self-talk, environmental control, interest enhancement, and self-consequating (i.e., self-provided extrinsic rewards). Here, the researchers also asked about students' use of learning strategies of rehearsal, elaboration, organization, planning, monitoring, and regulation, and included questions about students' effort and persistence (Wolters, 1999; Wolters & Rosenthal, 2000). The data revealed a correlation between students' use of motivational regulation strategies and their reported use of other learning strategies. They also found that all motivational strategies were associated with increased effort and persistence in tasks.

Volition regulation strategies. A second self-regulation strategy relates to volition. While some students have developed strategies to help them increase their volition without intervention by teachers, others clearly lack this type of control. Teachers can increase students' volitional control in several ways. For example, they can attempt to model volitional control through think-alouds and other instructional techniques (Corno & Kanfer, 1993). They can also teach cognitive reading strategies; Corno and Kanfer (1993) posit that this provides students with a "way" which then helps with the "will" (Guthrie et al., 1996). McCann and Turner (2004) found that, while

volitional strategies did not directly affect academic achievement, students' use of volitional strategies had direct effects on students' use of learning strategies which could potentially lead to increased achievement over time.

Interest regulation strategies. A third component of self-regulation which holds promise for teaching students to cope with uninteresting texts is an interest regulation strategy. Students' volitional control, which is demonstrated through their willingness to persevere through a text or task, is qualitatively different than students' engaged interest in a task (Sansone, 2009). Simply gritting one's teeth and suffering through a task, while necessary to many compulsory tasks and essential for self-regulation, is often not enough to motivate students' completion of a task, particularly over time (Sansone, 2009). In order to achieve engaged interest in a task, students can use interest regulating strategies to enhance what Sansone (2009) calls their "experience-defined motivation" (p. 7).

Interest research has included student reports of how they use these strategies (Wolters, 1998, 1999), as well as teacher interventions designed to test the effectiveness of various interest-enhancing practices, such as requiring participation (Frisby, Weber, & Beckner, 2014) and increasing social interaction (Isaac, Sansone & Smith, 1999). Reeve, Jang, Hardre, and Omura (2002) used self-determination theory to test the value of using a teacher-provided rationale to increase undergraduates' motivation during an inherently uninteresting activity. They delivered a lesson in conversational Chinese, which was designed to be low in situational interest-enhancing elements and was identified as boring in a pilot study. To test if the type of rationale affected students' feelings of self-regulation, the experimental groups got one of three rationales, each designed to impact a

different type of extrinsic motivation. The rationale that made the biggest impact—the "identified reason" group—focused on the value or importance of the task, used noncontrolling language, and acknowledged the negative affect associated with the task. This acknowledgement of lack of interest has been theorized to help students better internalize a boring task (Deci, 1992). Indeed, the researchers found that providing a reason for the task appear to improve students' internalization of the extrinsic motivator and therefore improved effort.

While teacher-provided rationales have been shown to improve interest, student-directed strategies have also been shown to be impactful. For example, Nett, Goetz, and Daniels (2010) analyzed how students coped with boring situations in math class. They found that boredom coping strategies could either be cognitive—changing one's perception of a task— or behavioral—changing the task itself. Additionally, the strategies could be approach strategies, in which students tried to solve the boredom problem, or avoidance strategies, in which students abandoned the problem. They found three types of students in their sample of 5th- to 10th-grade students. The first group was called the "evaders." These students used avoidance strategies like talking to friends and thinking about other things. This group had lower motivation, self-concept, and effort than the other two groups. The next group was called "criticizers." They used behavioral-approach strategies such as asking for alternative assignments and complaining to their instructors. The final, most successful group was the "reappraisers." These students used cognitive-approach strategies, often focusing on the usefulness of the task. This group had the least amount of boredom and anxiety, and the highest levels of enjoyment, interest, and effort.

Another interest-regulating strategy is task variation. This involves adding novelty to an otherwise-tedious task. Sansone and colleagues (1992) assessed undergraduate students' use of boredom-coping strategies in the face of the uninteresting task of copying letters. The participants were asked what strategies they used to complete this task, as well as several other tasks that were more interesting and found that strategy use could be categorized into four separate types: 1) increasing the challenge/skill, 2) altering the context, 3) changing the procedure, or 4) making the task more artistic or creative. In one study, students were told that the uninteresting copying task had a health benefit, therefore giving them a reason to perform the task (Sansone et al., 1992). Researchers found that students used interest enhancing strategies when they had the need to regulate their motivation—when "the task was presently uninteresting, there was a perceived reason to continue, and a relevant strategy was available" (p. 388). They also found that strategy use correlated with future desire to complete the task. However, the students who used interest enhancing strategies completed less of the copying task overall. Sansone, Wiebe, and Morgan (1999) extended this research, focusing on the moderating personality aspects of hardiness and conscientiousness. In this iteration of their research, they allowed participants to stop performing the task and removed the time limits from the previous study. They found strategy use to be correlated with persistence and, without the constraints of a time limit, also correlated with increased performance in the task. Students with high conscientiousness persevered through the task, regardless of a given purpose or strategy use. Those with low conscientiousness were able to achieve the same level of persistence only when they used an interest-enhancing strategy. Students with high hardiness were able to complete more

of the task when they were provided a rationale, and the researchers found this was positively impacted by their use of an interest enhancement strategy.

A Proposed Interest Regulation Strategy: A Reading "REF"

This study evaluated an intervention to teach students how to self-regulate their affective responses and interest when required to read uninteresting informational texts. The main research questions for the study were: 1) Can students be taught a self-regulating strategy to enhance their motivation and interest when reading uninteresting texts, and 2) Will the use of that strategy result in better reading comprehension?

Because of the benefits found in the regulation strategy research, a set of strategies was developed for students to use as they encountered uninteresting informational texts. The strategy set was developed after careful examination of the preexisting motivation, volition, and interest self-regulation strategy research base. The most often repeated strategies were compiled into three overarching concepts, which students can adapt to best fit their needs. The term "interest regulation," rather than the typically used term "interest enhancement" (Sansone et al., 1992), was selected for use in this study due to the overarching goal of the strategy use. The purpose of the strategy is not necessarily to increase students' interest—although that is likely to happen. The goal of the strategy is for students to regulate their "experience-defined motivation" (Sansone, 2009) so that they can successfully persevere through an uninteresting reading task. The three parts of the strategy do not just focus increasing students' interest in the reading, but instead focus on all aspects of value that are likely to counterbalance the costs associated with completing a boring task.

Based on Graham and Harris' acronym-based writing strategies (2005), the three components of this strategy are represented by a reading referee (or REF) to help students remember the three initials of the strategy. Like a referee in a sporting event, this strategy is designed to help students regulate the task in order to make it a better and more successful experience.

R: Give yourself *reminders* as you begin the task. Based in expectancy-value theory (Eccles & Wigfield, 2002), an abundance of research shows the importance of a rationale, or reminder, in more student-friendly language, that helps students realize why they are completing a task (Green-Demers, Pelletier, Steward, & Gushue, 1998; Mitchell, 1993; Nett, Goetz, & Daniels, 2010; Reeve, Jang, Hardre, & Omura, 2002). For example, Nett, Goetz, and Hall (2011) found that students who had the most successful strategies for coping with boredom focused on the usefulness of the task. These reminders about the task's utility are particularly important as students get older, as Wolters and colleagues (2014) found that older students saw less usefulness of reading in terms of their future plans. Jang (2008) also found that the rationale was particularly important to hold engagement in the task over time, which is consistent to the "catch" and "hold" theory of situational interest (Hidi, 1990; Mitchell, 1993). While positive gains have been found from both teacher-provided and student-driven rationales, a reminder that is self-relevant helps to increase students' autonomy (Hulleman et al., 2010).

Additional research provides insights on the most beneficial types of reminders. Yeager and colleagues (2012) found that if the learning purpose is self-transcendent or altruistic—that is, done for unselfish reasons, such as to improve society or the world around them, rather than simply to get a good job and make money—students are more

likely to persist through a boring task and lead to deeper learning outcomes. On the contrary, Durik and Harakiewicz (2007) found that pressure-inducing rationales, focusing on the great importance of the task for college success or career ability for example, tend to lower students' interest in a task. Teaching students to find relevant and interesting rationales—reminders that go beyond the basic, "I'll do it because I have to"—can be a good starting point for students' interest regulation.

Wolters and Rosenthal (2000) additionally found that reminding via self-talk was one way students regulated their own motivation. For example, students reported, "I tell myself I should keep working just to learn as much as I can" (p. 809). These reminders are often split between mastery self-talk, where students persuade themselves that they should keep working for the sake of learning goals, and performance-approach self-talk, where students focus on grades and other external consequences of the task. While mastery self-talk reflects a more desirable mindset, performance self-talk has also been effective as students regulate their experience with tasks. Students can also set goals for themselves and remind themselves to meet those goals, self-consequate by giving themselves a reward if they achieve a goal, and use self-affirmation to regulate their emotions (Corno & Kanfer, 1993) and increase their feelings of self-efficacy (McCann & Garcia, 1999; Trawick, 1992; Wolters, 2003; Zimmerman & Martinez-Pons, 1988).

E: Increase your *enjoyment* of the reading. There are several ways that students can engage with the task to enhance their interest in reading materials by making it a more positive and enjoyable experience. For example, Wolters (1998) and Schwinger, Steinmayr, and Spinath (2009) reported that both secondary students and undergraduates regulated their motivation in tasks by looking for connections between

the material and their own interests. Another way to make it enjoyable is through use of imagination (Wood & Endres, 2011). Lepper and Gilvovich (1982) found 4-6-year-olds were better at a task when they were pretending to be a space robot. While that is probably not an option for most learners, there are other ways to use imagination to enhance interest. Jang (2008) found that undergraduate teachers imagined themselves teaching the material to others in order to regulate their motivation in a boring reading task. Students could imagine themselves teaching the material to someone else, or even successfully completing the assignment (McCann & Turner, 2004).

Varying the task is another option to increase enjoyment. Sansone and colleagues (1992) reported students' successfully varying a task to increase engagement when completing the boring task of copying letters. They found that students would use strategies like making their lettering more artistic or racing themselves in order to motivate themselves to complete the task. Since some interest enhancement strategies, such as a race, may take students' cognitive processing away from the reading task, it is important to focus on strategies here that will not be excessively distracting.

Talking about the assignment's interest with others or working together is another powerful way to increase enjoyment in a reading task. While not always a feasible option, working with others is one way to increase interest in a task (Isaac, Sansone, & Smith, 1999). Additionally, talking to a classmate about his/her interest has been found to increase one's interest in the task (Oldfather, 2012; Thoman, Sansone, & Pasupathi, 2007).

F: Keep *focused* as you read. It is difficult to stay focused on a task which is inherently uninteresting: Students' minds tend to wander more (Unsworth & McMillan,

2013) and their ability to self-regulate declines, especially when more interesting alternatives arise (Fries, Dietz, & Schmidt, 2008). While increasing focus may not always lead to increased interest in the activity, it is part of a larger regulatory system to ensure that students will complete the task (Wolters, 2003). One key way for students to increase focus is through environmental control (Corno & Kanfer, 1993), such as avoiding distraction in their surroundings, finding a good study spot, listening to calming music, and taking breaks (Wolters, 1998). Students could also draw a chart, picture, or diagram to stay focused on the material (Jang, 2008). Doodling, for example, has been found to increase recall during an uninteresting task (Andrade, 2010). Highlighting the text, taking notes, or asking questions while reading can also provide the means by which to focus on a task and will increase the likelihood of interest generation (Pintrich, Marx, & Boyle, 1993; Zimmerman & Martinez-Pons, 1988).

Purpose of the Study

The purpose of the current study was to test the efficacy of an intervention aimed at increasing high school students' ability to regulate their interest when reading important, but uninteresting informational texts. The study used a quasi-experimental, mixed methods design with three pre-existing classroom groups receiving instruction and practice with one of the three interest-regulating strategies (a Reminders group, an Enjoyment group, and a Focus group), one pre-existing classroom group that receives instruction and practice in all three strategies (a REF group), and a control group receiving the teacher's existing instruction. Moderating variables, such as reading ability, academic achievement, and gender were examined to see if these impact the strategy

effectiveness. The following research questions were addressed:

1. Can students learn an interest-regulating strategy they can use to generate and maintain interest in uninteresting but important informational texts?
2. If students can learn the strategy, does the use of that strategy improve secondary students' interest, effort and reading comprehension?
3. Which component of the interest-regulating REF strategy has the largest impact on students' reading comprehension?

CHAPTER 2

METHODOLOGY

Participants and Treatment Conditions

The target population included high school sophomore students, ages 15 and 16, drawn from a school in the Rocky Mountain states. The school, Mountain High, has an 85.4% population of Caucasian students and a combined 14.6% population of Hispanic, Native American, Asian, Black/African American, and/or Pacific Islander students. Fourteen percent of the school population is considered economically disadvantaged. The participants included 324 total students, enrolled in 9 different sophomore English classes, with 137 male students, 185 female students, and 2 students who did not identify gender.

Participating Teachers

Three female English teachers agreed to participate in this study, each with varying amounts of education and experience. Teacher 1 had 3 years of high school teaching experience, only 1 of which involved teaching English. She completed both a Bachelor's of Arts degree in English Teaching and a Master's degree in Secondary Education. Teacher 2 had been teaching high school English for 6 years. Her original Bachelor's degree was in English, after which she completed coursework to receive her

teaching certification. Teacher 3 had the most teaching experience, having taught for 20 years at both the high school and junior high level. She had a Bachelor's degree, as well as both her Reading and English as a Second Language Endorsements.

Treatment and Control Conditions

Nine pre-existing classes were assigned to one of five treatment groups: 1) REF strategy group; 2) Reminders strategy group; 3) Enjoyment strategy group; 4) Focus strategy group; or 5) control group. Three teachers agreed to participate in the study; therefore, each teacher taught a REF strategy group, a control group, and a randomly assigned strategy group, either Reminders, Enjoyment, or Focus. In order to ensure that students in the five groups were approximately equivalent in their skills, reading ability prior to the treatment was analyzed using the Scholastic Reading Inventory. The Scholastic Reading Inventory (SRI) is a group-administered, computerized test published by Scholastic. This adaptive test consists of a set of computer-adapted passages and multiple choice items, and has a reported reliability ranging from 0.83-0.90 for 3rd-10th-graders (National Center on Intensive Intervention). No significant differences existed among the pre-existing classroom groups (p=.221, F(7,236)=1.37).

The Self-Regulated Strategy Development (SRSD) instructional framework, developed by Graham and Harris (2005), was used to build the instructional sequence for this intervention. This framework has been widely used to teach self-regulated writing strategies to students of various ages and abilities with much success (Harris & Graham, 2016; Harris, Graham, Friedlander, & Laud, 2013). This instructional framework scaffolds students' experience with a new strategy, beginning with a motivation-building

discussion of the strategy and gradually releasing responsibility to students over time (see Table 2.1).

Treatment 1: The REF strategy. The REF strategy instruction consisted of a 15-minute "Discuss It" phase in which the teacher led a discussion centered around having an adaptive view of motivation—that students can control their own reading experience through the effort they put into it (Paris, Wasik, & Turner, 1991). Teachers also asked students to discuss what they currently do when faced with a boring text, following which, teachers introduced the group's strategy.

Next, teachers spent 15 minutes in the "Model It" phase. This consisted of using the strategy with an example text, showing students how the REF strategy could be used throughout the reading task. Teachers were provided with excerpts of a text with ideas of how they could use the strategy, and each teacher personalized the modeling phase with their own examples. When modeling, teachers read the text, pausing to illustrate how they would use the REF strategy as they read.

Then, teachers asked students to "Memorize It." Teachers were provided with a PowerPoint lesson illustrating several ways that the strategy could be used. This discussion was designed to take approximately 15 minutes, with 10-minute follow-up review sessions in subsequent class periods. Below is an excerpt from a slide teaching students to increase enjoyment:

- Imagine yourself teaching the material to someone else—Einstein said, "You do not really understand something unless you can explain it to your grandmother."
- Vary the task by seeing how many pages you can read in a certain time period or by thinking about a unique way to include something you learned in a

conversation later on.

- Work together, or talk to someone else about what they think is interesting about the task.

Next, in the "Support It" phase, teachers asked students to practice the strategy, choosing one or two ways to use the strategy that work well for them. Two texts were selected for this initial, highly scaffolded practice session. The first text was a sample cell phone contract, chosen as an example of a real-world, uninteresting text that students are likely to encounter. The second was a passage similar to those found on a standardized test, including a brief nonfiction article on nutrition labels and several multiple choice questions about that article. Both texts were broken into chunks, with each section containing a specific prompt of a strategy for students to practice. Following the practice session, students discussed with a partner, then with the whole class, which techniques they preferred in order to adapt the strategy to their own preferences. This initial scaffolded activity phase was designed to take approximately 30-45 minutes.

In the next class period, following a brief strategy review, students were asked to "Practice It," this time with slightly less scaffolding. Teachers were provided with excerpts from the driver's education training manual—a boring but highly relevant text for this age group. This text was once again broken into chunks; however, this time, students were asked to select ways they would like to use the strategy and were asked to write about their strategy use after each chunk. Following the practice session, teachers were asked to lead a discussion about the task. Additionally, students were asked to bring a boring text that they are currently required to read to the next class session.

Again, this practice activity was designed to take approximately 30-45 minutes.

The following period, students again practiced the strategy, this time with a required boring text. Teachers were provided with options of boring texts that are similar to those required of sophomores for those students who did not bring their own. Prior to beginning this activity, students were prompted to write down two specific ways they would use the strategy, using the class PowerPoint. They were also asked to reflect on their strategy use in writing as they completed the reading task. Following this 30-45-minute practice session, the teacher gave students a brief assessment measure to ensure that students learned the target strategy. This "ticket out"-style assessment asked students what the strategy is, when they would use it, and how they would use it—asking for specific ways they plan on implement this strategy. If the students mastered the strategy with 80% proficiency, the group moved to the assessment portion of the strategy. In five of the six classes, the students achieved the required 80% proficiency on this assessment. One class did not meet this benchmark, and the teacher then repeated the "Memorize It" phase to review the strategy again.

The last phase of instruction, "Review It," consisted of a "snowball"-style culminating activity designed to review all the things students had learned in the prior phases. Students were instructed to write their names, as well as one helpful way to use the strategy, on a sheet of paper. When they were finished, they were asked to crumple up their paper and to throw their "snowballs" to another student. That student read what the previous student wrote, and then added another beneficial way the strategy could be used. This process was repeated several times and concluded with a whole-class review.

Treatment 2-4: Individual strategy groups. In treatment groups two, three,

and four, students were given instruction and practice materials for only their specific strategy. Group two received instruction in using the Reminders strategy, group three received instruction in the Enjoyment strategy, and group four received instruction in the Focus strategy. In order to attempt to keep instructional time equal across all groups, each PowerPoint lesson featured the same number of slides. The individual strategy group lessons included more detail and more specific instruction than the lessons in treatment group one, which was designed to balance instructional time across the groups.

The instruction for treatment groups two through four mirrored the instruction in the REF group. Teachers began with a 15-minute "Discuss It" component, outlining the usefulness of their specific strategy. This was followed by a 20-minute "Model It" component, in which teachers will complete a think-aloud of their strategy use on a selected text. Next, teachers helped students to "Memorize It"—focusing on learning the individual strategy in detail. Like in treatment group one, these groups also received three additional practice sessions in order to memorize this strategy. The "Support It" and "Practice It" components used the same practice activities as the REF group, and the "ticket out" assessment will be administered to each group to assess their strategy knowledge. Treatment groups two through four also concluded instruction with a 20-minute "Review It" session.

Control condition. In the control condition, students received teachers' traditional instruction on reading informational text—it was business as usual in this group's classroom, and the teachers were asked to deliver their originally planned curriculum. This instruction was observed by the researcher and described in the results section in order to analyze the differences between groups.

Professional Development

The participating teachers in the treatment conditions met for two 1-hour professional development meetings in which the study was presented to teachers, and the REF strategy and its implementation was described. Each teacher then received a packet of all PowerPoint-driven lesson plans, and the semiscripted lesson plans were discussed so that the teachers were familiar with the strategy and its implementation.

Fidelity of Implementation

In order to assess fidelity of implementation, each teacher was observed and rated using a researcher-created fidelity instrument to determine teachers' use of the prescribed lesson plans (see Table 2.2). The fidelity of implementation (FOI) instrument focused both on quantity of instruction, with items measuring adherence to the assigned instructional sequence and the dosage of the intervention, as well as the quality of instruction, with items assessing students' on-task behavior, teachers' questioning and discussion techniques, students' responsiveness to questions, and written response completion (Colvin, Flannery, Sugai, & Monegan, 2009; Harn, Parisi, & Stoolmiller, 2013; McNamara, 2014). Fidelity was assessed during at least two class periods for each participating classroom, and was rated on a 1-10 scale, 1 being no instruction seen, and 10 being exact fidelity to the instructional plan (see Table 2.2 for the complete instrument for lesson 1 of the intervention).

Instruments

In order to ensure content validity of each of the following measures, I consulted various experts in the field of reading, verifying that each measure is an accurate representation of each construct. To check reliability, I tested for internal consistency with matched items that measure the same characteristic, and the Cronbach's alphas for each measure is reported below.

Comprehension

The comprehension test consists of a set of four informational articles plus eight to nine questions for each article. The articles and the comprehension questions were developed for a previous study related to interest. The text set includes 900-1100-word informational texts, similar to what students would be reading in their content-area coursework and culled from the online editions of *Encyclopedia Britannica*, *National Geographic,* and *NewsELA*. The texts were vetted to ensure a similar, academic and informational style throughout. Any texts that included dialogue, narrative vignettes, vivid imagery, or informality were eliminated, as these elements tend to increase students' interest in text (Wade, Butxton, & Kelly, 1999). The texts were also assessed to ensure that each was similarly complex. Table 2.3 lists each article along with Lexile, word count, and prereading interest data. The texts were also assessed qualitatively through an extensive analysis by a group of five researchers. An informational text difficulty rubric was developed and used to assess each text, ensuring a similar difficulty level across texts. This pool of texts had been used in a previous study related to high school students' interest. Following this study, the text pool was narrowed to the four

texts that both students rated as uninteresting following reading and had high internal reliability scores.

Students read one text prior to the intervention as a preassessment, and the remaining three texts were used as a final assessment, with a total of four testing occasions. The texts students read during each testing occasion were counterbalanced across testing sessions.

The articles were accompanied by a set of eight to nine multiple choice comprehension questions designed to assess both basic and inferential comprehension of the text. The questions were also developed for a previous study and had been vetted by a group of four researchers prior to their use. Following a pilot using these comprehension items, an item analysis was run. Based on the number of students who answered correctly, the easiest and hardest questions from each text were eliminated. The overall reliability coefficient as measured by Cronbach's alpha across all comprehension items included in this study was .81.

Interest

In order to ensure that each article was, in fact, uninteresting to students, an interest measure was included before students read. Students previewed the text and rated their interest in the article prior to reading. The five-point scale was adapted from an interest scale by Giambra and Grodsky (1989), ranging from "I am NOT interested in reading this article at all and I think I'll hate reading it," to "This seems incredibly interesting and I'd love to read it."

Additionally, after the reading of the text, students were asked if they became

more interested in the task with the following questions: “To be honest, I wasn’t interested in this text” (reverse scored), “I found ways to make this text interesting,” “I became interested in this text when reading it,” “I think it was a waste of time to read this text” (reverse scored), and “I would read this text again.” This measure was rated on a seven-point scale, ranging from one (disagree strongly) to seven (agree strongly) (Bray & Barron, 2004; Green-Demers et al., 1998; Unsworth & McMillan, 2013). Cronbach’s alpha for these five items ranged from .82-.88 for each of the individual texts, and .90 across all measures.

Strategy Use

One potential factor between interest and increased comprehension is an increase in strategy use. Therefore, students’ strategy use was assessed with a self-reported measure in order to determine if and how students used the strategy. This questionnaire asked students what strategies they used to help them through the task, as well as how that strategy helped them complete the reading. The questionnaire includes questions with seven-point scale, such as “Using the strategy helped me get through this text,” “I would use the strategy again,” and “Learning about the strategy was helpful.” Item reliability for the five strategy questions was high—Cronbach’s alpha ranged from .90 to .93 across the four texts.

Effort

An additional potential variable in the relation between interest and comprehension is an increase in effort. Effort has been previously found to mediate the

relationship between regulation strategy use and performance (Schwinger, Steinmayr, & Spinath, 2009). To measure effort, a modified version of the effort scale on the Motivated Strategies for Learning Questionnaire was used, with modifications to make this measure more task-specific, rather than trait-specific (MSLQ, Pintrich, Smith, Garcia & McKeachie, 1993), with additional items modeled on the existing questions. The effort subscale of the MSLQ has a reported internal reliability coefficient of .69, and the modified survey had a reliability coefficient of .90 across all texts. All items were measured on a seven-point scale ranging from one (strongly disagree) to seven (strongly agree): "I put my best effort into reading the article and answering the questions," "I worked hard to do well on this even if I didn't like it," "When the reading was difficult, I gave up or only read the easy parts" (reverse scored), "Even when the material was dull, I managed to keep working until I finished," "I didn't pay much attention to the article or the questions" (reverse scored), and "I tried to do well on this reading and these questions."

Effort was also assessed based on time on task during the testing procedure. As students finished completing the test, the researcher recorded the finishing time for each student. This was designed to allow for a more thorough analysis of students' effort on each assessment measure.

Additional Data

Additional brief measures were used to assess several possible covariates. Scores from the Scholastic Reading Inventory were included as a covariate to analyze how prior reading ability impacts student results. Scores on the SRI range from 5L-2000L, and the

SRI range suggested for students in 10th grade is 1080L-1305L (National Governors Association, 2010). Students in this study had an average score of 1161L, with a scores ranging from 58L-1628L.

Additionally, self-reported GPA was used to assess the impact of prior achievement on the results. Self-reported GPA has been found to be a moderately accurate measure of students' actual grades, and in a meta-analysis of studies analyzing reliability of self-reported grades found that high school GPA had an average reliability of .82 (*N*=44,176) (Kuncel, Crede, & Thomas, 2005).

Finally, a question was included asking students to identify their gender. While gender has been a debated part of previous interest research, it has been found to statistically impact students' performance on interest-related measures in the past (Ainley, Hillman, & Hidi, 2002; Graham, Tisher, Ainley, & Kennedy, 2008; Oakhill & Petrides, 2007).

Procedures

Following IRB and school approval of the study, two hour-long professional development sessions for participating teachers were conducted, both during school-allotted departmental collaboration time and during lunch. These professional developments included a question-and-answer session to clarify any confusion that arose. Then, a pretest was administered by the researcher to all students in the study to determine a baseline prior to implementation of instruction (Testing Occasion #1).

Teachers then began the instructional sequence using researcher-created PowerPoint lessons. Instructional time per week varied by teacher and class period due

to the school schedule—students either received instruction 2 or 3 days a week, depending on block scheduling. Fidelity of implementation was assessed by the researcher using the fidelity of implementation instrument during at least two class sessions per participating classroom.

The first lesson consisted of the "Discuss It," "Model It," and "Memorize It" components of the lesson sequence. The following class, teachers conducted the next PowerPoint lesson, which includes the "Support It" component of the lesson sequence, as well as the first practice activity. The next class period, teachers gave students another researcher-created practice activity, this time using the text of the Driver's Education manual. The final practice activity occurred the following class period, which consisted of an activity using a student-selected text. At the end of this sequence of instruction and practice, teachers administered a brief "ticket-out" style assessment, which were analyzed to ensure that students have at least 80% proficiency with the strategy. The one class that did not attain 80% proficiency completed an additional day of practice. Each class then participated in the "snowball"-style review activity. During the next 3 weeks, each posttest (Testing Occasions #2-4) was administered and collected by the researcher. (See Table 2.4 for a description of both teacher and researcher-led tasks during each week of the study.)

Table 2.1

Self-Regulated Strategy Development Instructional Framework

Phase	**Time**
Discuss It	15 minutes
Model It	15 minutes
Memorize It	15 minutes initially + 3 10 minute review sessions; *Repeat if necessary*
Support It	2 40 minute sessions
Practice It	40 minutes + 10 minute assessment; *Repeat if necessary*
Review It	20 minutes

Table 2.2

Fidelity of Implementation Instrument—Lesson 1

Quantity of Instruction/ Instructional Sequence	*Period*	*Period*	*Period*
1. Adherence to instructional sequence:			
a. Rationale/background			
b. Introduction of the strategy			
c. Modeling the strategy with a think-aloud			
2. Dosage of intervention—Record instructional time here			
Quality of Instruction			
3. 75% students engaged in lesson (on task, participating)			
4. Teacher actively asking questions and leading discussion			
5. Students actively responding to questions			

Table 2.3

Instrument Data

Text Title	Lexile	Word Count	Prereading Interest
Antibacterial Use	*1220	959	**M=2.43
Great Pacific Garbage Patch	1110	890	M=2.24
U.S. Census	1180	1037	M=2.21
Water Purification	1220	973	M=2.26

Note. * Range suggested for students in 10th grade is 1080L-1305L; **Scores range from 1-5 scale, 1 being highly uninterested and 5 being highly interested.

Table 2.4

Study Schedule

	Teacher Tasks	Researcher Tasks
Week 1	• Teachers attend professional development session • Teachers hand out IRB-approved permission slips	• Leads professional development session • Explain study and permission slips
Week 2	• Ensures that all students have completed the SRI, as well as the pretest	• Administers pretests to all students—Testing occasion #1
Week 3	• Conducts PowerPoint lesson #1 (Discuss It, Model It, and Memorize It) • Conducts PowerPoint lesson #2 (Support It, and Practice It) and administers practice activity #1 (cell phone/standardized test)	• Observes lessons to determine fidelity of implementation
Week 4	• Conducts PowerPoint lesson #3 (Practice It) and administers practice activity #2 (Driver's Education text practice) • Conducts PowerPoint lesson #4 (Practice It) and administers practice activity #3 (Self-selected text practice) • Give "ticket out" assessment	• Observes lessons to determine fidelity of implementation • Analyze "ticket out" assessment
Week 5	• Conducts strategy review activity (PowerPoint lesson #5)	• Administers post-test—Testing occasion #2
Week 6		• Administers post-test—Testing occasion #3
Week 7		• Administers post-test—Testing occasion #4
Week 8+	• Gives feedback	• Data review and analysis

CHAPTER 3

RESULTS

Following data collection, several quantitative data analysis methods were used to determine the efficacy of the intervention. Because the students in each group received their instruction from different teachers, differences at the teacher level were checked. No significant differences at the teacher level were found, so the data were collapsed across the teachers in each group for analysis. First, descriptive statistics were collected to begin to analyze the performance of students in each treatment group on comprehension, interest, and effort across the four testing occasions. Table 3.1 illustrates these descriptive statistics, with comprehension measured as a percentage correct and interest/effort measured on a one to seven scale, one being the lowest and seven being the highest self-reported rating for each measure.

In order to measure the statistical significance of each of the strategies, as well as the difference before and after the intervention, a doubly multivariate repeated measures analysis of variance was conducted. This statistical test allowed for an analysis of the differences in the outcomes of comprehension, interest, and effort, and how they differed by both testing occasion and strategy group assignment.

Prior to running this repeated measures analysis of variance, three separate ANOVAs were conducted to investigate differences among groups in performance on

their pretest measure. On measures of comprehension, interest, and effort, no significant differences existed across treatment groups on the first testing occasion—all p values were greater than .24. Therefore, pretest data were included as the first repeated measure in the analysis.

The doubly multivariate repeated measures analysis of variance test consisted of two independent variables: treatment group, a between-subject variable with five levels, and testing occasion, a within-subject variable with four levels. The dependent variables in this analysis were comprehension, interest, and effort. Based on the multivariate test on the independent variable, there were no significant differences based on strategy treatment group, Wilks' Lambda=.91, $F(12,510)=1.50$, $p=.121$, $\eta_p^2=.03$. There was a main effect for testing occasion, but that effect was compromised by interaction with the strategy treatment group. The interaction between the testing occasion and strategy treatment group was statistically significant, Wilks' Lambda=.72, $F(36,703)=1.77$, $p=.004$, $\eta_p^2=.078$. Followup analysis to further analyze this interaction indicated no significant effect for comprehension, where the Greenhouse-Geisser correction was used ($F(11.82)=1.5$, $p=.104$, $\eta_p^2=.031$. However, there were significant effects for the dependent variables of interest *(*$F=1.80$, $p=.047$, $\eta_p^2=.036$) and effort ($F=2.41$, $p=.007$, $\eta_p^2=.047$).

To further analyze these effects, followup ANOVAs were performed with strategy treatment group as the independent variable and testing occasion for effort and interest as the dependent variables. Post hoc analysis of the variable of effort using the Tukey HSD test showed significant differences during testing occasions two and four. During both testing occasions, the mean score for the REF treatment group was

significantly different from the mean score for the control group (p=.03, M=.56, SD=.19 and p=.009, M=.77, SD=.23, respectively). Additionally, post hoc analysis for the variable of interest showed significant difference during testing occasion two. The mean interest scores differed significantly between the Reminders group and the Enjoyment group, between the Reminders group and the Control group, and between the REF group and the control group. Although differences exist in these groups, they may not be attributable to research intervention and do not add any insights into the research questions. The included graphs (Figure 3.1 and Figure 3.2, respectively) further illustrate these differences and highlight the random nature of the statistical significance of these results.

Additionally, the impact of the covariates of gender, reading ability, and school achievement was measured in the doubly multivariate repeated measures analysis of variance. While gender and school achievement were not significant covariates, reading ability, as measured by students' SRI scores, did prove to be significant for the variables of comprehension and effort. Followup ANOVA tests indicated that comprehension was impacted by reading scores only during testing occasion two, in which there were statistically significant differences between the Focus group and the Control group (F(4, 207)=4.36, p=.002, η_p^2=.08). The ANOVA data did not reveal any additional significance for the variable of effort due to the more conservative nature of the test. Once again, statistical significance on these tests is not explainable by the intervention research and is likely due to chance.

In addition, descriptive statistics were measured to quantify students' responses to the post-test survey regarding their strategy use. Rated on a scale from one to seven, one

being the lowest reported rating and seven being the highest reported rating, the overall average score tended to be positive, with a mean of 4.66 (*SD*=1.41). Additionally, students' self-report of their use of the strategy on the task showed some evidence that they learned and utilized the strategy when reading uninteresting text, though the mean score was not high (*M*=4.95, *SD*=1.57). Table 3.2 shows the means and standard deviations of students' individual responses to each strategy use item, scored on a seven-point scale.

Fidelity of Implementation

Overall fidelity of implementation, which was assessed by the researcher based on the researcher-created FOI protocol and aligned with the daily curriculum of the intervention, varied largely among the three teachers. Table 3.3 provides a summary of the fidelity of implementation scores across the participating teachers. Fogarty and colleagues (2014) delineated five ways in which fidelity of implementation can be assessed in a reading intervention—adherence, dosage, quality of delivery, participant responsiveness, and program differentiation—and this framework will be used to describe the FOI results.

Adherence

Adherence to the instructional sequence was measured through items on the intervention protocol, which were scored on a one to ten scale. Overall, the teacher average adherence score was 7.27 (*SD*=1.08). The most common adherence problem that occurred across the four observed instructional periods was a lack of debrief following instruction and practice—teachers often skipped portions of the lesson that asked them to

discuss and review the activities.

Dosage

Dosage of the intervention was measured based on time spent completing the observed lessons, compared to the recommended time for each lesson. The average observed instructional time was lower than the recommended time (M=-12.67 minutes), with a standard deviation among teachers of 2.01. The dosage of the intervention was particularly problematic with the initial lesson—the length of observed lessons ranged from 30-50% of the recommended instructional time.

Quality of Delivery and Participant Responsiveness

Quality of delivery and participant responsiveness were assessed both through the intervention protocol and through observation notes from the researcher. Participant responsiveness, as measured based on students' engagement in classroom discussion and their on-task behavior, varied by classroom teachers (SD=1.41), and scored a mean of 7.09 out of 10 overall. Field notes indicated that the quality of delivery and participant responsiveness scores were impeded by two main concerns: management/engagement issues and instructional issues. For example, in several classrooms, management concerns impeded the successful instruction of the lesson and demonstrated students' lack of engagement in the content—students were observed on a phone, working on other assignments, reading books, or talking to peers during direct instruction time.

Program Differentiation

Finally, program differentiation—the separation of each of the treatments of the intervention—was assessed through observation notes, both from the treatment groups and the control group. Based on these observations, differentiation was hampered by curriculum blurring between treatment groups. Participating teachers occasionally had a difficult time isolating the strategies that fit their particular treatment group, and on several occasions, teachers instructed using strategies that did not fit the assigned strategy group for the class.

Additionally, there were problems with a lack of differentiation between the control and the strategy groups. Rather than adhering to their originally planned lessons, several observed control lessons utilized similar strategies and techniques to those of the treatment groups. In one circumstance, the same practice materials were used with both groups, but instead of using the REF strategy, the teacher used a strategy called SOAPStone. However, she framed the SOAPStone instruction as a focus strategy and required students to practice it with an uninteresting text, which closely mirrored the curriculum from the Focus treatment group.

Field Notes

Based on researcher observations and field notes, the teachers' approach to the content may have undermined students' learning of the strategies, even in circumstances where adherence to the instructional sequence was high. For example, in one lesson, the instructor was careful to follow the content of the provided curriculum; however, some students fell asleep during the lesson. Additionally, participating teachers tended to treat

the practice activities similarly to the pre- and post-tests, rather than treating them as instructional opportunities. For example, the lack of debriefing and discussion following the activities limited the amount of clarification and in-depth learning that could have occurred following practice sessions. There was an attitude of just "getting through" content, rather than ensuring that students' internalized these strategies through extended practice. The language teachers used when instructing reflected this attitude—for example, one teacher finished her PowerPoint lesson by stating, "I know that was kind of tedious." This type of language was pervasive throughout the instructional sequence.

Table 3.1

Descriptive Statistics

		Testing Occasion 1		Testing Occasion 2		Testing Occasion 3		Testing Occasion 4	
REF Treatment Group #1	*N*=68	Comp	*M=.60 SD=.22	Comp	M=.60 SD=.20	Comp	M=.60 SD=.23	Comp	M=.58 SD=.22
		Interest	**M=3.51 SD=1.38	Interest	M=3.93 SD=1.41	Interest	M=3.79 SD=1.48	Interest	M=3.74 SD=1.55
		Effort	**M=5.23 SD=1.25	Effort	M=5.50 SD=1.28	Effort	M=5.40 SD=1.22	Effort	M=5.26 SD=1.99
Reminders Treatment Group #2	*N*=26	Comp	M=.64 SD=.15	Comp	M=.62 SD=.19	Comp	M=.69 SD=.17	Comp	M=.57 SD=.19
		Interest	M=3.31 SD=1.27	Interest	M=4.18 SD=1.19	Interest	M=3.93 SD=1.53	Interest	M=4.29 SD=1.50
		Effort	M=5.45 SD=.85	Effort	M=5.56 SD=.96	Effort	M=5.65 SD=1.03	Effort	M=5.57 SD=1.19
Enjoyment Treatment Group #3	*N*=18	Comp	M=.51 SD=.22	Comp	M=.60 SD=.23	Comp	M=.48 SD=.27	Comp	M=.51 SD=.28
		Interest	M=3.26 SD=1.51	Interest	M=2.97 SD=1.52	Interest	M=3.52 SD=1.53	Interest	M=4.09 SD=1.70
		Effort	M=5.43 SD=1.29	Effort	M=5.16 SD=1.58	Effort	M=4.98 SD=1.81	Effort	M=5.19 SD=1.77

Note. * Comprehension scores reported by percent correct from 1-100%; ** Scores ranged from 1-7, 1 being the lowest and 7 being the highest reported rating.

Table 3.1 Continued

Descriptive Statistics

		Testing Occasion 1		Testing Occasion 2		Testing Occasion 3		Testing Occasion 4	
Focus Treatment Group #4	*N*=21	Comp	*M*=.66 *SD*=.22	Comp	*M*=.68 *SD*=.16	Comp	*M*=.64 *SD*=.20	Comp	*M*=.56 *SD*=.24
		Interest	*M*=3.87 *SD*=1.54	Interest	*M*=3.98 *SD*=1.41	Interest	*M*=3.57 *SD*=1.37	Interest	*M*=3.86 *SD*=1.73
		Effort	*M*=5.42 *SD*=1.03	Effort	*M*=5.61 *SD*=.86	Effort	*M*=5.17 *SD*=1.05	Effort	*M*=4.59 *SD*=1.44
Control Group	*N*=67	Comp	*M*=.64 *SD*=.22	Comp	*M*=.56 *SD*=.23	Comp	*M*=.60 *SD*=.23	Comp	*M*=.55 *SD*=.22
		Interest	*M*=3.26 *SD*=1.62	Interest	*M*=3.05 *SD*=1.44	Interest	*M*=3.42 *SD*=1.60	Interest	*M*=3.33 *SD*=1.59
		Effort	*M*=5.31 *SD*=1.31	Effort	*M*=5.07 *SD*=1.33	Effort	*M*=5.14 *SD*=1.31	Effort	*M*=4.54 *SD*=1.42

Note. * Comprehension scores reported by percent correct from 1-100%; ** Scores ranged from 1-7, 1 being the lowest and 7 being the highest reported rating.

Table 3.2

Descriptive Statistics on Strategy Use Items

Strategy Use Item	Mean	Standard Deviation
Q1: I used the strategy I learned when reading this article.	**M*=4.95	*SD*=1.57
Q2: Using the strategy helped me get through the article.	*M*=4.68	*SD*=1.55
Q3: Learning about the strategy was helpful.	*M*=4.74	*SD*=1.52
Q4: I would use the strategy again.	*M*=4.89	*SD*=1.59
Q5: I learned a lot from this text because of the strategy.	*M*=4.06	*SD*=1.57

Note. *Scores range from 1-7, 1-7, 1 being the lowest and 7 being the highest reported rating.

Table 3.3

Fidelity of Implementation Means

Quantity of Instruction	*Teacher 1*	*Teacher 2*	*Teacher 3*
1. Adherence to instructional sequence	**M*=7.0 *SD*=2.49	*M*=8.46 *SD*=2.11	*M*=6.36 *SD*=2.87
2. Dosage of intervention—Instructional time vs. recommended time	*M*=-12.5 minutes *SD*=11.15	*M*=-10.75 minutes *SD*=10.69	*M*=-14.75 minutes *SD*=7.57
Quality of Instruction			
3. 75% students engaged in lesson (on task, participating)	*M*=5.5 *SD*=1	*M*=8.25 *SD*=.5	*M*=8.57 *SD*=1.13
4. Teacher actively asking questions and leading discussion	*M*=6.25 *SD*=2.22	*M*=9.25 *SD*=.96	*M*=5.86 *SD*=2.79
5. Students actively responding to questions	*M*=6.25 *SD*=2.22	*M*=9 *SD*=.82	*M*=5.29 *SD*=2.29

Note. *Scores ranged from 1-10, 10 being exact fidelity to instructional plan.

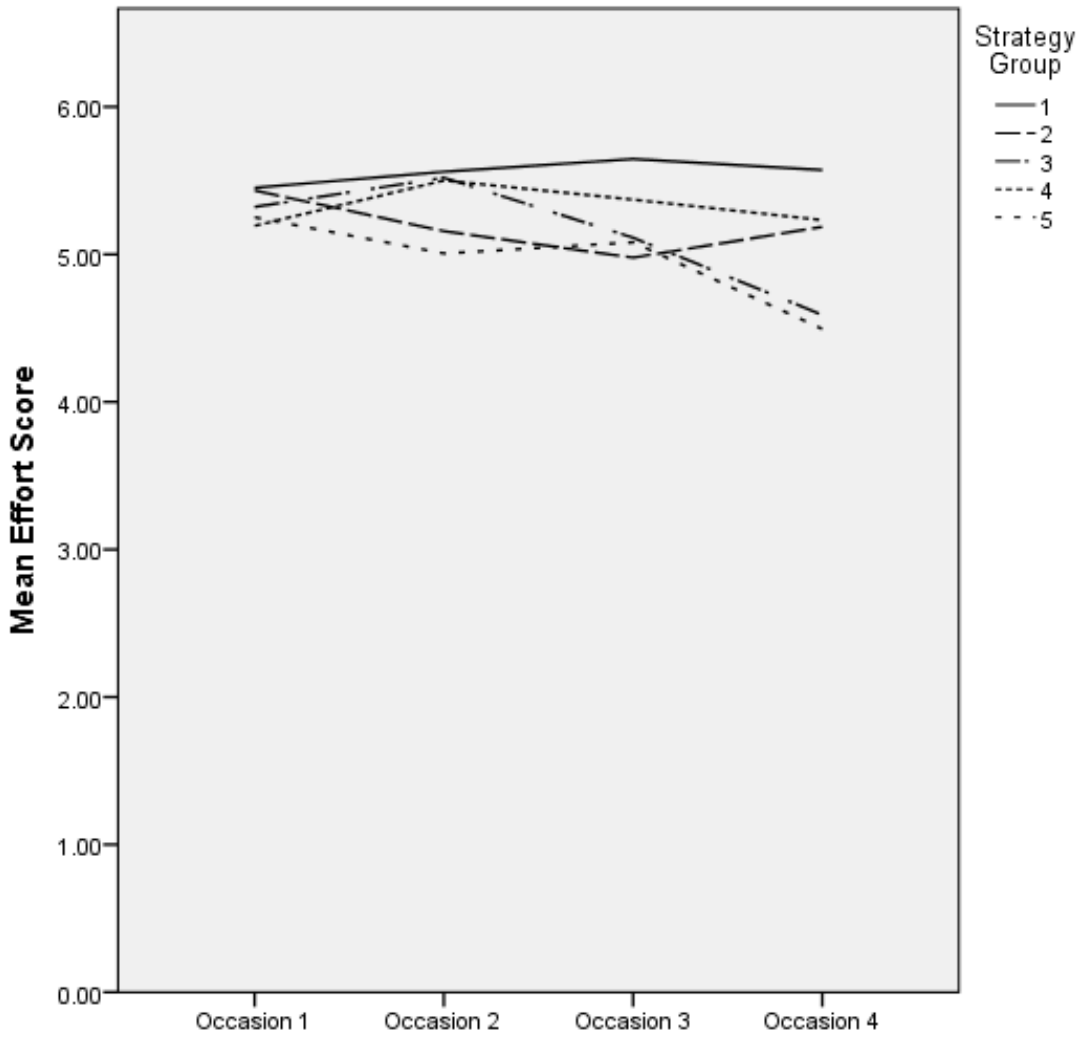

Figure 3.1. Relation Between Effort Scores and Testing Occasion by Strategy Treatment Group

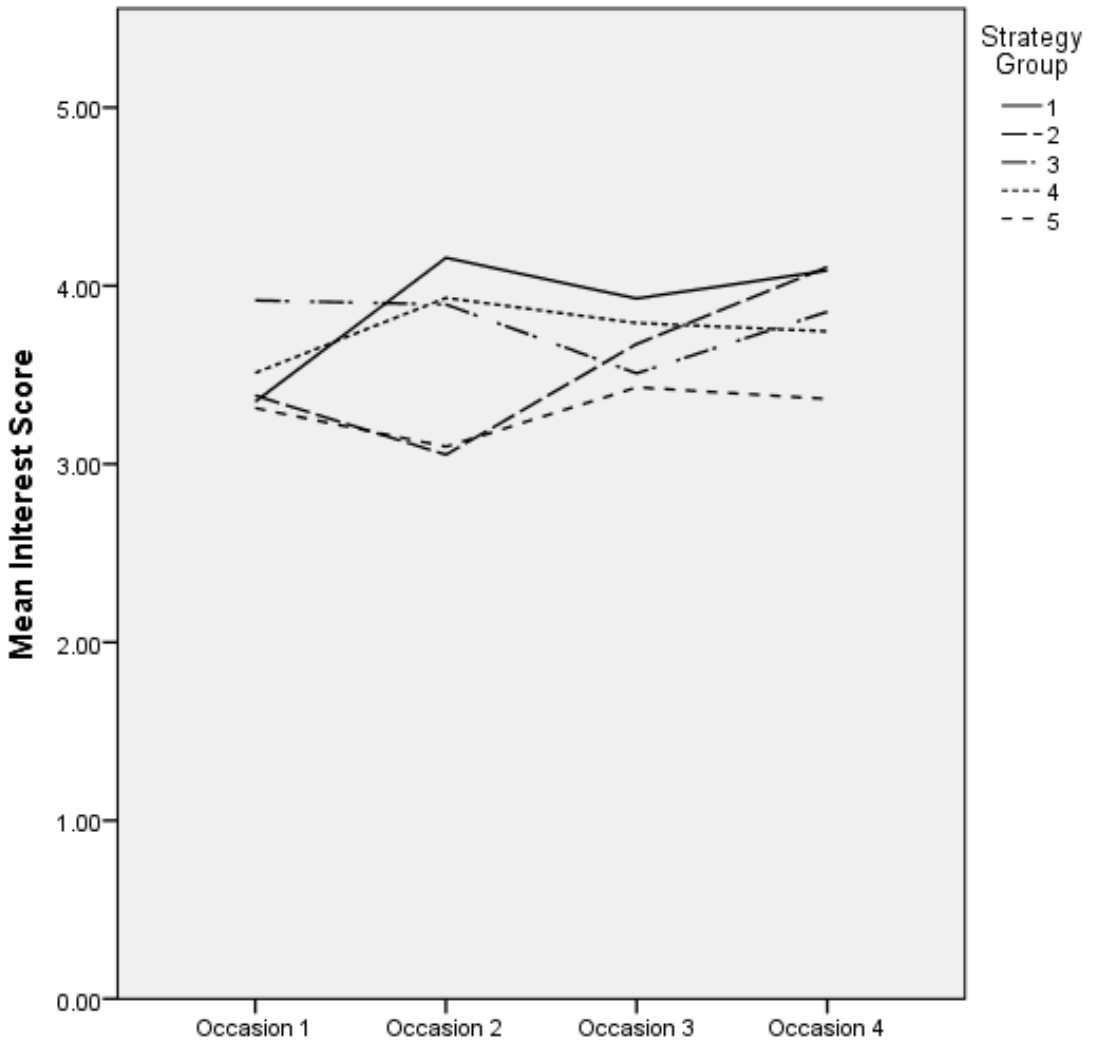

Figure 3.2. Relation Between Effort Scores and Testing Occasion by Strategy Treatment

CHAPTER 4

CONCLUSIONS

The purpose of this quasi-experimental study was to determine the effectiveness of an instructional intervention designed to help high school students learn to regulate their interest when reading uninteresting texts. Three research questions were asked: 1) Can students learn an interest-regulating strategy they can use to generate and maintain interest in uninteresting but important texts? 2) If students can learn the strategy, does the use of that strategy improve secondary students' interest, effort and reading comprehension? 3) Which component of the interest-regulating REF strategy has the largest impact on students' reading comprehension?

To answer these questions, five treatment groups participated in the study, with one group receiving instruction in all three targeted interest regulation strategies—the REF treatment group, three groups receiving instruction in one of the three individual interest regulation strategies—the Reminders, Enjoyment, and Focus groups, respectively, and a control group who received the teachers' traditional instruction. Pre- and post-test data were collected to determine the impact of the strategy instruction on students' comprehension, effort, interest, and strategy use.

First, results did not demonstrate conclusively that students learned the interest-regulating strategy. Analysis of student strategy use scores showed some indications that

they learned and used their assigned strategy; however, the ratings were only modestly positive and were self-reported. Second, even if students did effectively learn the strategy, it did not improve their interest, effort, or reading comprehension. No significant differences were found in either the between-group variables of post-test treatment groups or the within-group variable of pre- and post-test scores. Third, because no differences were found in any of the participating groups, none of the interest-regulating components had a more advantageous impact on students' reading comprehension, interest, or effort.

The lack of significant differences between treatment groups and testing occasions may have been impacted by both the structure and the implementation of the intervention (O' Donnell, 2008). While the proposed interest regulating study has potential, three main issues may have proved to be a stumbling block in its success: 1) teacher buy-in, 2) length of treatment, and 3) measurement. Each of these likely obstacles will be addressed in detail below.

First, the study was potentially impacted by the lack of support and buy-in from the participating teachers, which is critical for an effective intervention (Forman, Olin, Hoagwood, Crowe, & Saka, 2009). When analyzing the challenges of intervention research, Berman and McLaughlin (1976) stated, "The bridge between a promising idea and the impact on students is implementation, but innovations are seldom implemented as intended" (p. 349). From the initial professional development meetings, it was apparent that not enough teacher buy-in had been developed in the conception of this study to ensure effective implementation of the strategy. This was evident in several ways: First, when going over the intervention, teachers often shifted the discussion to matters of

logistical concerns rather than focusing on learning the nuances of the curriculum. Second, even though teachers were given printed copies of instructional materials for note-taking prior to the implementation of the study, it was not apparent that teachers had enough ownership over the content to complete additional review of the lesson planning materials prior to teaching. This lack of preparation was occasionally evident in the lesson presentation, as teachers sporadically struggled with fidelity of implementation, particularly in terms of program differentiation. Third, the lack of teacher buy-in was also evident in terms of instructional time, as teachers consistently recorded lower instructional doses than recommended.

Finally, the lack of teacher buy-in was most evident in the language used when discussing the study with students. Field notes indicated that presented materials were occasionally couched in apology—for example, one teacher commented that she knew students didn't like the lesson, but that they would just get it over with quickly. This type of negative language didn't allow teachers to appropriately model the value of the strategy for students, instead treating it as a perfunctory element of required classroom instruction. It is difficult to imagine how students would find such strategy use important if that importance was not modeled by their teachers.

A second and important factor that potentially impacted the effectiveness of this intervention is that of instructional time. Ideally, instructional time for the intervention would be much longer to allow students to internalize these strategies in their own reading process. However, due to the pressures of other curriculum standards and the fast-paced environment of the high school classroom, it was difficult to increase the length of the instructional time for the treatment. To meet the needs of the participating

teachers, the time designated for instruction was limited, which was not ideal in terms of finding statistical significance from the intervention. However, it was still a challenge for the teachers to fit this into their scheduled curriculum, particularly as they were being asked to give up part of 10 days of instruction during a 21-day term. When delivering their instruction, the teachers tended to minimize the amount of time they spent with each lesson as designed, shortening the intervention time even further.

Third, issues of measurement may have impacted the results of this study. Having four separate testing occasions was not ideal in terms of measurement, but was necessary for the constraints of the classroom. Breaking up the post-test data into three testing occasions may have negatively influenced the impact of the study, as the week-long interval between tests may have impacted both students' knowledge retention and motivation. Students may have learned the strategy and used it initially, thus explaining the statistical significance in interest and effort during testing occasion two, but may have forgotten or been unmotivated to use it during testing occasions three and four. Retention is a common problem encountered during strategy instruction interventions, and the week between testing occasions may have exacerbated this effect.

Additionally, several measures, namely, the interest, effort, and strategy use surveys, relied on student self-report for data collection. Self-report can be, by nature, an unreliable method of measurement, particularly for adolescent populations (Fan et al., 2006). The unreliability of self-report may have been exacerbated by students' low motivation to complete the task. For example, Paris, Wasik, and Turner (1991) postulated that students need both *skill* and *will* when completing reading tasks—regardless of whether students learned the *skill* of interest regulation, they also need the

will to use it, particularly in the face of challenging or uninteresting text. Without more incentive to use the strategy on each assessment, students' lack of will may have negatively impacted the data.

However, the results of students' responses on the strategy items begin to reveal the potential of the strategy—both in terms of immediate and long-term impact. First, students' self-report of their use of the strategy on the task indicated that they seemed to be able to both learn and utilize the strategy when reading uninteresting text. Seventy-four percent of students surveyed indicated some level of agreement that they used the strategy they learned when reading the assigned article. Of course, these data were self-reported, and it is not known whether students used the strategy or whether they simply reported that they did. Additionally, the overall mean score on students' strategy survey tended to be positive, as was the average of each individual strategy item. More specifically, 69% of students had a positive mean score across their three strategy surveys on the item indicating that they would use the strategy again. Again, this was self-reported data, and may not have accurately reflected students' true intentions. While students' comprehension, effort, and interest may not have been statistically impactful based on the scope of this study, continued use of the strategy may prove fruitful in terms of student achievement.

A final, but nonetheless important, hypothesis for the lack of findings in the results could be that, after all, learning and using an interest-regulating strategy simply does not make a difference in students' reading comprehension, interest, and effort. Prior research in interest regulation indicates that using these types of strategies may increase students' cognitive load, therefore slowing down their completion of complex tasks

(Sansone et al., 1992; Sansone, 2009; Sansone, Smith, Thoman, & MacNamara, 2012). Because these assessment tasks were relatively short, the payout in terms of increased focus, cognitive effort, and interest may not have outweighed the cost of increased cognitive load and task completion time. This hypothesis must be considered as well.

Further Research

There are several logical lines of research that could add further understanding to the instruction of interest regulation strategies. First, more research is needed on what readers of all levels do when they are uninterested in a text. The current research base on interest regulation is largely focused on tasks other than reading, and very little of that research looks at literacy specifically. For example, the work of Wolters (1998, 1999; Wolters & Rosenthal, 2000) utilizes think-aloud protocols to examine what students do when confronted with a variety of tasks, but did not focus on students' strategies for getting through boring texts. More research is needed on how readers work through uninteresting and otherwise challenging texts. Analyzing what readers do when faced with boredom, perhaps through researcher-led think-alouds, could further inform and shape the development of the REF strategy.

An additional area where more research is necessary is in the teaching of regulation strategies, particularly in terms of how such strategies can be best taught to students. While past researchers have extolled the virtues of teaching students to regulate their own motivation, interest and/or affect (Fries, Dietz, & Schmidt, 2008; McCann & Turner, 2004; Nett, Goetz, & Hall, 2011; Oldfather, 2012; Wolters & Rosenthal, 2000), there have been no studies in which students are taught this important skill. Additionally,

there is very little guidance in current research on how best to accomplish that task. While other teaching heuristics, such as the Graham and Harris (2005) model used here, can be utilized, ideal teaching techniques for this context have not yet been identified, and further research could help examine the best methods for teaching these regulation strategies.

Following such exploratory research, further study into the impact of teaching interest regulation strategies would be beneficial, especially with the creation of a university-school partnership prior to the impetus of the study. A partnership between researchers and teachers at the secondary level—one in which curriculum and practice activities were developed collaboratively— would allow teachers to feel more ownership over the content and more responsibility in the implementation. This involvement has been found to increase teacher buy-in and, therefore, increase overall fidelity of implementation (Murray & Malmgren, 2005). If such a partnership isn't feasible, the impact of an interest regulation intervention may be increased if implemented by the researcher, rather than by teachers. In a meta-analysis of adolescent reading intervention studies, Scammacca, Roberts, Vaughn, and Stuebing (2015) found that interventions which were taught by researchers had statistically significantly higher effect sizes than those taught by classroom teachers.

Finally, more research on the individual REF strategies—Reminders, Engagement, and Focus—would be beneficial. In-depth study of the effectiveness of each strategy individually would help inform future directions of interest regulation. Additionally, there may be other potentially viable interest regulating strategies that have not been explored within the parameters of this study, but that could potentially have a

larger payoff in terms of student comprehension, interest, and effort. Further research on a wide variety of interest regulation strategies may reveal such a strategy.

APPENDIX

SAMPLE MEASURE

Time Completed:_____

Student Number:_____ Class:_____ Teacher_____

Date:_____ Gender:_____ Estimated GPA:_____

Before reading the article, skim the title and read the first few paragraphs. Then, circle the number that best matches how interested you are in reading the rest.

1	2	3	4	5
I am NOT interested in reading this article at all and I think I'll hate reading it.	I'm not really interested in reading this article and would not like to read more.	I'm sort of interested in this article, but it isn't *really* interesting.	This article seems interesting, and I'm curious to read more about it.	This seems incredibly interesting and I'd love to read it.

Next, read the article carefully, using the interest-regulating strategy you learned.

U.S. Census

By National Geographic

The U.S. Census counts every resident in the United States. It is required by the United States Constitution to take place every 10 years. The 2010 census found that there are 308,745,538 people in the U.S. In order to count and collect information about all those residents, the Census Bureau delivers a 10-question form to every household. This form includes questions about sex, age, race, household relationships, and property ownership. These sets of data are defined as demographic data.

Census-takers are hired to visit households and gather information from residents who have not returned their census form. Census-takers ensure that a community is represented as accurately as possible.

Census data is important on both the national and local level. Population counts

help determine the number of seats a state occupies in the U.S. House of Representatives. This process is called apportionment. Every state is entitled to at least one representative in the House, but as a state's population grows, the state gains representation. Apportionment can change every 10 years. In 2010, the state of New York lost two representatives because of a declining population. The state of Texas, on the other hand, gained four seats. California, the most populous state, retained its 53 representatives in the House. California's number of representatives stayed the same for the first time in the state's history.

Census data also determines how federal funding is distributed across the country. Federal funding is money provided by the national government for such projects and services as hospitals, schools, bridges, job-training centers, and emergency services. An area with a large number of elderly citizens, for example, may qualify for more funding for hospitals and nursing homes. A densely populated urban area may benefit from increased funding for public transportation.

A wide variety of people and organizations use census data to support research, advocate for causes, and locate specific populations. For example, the Save the Manatee Club petitioned the Florida Fish and Wildlife Conservation Commission to increase its protection of manatees, an endangered species of marine mammal. Using census data, the Save the Manatee Club identified areas with significant construction and development near manatee habitats. The Wildlife Conservation Commission increased its protection of Florida's at-risk species.

Residents of a suburb of Minneapolis, Minnesota pushed for further examination of a proposed power plant in the area. Residents were able to use census data to cite the suburb's larger population of elderly residents and children, groups that are more susceptible to the facility's environmental impacts. The power plant was not built. The Census Bureau also conducts specific census programs that collect and present detailed sets of data about the United States, its communities, national economy, and geographic boundaries.

The American Community Survey

The Census Bureau conducts the American Community Survey (ACS). More detailed than the decennial census, the ACS collects and produces population and housing information every year. The ACS does not count the entire population, but instead samples about 3 million households that represent all counties of the United States and *municipios* of Puerto Rico. The ACS produces demographic, social, economic, and housing data at one-year intervals for geographic areas with a population of 65,000 or more, at three-year intervals for areas with a population of 20,000 or more, and at five-year intervals for those with less than 20,000.

Data from the American Community Survey is needed to evaluate and manage national, state, and local government programs. Responses to questions about income and

housing are used by the U.S. Department of Housing and Urban Development (HUD) to assess the need for housing assistance for elderly, handicapped, and low-income homeowners. Federal programs use age information to target funds and services to children, working-age adults, and the elderly. Local governments use ACS data for budgeting and planning community services programs, such as libraries, schools, and facilities such as swimming pools. As a whole, the ACS provides up-to-date information that helps all levels of government better understand community issues, accurately target funds for people and projects in need, and measure the performance of programs.

The Economic Census

The Census Bureau also conducts the Economic Census. The Economic Census provides a detailed account of the United States' economy every five years. This census collects data about economic production, business establishments, agricultural production, and government institutions. It also includes statistics on minority- and women-owned businesses. Economic Census data is used for a variety of purposes: locating business markets, developing economic policy, evaluating the growth of specific industries, and assisting local businesses.

The Economic Census may show that the health care industry is booming, for instance—hiring more doctors, nurses, and other health-care professionals. The manufacturing sector, however, may be slowing. These data influence where the government invests in research and job-training facilities. The Economic Census assesses the strengths and weaknesses of the U.S. economy and provides data that is used to diversify and strengthen business development throughout the country.

Census Geographic Programs

The Census Bureau works with tribal, state, county, and local officials, as well as agencies such as regional planning commissions, to accurately define the different geographic units used in the U.S. Census and American Community Survey. These units, such as property tracts and neighborhoods, are constantly changing. Census geographic programs ensure that census and survey data reflect those changes.

Each geographic program improves the accuracy of census data through distinct functions. The "Local Update of Census Addresses" program invites tribal, state, and local governments to review and comment on the list of addresses the Census Bureau will use to deliver questionnaires. The "Census New Construction Program" requires tribal and local governments to submit mailing addresses for housing units constructed after the Census Bureau address list was updated.

The "School District Review Program" encourages state officials to provide updates and corrections to the previous year's school district information. School district information is very important. The number of immigrant students who may need English-language development (ELD) classes, or the number of low-income students who qualify for free meals may change on a yearly basis. English language development and school

meal programs are funded by the government. Ultimately, various census geographic programs help accurately distribute funding offered by federal, state, and local governments.

Now that you've finished reading this article, mark how much you agree or disagree with the following statements by circling one number on the scale.

	Disagree strongly	*Somewhat disagree*	*Disagree a little*	*Neither agree or disagree*	*Agree a little*	*Somewhat agree*	*Agree strongly*
To be honest, I wasn't interested in this text.	1	2	3	4	5	6	7
I found ways to make this text interesting.	1	2	3	4	5	6	7
I became interested in this text when reading it.	1	2	3	4	5	6	7
I think it was a waste of time to read this text.	1	2	3	4	5	6	7
I would read this text again.	1	2	3	4	5	6	7

Now that you have read the article, please answer these questions based on what you have read. Circle the best answer.

1. The power plant in Minnesota was not built because Census data showed that
   a. there was too much construction and development there already.
   b. the area had lots of people at greater health risk.
   c. the surrounding population was too small to support the business.
   d. the population of elderly residents and children did not want the power plant.

2. The American Community Survey is a separate survey that is designed to collect information on
    a. neighborhoods and other geographic areas.
    b. the United States' economy and businesses.
    c. special topics dealing with current events.
    d. the number of pets a family owns.

3. Apportionment is
    a. used to gather information about declining populations in the United States.
    b. the way to determine the amount of people in the U.S. House of Representatives for each state.
    c. allocation of federal funding across the United States by the Census Bureau.
    d. the way the Census Bureau determines that a community is represented accurately.

4. According to the article, census data is important because it
    a. is required by law.
    b. allows the government to track where people move.
    c. can change how the national government gives out money.
    d. is used to elect people to the House of Representatives.

5. How does the U.S. Census differ from the American Community Survey (ACS)?
    a. The U.S. Census is given more often than the ACS.
    b. The U.S. Census includes the entire population, while the ACS only includes a sample of the people.
    c. The U.S. Census records demographic information, while the ACS focuses on economics and business.
    d. The U.S. Census is more detailed than the ACS.

6. Which is NOT an example of how the Economic Census data is used?
    a. to see what job areas are growing.
    b. to define geographic units used in the Census.
    c. to help small local businesses.
    d. to determine the strengths of the economy.

7. In order to get as many people to respond to the census as possible, the Census Bureau
    a. emails people who haven't returned their census form.
    b. calls people who haven't returned their census form.
    c. delivers a new 10-question form to people who haven't returned their census form.
    d. visits people who haven't returned their census form.

8. The U.S. census takes place every _____ years, while the Economic Census happens every ____ years.
    a. 5; 10
    b. 10; 5
    c. 2; 3
    d. 3; 2

9. Census geographic programs help to
    a. define geographic units used in the Census Bureau's other surveys.
    b. improve the quality of the census' questions.
    c. determine the number of U.S. representatives.
    d. locate business markets for local entrepreneurs.

10. Who is able to access and use general census data, according to the information in the article?
    a. the U.S. government
    b. researchers
    c. the general public
    d. all of the above

Now that you've finished reading this article and answering questions, mark how much you *agree* or *disagree* with the following statements about how much effort you put into reading the article and answering the questions by circling one number on the scale.

	Disagree strongly	*Somewhat disagree*	*Disagree a little*	*Neither agree or disagree*	*Agree a little*	*Somewhat agree*	*Agree strongly*
I put my best effort into reading the article and answering the questions.	1	2	3	4	5	6	7
I worked hard to do well on this even if I didn't like it.	1	2	3	4	5	6	7

When the reading was difficult, I give up or only read the easy parts.	1	2	3	4	5	6	7
Even when the material was dull, I managed to keep working until I finished.	1	2	3	4	5	6	7
I didn't pay much attention to the article or the questions.	1	2	3	4	5	6	7
I tried to do well on this reading and these questions.	1	2	3	4	5	6	7

Answer the following questions about the interest-regulating strategy you used during this text.

What strategy did you learn? *Circle ONE:*

Reminders *Enjoyment* *Focus* *REF: All three strategies*

	Disagree strongly	*Somewhat disagree*	*Disagree a little*	*Neither agree or disagree*	*Agree a little*	*Somewhat agree*	*Agree strongly*
I used the strategy I learned when reading this article.	1	2	3	4	5	6	7

Using the strategy helped me get through the article.	1	2	3	4	5	6	7
Learning about the strategy was helpful.	1	2	3	4	5	6	7
I would use the strategy again.	1	2	3	4	5	6	7
I learned a lot from this text because of the strategy.	1	2	3	4	5	6	7

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