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IS IT CHOICE OR IS IT INTEREST?  
THE EFFECT OF CHOICE ON THE COGNITIVE AND AFFECTIVE  
ENGAGEMENT OF ELEMENTARY STUDENTS  
PERFORMING A READING TASK

A Dissertation

Submitted to the School of Education

Duquesne University

In partial fulfillment of the requirements for  
the degree of Doctor of Education

By

Jerilyn Carter Scott

May 2012

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Jerilyn Carter Scott

2012

**DUQUESNE UNIVERSITY**  
**SCHOOL OF EDUCATION**  
**Department of Instruction and Leadership**

*Dissertation*

Submitted in Partial Fulfillment of the Requirements

For the Degree of Doctor of Education (Ed.D.)

**Instructional Leadership: Excellence at Duquesne**

*Presented by:*

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**March 7, 2012**

TITLE: IS IT CHOICE OR IS IT INTEREST?: THE EFFECT OF CHOICE AND  
INTEREST ON THE COGNITIVE AND AFFECTIVE ENGAGEMENT OF  
ELEMENTARY STUDENTS PERFORMING A READING TASK

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## ABSTRACT

IS IT CHOICE OR IS IT INTEREST?  
THE EFFECT OF CHOICE ON THE COGNITIVE AND AFFECTIVE  
ENGAGEMENT OF ELEMENTARY STUDENTS  
PERFORMING A READING TASK

By

Jerilyn Carter Scott

May 2012

Dissertation supervised by Dr. Sarah Peterson

The author replicated and extended a study by Flowerday, Schraw, & Stevens (2004) that examined the effects of choice, topic interest, and situational interest on reading engagement, attitude, and learning in college-age students. The study was replicated using fourth and fifth graders as subjects. The study was extended to examine the effects of gender and reading ability cohort on the outcome measures. Participants randomly assigned to the choice condition made a blind choice of Packet A or B containing a non-fiction essay to read; participants assigned to the no choice condition were given one of the packets without being offered a choice. Outcomes were measured using scores on a multiple-choice test, a content essay, a personal reaction essay, and an attitude checklist. Results confirmed the 2004 finding that situational interest has the strongest effect on students' attitude toward a reading task. Both topic interest and

choice had a smaller but significant effect on attitude after situational interest was controlled for, indicating that topic interest and choice have a stronger influence on the attitude of elementary students than they do on college students. Participants in the choice group had higher situational interest levels and a more positive attitude toward the task. There was no difference in the performance outcomes of the choice and no choice groups. Neither gender nor reading ability cohort had an effect on interest level or attitude.

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## **CHAPTER I: INTRODUCTION**

### **Overview of the Study**

Most children enter the world of readers eagerly, but their enthusiasm for reading wanes as they progress through school. Intrinsic motivation for reading, in which children read simply for personal pleasure or satisfaction, is at its peak during the earliest years of reading (Guthrie, Alverson, & Poundstone, 1999). This intrinsic motivation, if it persists, allows children to become lifelong readers. However, enjoyment of reading for its own sake and children's perceptions of themselves as readers decrease from grades three through eight (Guthrie, Alverson, & Poundstone, 1999). Instead of reading primarily for personal pleasure, children are now motivated to read largely by extrinsic motivations, as children read to please the teacher, earn high grades, and keep up with their peers. This type of motivation is dependent upon external factors, and does not lead to a lifelong habit of reading for pleasure.

Children who are highly engaged in reading are motivated to read, and so spend more time reading; children who spend more time reading become better readers and are more likely to become lifelong readers (Yankelovich, 2006). Educators and researchers, therefore, have devoted a great deal of energy to seeking ways of keeping children engaged in personally meaningful reading. Many strategies are used to foster reading engagement and motivation, including readers' theater, literature circles, reward systems, teaching through children's interests, and allowing children to make choices about their reading and reading responses. This research focuses specifically on the use of choice and interest to engage children in reading. It replicates and extends Flowerday, Schraw,

and Stevens' 2004 study which attempted to disentangle the relative effects of choice and interest on the affective and cognitive engagement of readers.

Researchers have asserted that giving students opportunities to make choices in their learning teaches them self-regulation skills (Kamii, 1991), makes learning more pleasurable (Sweet, Guthrie, & Ng, 1998), and increases their academic performance (Cordova & Lepper, 1996). Likewise, student interest in a topic or task has been shown to enhance deeper learning (Schiefele, 1996) and to promote personal engagement (Schraw & Lehman, 2001). Teachers therefore attempt to foster intrinsic motivation to read and learn by providing students with choices in their learning and by teaching through their interests (Flowerday & Schraw, 2000). If teachers are to harness the power of choice and interest to improve student outcomes, however, we must have a better understanding of how the two interact and what power they each hold. Much of the existing research has failed to distinguish between the effects of choice and the effects of interest, which are inevitably intertwined. Students naturally choose that in which they are already most interested. Perhaps, also, the act of making a choice automatically enhances one's interest in that which has been chosen.

This study attempts to address a gap in the research by determining whether the benefits that have been attributed to choice or interest are truly attributable to that factor alone. It further explores what kinds of choices or what kinds of interest are most beneficial and should be capitalized on, as well as which students might benefit the most. By replicating a previous study on this topic (Flowerday, Schraw, & Stevens, 2004) using younger students as subjects, this study will explore how the interplay of the effects of choice and interest on cognitive and affective engagement in a reading task is affected by

the age and maturity of the reader; the gender of the reader; and the ability cohort of the reader. As these variables come to be better understood, more complete theories of choice and interest will guide classroom teachers to more effective use of these tools in the classroom.

## **Theoretical Background of the Study**

### **Educators' Beliefs about Choice**

Teachers believe that giving children meaningful choices in their learning benefits students by enhancing autonomy, motivation, and engagement (Flowerday & Schraw, 2000). This study of teacher beliefs about choice showed that teachers provide opportunities for choice for a variety of reasons, including the belief that children actually learn better when engaged in tasks and topics of their choice. “How-to” books for teachers are full of strategies for providing children with choices about their learning. For example, in Supporting Struggling Readers and Writers, Strickland, Ganske, and Monroe (2002) recommend the use of literature circles, sustained silent reading, and writing workshop because they all present students with opportunities to make choices in their literacy learning. Day, Spiegel, McLellan, and Brown(2002), in Moving Forward with Literature Circles, suggest that if students have to read only what is suggested by another person, such as a teacher, they may begin to dislike reading and resist adult recommendations. It is widely accepted that allowing for choice in the classroom brings both motivational and academic benefits.

The International Reading Association (IRA) also subscribes to the belief that providing choices for children is important. In their position statement on adolescent literacy, the IRA Commission on Adolescent Literacy (1999) states that choosing their

own reading materials is important to adolescents who are seeking independence. It further asserts that children deserve teachers who engage children in self expression by offering choices and supports for accomplishing them, such as allowing children to represent their learning through a variety of independently selected projects. A joint position statement by the National Middle School Association and the International Reading Association (2002) recommends that teachers provide opportunities for students to read material they choose and states that students should have many opportunities to choose reading materials that are interesting and engaging.

However, there is little solid guidance on the effective use of choice in the classroom. There are as many variations on classroom choice as there are classrooms. Children may choose the topic that they wish to study; they may be assigned a topic, but allowed to choose the reading materials they will use to support their research; they may have a choice of reinforcement or assessment tasks to complete; they may choose the classmates with whom they will work. To compound the issue, different types of learners may be given different opportunities for choice, and not all may respond the same way. Flowerday and Schraw (2000) found that teachers tend to provide more and different opportunities for choice to their more capable students, believing them to benefit more from choice than do their less capable students. Although a vast range of choice practices are found in classrooms, the teachers studied were unanimous in stating that they provide choice to their students because they believe choice to be powerful in promoting both motivation and learning.

## **Research on the Effect of Choice**

In spite of commonly held beliefs about the power of choice, the existing research does not clearly support the direct benefits of choice on learning and achievement in reading. Some studies, conducted on adults rather than children, have failed to report any effect of choice on learning (Schraw, Flowerday, & Reisetter, 1998; Reeve, Nix, & Hamm, 2003). Other studies have provided mixed results that may indicate enhanced academic performance when children are provided with choice (Cordova & Lepper, 1996; Reynolds & Symons, 2001). Most researchers agree that choice has a significant positive effect on affective engagement and attitude, if not on cognitive engagement (Schraw et. al., 1998; Sweet, Guthrie, & Ng, 1998; Flowerday & Schraw, 2003). It could be argued that an increase in enjoyment and satisfaction felt by the student is a worthwhile benefit of providing classroom choice, even if it does not directly enhance task performance. However, even the power of choice on affective factors has been called into question by Flowerday, Schraw, & Stevens (2004), who raise the possibility that previous research on choice has been confounded with the effects of interest in a task. Do the benefits observed come from the fact that students were allowed to make a choice, or from the fact that they naturally chose that in which they were already interested? Flowerday, Schraw, and Stevens' 2004 study attempted to separate the effects of choice and interest from each other. They concluded that the presence of choice alone, apart from the interest that influences students' choices, may have little effect on either engagement or attitude. If that is the case, the energy teachers spend trying to provide meaningful choices to their students may be misdirected. A more

complete understanding of the interplay of choice and interest is needed in order for teachers to make the best use of them as learning and motivational tools in the classroom.

### **Educators' Beliefs about Interest**

The notion that students' own interests should be discovered and capitalized on by the teacher is not a new one. John Dewey wrote in the early 1900's that we should teach children through their own interests as a way of engaging their attention (Rickford, 2005). Children have a natural curiosity about the world and a desire to acquire information about intriguing topics. It seems intuitive that one can motivate students and enhance their willingness to learn by working within their unique interests.

The Program for International Student Assessment (PISA), in its paper on Policy and Practice Implications (IRA, 2003), acknowledges the importance of students' interests as a motivator in education. The report noted that within individual countries, there is a consistent correlation between interest in reading and achievement. They suggest that teachers should seek to foster student interest in a wide range of reading activities in an attempt to increase engagement, which is critical to student achievement. They specifically recommend that teachers make an effort to discover what boys might already like to read and what they like to do, in order to introduce them to reading materials related to their out-of-school interests. The International Reading Association, in its position statement on adolescent literacy, states that caring teachers who act on adolescents' interests address motivational needs (IRA, 1999). In another publication on excellent reading instruction, they make the case for teaching through individual interests even more strongly when they say that children deserve teachers who act on children's interests to promote the desire to read (IRA, 2000a).

## **Research on the Effects of Interest**

Research has distinguished between two primary types of interest: topic interest and situational interest (Hidi, 1990; Schiefele, 1996). Topic interest refers to a stable, content-specific topic interest that transcends a given situation (Tobias, 1994; Schiefele, 1999). It appears to be based on previous knowledge and experiences, as well as emotions. An example of topic interest would be a boy who is fascinated by dinosaurs and spends years playing with them, reading about them, building models, and learning as much as possible about various types of dinosaurs. Situational interest, by contrast, is short-lived and situation-specific. It is based on novelty, curiosity, and spontaneous engagement (Krapp, Hidi, & Renninger, 1992; Wade, 1992). An example would be a girl whose interest is piqued by an activity in which her class is making Aborigine X-ray style paintings; she is interested in reading about the features of X-ray painting, and is engaged in the project for the duration of the activity, but her interest ends with the project. She does not sustain an ongoing curiosity about Aborigine art that causes her to continue thinking and seeking knowledge about the subject. Both types of interest have been studied for their impact on learning and motivation.

### **Topic interest.**

Schiefele (1999) found that topic interest, also referred to in the literature as personal interest, is correlated with the use of engagement strategies that lead to deeper processing of text. Although topic interest presupposes a degree of prior knowledge, the increase in deeper text processing appears to be independent of prior knowledge (Schiefele, 1999). Topic interest has also been shown to improve the degree of complexity and the amount of information included in students' writing about the topic



(Benton, S.L., Sharp, J.M., Corkill, A.J., Downey, R.G., & Khramtsova, I. 1995).

Teachers can take advantage of children's individual topic interests when they allow the children to choose their own subject for a research or writing project, choose topics about which to read, or when the teachers design lessons around topics that they know are of interest to certain students. Because a classroom may have thirty children with thirty individual interests, it is impossible for a teacher to appeal directly to everyone's topic interests at once.

**Situational interest.**

Because situational interest is temporary and situation-specific, it is relatively easy to create or enhance situational interest in a task in a classroom setting. Therefore, situational interest may be a more powerful tool for teachers than topic interest, which may be different for each child in a given classroom. Like topic interest, situational interest has been shown to foster deeper learning (Wade, S.E., Buxton, W.M., & Kelly, M., 1999; Schraw, 1997) and to enhance critical writing (Schraw, 2000). A strong situational interest leads to enhanced affective engagement and an even stronger positive influence on students' attitudes (Flowerday, Schraw, & Stevens, 2004).

There are many ways to increase children's situational interest in reading tasks. Situational interest in a text can be increased by the use of stimulating tasks (Guthrie, Wigfield, & Humenick, 2006), perceived relevance of the text (Schraw & Dennison, 1994), and novelty (Chen, Darst, & Pangrazi, 2001). Situational interest may function as a precursor of a more enduring topic interest (Guthrie et al., 2006; Hidi & Renninger, 2006).

One area of research has focused on the effect of “seductive details” on readers’ interest, attention, and comprehension. Seductive details are defined as interesting but unimportant information, either textual or graphic, that engages the reader’s attention but does not relate to the main idea or concepts of the text (Wade 1992). Garner et. al. (1992) found that when importance and interestingness diverge, interestingness is a stronger predictor of what information is recalled. The inclusion of seductive details, while intended to engage the reader and enhance learning, actually hinders the learning of important information and abstract concepts (Wade 1992). Sanchez and Wiley (2006) found that readers with a low working memory capacity are particularly vulnerable to the negative effects of seductive details, perhaps because they are less able to control the allocation of their attention. Readers have also been found to spend less time reading important information and more time reading irrelevant seductive details, hindering their recall and processing of main ideas (Lehman, Schraw, McCrudden, & Hartley, 2007). Harp and Mayer (1998) distinguish between emotional interest and cognitive interest; they theorize that seductive details engage the reader’s emotional interest, causing less attention to be allocated to cognitive interest. The seductive details effect indicates that all interest is not helpful to learning; interest in the wrong elements of the text can detract from learning and comprehension.

Because situational interest is easily manipulated in the classroom, it may be a powerful tool for teachers in engaging children, increasing motivation, and enhancing learning when employed effectively. It is especially important to understand the interaction of choice and situational interest in creating positive effects on learning and motivation. Does choice itself benefit students independent of situational interest, or is

enhanced situational interest really the cause of the effects that have been previously attributed to choice?

### **The Relationship Between Choice and Interest**

Clearly, many teachers today believe that providing their students with choices in their learning is a valuable part of effective instructional practice, and they are attempting to implement classroom choice in a variety of ways (Flowerday & Schraw, 2000).

Providing opportunities for meaningful choices in the classroom requires a great deal of skill, time, and energy on the part of teachers. It is therefore imperative that we come to understand the power of choice and how it interacts with related forces such as interest, motivation, and cognitive engagement to foster student learning. Under what conditions should teachers provide choice in their classrooms? Will all students benefit from the same type and degree of choice, or will some choices benefit one type of student but not another? Would teachers be better off focusing their energies on enhancing situational interest or other factors rather than seeking more opportunities to provide choice? None of these questions can be adequately answered without a more complete and informed theory of choice than currently exists. More research is needed in order to create a model of choice that would guide teachers in using choice more effectively to enhance students' learning outcomes.

A line of study has been conducted toward the goal of better understanding the interaction of choice and interest in the classroom (Schraw, Flowerday, & Reisetter, 1998; Flowerday, 2000; Flowerday & Schraw, 2003; Flowerday, Schraw, & Stevens, 2004). The present study is intended to be a building block in the theory of choice that is being developed through this line of inquiry.

Schraw, Flowerday, and Reisetter (1998) studied the role of choice in cognitive and affective engagement, using college students as their subjects. They concluded that a choice of reading material in a low stakes setting had a positive effect on affective engagement, but no effect on cognitive engagement. Flowerday (2000) then attempted to distinguish between the effects of choice and interest on cognitive and affective engagement of college students, believing that perhaps interest was driving choice, and therefore responsible for some of its effects. She found that choice and interest can operate independently of one another, and that interest has a more powerful effect on both cognitive and affective engagement. Choice alone had little effect on affective engagement and even less on cognitive engagement.

Flowerday and Schraw (2003) next explored the effects of different types of choices. They found that giving college students a choice of which activity to complete following an assigned reading task did not enhance their performance on the activity, although it did increase their affective response to the task. Giving the students a choice of how much time to spend preparing for and completing the task actually decreased their performance, indicating that not all choice enhances student outcomes. Finally, Flowerday, Schraw, and Stevens (2004) provided college students with a blind choice of reading material, attempting to separate the effects of choice and interest. They found that whereas situational interest in the reading had a robust effect on attitude and a more modest effect on affective engagement, choice alone had little impact on either attitude or engagement. Interest, not choice, appeared to be responsible for even the affective effects that have previously been attributed to choice. The result led them to conclude that our previous understanding of choice may be unintentionally confounded by the

effects of interest. Taken together, these studies lead one to question whether choice itself does, in fact, hold the power that teachers believe it does, or if it is actually enhanced situational interest that drives the effects. This line of inquiry underscores the need to develop a more complete and informed understanding of choice and how to best use it to enhance student outcomes, particularly with reference to elementary students.

### **Purpose of the Study**

All of the aforementioned studies were conducted with college aged students. One purpose of this study is to continue this line of inquiry by replicating and extending Flowerday, Schraw, and Stevens' 2004 study using a sample of upper elementary students to determine if the results are consistent with a younger population. This study will serve to either support or refute the actual impact of choice on children's learning when the effects of choice are separated from those of situational interest in the task. Some studies have found that children and adults differ in how the interest level of reading material affects the reader's attention to and recall of the material (Anderson, Shirey, Wilson, & Fielding, 1984; Shirey & Reynolds, 1988). Perhaps the age and maturity of the reader will impact the results of Flowerday, Schraw, and Stevens' (2004) study on the relationship between choice and interest.

A second purpose of this study is to extend Flowerday, Schraw, and Stevens' 2004 study by exploring whether choice and interest interact differently in boys and girls. Schiefele, Krapp, and Winteler (1992), in a meta-analysis of research on interest as a predictor of achievement, found that male students' performance correlates more closely with their interest level than does that of female students. They suggest that perhaps females, being more conformist, are more likely to invest effort regardless of interest,

whereas boys may put forth greater effort only when their interest is piqued by the task. D'Ailly (2004) also observed a stronger link between interest and performance in boys. He suggests, however, that the difference may be due mainly to the fact that boys determine their interest in a task based on their self-efficacy for the task. Clearly, however, there is a gender difference in how interest affects performance; perhaps choice and interest interact differently in males and females.

A third purpose of this study is to consider whether the effect of choice on cognitive and affective engagement is different on students of different reading ability cohorts. Teachers acknowledge providing more academic choice to their more capable students, believing that they are better able to benefit from it than are less capable students (Flowerday & Schraw, 2000). In Flowerday and Schraw's study, teachers indicated a belief that higher achieving students benefit more from choice due to greater maturity, better decision-making skills, and more prior knowledge, whereas lower achieving students need more structure in order to learn best. However, this researcher is not aware of any research that confirms or refutes this anecdotal belief. This study will explore whether the effect of choice on cognitive and affective engagement is, in fact, different for students of higher reading ability. This knowledge will further inform the effective use of choice as a learning and motivational tool in the classroom.

### **The Research Questions**

In order for teachers to use choice effectively and to capitalize on children's interests to foster learning, we must understand how choice and interest, separately and together, affect students' engagement. Extending our understanding of choice and interest to include their interaction with reading ability and with gender will help to

determine under what conditions choice can be used to enhance student learning, and guide us in developing a model of best choice practices for teachers.

This study is guided by the following questions:

1. Does being given a choice of reading passages affect children's cognitive and/or affective engagement in the task, independent of situational interest, in the same ways that Flowerday, Schraw, and Stevens' (2004) found it did with college students?
2. Does being given a choice of reading passages have different effects on the cognitive and/or affective engagement of boys and girls?
3. Does being given a choice of reading passages have different effects on the cognitive and/or affective engagement of children in different reading ability cohorts?

The answers to these questions will contribute to the growing body of knowledge about choice and interest, and their most effective use in enhancing learning outcomes for children. As more research is conducted in this area, a theory of choice can be developed that will guide teachers in using choice to the best advantage in the classroom.

## **CHAPTER II: REVIEW OF THE LITERATURE**

### **Introduction**

In this chapter, a review of the current literature on choice and interest will be presented. Most of the literature focuses on either choice or interest, without exploring the intersection of the two. Along with the research on choice, the relevant literature on self-determination theory will be reviewed, as self-determination theory is cited as the theoretical foundation of much of the work that has been done on choice. The broader topic of interest will be broken down into the subtopics of topic interest and situational interest, according to distinctions made in the literature. An effort was made to include any research that informed the theory and design of the study by Flowerday, Schraw, and Stevens (2004), along with their other work on the subject. Literature on the construct of relevance is included as well, because it has been proposed that the effects of choice may vary based on the choice-maker's perception of the relevance of the choice (Reeve, Nix, & Hamm, 2003; Deci & Ryan, 2000).

### **Research on Choice**

Previous research on the value of choice in the classroom has focused on the power of choice to motivate students, thereby presumably enhancing positive attitude, motivation, and learning outcomes. It has been asserted that students enjoy learning more when they are given choices in their learning (Parker & Lepper, 1992; Schraw, Flowerday, & Reissetter, 1998; Sweet, Guthrie, & Ng, 1998). Choice is also credited with enhancing engagement in learning tasks (Schraw et al., 1998) and improving the



performance and learning of students (Cordova & Lepper, 1996; Reynolds & Symons, 2001).

Teachers have embraced the perceived power of choice and regularly use it in their attempts to engage, motivate, and teach students. Flowerday and Schraw (2000) have shown that the vast majority of classroom teachers believe that choice can be used as an instructional tool to increase learning and motivation. In the same study, they describe teachers as giving choice in materials, topics, and activities with the expectation that it will result in increased engagement and learning, especially for higher-functioning students. Giving students choices in their reading material and learning tasks has become a well-established motivational strategy, described by the International Reading Association (2007) as being essential to high quality literacy instruction.

In spite of the firmly held popular belief that choice has positive effects on both learning and motivation, the relatively few studies that have examined the impact of choice in the classroom paint a mixed picture. The inconsistent and sometimes contradictory findings suggest that choice is more complex and multifaceted than was once believed.

Many studies assert that choice is associated with a variety of positive outcomes. In a 1978 study, Zuckerman, Porac, Lathin, Smith, and Deci found that individuals who were allowed to choose which puzzle solving tasks to work on demonstrated greater feelings of control and a willingness to invest more time in the task. Wise, Roos, Plake, & Nebelsick-Gullet (1994) demonstrated that choosing one's test format can reduce test anxiety. In a 1991 study, Schiefele demonstrated that students who were allowed to choose their own reading material expended more effort in learning and understanding

the material. Reynolds and Symons (2001) showed that third grade students searched text more efficiently when given a choice of what to read. Cordova and Lepper (1996) found that allowing students to choose features of a computerized learning program that were instructionally incidental led to significant increases in their motivation, learning, and feelings of competence.

Although choice has been shown to have positive effects on some variables, it has been shown to have little or no effect on others. In Parker and Lepper's 1992 study involving the effects of fantasy contexts on children's learning and motivation, having a choice of fantasies had no impact on the children's learning outcomes. In contrast to Cordova & Lepper (1996) and Zuckerman et al. (1978), who associated choice with increased motivation, Reeve, Nix, and Hamm (2003) found that perceived choice did not, in itself, increase intrinsic motivation for a task. Likewise, D'Ailly (2004) found that giving students choices in their learning environment did not produce any significant impact on students' learning; D'Ailly postulated that perhaps personal choice only impacts learning when it is powerful enough to elicit a higher level of interest in students. This non-effect of personal choice was observed in both North American and Chinese cultures (D'Ailly, 2004). Schraw et al. (1998) demonstrated that whereas choice had a positive effect on the affective engagement of students performing a task, it had no effect on the students' cognitive engagement. Flowerday and Schraw (2003), in a follow-up study, again found that choice-making itself does not increase cognitive engagement. These studies raise the question of which variables can be positively impacted by the provision of choice, and which cannot.

Some research has actually shown that choice can have a negative impact on students' performance. Iyengar and Lepper (1999), for example, found that there is a cultural component to the effects of choice. They challenged what they considered to be an American bias toward the value of individual choice and control by examining the motivational effects of choice on elementary school aged Anglo American children and Asian American children. The Asian American children selected for the study spoke their parents' native language at home (Chinese, Japanese, or Korean), indicating that they were likely being raised with the influence of traditional Asian values, rather than being completely assimilated into American culture. The Anglo American children experienced greater motivational benefits from making their own choices than from having choices made for them by any other person. The Asian American students, raised with societal values that emphasize the collective over the individual, showed the greatest increase in motivation when choices were made for them by trusted members of their in-group. It is postulated that for children coming from cultures that place greater value on collective harmony than on individual self-determination, the provision of choice could be anxiety-producing and demotivating.

In another study that casts some doubt on the positive effects of choice, Iyengar and Lepper (2000) challenged the notion that people's desire for choice, and their ability to manage choice, is unlimited. They presented adult shoppers with either a small array of jams for sale, or a large display of many jams for sale. Although the shoppers were attracted to the large variety, they actually purchased less jam when presented with a larger array of choices than they did from the smaller selection. Iyengar and Lepper concluded that providing a vast array of choices may lead to choice overload, in which

too many choices of products to purchase leads to a decreased motivation to purchase at all.

Flowerday, Schraw, and Stevens (2004) also found a slight negative effect for choice on a reading task performance. They conducted a study on college students in which they presented the subjects with a blind choice of reading tasks to perform. The participants were given a choice of Packet A or Packet B, not knowing what was contained in each. When they analyzed the results for choice, topic interest, and situational interest, the researchers found that allowing students to make a choice of the packet with which to work, rather than being assigned a packet, resulted in a slight decrease in performance on the task. They theorized that either a blind choice is not as motivating as a choice between two known options, or that the stakes were too low to tap into the motivational properties of choice.

A number of explanations for these contradictory results about the motivational properties of choice have been suggested. Flowerday, Schraw, and Stevens (2004) suggest that effects which have previously been attributed to choice may, in fact, be the result of interest instead. They believe that previous studies have confounded the effects of choice and interest because participants were asked to make choices based implicitly on their interest in what they chose. Their attempts to isolate the effects of choice, topic interest, and situational interest led them to conclude that it is primarily situational interest, rather than choice or topic interest, that leads to increased engagement and motivation.

Returning to the contradictory nature of the research on choice, Reeve, Nix, and Hamm (2003) propose that there is a distinction between action choices and option

choices. Option choices (pick Option A or Option B) provide a perception of choice, but do not tap into locus of control or volition, and therefore fail to affect motivation. Schraw, Flowerday, and Reisetter's 1998 study, in which perceived choice did not increase motivation, relied on option choices (students chose reading material from among three options, based on one-sentence summaries of the passages). Action choices are defined as "a series of ongoing choices about what to do" (Reeve et al., 2003, p. 377). Action choices, Reeve et al. suggest, do increase motivation because they also involve one's locus of control and volition. Zuckerman et al. (1978) and Cordova and Lepper's (1996) studies provided action choices (how to allocate one's time and features of a computerized learning environment, respectively) which demonstrated that choice increased motivation.

To explore the conditions under which choice can be used as a tool to increase motivation and learning, one must place choice in the context of a motivational framework. Eccles and Wigfield's expectancy-value model (2000) regards choice as an outcome of a motivational process in which people make choices by weighing the perceived benefits and costs of various choices. The social cognitive theory of Bandura (1997) portrays self-efficacy as the determinant of choice and goal setting. Self-determination theory (Deci & Ryan, 2000), a widely accepted construct of motivation, describes choice as a motivating factor itself under the right conditions.

Flowerday and Schraw, whose work this research is attempting to replicate and extend, present self-determination theory as the foundation for their work on choice and interest. Therefore this study will also examine the topics of choice and interest from the perspective of self-determination theory. Katz and Assor (2007) propose that viewing the

existing studies on choice through the lens of self-determination theory may explain some of the inconsistencies in the research.

### **Self-Determination Theory**

Self-determination theory (SDT) proposes that human motivation is centered around the drive to satisfy basic psychological needs for *autonomy*, *competence*, and *relatedness* (Deci, Vallerand, Pelletier, & Ryan, 1991). The degree to which a behavior addresses these three needs determines the extent to which the behavior is motivating to the individual.

Autonomy is defined by Deci and Ryan (2000) as “the organismic desire to self-organize experience and behavior and to have activity be concordant with one’s integrated sense of self” (p. 231). Katz and Assor (2007) describe the need for autonomy as “the need to feel a sense of full volition and ‘choicefulness’ regarding one’s activities and goals” (p. 3).

The need for autonomy refers to the feeling that choices and experiences are congruent with one’s own values, beliefs, and goals. Autonomy-supportive contexts recognize learners’ unique frames of reference, allow learners to act in accordance with their personal values, and allow learners to pursue goals and interests that are meaningful to them. Much research supports the benefits of autonomy-supportive behaviors and learning environments. Vansteenkiste et al. (2004) showed that autonomy-supportive learning climates have a significant positive effect on students’ engagement. Assor, Kaplan, Kanat-Maymon, and Roth (2005) demonstrated that teacher behavior that is controlling, rather than autonomy enhancing, results in amotivation and poor learner engagement. Similarly, autonomy-supportive parenting styles have been shown to result

in better internalization of expected behaviors than more controlling, autonomy-suppressing parenting behaviors (Roth et al., 2009). Zhou, Ma, and Deci (2009) found that autonomy-supportive classroom practices had a positive impact on engagement even in rural Chinese children, showing that the psychological need for autonomy transcends cultures.

Katz and Assor (2007) believe that attention to the implications of self-determination theory can explain the inconsistent and conflicting research findings on the effects of choice. If, as Deci and Ryan (2000) assert, all three needs suggested by self-determination theory – competence, relatedness, and autonomy – must be met in order for intrinsic motivation to emerge, then choice can only motivate if all three needs are supported by the choice making experience. Choices that do not support one's need for autonomy may lack the motivating quality of other, autonomy-supportive choices. The need for competency refers to people's need to believe that they are capable of succeeding at the task which they are undertaking. It is similar to Bandura's (1997) construct of self-efficacy. A lack of self-efficacy for a task results in low motivation to engage in the task, stemming from a belief that success is unlikely. Conversely, succeeding at a task elevates one's sense of efficacy and increases the motivation to engage in a similar task in the future. Deci et al. (1991) assert that the need to feel competent and efficacious is a major psychological drive that plays a key role in self-determination and motivation. Choice and decision making are influenced by the need to both feel and demonstrate competence (Katz & Assor, 2007).

The need for relatedness is the psychological need to feel connected to and to interact with other people. Psychological and educational theorists have recognized the

drive for human interaction for decades; Vygotsky's social constructivism, Erikson's stages of psychosocial development, and Maslow's hierarchy of needs all recognize the need for relatedness (Flowerday, 2000). Little direct research has been done on the relationship between choice and the need for relatedness (Katz & Assor, 2007), but the studies on the cultural components of choice can inform this line of inquiry. Iyengar and Lepper (1999) found that Asian American children, raised to value the interdependent self above the independent self, were more motivated by choices that were made for them by trusted members of their in-group, reflecting those social values. Anglo American children, by contrast, were more motivated by making their own choices, in accordance with the American emphasis placed on individualism. Moreno and Flowerday (2006) theorize that students' attitudes toward animated pedagogical agents (APAs) were influenced by whether the ethnicity of the APAs threatened or supported the students' need for relatedness. Although the impact of the need for relatedness on the motivational properties of choice is less intuitive than that of the needs for autonomy and competence, there is evidence that such an impact exists.

Future research will need to consider how the psychological need for autonomy described in self-determination theory relates to the motivational properties of choice. Perhaps, as Katz and Assor (2007) suggest, choice must include autonomy-supportive factors such as relevance and goal support in order to wield any motivational power.

### **Research on Interest**

Early research on the effect of interest on attention and learning focused primarily on how the reader's interest in reading material affected recall of the material (Asher & Markell, 1974; Asher, Hymel, & Wigfield, 1978; Asher, 1979). Results tended to show



that elementary school aged children, particularly boys, demonstrated better recall and learning of more interesting information. The two predominant hypotheses to explain the link between interesting material and learning were that readers bring an existing operative schema to information in which they already have an interest, and that increased attention was directed toward more interesting information (Shirey & Reynolds, 1988).

Anderson, Shirey, Wilson, and Fielding (1984) found that interesting material increased the recall and learning of children, and that children directed more attention toward interesting material, but they found that no causal relationship existed between selective attention and learning. A similar study with adults showed that while mature readers also learn interesting material more readily, adults directed less attention toward the interesting material (Shirey & Reynolds, 1988). It was hypothesized that learning strategies other than increased attention are implemented automatically by more mature readers.

Rosalie Fink's (1995) work proposes that personal topic interest can have an enormous motivating effect on struggling readers. She published a 1995 study based on a series of interviews with people she calls "successful dyslexics," dyslexic individuals who have achieved notable success in fields that require a great deal of reading and writing. Her subjects credit a passionate interest in a given topic for spurring them to read avidly in spite of their difficulties with reading. By reading widely and deeply about a particular subject, these individuals scaffolded their developing reading ability with familiar schemas and text structures. Their topic interests were what fed their persistence in reading, allowing them to become skilled readers over time. In her study, topic interest

emerged as a critical factor in fostering her subjects' engagement, persistence, and eventual competence in reading.

A number of works published in the 1990's focused on the effects of interest on learning from text, and on the connection between interest and motivation (Schiefele, 1991; Krapp, Hidi, & Renninger, 1992; Schiefele, 1996; Schraw, 1997). Two forms of interest were distinguished in the literature: topic interest and situational interest. Topic interest, also referred to as personal interest, was defined by Schiefele (1999) as a relatively stable evaluative orientation toward a certain domain. He described situational interest as a temporary state that is elicited by specific features of a text. In this study, Schiefele found that while prior knowledge and cognitive ability had a minimal effect on text learning, topic interest was significantly related to text learning, especially for deeper level learning. Subsequent research has acknowledged the distinction between topic interest and situation interest (Hidi & Harackiewicz, 2000; Ainley, Hidi, & Berndorff, 2002; Naceur & Schiefele, 2005).

### **Topic Interest**

Ainley, Hidi, and Berndorff (2002) discuss three types of interest in relation to learning: individual interest (one's predisposition to respond to certain stimuli), situational interest (elicited by certain aspects of the environment), and topic interest. They describe topic interest as having aspects of both individual interest and situational interest, defining it as "the level of interest triggered when a specific topic is presented" (Ainley, Hidi, & Berndorff, 2002, p. 545). Using interactive computer technology, they determined that topic interest is related to affective response, which is related to task

persistence with the text, which in turn leads to increased learning. In that way, they link topic interest to enhanced learning from text.

Naceur and Schiefele (2005) found that topic interest, independent of other factors, has a positive effect on long-term recall of text. Flowerday, Schraw, and Stevens (2004) attempted to separate the effects of choice, topic interest, and situational interest by providing students with a blind choice of a reading response task. They found that whereas topic interest had a small positive effect on the attitude of the participants, situational interest had a moderate positive effect on engagement, and a robust positive effect on attitude. They conclude that although topic interest has some influence on attitude, the real power is in the situational interest.

### **Situational Interest**

Situational interest became the primary focus of researchers' attention as a motivational tool, partly due to the belief that topic interest is too individual to alter or tap effectively in classroom practice (Chen, Darst, & Pangrazi, 2001). Several theoretical constructs of situational interest have emerged (Hidi & Anderson, 1992; Deci, 1992; Mitchell, 1993; Schraw, Bruning, & Svoboda, 1995). Deci (1992) proposed that situational interest was a multi-dimensional construct, involving seven different factors that combine to create a temporarily heightened level of interest. Chen, Darst, & Pangrazi (1999) examined situational interest from the perspective of physical education rather than reading tasks. They concurred with Deci's (1992) theory of situational interest as a multi-source construct, but refined Deci's construct to include five different dimensions rather than Deci's original seven. Deci identified novelty, challenge, attention demand, sense of delight, exploration intention, desire arousal, and time

alteration as components of situational interest. Chen, Darst, and Pangrazi suggested that situational interest is composed, instead, of the dimensions of novelty, challenge, attention demand, exploration intention, and instant enjoyment. Their results showed instant enjoyment to be the primary determinant of situational interest, with novelty and exploration serving to enhance instant enjoyment (Chen, Darst, & Pangrazi, 2001).

Hidi and Harackiewicz (2000) asserted that situational interest, the momentary state of being engaged by an activity or text, can lead to a more lasting intrinsic motivation to learn or pursue an activity. Guthrie and Humanick (2004), in a meta-analysis of existing studies, concluded that giving children choices in their reading, presumably enhancing situational interest in what they are reading, leads to increased motivation for reading. This is consistent with the position held by prominent reading professionals (IRA 1999, 2000b, 2007). Guthrie, Hoa, Wigfield, Tonks, & Perencevich (2006) found that situated interest for a specific book can lead to longer-term intrinsic motivation to read, which is the ultimate goal of educators. Guthrie et al. (2006) further demonstrated that attaching stimulating tasks to reading activities can increase situational interest, which in turn increases both reading comprehension and intrinsic motivation to read. It is clear that situational interest has the power to function as a motivational tool. The attraction of harnessing situational interest as a tool to create or enhance long-term intrinsic motivation is that it is relatively easy to enhance the situational interest of learning tasks.

Given the apparent power of situational interest to influence learning, attention has shifted from merely capitalizing on existing interest to seeking means of developing students' interests. Hidi and Renninger's (2006) most recent model of interest

development proposes four phases of interest development: triggered situational interest, maintained situational interest, emerging individual interest, and well-developed individual interest. They propose that the four phases are “sequential and distinct, and represent a form of cumulative, progressive development in cases where interest is supported and sustained, either through the efforts of others or because of challenges or opportunities that a person sees in a task” (p. 112). Both nascent situational and individual interests, once triggered, can be nurtured and sustained. An interest that begins as situational in nature can, over time, become a lasting individual interest. Likewise, an interest that is neglected at any phase can diminish and disappear rather than developing. This model holds implications for the classroom in that careful teaching can spark and nurture new interests that, over time, can become the deeply held interests that result in increased intrinsic motivation for reading and learning.

Rotgans and Schmidt (2009) have further explored the use of situational interest in the classroom. They investigated the fluctuation in situational interest during the course of a learning event in a problem-based learning environment at a polytechnic school. They concluded that situational interest does not develop in a linear fashion. Situational interest is initially triggered by epistemic curiosity, aroused by novel questions and unsolved problems (Litman, 2008). Throughout the learning event studied, interest waned slightly and rose again during the elaboration of learning at the conclusion of the event. In contrast to previous studies which demonstrated that prior knowledge acts as an influence on interest (Schraw & Lehman, 2001), Rotgans and Schmidt found that prior knowledge did not significantly predict students’ situational interest in a task. They also speculate that self-reported situational interest alone is not sufficient to predict

performance; rather, interest must be translated into engagement behaviors before it influences performance.

### **Interest and Gender**

Gender differences have been demonstrated in both topic interest and situational interest. Research has consistently shown that girls tend to display higher levels of topic and situational interest than do boys. However, boys are more susceptible to having their situational interest levels raised by interesting materials and circumstances. Their performance is also more significantly correlated with increased interest levels (Oakhill & Petrides, 2007; D'Ailly 2004).

Other factors aside, girls display a higher level of both topic and situational interest across the board (Ainley, Hillman, & Hidi, 2002; D'Ailly, 2004). Ainley, Hillman, and Hidi (2002) studied the effects of topic interest on reading persistence and recall. They found that girls, when rating their interest in a list of titles, showed more interest in a broader range of titles than did boys. The girls' interest appeared to be based on shared interests with the characters or the storyline, regardless of the gender of the protagonist.

Oakhill and Petrides (2007) studied the effect of gender differences on reading comprehension. Boys' comprehension and cognitive performance was far more influenced by their level of interest in the material than girls' was. Ainley, Hillman, and Hidi (2002), who also studied reading comprehension, found that both boys' and girls' comprehension and recall were enhanced by a high level of interest in the topic. However, boys were more likely to disengage when the material was uninteresting to them. Girls, by contrast, persisted in reading and showed greater recall even when their

interest level was low. Schiefele et al. (1992) speculate that perhaps one explanation for girls' performance being less closely correlated with their interest level is that girls are conditioned to be more compliant; they will persist in a task and put forth more effort just because they are expected to. D'Ailly (2004) found gender differences in the link between self-efficacy and interest. Boys may demonstrate a stronger link between interest and performance than girls do because boys' interest level is more strongly affected by their self-efficacy for the task.

Chen and Darst (2002) challenge the view that boys' and girls' differing interests have a biological basis. In studying the relationship between individual and situational interest in physical education activities, they determined that boys and girls are attracted equally to tasks that hold high situational interest for them. However, their skill level for the tasks played a more important role in determining their interest level than did their gender. They conclude that the differences in interests between male and female middle school students may be accounted for primarily by differences in skill level.

Several studies have investigated the mediating effects of interest on motivation. Katz et al. (2006) studied the effects of interest as a coping mechanism to deal with sub-optimal learning environments. While boys tend to react to positive feedback by showing increased levels of motivation, girls react to some types of positive feedback with decreased motivation, perhaps as a response to perceived evaluative and controlling behavior. This pattern held true for boys and girls with moderate levels of interest in a task. Girls who had either high or low levels of interest in the task, however, appeared to be protected from this effect. Katz theorizes that girls of high or low interest levels were less likely to feel controlled by the positive feedback; girls of moderate interest, unsure of

their own feelings about the task, experienced the positive feedback as controlling and therefore demotivating.

Shaffner and Schiefele (2007) also cite girls' tendency to react more negatively to evaluative and controlling situations than do boys. They tested the effect of task instructions that were designed to reinforce either intrinsic motivation or extrinsic motivation. Two groups stood out in their responses: girls demonstrated more enhanced performance in response to the intrinsically motivating instructions than did boys, and participants beginning the task with especially high levels of interest demonstrated more enhanced performance in response to the intrinsically motivating instructions than did participants who began the task with lower interest levels. Shaffner and Schiefele believe that the strong effect showed by girls is due to the fact that their goal structure is congruent with the values of intrinsic motivation. The girls may have reacted more positively than boys to the intrinsically motivation instructions, and more negatively than boys to the controlling, extrinsically motivating instructions, because the task instructions designed to reinforce intrinsic motivation were more congruent with their own goal structures.

While it is clear that gender plays a role in the effects of interest on motivation and performance, it is not clear exactly how gender and interest interact. Much of the research on interest, including Flowerday, Schraw, and Stevens (2004), is grounded in self-determination theory and the need for support of autonomy values. Assor et al. (2005) examined controlling teacher behaviors and the resulting anger and anxiety among children. They found no difference between the genders in children's need for autonomy supportive environments; controlling teacher behaviors were as harmful for girls as they



were for boys. This indicates that girls are no less tolerant of autonomy suppression than are boys. However, girls do appear to react differently than boys to some types of teacher feedback (Katz et al., 2006).

In light of the complexities of understanding interest as a motivational tool, it is important to determine how situational interest, especially, interacts with choice. By developing a theory of choice independent of the confounding effects of interest, educators will be able to use both choice and interest most effectively in order to maximize engagement, motivation, and learning.

### **Conclusion**

A review of the literature shows that much work remains to be done on the effective use of choice and interest as motivators in the classroom. There is a strong belief among educators that providing students with choice enhances their learning (Flowerday & Schraw, 2000). However, research does not clearly demonstrate what types of choices are most effective in the classroom, or what effects choice has on students' cognitive and affective engagement.

Much of the research on the constructs of choice and interest has focused either on choice, or on some type of interest; few studies have made an attempt to explore or define the relationship between the two. Flowerday, Schraw, and Stevens' 2004 study is among the few that have attempted to separate the effects of choice and interest. In order to most effectively harness the motivational powers of choice and interest in the classroom, we must develop a clearer understanding of how they interact to produce the positive effects that have been attributed to each. By developing a theory of choice independent of the confounding effects of interest, educators will be able to use both

choice and interest most effectively in order to maximize engagement, motivation, and learning. This study is intended to contribute to the body of research on this interaction between choice and interest.

## **CHAPTER III: METHODOLOGY**

### **Introduction**

The purpose of the study was to replicate and extend Flowerday, Schraw, and Stevens' 2004 study on the role of choice and interest in reader engagement. In the 2004 study, the authors studied the relationship of choice, interest, and performance on a reading task. Ninety-eight college undergraduates participated in Experiment I. Half of the students were given a choice of sealed packet A or sealed packet B to work with; the other half were assigned one of the two packets. Unbeknownst to the subjects, the packets' contents were all exactly the same. The participants first filled out a topic interest inventory to establish their level of pre-existing interest in the topic of the reading task. Then they read a two-page expository article about Seasonal Affective Disorder. After reading, they filled out surveys to measure situational interest in the article and their affective response to the task. A multiple choice test was given about factual information in the article. They also wrote two essays, one retelling the main ideas and factual information from the article, and one describing their feelings about the task and the reading. Finally, they completed a checklist about their attitude toward the task. Using this data, the researchers examined the relationships among cognitive engagement, affective engagement, topic interest, situational interest, and the choice/no choice condition. An Experiment II was conducted with another 106 college undergraduates; the only changes were that the article was rewritten to include more interesting language and details, and the multiple choice test was modified to fit the contents of the revised article. Again, the researchers used the data to examine the relationships among

cognitive engagement, affective engagement, topic interest, situational interest, and the choice/no choice condition. The results of both experiments showed that situational interest had a positive effect on attitude and engagement. No effects were found for choice or topic interest. They concluded that the power to increase engagement lies not with choice making, but with situational interest.

This study followed the methodology of the Flowerday, Schraw, and Stevens study as closely as possible, with the following differences: Whereas the original study was performed with college students, this study was performed with upper elementary students. Because of the difference in the participants' age, a different reading passage was used to provide an appropriate reading level for the younger population. With the exception of the multiple choice questions and title index which had to be specific to the reading passage, the same instruments used in the original study were used for this study. Like the original study, this study examined the effect of choice and interest on the subjects' cognitive and affective engagement (Research Question 1). In addition, however, Research Question 2 of this study explored the impact of gender on the relationship between choice and interest. Research Question 3 further extended the original study by examining the differences in the results of students of different reading ability cohorts.

### **Participants**

Ninety-six students enrolled in the fourth and fifth grades at an independent, co-educational day school in western Pennsylvania were invited to participate in the study. This age group was selected for the study because the upper elementary years are when recreational reading typically declines, and therefore there is a particular focus among

education professionals on using choice and interest with this age group to foster students' motivation to read (Guthrie, Alverson, & Poundstone, 1999). Nearly all were middle to upper-middle socioeconomic class.

Participation was voluntary and took place during the language arts period of the school day. It was made clear to the students that neither their participation nor their performance would impact their grades. All participants were required to sign an agreement to participate (Appendix A) and, because they were under eighteen years of age, their parents were required to sign a consent form prior to their child's participation (Appendix B). Participants were randomly assigned to either the choice condition or the no-choice condition.

### **Materials**

Materials consisted of an informed consent form for parents, an agreement to participate form for students, a 10-item topic interest index, a two-page text, a 10-item interest inventory, a 10-item multiple-choice test, 2 essay forms (content essay and personal reaction essay), and a 12-item attitude checklist. Stanine scores from the ERB reading comprehension test, administered by the school within the last calendar year, were used to identify participants' reading ability cohort.

### **Topic Interest Index**

Participants completed a 10-item topic interest index (Appendix C). This instrument consisted of a list developed by the researcher of ten non-fiction text titles indicating a variety of topics about which students might be asked to read. The titles were modeled after those used in the original study but modified to be appropriate for upper elementary students. Participants rated their level of interest in each topic using a

6-point rating scale (6 = *very much interested* and 1 = *completely uninterested*). Topic titles included “Tidepools: A Slice of Ocean Life” and “The Creation of the Appalachian Trail,” among eight other titles. For this study, only the rating for the title of the passage that was actually read was used in data analysis. All participants read “Restoring Nature’s Balance: Reintroducing Wolves to Yellowstone.”

### **Text**

“Restoring Nature’s Balance: Reintroducing Wolves to Yellowstone” (Appendix D) was a 350 word selection taken from a fourth grade reading workbook, Spectrum Reading Grade 4, published by Frank Schaffer Publications (2007). The selection was designed by the publishers to appeal to the interests of students of this age and reading level. Because Flowerday, Schraw, & Stevens (2004) used an expository passage in the original study, this researcher also used an expository passage.

Because classroom reading material is often selected based on the reading ability expected at a certain age or grade, rather than the actual reading ability of a specific student, all students were provided with the same text. As in the original study, the text was selected to be on the lower end of the typical range of reading ability for students of this age, in order to ensure its accessibility to the greatest number of participants. The reading material consisted of only a small title and text in a clear, simple font; no graphics, pictures, or other elaboration that could affect the participants’ interest in the material was used.

### **Interest Inventory**

An interest inventory was used to measure situational interest after reading the selection (Appendix E). It was the same instrument used in the original study. The 10

items were adapted from the perceived interest questionnaire used by Schraw et al. (1995), who determined that all items loaded on a single factor with a coefficient alpha of .83 (Flowerday, Schraw, & Stevens, 2004). After reading the text, participant interest was measured using a 5-point rating scale that asked how strongly the participants agreed or disagreed with a series of statements (1 = *strongly disagree* and 5 = *strongly agree*). Typical items were, “I thought the story’s topic was fascinating” and “I got caught up in the story without trying to.” Scores could range from 10 to 50.

### **Multiple Choice Test**

A 10-item multiple choice test was completed after the interest inventory (Appendix F). All items assessed participant understanding of the main ideas and factual information included in the text. Although modeled after the instrument used in the original study, the items were written by the researcher to correspond with the age-appropriate reading passage used in this study. The number of items answered correctly was the participant’s score.

### **Essays**

The instructions for writing each of two essays were printed at the top of sheets of ruled paper (Appendix G). In Essay 1, participants were asked to write a one-page response restating the main ideas of the text. In Essay 2, participants were asked to describe their personal reactions to completing the tasks involved in the study. They were encouraged to be candid and specific, including both things they liked and disliked about participating in the study. Although written in language geared for fourth and fifth graders, the directions resembled the directions from the original study as closely as possible. Participants were assured that their responses would not be read by their

language arts teachers and would have no effect on their grades. Essays were written immediately after the participants completed the multiple-choice test.

Following the data analysis procedures of the original study, Essay 1 content, measuring cognitive engagement in the task, was scored by categorizing participant statements into three main types: thematic, critical responses, and personal responses. Subcategories exist for each (see scoring protocol in Appendix H). Only responses giving content-related information were scored. Essays were scored by the author and a trained assistant using a scoring protocol developed by Schraw et al. (1998) and used in Flowerday, Schraw, and Stevens (2004). Essays were first read in their entirety, and then a sentence-by-sentence analysis was conducted. Differences in scoring were discussed by the two raters and a consensus reached. In addition, a randomly selected subset of 10 essays was scored by a third rater to analyze interrater reliability.

The same raters scored Essay 2, measuring affective engagement in the task, again following the procedures of the original study. A sentence-by-sentence analysis was conducted after a first reading of the essay. Personal reaction statements from these essays were categorized by positive and negative reactions to research participation, text materials, essay writing, and choices given. The score on Essay 2 was equal to the total number of personal reaction statements that were related to the student's feelings about the text and participation in the study; the number of personal reaction statements made was taken as a measure of affective engagement. The use of these protocols allowed the researcher to compare the total number of essay responses between the experimental and control groups for Essay 1 and for Essay 2. A randomly selected subset of 10 essays was scored by a third rater to analyze interrater reliability.



## **Attitude Inventory**

Participants completed a 12-item attitude checklist used in the original study and designed to measure levels of participant satisfaction, enjoyment, perceived autonomy, motivation, and sense of fairness associated with their experiences in this study (Appendix I). Examples of the items are “I got personally involved in what I read” and “I appreciate the choices I got to make in this study.” The 12 items were based on claims appearing in the choice literature and other dimensions identified by Kohn (1993) and used in Flowerday, Schraw, and Stevens (2004). Students rated each item on a 5-point rating scale (1 = *strongly disagree* and 5 = *strongly agree*). Scores for the attitude checklist could range from 12 to 60.

## **Procedures**

A description of the research, a parental consent form, and a student assent form were sent home with students by their classroom teachers. The consent form included permission to use ERB reading comprehension scores obtained from school records. Consent and assent forms were completed at home and returned to the classroom teachers in sealed envelopes; the teachers passed them on to the researcher. Families who did not return the forms by the deadline were contacted by telephone to remind them to return the forms, giving or withholding consent. Only students whose parents gave written consent were permitted to participate in the study. Students not participating in the study spent the class period allotted to the study in a supervised study hall in another classroom. The study was conducted during a language arts class period. All participating students completed a topic interest index. Individuals were randomly assigned to either the experimental condition (choice) or the control condition (no choice). Participants in the

choice group were given the option of working with a packet contained in a sealed envelope labeled “A” or working with a packet in a sealed envelope labeled “B.” The choice of packets was offered individually to each student by the researcher. Once the choice was made, the student was required to work with that packet for the duration of the study. Participants in the no-choice group were randomly handed either Packet A or Packet B by the researcher. Participants were seated at individual desks spread out around a classroom and were unable to interact or to see each others’ materials. Therefore, the participants were unaware that each packet contained exactly the same materials.

After the packets were distributed, the procedures were the same for the experimental and control groups. First, all students completed the measure of existing topic interest (approximately 5 minutes). Participants were then instructed to open the packet and read the passage, a 350-word expository article on the reintroduction of wolves to Yellowstone National Park. Participants were given as much time as necessary to complete the reading (approximately 10 minutes). After reading, students were instructed to complete the tasks in the order in which they were presented in the packet. Students first completed the post-reading interest inventory, followed by the multiple-choice test (approximately 5-10 minutes each). As in the original study, the researcher allowed the students as much time as necessary to complete each task, but guided the group to stay at the same pace by beginning each new task at the same time. Next, students were told to read the instructions and begin writing Essay 1. A length of one page was suggested; each essay took no more than 15 minutes to complete. Students began writing Essay 2 at the same time, again with no time limit but a suggested length of

one page and/or 15 minutes. After the essays, the participants completed the final task, the attitude checklist (approximately five minutes). Participants returned the materials, including the topic interest index that was completed before the packets were distributed, to the envelopes. Students affixed their names to the envelopes with removable sticky notes, allowing an assistant to make a notation on the envelope as to each participant's reading ability cohort and gender before removing the names and turning the completed packets over to the researcher. Reading ability cohort designations were determined using the stanine score from the reading comprehension section of the ERB test, a standardized achievement test given by the school earlier in the year.

### **Data Analysis**

Research question #1: Does being given a choice of reading passages affect children's cognitive and/or affective engagement in the task, independent of situational interest, in the same ways that Flowerday, Schraw, and Stevens' (2004) found it did with college students?

Reliability indices were calculated for each of the instruments in this study using Cronbach's alpha. Mirroring the data analysis of the original study, a series of regression analyses were performed using hierarchical entry of the independent variables (topic interest, situational interest, and choice condition) to test a series of hypotheses about elementary students performing a reading task. The first regression analysis used the attitude survey scores as the dependent variable. The predictors were the topic interest score (1-6), and the situational interest score (total points), and the choice condition (0 or 1). The predictors were entered in separate steps to test their relative contributions in accounting for the outcome measures. Three more regression analyses were performed

using the same predictors; the dependent variables were the scores from the multiple choice test, the content essay, and the reaction essay, respectively.

Research question #2: Does being given a choice of reading passages have different effects on the cognitive and/or affective engagement of boys and girls?

An analysis of covariance was run to determine whether the interplay of situational interest, topic interest, and choice was different for boys than it was for girls on the four dependent measures (multiple choice test score, content essay score, reaction essay score, and attitude score).

Research question #3: Does being given a choice of reading passages have different effects on the cognitive and/or affective engagement of children in different reading ability cohorts?

An analysis of covariance was run to determine whether the interplay of situational interest, topic interest, and choice was different for students in the low, medium, and high reading ability cohorts on the four dependent measures (multiple choice test score, content essay score, reaction essay score, and attitude score). The reading ability cohort designation was determined using the stanine score from the ERB reading comprehension test. For the purposes of this study, stanines 1-3 were considered to be the low reading ability cohort; stanines 4-6 were considered to be the middle reading ability cohort; and stanines 7-9 were considered to be the high reading ability cohort.

## CHAPTER IV: RESULTS

### Introduction

Many benefits have been attributed to the practice of giving children choice in their reading material and tasks, including deeper learning, more enjoyment, and increased engagement in the task. Likewise, both situational and topic interest have been found to enhance the learning, enjoyment, and engagement of students. This study attempts to determine whether the benefits that have been attributed to choice or interest are truly attributable to that factor alone – and if so, what kinds of choices or what kinds of interest are most beneficial and should be capitalized on. This study replicates research conducted by Flowerday (2004) on college students, but uses a sample of fourth and fifth grade students to determine if the effects of choice and interest are the same on younger students. It further attempts to determine whether the benefits of either choice or interest vary depending on gender or reading ability.

Research Question One asks whether being given a choice of reading passages affects children's cognitive and/or affective engagement in the task, independent of situational interest, in the same ways that Flowerday, Schraw, and Stevens (2004) found that it did with college students. Research Question Two extends the original study to ask whether being given a choice of reading passages has different effects on the cognitive and /or affective engagement of boys and girls. Research Question Three asks whether being given a choice of reading passages has different effects on the cognitive and/or affective engagement of children in different reading ability cohorts.

Mirroring the original study, a series of regression analyses was performed to answer Research Question One, which asks whether being given a choice of reading packets affects the cognitive and affective engagement of children in the same way it does with college students. Dependent variables included the scores from the multiple choice test, the content essay (essay 1), the reaction essay (essay 2), and the attitude checklist. Predictors included the choice condition (choice or no choice), the topic interest score, and the situational interest score. ANCOVAs were performed to answer Research Questions Two and Three, examining whether gender and reading ability cohort affect the interplay of choice, situational interest, and topic interest for students performing a reading task.

### **Descriptive Statistics**

There were a total of 96 participants in the study, all of whom were fourth and fifth grade students at an independent, co-educational day school in western Pennsylvania. The school's population is primarily from the middle to upper-middle socioeconomic class. Forty-eight of the students were in fourth grade, and forty-eight were in fifth grade. The participants were 53.1% male (N=51) and 46.9% female (N=45). Forty-five of the participants were randomly assigned to the choice group, meaning they were given a choice of reading packet A or B without knowing the contents of the packet. Fifty-one of the participants were randomly assigned to the no-choice group, meaning they were handed either packet A or packet B without being given a choice. The choice group made up 46.9% of the participants, while the no-choice group made up 53.1% of the participants. The groups were approximately equally divided between male/female, choice/no-choice, and fourth/fifth grade.

Students were assigned to the low, middle, or high ability reading cohort based on reading comprehension scores from standardized tests administered by the school within the previous calendar year. For the purposes of this study, stanines 1-3 were considered the low reading ability cohort; stanines 4-6 were considered to be the middle cohort; and stanines 7-9 were considered to be the high ability reading cohort. The low and high reading ability cohorts were each comprised of twenty students, with 20.8% of participants in the low cohort and 20.8% of the participants in the high cohort. The majority of the students (N=56) were in the middle reading ability cohort, which was made up of 58.3% of the study participants.

Table 1 shows the means and standard deviations of the participants' scores on each measure. The total mean for the topic interest score was 4.11 (score range 1-6), showing that the participants as a group came to the task moderately interested in the topic of the reading passage. This is very similar to Flowerday's mean topic interest score of 4.44 among the college-age participants in the original study. The post-reading situational interest scores of the participants had a mean of 30.50 (score range 10-50), indicating that after reading the passage, they were only somewhat interested in the text. Again, this is very similar to original study's mean score of 30.42. The two instruments were designed to measure the similar, but not identical, constructs of topic interest and situational interest as described in the literature (*Hidi, 1990*).

The mean of the scores on the multiple choice test, used as a measure of cognitive engagement, was 6.82 out of ten possible points (range of achieved scores 1-10). As a group, the participants answered approximately 68% of the questions correctly, which is comparable to the scores of the college-age participants in the original study, who

answered 64% of the questions correctly. The mean score on the post-task attitude checklist, used as a measure of affective engagement, was 44.57 (score range 12-60), indicating a moderately positive attitude among participants. This was in line with the mean score of 41.06 in the original study.

The content essay and personal reaction essay were scored using a protocol developed by Schraw et al. (1998) and used by Flowerday (2004) in the original study. The score was comprised of the number of factual (essay 1) and personal (essay 2) responses made, so any number of responses was possible. The content essay scores, used as a measure of cognitive engagement, ranged from 2-9, with a mean of 5.60. The personal reaction essay scores, used as a measure of affective engagement, ranged from 2-7, with a mean of 4.33. The means are lower than those in Flowerday's study (content essay  $M=10.06$ , personal reaction essay  $M=6.74$ ), possibly reflecting the younger age of the participants, for whom essay writing is presumably slower and more laborious. However, in both studies, the participants wrote more about the factual content of the text than they did about their personal reactions to the text.

Reliability for the dependent measures was .93 for the situational interest inventory, .70 for the topic interest inventory, .86 for the attitude checklist, and .52 for the 10-item multiple-choice test. Interrater reliability for the scoring of Essay 1 and Essay 2 was .85 and .89, respectively.



**TABLE 1**  
**Means and Standard Deviations**

Measure	Group					
	Choice (N = 45)		No choice (N = 51)		Total (N = 96)	
	M	SD	M	SD	M	SD
Topic interest	4.27	1.54	3.98	1.75	4.11	1.65
Situational interest	32.56	9.33	28.69	9.61	30.50	9.63
Multiple-choice test	6.76	2.13	6.88	1.84	6.82	1.97
Content essay	5.82	1.61	5.41	1.71	5.60	1.67
Reaction essay	4.47	1.14	4.22	1.15	4.33	1.15
Attitude	47.69	6.81	41.82	9.27	44.57	8.68

Notes: Topic interest score range = 1-6. Situational interest score range = 10-50. Multiple choice test score range = 0-12. Attitude score range = 12-60.

### T-Tests for Research Question One

An independent samples t-test was conducted between the choice and no-choice groups for each variable (Table 2) to explore whether there were statistical differences between the two choice conditions on any measure. There was a significant difference in the attitude scores between the two groups, with choice-making participants showing a significantly more positive attitude toward the reading task than those who did not make a choice ( $p=.001$ ). The choice group had a mean score of 47.69; the no-choice group had a mean score of 41.82. There was also a significant difference in the situational interest scores of the choice/no-choice groups after reading the passage ( $p=.049$ ). The choice group reported a higher situational interest level ( $M=32.56$ ) than the no-choice group. There was no significant difference between the two groups on any of the other measures.

**TABLE 2**  
**Independent Samples T-Tests for Choice Condition**

	t	df	p
Topic interest	.845	94	.400
Situational interest	1.996	94	.049
Multiple-choice test	-.313	94	.755
Content essay	1.205	94	.231
Reaction essay	1.069	94	.288
Attitude	3.493	94	.001

A correlation matrix was created including the measures of topic interest, situational interest, the multiple choice test, the content essay, the personal reaction essay, and the attitude survey (Table 3). To correct for the compounding of Type I error due to testing 15 correlations, an alpha level of .004 was used to determine statistical significance. Table 3 identifies correlations that were below .001 as well as those below .01. The latter alpha level is shown because the Bonferonni method is most stringent in correcting for Type I error.

The correlation between the two types of interest in the present study was .57 and is statistically significant at the .001 level. This supports the assertion that the two types of interest are related although not identical. In the original 2004 Flowerday study, the correlation between topic interest and situation interest was also found to be statistically significant with a correlation of .49. A Fisher's z test was used to determine whether the two correlations were statistically similar. The result ( $z=.768$ ) showed no significant difference in the correlations between topic interest and situational interest in the two studies.

The strongest correlation in both the 2004 study and the current study was between situational interest and attitude. In the current study, situational interest and attitude had a 45% shared variance ( $r=.67$ ), which is significant at the  $p<.001$  level. Topic interest and attitude had a 33% shared variance ( $r=.57$ ). Topic interest and situational interest also had a large shared variance (32%,  $r=.57$ ), significant at the  $p<.001$  level, indicating that the two types of interest are closely related but not identical. Both topic interest and situational interest have previously been found to have a large positive correlation with attitude (Cohen, 1988). These findings are also consistent with the results of the original study, in which the strongest correlations were also among topic interest, situational interest, and attitude.

The original study found that the content essay score was significantly correlated only with the reaction essay ( $r=.32$ ). The current study also demonstrated a significant correlation between the content essay score and the reaction essay score ( $r=.41$ , shared variance 17%). In addition, however, the current study also showed moderately significant correlations between the content essay and topic interest ( $r=.36$ , shared variance 13%); between the content essay and situational interest ( $r=.35$ , shared variance 12%); and between the content essay and attitude ( $r=.46$ , shared variance 20%), all significant at the  $p<.001$  level. The correlation between the content essay and the multiple choice test ( $r=.29$ , shared variance 8%) had a significance value of exactly .004. These findings raise the possibility that the cognitive performance and/or effort of younger students are more greatly influenced by their attitude and interest level than is that of college-age students.

**TABLE 3**  
**Correlation Coefficients and Significant Values among Instruments**

Measure	TI	SI	MC	CE	RE	ATT
Topic Interest (TI)	--	.57** <.001	.20 .051	.36** <.001	.20** .056	.57** <.001
Situational Interest (SI)		--	.15 .143	.35** <.001	.05 .606	.67** <.001
Mult.Choice Test (MC)			--	.29* .004	.44** <.001	.11 .279
Content Essay (CE)				--	.41** <.001	.46** <.001
Reaction Essay (RE)					--	.18 .072

\*p<.01      \*\*p<.001

Note: TI=Topic Interest, SI=Situational Interest, MC=Multiple Choice Test, CE=Content Essay, RE=Reaction Essay, ATT=Attitude Score

### Regressions for Research Question One

Regression analyses were performed using hierarchical entry of independent variables to test a sequence of hypotheses about the factors influencing the cognitive and affective engagement of students performing a reading task. The analyses performed were modeled after the original study in order to compare Flowerday's findings using a college-age sample with this researcher's findings using an elementary-age sample. For each of the four dependent measures (multiple-choice test, attitude, essay content, and essay reaction), the three independent variables (topic interest, situational interest, and choice condition) were entered in separate steps to test their relative contributions in accounting for the outcome measures. At Step 1, topic interest was entered. At Step 2,

situational interest was added to determine what additional contributions it made to the prediction of the outcome. Finally, at Step 3, choice was added to the equation to determine whether it made any additional contribution to prediction of the outcome after the effects of the two interest measures had been taken into consideration.

The four hierarchical regression models analyzed the effect of choice on attitude, multiple choice, essay content, and essay reaction after accounting for topic interest and situational interest. Table 4 presents the summaries of the results of the regression analyses.

**TABLE 4**  
**Summary of Regression Models: Research Question One**

Predictor	R	R <sup>2</sup>	F	<i>p</i>	R <sup>2</sup> change	Fchange	<i>p</i>
<b>Attitude</b>							
Topic interest	.572	.327	45.674	<.001	.327	45.674	<.001**
Situational interest	.708	.501	46.626	<.001	.174	32.347	<.001**
Choice	.740	.548	37.127	<.001	.047	9.553	.003*
<b>Mult. Choice Test</b>							
Topic interest	.200	.040	3.910	.051	.040	3.910	.051
Situational interest	.205	.042	2.035	.136	.002	.194	.661
Choice	.213	.045	1.459	.231	.003	.337	.563
<b>Content Essay</b>							
Topic interest	.360	.129	13.967	<.001	.129	13.967	<.001**
Situational interest	.402	.162	8.963	<.001	.032	3.576	.062
Choice	.406	.165	6.069	.001	.004	.398	.530
<b>Reaction Essay</b>							
Topic interest	.196	.038	3.749	.056	.038	3.749	.056
Situational interest	.208	.043	2.107	.127	.005	.486	.487
Choice	.235	.055	1.785	.155	.012	1.135	.289

\**p*<.01      \*\**p*<.001

Table 4 contains the results for all four regressions. In the first model for the attitude dependent variable, topic interest was found to be significantly related to attitude,  $R=.572$ ,  $F(1, 94) = 45.674$ ,  $p < .001$ . At Step 2, situational interest was added and resulted in a significant increment in  $R^2$  of .174,  $F_{\text{change}}(1, 93) = 32.347$ ,  $p < .001$ . At the third step in the hierarchy, choice was added as a predictor and resulted in an increment in  $R^2$  (.047) that is significant at  $p < .01$  but not at  $p < .001$ ,  $F_{\text{change}}(1, 92) = 9.553$ ,  $p = .003$ . Table 5 shows that the strongest independent variable for this regression was situational interest ( $\beta = .457$ ). As situational interest increased, attitude increased. There is also a positive relationship between topic interest and attitude ( $\beta = .293$ ); attitude increased along with topic interest. There is a negative relationship between choice and attitude ( $\beta = -.221$ ), indicating that a more positive attitude is related to having made a choice in the study; that is, participants in the choice group reported a more positive attitude about the task.

The second regression model considered the multiple-choice test. As can be seen in Tables 4 and 5, none of the predictors had a significant relationship with the outcome variable.

The third regression model examined the variance in content essay responses for the predictors. At the first step, topic interest was a significant predictor,  $R = .360$ ,  $F(1, 92) = 13.967$ ,  $p < .001$ . Situational interest and choice did not explain any additional variance. The strongest independent variable in this regression was topic interest ( $\beta = .238$ ). Participants who indicated more interest in the topic of the text before reading tended to give more essay responses related to the content of the passage. Although situational interest had a moderate positive relationship with the content essay

score (beta=.205) and choice had a negative relationship with the content essay score (beta = -.061), these two predictors were not significant.

The last regression model examined the variance explained by the predictors for the essay reaction score. As can be seen in Tables 4 and 5, none of the predictors had a significant relationship with the outcome variable.

**TABLE 5**  
**Unstandardized and Standardized Betas for Regression Models: Research Question One**

Predictor	b	SE	B	t	p
<b>Attitude</b>					
Topic interest	1.536	.448	.293	3.428	.001
Situational interest	.412	.078	.457	5.265	.000*
Choice	-3.831	1.239	-.221	-3.091	.003
<b>Multiple Choice test</b>					
Topic interest	.199	.148	.166	1.342	.183
Situational interest	.014	.026	.068	.539	.591
Choice	.238	.409	.060	.580	.563
<b>Content Essay</b>					
Topic interest	.240	.117	.238	2.052	.043
Situational interest	.035	.020	.205	1.735	.086
Choice	-.204	.324	-.061	-.631	.530
<b>Reaction Essay</b>					
Topic interest	.173	.086	.249	2.022	.046
Situational interest	-.013	.015	-.111	-.884	.379
Choice	-.253	.237	-.110	-1.065	.289

\*p<.001

## ANCOVAs for Research Question Two

ANCOVAs were conducted to determine whether the interplay of situational interest, topic interest, and choice was different for boys than for girls on the four dependent variables (multiple choice test, attitude, content essay, reaction essay). In each ANCOVA there were two covariates (topic interest and situational interest) and two independent variables (gender and choice). Table 6 shows that the number of boys and girls in the study was roughly equal (male N=51, female N=45). Likewise, the participants were divided almost equally between the choice and no-choice groups (choice N=45, no-choice N=51). The ANCOVAs all satisfied Levene's tests for homogeneity of variance (multiple choice  $p=.149$ ; attitude  $p=.070$ ; content essay  $p=.926$ , reaction essay  $p=1.00$ ).

**TABLE 6**  
**Descriptive Statistics for Gender ANCOVAs**

Measure	Group				Group			
	Choice		No choice		Male		Female	
	M	SD	M	SD	M	SD	M	SD
Mult.Choice Test	6.76	2.13	6.88	1.84	6.96	2.14	6.67	1.77
Attitude	47.69	6.81	41.82	9.27	42.27	8.71	47.18	7.97
Content Essay	5.82	1.61	5.41	1.71	5.33	1.68	5.91	1.62
Reaction Essay	4.47	1.14	4.22	1.15	4.25	1.11	4.42	1.20



Tables 7 through 10 present the outcomes of the four ANCOVAs. The result of most interest is the interaction of choice and gender. Gender was not a significant factor in multiple choice scores, attitude scores, content essay scores, or reaction essay scores. It appears that choice-making does not have a significantly different effect on boys than it does on girls. The only statistically significant result was that choice had a significant effect when the attitude survey scores were the dependent variable ( $p=.007$ ). The choice group, both male and female participants, reported a more positive attitude toward the task. The gender x choice interaction was not significant for any of the dependent variables.

**TABLE 7**  
**ANCOVA on the Multiple Choice Dependent Variable**

	Mean Square	F	df	<i>p</i>	Partial Eta Sqd
Intercept	223.539	57.755	1	.000	.391
Topic interest	8.723	2.254	1	.137	.024
Situational interest	1.150	.297	1	.587	.003
Gender	4.811	1.243	1	.268	.014
Choice condition	.517	.134	1	.716	.001
Gender*choice cond.	.076	.020	1	.889	.000
Error	3.870		90		
Corrected total			95		

**TABLE 8**  
**ANCOVA on the Attitude Dependent Variable**

	Mean Square	F	df	<i>p</i>	Partial Eta Sqd
Intercept	5317.359	155.195	1	.000	.633
Topic interest	358.045	10.450	1	.002	.104
Situational interest	947.303	27.649	1	.000	.235
Gender	74.610	2.178	1	.144	.024
Choice condition	256.937	7.499	1	.007*	.077
Gender*choice cond.	72.779	2.124	1	.148	.023

**TABLE 9**  
**ANCOVA on the Content Essay Dependent Variable**

	Mean Square	F	df	<i>p</i>	Partial Eta Squd
Intercept	100.421	41.484	1	.000	.316
Topic interest	8.847	3.655	1	.059	.039
Situational interest	6.885	2.844	1	.095	.031
Gender	1.579	.652	1	.421	.007
Choice condition	.452	.187	1	.667	.002
Gender*choice cond.	1.600	.661	1	.418	.007
Error	2.421		90		
Corrected total			95		

**TABLE 10**  
**ANCOVA on the Reaction Essay Dependent Variable**

	Mean Square	F	df	<i>p</i>	Partial Eta Squared
Intercept	122.242	93.171	1	.000	.509
Topic interest	4.905	3.739	1	.056	.040
Situational interest	.966	.736	1	.393	.008
Gender	.039	.030	1	.863	.000
Choice condition	1.379	1.051	1	.308	.012
Gender*choice cond.	.327	.249	1	.619	.003
Error	1.312		90		
Corrected total			95		

### ANCOVAs for Research Question Three

Research question three asks whether students of different reading abilities respond differently to choice-making. ANCOVAs were conducted to determine whether the effect of choice was different for students in the low, medium, and high reading cohorts on the four dependent variables (multiple choice test, attitude, content essay, reaction essay) after removing the effects of situational interest and topic interest. In

each ANCOVA there were two covariates (topic interest and situational interest) and two independent variables (reading ability cohort and choice). The low reading ability cohort was made up of 20.8% of the participants (N=20). The middle reading ability cohort was the largest, made up of 58.3% of the participants (N=56). The high reading ability cohort was made up of 20.8% of the participants (N=20). The ANCOVAs all satisfied Levene's tests for homogeneity of variance (multiple choice  $p=.241$ ; attitude  $p=.496$ ; content essay  $p=.552$ , reaction essay  $p=.908$ ).

**TABLE 11**  
**Descriptive Statistics for Reading Cohort ANCOVAs**

	Reading Ability Cohort						Choice Condition			
	Low		Medium		High		Choice		No Choice	
	M	SD	M	SD	M	SD	M	SD	M	SD
Mult. Choice Test	5.40	1.93	6.82	1.84	8.25	1.29	6.76	2.13	6.88	1.84
Attitude	41.95	9.75	45.48	8.40	44.65	8.22	47.69	6.81	41.82	9.27
Content Essay	4.65	1.50	5.71	1.51	6.25	1.92	5.82	1.61	5.41	1.71
Reaction Essay	3.50	1.10	4.39	1.04	5.00	1.03	4.47	1.14	4.22	1.15

The result of most interest is the interaction of choice and reading ability cohort. Reading ability cohort was found to be a significant predictor of performance on the multiple choice test ( $p<.001$ ), the content essay ( $p=.014$ ), and the reaction essay ( $p<.001$ ). Students of higher reading ability achieved higher scores on each of the performance measures, presumably reflecting their greater ease with reading and writing tasks.

Students of different reading ability cohorts did not show a significant difference in their response to the choice condition with regard to any of the dependent variables. Again, however, participants in the choice group reported a significantly more positive attitude regardless of their reading ability cohort ( $p=.005$ ). Being given a choice had a positive effect on students' attitude toward the task, but students' reading ability did not affect their attitude scores.

**TABLE 12**  
**ANCOVA on the Multiple Choice Dependent Variable**

	Mean Square	F	df	<i>p</i>	Partial Eta Sqd
Intercept	252.868	81.414	1	<.001	.481
Topic interest	1.382	.445	1	.506	.005
Situational interest	3.066	.987	1	.323	.011
Reading cohort	38.331	12.341	2	<.001**	.219
Choice condition	1.446	.466	1	.497	.005
Reading*choice cond.	2.392	.770	2	.466	.017
Error	3.106		88		
Corrected total			95		

**TABLE 13**  
**ANCOVA on the Attitude Dependent Variable**

	Mean Square	F	df	<i>p</i>	Partial Eta Sqd
Intercept	5121.667	142.021	1	<.001	.617
Topic interest	327.596	9.084	1	.003	.094
Situational interest	991.075	27.482	1	<.001	.238
Reading cohort	18.572	.515	2	.599	.012
Choice condition	296.681	8.227	1	.005*	.085
Reading*choice cond.	10.642	.295	2	.745	.007
Error	36.063		88		
Corrected total			95		

**TABLE 14**  
**ANCOVA on the Content Essay Dependent Variable**

	Mean Square	F	df	<i>p</i>	Partial Eta Squd
Intercept	97.719	43.454	1	<.001	.331
Topic interest	6.221	2.767	1	.100	.030
Situational interest	8.518	3.788	1	.055	.041
Reading cohort	9.994	4.444	2	.014*	.092
Choice condition	.139	.062	1	.804	.001
Reading*choice cond.	.830	.369	2	.692	.008
Error	2.249		88		
Corrected total			95		

**TABLE 15**  
**ANCOVA on the Reaction Essay Dependent Variable**

	Mean Square	F	df	<i>p</i>	Partial Eta Squd
Intercept	126.882	114.485	1	<.001	.565
Topic interest	2.494	2.250	1	.137	.025
Situational interest	.439	.396	1	.531	.004
Reading cohort	9.234	8.332	2	<.001**	.159
Choice condition	.607	.547	1	.461	.006
Reading*choice cond.	.441	.398	2	.673	.009
Error	1.108		88		
Corrected total			95		

## CHAPTER V: DISCUSSION

### Introduction

The purpose of this study was to help illuminate the relative effects of choice and interest on the affective and cognitive engagement of children in reading tasks. Children naturally choose that in which they already have a greater interest, making it difficult to disentangle the effects of choice and interest on their attitude and performance. Much of the research on the effects of choice has failed to control for the confounding effects of interest. This study continued a line of inquiry that attempts to distinguish between the two, specifically by replicating and extending a 2004 study by Flowerday, Schraw, and Stevens.

Research Question One asked whether a study of elementary school students would produce the same results as Flowerday's study of college students, or whether the findings would be different in a younger population. Research Question Two asked whether choice and interest interact differently among boys and girls, as some studies suggest they might (Schiefele, Krapp, & Winteler, 1992; D'Ailly, 2004). Research Question Three examined whether students of different reading abilities respond differently to choice, as many teachers believe they do (Flowerday & Schraw, 2000).

Mirroring the design of the original study (Flowerday, Schraw, & Stevens, 2004) with the exception of the participants' age, ninety-six fourth and fifth grade students were either given a choice between Packets A and B, or they were randomly assigned Packet A or B. They completed a topic interest inventory that included the title of an expository article that, unbeknownst to the participants, was contained in every packet. Participants

then read the article and completed a situational interest inventory, a brief multiple choice test on the article's content, a content response essay, a personal reaction essay, and an attitude survey. Responses were analyzed with regard to differences among the choice condition, gender, and reading ability cohort of the participants.

### **Hypotheses of the Researcher**

Most researchers on the effects of choice agree that choice has a significant positive effect on affective engagement and attitude; there is less evidence that choice actually has a positive effect on cognitive engagement (Schraw et. al., 1998; Sweet, Guthrie, & Ng, 1998; Flowerday & Schraw, 2003). The original 2004 study which the current research sought to extend is part of a line of inquiry that challenges previous research on choice, proposing that the effects attributed to choice are actually attributable to interest instead (Schraw, Flowerday, & Reisetter, 1998; Flowerday, 2000; Flowerday & Schraw, 2003; Flowerday, Schraw, & Stevens, 2004). The 2004 study found that choice-making itself was not a predictor of affective or cognitive engagement.

Situational interest in a reading task did increase attitude and affective engagement; neither topic interest nor the act of making a choice had a significant effect on either cognitive or affective engagement.

This researcher speculated that perhaps the interaction of choice and interest might be different in a population younger than the 2004 study's college age participants. Some studies have found that children and adults differ in how the interest level of reading material affects the reader's attention to and recall of the material (Anderson, Shirey, Wilson, & Fielding, 1984; Shirey & Reynolds, 1988). Adults' interest level had a smaller effect on their performance than did children's, perhaps indicating that adults rely

less on increased attention generated by interest as a learning strategy than do younger children. Choice has also been shown to affect different populations in different ways. For instance, cultural beliefs and attitudes affect the motivational properties of choice-making in children (Iyengar & Lepper, 1999).

Gender has been shown to be a factor in the effects of interest as well. Girls tend to have a broader range of topic interests and higher levels of situational interest across the board than do boys (Ainley, Hillman, & Hidi, 2002; D'Ailly, 2004). However, boys' comprehension and cognitive performance appears to be more strongly influenced by their level of interest in the material (Ainley, Hillman, & Hidi, 2002; Oakhill & Petrides, 2007). This researcher theorized that in light of the gender differences demonstrated with regard to the effects of interest, perhaps gender would be a factor in the interplay of choice and interest as well.

This researcher is not aware of existing research that examines the effects of students' reading ability on their choice-making behaviors and reactions. However, Flowerday and Schraw (2000) report that teachers believe their more capable students benefit more from being given choices in their learning than do less capable students. Teachers acknowledge giving more choices and different choices to students of higher ability. This study attempted to either support or refute those beliefs in the absence of any previous research findings.

### **Discussion of the Results**

As in the original study, situational interest was the most powerful predictor of a positive attitude toward the task. Students who indicated that they had a high level of situational interest in the reading task also had a more positive attitude toward the task.



Interestingly, both topic interest and choice appeared to have a stronger influence on the attitude of the younger participants than they did on the college students. The original study found no significant effect on attitude for topic interest or choice after situational interest was controlled for. In this study, topic interest had a small but statistically significant effect on attitude, even when considered along with the more powerful situational interest. The choice condition had an effect that reached statistical significance at the .01 level, although not at the more stringent .001 level. Students who were given a choice of packet reported a somewhat more positive attitude than did students who were not given a choice.

These findings indicate that both topic interest and the act of making a choice may be more important to elementary students than to college students. In the original study, topic interest was a predictor of affective engagement when considered alone, but the effect largely disappeared when considered along with the more powerful situational interest. Flowerday and Schraw (2004) speculated that perhaps topic interest may serve to attract a reader's attention to a text, but interest would not be sustained due to redundant information or poor presentation. Perhaps children, who presumably have less knowledge than adults even about topics that interest them, are more likely to have their attention sustained by an article about a topic in which they expressed initial interest. It is also possible, as Flowerday and Schraw suggested, that participants had difficulty making accurate ratings because they lacked adequate familiarity with the topics presented. In any case, it appears that topic interest can be used as a motivator for elementary students, although situational interest is both more powerful and more easily manipulated in the classroom.

Of particular interest is the fact that making a choice, even a blind choice of packet A or packet B, had some positive effect on elementary students' attitude toward the task. The effect was small, reaching statistical significance only at the .01 level, but the results are a marked difference from those found by Flowerday and Schraw with a college age population. The children in the choice group also had significantly higher situational interest scores than did the no-choice group.

The finding that choice had a greater effect on the children in this study than it did on the college students in the original study is consistent with prior research. In a 2008 meta-analysis of research findings on the effects of choice on intrinsic motivation, Patall et al. found that choice was more effective as a motivator for children as compared to adults. Another meta-analysis of research on the effects of extrinsic rewards on intrinsic motivation (Deci et al., 1999) found that rewards have a more detrimental effect on children than on adults. Perhaps children, who have many fewer opportunities to make choices throughout their daily lives than do adults, value the opportunity to make a choice more than adults do. The theory of establishing operations asserts that a reinforcer will be more powerful to the extent that an organism has been deprived of that reinforcer (Michael, 1993). Thus, it is possible that the opportunity to make a choice is a less powerful motivator for adults who experience a smaller degree of choice deprivation in daily life than do children. It is also possible that the opportunity to make a choice in a schoolwork setting introduced enough of an element of novelty that it piqued their interest in a way that it did not for adults. This research supports the notion that children react differently to being offered choices than adults do. It appears that for children,

choice itself may in fact be a motivating factor to some extent, although as previously stated, situational interest has a far more robust effect on affective engagement.

Another difference that was found in the younger population was the correlation of interest and attitude with performance on the content essay. In the original study, the only significant correlation with the content essay score was the reaction essay score. College-age participants who produced more information in the content essay also made more comments in the personal reaction essay. Among the younger population, however, a higher content essay score was correlated with higher topic interest, higher situational interest, and higher attitude scores as well as with a higher reaction essay score. The multiple choice scores did not increase with more positive attitude or heightened interest, indicating that these students did not have a significantly higher comprehension or recall of the text. However, students with more positive attitude and heightened interest did write more in the content essay, demonstrating greater persistence and engagement even if it did not reflect greater learning.

The ego depletion theory proposed by Baumeister et al. (1998) would suggest that students given a choice of packets would demonstrate less persistence and produce fewer responses on the essay tasks than those assigned a packet, rather than more. This theory suggests that self-regulation is a limited resource, and acts of volition such as making a choice deplete inner resources, leaving less energy for subsequent tasks. Moller, Deci, and Ryan (2006), however, counter that not all choices are ego-depleting. They differentiate between controlled choice, in which one feels pressured to make a certain choice, and autonomous choice, in which one feels free to make a choice based solely on one's own needs. Whereas a controlled choice may be ego-depleting, an autonomous

choice is energizing. In this study, participants were not pressured into selecting one packet or another. Thus, the choice was an autonomous one and may have served to energize with regard to task persistence rather than to deplete, resulting in a greater number of essay responses than the no-choice group.

These results are also consistent with those of Patall, Cooper, and Wynn (2010), who found that students given a choice of homework options completed more homework than their no-choice peers. The choice group in that study demonstrated greater interest, more positive attitude, and more task persistence on homework of their choice compared to peers who were assigned homework tasks. Also consistent with the results of the current study is the fact that the choice students' homework was not necessarily done better than their no-choice peers, in spite of the fact that they completed more of it; choice affected task persistence but not effort or accuracy.

Gender did not have a significant effect on either cognitive or affective engagement in the task. Both boys and girls in the choice group reported a more positive attitude toward the task than the children in the no choice group. However, there were no significant difference between boys and girls on any measure. There was no significant interaction between choice and gender, indicating that boys and girls did not respond differently to the provision of choice.

There are few studies that have examined the effects of choice specific to gender. Patell, Cooper, and Robinson (2008), however, observe in their meta-analysis of choice research that there is some indication that choice may have a greater effect for girls than for boys. The current study did not find a gender difference for choice.

There is much research that suggests that gender differences exist with regard to interest. Girls tend to report higher levels of topic and situational interest across a broader range of subjects than do boys (Oakhill & Petrides, 2007). Boys' performance appears to be more closely linked to their interest level than is that of girls (D'Ailly, 2004). Neither assertion was evident in the current research. Although it is known from prior research that gender differences exist with regard to interest and motivation, this study did not identify any gender differences with regard to either choice or reading ability.

Predictably, students' reading ability had a strong effect on their performance on the multiple choice test, the content essay, and the reaction essay. Students of greater reading ability performed better on these academic tasks than did students of lower reading ability. Presumably the increased number of essay responses produced by the stronger readers reflects their greater ease with reading and writing tasks. However, there was no significant difference among reading cohorts on attitude scores, and there was no significant interaction between choice and reading ability.

Chen and Darst (2002) have proposed that interest level is mediated to some extent by skill level or self-efficacy for a task. Children are attracted to activities that they consider to be within their ability, and have less interest in activities at which they expect to perform poorly. However, students of different reading abilities demonstrated similar levels of interest and a similar attitude toward the tasks in the current study. Reading ability level did not appear to affect interest or attitude. Flowerday and Schraw (2000) report that teachers believe their more capable students benefit more from being given choices in their learning due to greater maturity, better decision-making skills, and

more prior knowledge, whereas lower achieving students need more structure in order to learn best. This research did not support the anecdotal belief that students of different abilities react differently to choice. In this study, more capable students did not respond more positively in any way to being given a choice than did lower achieving students.

This research, like the 2004 study, shows that situational interest has the strongest positive effect on students' attitude and engagement. Whereas the 2004 study found that topic interest and choice had no significant effect on college-age students' attitude and engagement, this study found that topic interest and choice does have some effect on children's attitude and engagement. Although the positive effects are much smaller than those of situational interest, the act of making a choice does seem to matter somewhat to children in a way that it does not for adults.

### **Limitations of the Study**

The primary limitation of this study is the fact that the choice given was only a blind choice between two unknown options. Reeve, Nix, and Hamm (2003) propose that there is a distinction between action choices and option choices. Action choices are personally meaningful choices that tap into locus of control or volition, while option choices such as "pick A or B" provide the perception of choice without being meaningful. Much of the research that has found motivational benefits of choice has been based on action choices rather than option choices. Eccles and Wigfield's expectancy-value model (2000) regards choice as a motivational process in which people weigh the perceived benefits and costs of various choices. This is not possible to do in a blind option choice. Deci and Ryan (2000) describe choice as a motivating factor if it supports an individual's need for competence, autonomy, and relatedness. A blind choice

cannot be made in support of these individual needs. Thus, it is quite possible that the choice provided in this study was not personally meaningful enough or autonomy-supportive enough to tap into the full motivational potential of choice-making.

It is also possible that the effects of choice and interest are still entangled in that the novelty of making a choice may have, in itself, piqued the students' interest enough to tap into the motivational properties of situational interest. In that case, the benefits attributed to choice-making would still be more accurately attributed to enhanced interest. The fact that they were given a choice of packets could have served to raise students' interest in the task, even though the blind choice protected them from choosing material that was of particular interest to them.

Finally, the sample population itself was limiting in that it was a fairly restricted sample. The fourth and fifth graders who participated in the study were all students at an independent day school. Their attendance at that school indicates that they came from families for whom education is valued highly enough that they made an effort to seek out and apply to an independent school. It also indicates that the great majority of the sample is likely from a socio-economic class that can afford the tuition of an independent school. Thus, the sample in this study may not be representative of a broader population of children from different socio-economic or educational backgrounds.

### **Implications for Teaching**

Professional literature is full of assertions that providing young students with choices in their learning has dramatic effects on their effort, engagement, and attitude. Teachers believe that choice is important and beneficial for students, especially higher achieving students. Many classroom practices focus on ways to build choice into the

daily life of elementary students. Those beliefs are only partially supported by this research.

Unlike college age students, elementary students do appear to benefit somewhat from being given choices in their work, independent of the effects of interest. Participants who were given a choice of working with packet A or packet B did report a more positive attitude toward the task, even after interest was controlled for. Participants in the choice group also reported a higher level of situational interest. It follows that it may be worth teachers' time to provide opportunities for choice in the classroom in some situations, particularly when the goal is to engage students by fostering a more positive attitude and piquing their interest in a task. However, care must be taken to remember that choice is not necessarily a motivating factor for students of all cultures (Iyengar & Lepper, 1999) and that having more choices is not necessarily better (Iyengar & Lepper, 2000).

Teachers attempting to use choice as a motivator in their classrooms need to be aware that there are many variations on choice, not all of which have the positive effects that teachers are seeking. The self-regulatory model asserts that some choices can be ego-depleting in that choice-making draws on limited resources of volition; thus perhaps choices that require too much effort are demotivating. Research has shown that instructionally irrelevant choices appear to have stronger motivational properties than instructionally relevant ones (Baumeister et al., 1998). Perhaps this is because less effortful choices are less ego-depleting, or perhaps it is because choices perceived as irrelevant by adults are nonetheless meaningful to children in that they support expression of personal identity. Self-determination theory asserts that whereas controlling choices



are demotivating, autonomous choices are energizing and motivating. Patall et al. (2010) found that the being given a choice in the classroom, in and of itself, provides a perception of autonomy-supportive teacher behavior that can bring about positive effects. Clearly, more research is needed to differentiate effectively among the various types and applications of choice available to teachers.

It should be noted that even in this study, which did find some motivational influence of choice for children, the positive effects of choice were dwarfed by the effects of situational interest in the task. Situational interest, defined as a short-term, situation-specific interest, was a far more powerful predictor of positive attitude and engagement than was choice-making. While choice in the classroom appears to have a positive effect on elementary students, teachers' efforts would be more efficiently spent on increasing the situational interest in classroom tasks than in focusing solely on creating opportunities for choice.

### **Implications for Further Research**

It is clear that much more research is needed before a comprehensive model of choice can be developed to guide classroom practice. We need to understand what types of choices are meaningful enough to students to have motivational properties. Clearly, the effects of choice vary with the type of choice, the characteristics of the one making the choice, and the conditions under which the choice is made. It appears that in order to be most effective as a motivational tool, a choice must be autonomous rather than controlling; personally relevant but not overly burdensome to make; and somewhat limited in scope and number. It is also known that choice can be threatening, demotivating, or even perceived as disrespectful by students of different cultures (Iyengar

& Lepper, 1999). We need to better understand how culture, gender, age, and other factors affect the motivational properties of choice. Even more importantly, there needs to be a clearer and more specific understanding of exactly what is meant by “choice” when discussing its uses and implications.

Because situational interest has been repeatedly shown to be a powerful motivator, research is needed to explore how this type of interest can be created and manipulated in the classroom. What factors raise the interest level of students, and what cognitive and affective benefits result? While it is clear that heightened situational interest enhances attitude and affective engagement, it is less clear how it can be used to increase cognitive engagement and performance. The end goal is to promote student learning; while attitude and engagement play into that, we need to understand how enhancing and exploiting situational interest can lead to cognitive benefits that result in more powerful learning and performance.

It appears that situational interest can be a powerful tool in the classroom. Choice-making, under the right conditions, may have some benefit for young children even apart from interest inherent in what they are choosing. Future research will continue to explore the interplay of choice and interest in order to capitalize on their combined and respective benefits for attitude, engagement, and learning. As the research base grows, we will move closer to a comprehensive model of choice that can be applied in light of specific contextual factors such as age, gender, reading ability, and culture.

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## **Appendix A**

### **Assent to Participate in a Research Study**



# DUQUESNE UNIVERSITY

600 FORBES AVENUE ♦ PITTSBURGH, PA 15282

## ASSENT TO PARTICIPATE IN A RESEARCH STUDY

You are being asked to participate in a research study that will help educators learn about how to be better teachers. The study is trying to figure out whether making choices and reading about topics that are interesting to them helps students learn better. Your parents have also been told about the study. Their written permission is required for you to participate in the study.

If you agree to participate in the study, you will spend about one hour of your language arts class doing a reading task. Some students will get to choose a packet of work, and others will be assigned a packet of work. Both packets contain a short reading passage and several sets of questions. You will answer questions about your interests, about the passage, and about how you feel about participating in the study. The whole job will take less than an hour.

Your name will be removed from your packet of work before the researcher sees it. The researcher conducting the study will not know who completed which packet. Your teachers will not know who participated in the study. They will not see your work from the study, and the work you do in the study will not effect your language arts grade at all. Your ERB reading comprehension score will be added to your packet, but the researcher will not know whose score it is.

**Yes, I agree to participate in this research study. I understand that I may change my mind at any time and that my grades will not affected by my work on this task.**

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Participant's Signature

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Date

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Researcher's Signature

---

Date

## **Appendix B**

### Consent to Participate in a Research Study



# DUQUESNE UNIVERSITY

600 FORBES AVENUE ♦ PITTSBURGH, PA 15282

## CONSENT TO PARTICIPATE IN A RESEARCH STUDY

**TITLE:** Is it Choice, or is it Interest? The Effect of Choice on the Cognitive and Affective Engagement of Elementary Students Performing a Reading Task

**INVESTIGATOR:** Jerilyn Scott  
145 Pilgrim Drive, Sewickley, PA 15143  
(412) 818-5218    jscott@sewickley.org

**ADVISOR:** Dr. Derek Whordley  
Duquesne University School of Education  
(412) 897-3464

**SOURCE OF SUPPORT:** This study is being performed as partial fulfillment of the requirements for the doctoral degree in Instructional Leadership at Duquesne University.

**PURPOSE:** Your child is being asked to participate in a research project that seeks to investigate the influence of choice and interest on students' engagement in reading tasks. Students will be asked to spend approximately one hour of their language arts time on the task. Half of the students, selected at random, will be given a choice of working with Packet A or Packet B; the other half will be assigned one of the packets. All participants will complete a questionnaire rating their interest in various topics; read a brief non-fiction passage written at a fourth grade reading level; complete a questionnaire rating their interest in the passage; answer 10 multiple choice questions about the passage; write a response telling what they learned from the passage; write a response giving their personal reactions to the passage; and complete a

questionnaire about their feelings about participating in the study. The total time required will be less than one hour. Participation in the study is voluntary and will have no impact on their language arts grade; teachers will not know who participates in the study. The Lower School Administrative Assistant will affix your child's most recent ERB reading comprehension score and gender to the packet while removing any identifying information. The researching will not be able to associate your child's name with his/her work from the study or his/her ERB scores.

These are the only requests that will be made of your child.

**RISKS AND BENEFITS:**

The tasks involved in the study are similar to reading and writing tasks done in the classroom on a daily basis. There are no risks to the students greater than those encountered in everyday life.

**COMPENSATION:**

No compensation will be provided for participation in the study, nor is there any cost to the participants.

**CONFIDENTIALITY:**

No identity will be available to the researcher in the data analysis. Your child's name will never appear on any survey, research instruments, or ERB score reports. All written materials and consent forms will be stored in a locked file in the researcher's home. Your child's response(s), including ERB reading comprehension scores, will only appear in statistical data summaries with no identifiers. All materials will be destroyed at the completion of the research.

**RIGHT TO WITHDRAW:**

Your child is under no obligation to participate in this study. You and your child are free to withdraw your consent to participate at any time.

**SUMMARY OF RESULTS:**

A summary of the results of this research will be supplied to you, at no cost, upon request.

**VOLUNTARY CONSENT:**

I have read the above statements and understand what is being requested of my child. I also understand that my child's participation is voluntary and that I am free to withdraw my consent at any



time, for any reason. On these terms, I certify that I am willing to grant my permission for my child to participate in this research project.

I understand that should I have any further questions about my participation in this study, I may call the researcher (Jerilyn Scott, 412-818-5218), her advisor (Dr. Derek Whordley, 412-897-3464), or the Chair of the Duquesne University Institutional Review Board (Dr. Paul Richer, 412-396-6326) at any time.

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Participant's Signature

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Date

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Researcher's Signature

---

Date

## **Appendix C**

### Topic Interest Inventory

## Topic Interest Inventory

Below is a list of articles that you may be asked to read later in this study. Please indicate how interested you are in these topics. Use the rating scale provided below.

6 = Very much interested

5 = Moderately interested

4 = Slightly interested

3 = Slightly uninterested

2 = Moderately uninterested

1 = Very much uninterested

- \_\_\_\_\_ 1. Tidepools: A Slice of Ocean Life
- \_\_\_\_\_ 2. Training Service Monkeys: Not Just Monkeying Around
- \_\_\_\_\_ 3. The Creation of the Appalachian Trail
- \_\_\_\_\_ 4. Tower Power: The Eiffel Tower
- \_\_\_\_\_ 5. Racing for the Yellow Jersey: The Tour de France
- \_\_\_\_\_ 6. Peregrine Falcons in the City
- \_\_\_\_\_ 7. What a Thrill! The First Roller Coasters
- \_\_\_\_\_ 8. Quilt Codes: Keys to the Underground Railroad
- \_\_\_\_\_ 9. Restoring Nature's Balance: Reintroducing Wolves to Yellowstone
- \_\_\_\_\_ 10. The Johnstown Flood: Flood of the Century

## **Appendix D**

Text

## Restoring Nature's Balance: Reintroducing Wolves to Yellowstone

If you were to take a trip to Yellowstone National Park, there is a good chance that you would be able to catch a glimpse of a wolf during your visit. More than 250 wolves live in Yellowstone National Park today. But if you had visited just a few years ago, you would not have had a chance to see one of these beautiful, independent creatures.

Between 1926 and 1995, there were no wolves living in Yellowstone. Because wolves did live there in the past, scientists decided to try to bring them back to the park. In 1995, the United States Fish and Wildlife Service captured 14 wolves in Canada and released them in the park. A year later, they caught and released 17 more wolves. By the third year of the program, 64 wolf pups had been born. The wolves were breeding and raising their young even more quickly than the scientists had hoped!

Today, scientists say that Yellowstone National Park has the major predators that it once had before humans interfered. You might wonder why animals that hunt and kill other animals are so important, but everything in nature has a role to play. Think of nature as a see-saw that always wants to be balanced. A big change in nature will cause the "see-saw" to become unbalanced. Human beings, who believed wolves were a dangerous annoyance, caused things to go out of balance at Yellowstone.

Scientists call wolves one of the keystone species. This means that many other plants and animals depend on them. Some scientists believe that wolves affect as many as 25 other species at Yellowstone. For example, wolves mostly hunt elk and deer.

Other animals that live in the area eat the leftover meat wolves leave behind. This means that those animals may eat fewer plants. More plants grow, and they may be larger than before. This provides shelter for some animals and insects.

At Yellowstone, the environment began to change not long after the wolves were brought back. It is quickly becoming more like it was hundreds of years ago. Many people have heard about the program and are interested to hear how the wolves are doing. Scientists are glad that more people are learning about endangered species and how important even a single type of animal can be to the environment.

## **Appendix E**

### Situational Interest Inventory

## Situational Interest Inventory

### Instructions

In this part we want you to rate how you responded to the article overall. Please indicate how strongly you agree or disagree with each statement using the 5-point scale shown below.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

- \_\_\_\_\_ I thought the article was very interesting.
- \_\_\_\_\_ I'd like to discuss this article with others at some point.
- \_\_\_\_\_ I would read this article again if I had the chance.
- \_\_\_\_\_ I got caught up in the text without trying to.
- \_\_\_\_\_ I'll probably think about the implications of this article for some time to come.
- \_\_\_\_\_ I thought the article's topic was fascinating.
- \_\_\_\_\_ The information was personally relevant to me.
- \_\_\_\_\_ I would like to read more about this topic in the future.
- \_\_\_\_\_ The article was one of the most interesting things I've read in a long time.
- \_\_\_\_\_ The article really grabbed my attention.



## **Appendix F**

### Multiple Choice Test

## Multiple Choice Test

Circle the correct answer to the following questions about the passage you read. You may look back at the passage if you need to.

1. How many wolves live in Yellowstone National Park today?
  - a. no wolves live in the park today
  - b. 250 wolves live in the park today
  - c. 2500 wolves live in the park today
  - d. no one knows, because scientists are unable to count them
  
2. Why did scientist decide to reintroduce wolves to Yellowstone?
  - a. to cut down on the deer population
  - b. because farmers wanted wolves to patrol their ranches
  - c. because wolves lived in the park in the past
  - d. to kill animals who damage native plants
  
3. How did they reintroduce wolves to the park?
  - a. they captured wolves in Canada and released them in Yellowstone
  - b. they bought wolves from zoos to release in Yellowstone
  - c. they put litters of baby wolves in the park to grow up
  - d. the Fish and Wildlife Service raised wolves and then released them
  
4. How does the animal life in Yellowstone today compare to the past?
  - a. there are still no natural predators in the park
  - b. wolves have destroyed too many native species
  - c. wolves have reduced plant life that animals need to live
  - d. the major predators that existed before humans interfered are now back
  
5. How did humans cause nature to become imbalanced in Yellowstone?
  - a. by building hotels and tourist attractions in the park
  - b. by releasing wolves into the wild
  - c. by removing wolves, thinking they were a dangerous annoyance
  - d. by letting wolves hunt protected species
  
6. What is a keystone species?
  - a. a species that has become extinct
  - b. a species that preys upon smaller animals
  - c. a species that is protected by human intervention
  - d. a species that many plants and animals depend on

7. How does the presence of wolves affect plant life?
  - a. animals eat wolves' leftover kills, so they eat fewer plants
  - b. wolves dig and trample the plants so they do not grow as well
  - c. wolves' leftover kills fertilize plants so they grow larger
  - d. animals destroy plant life while trying to flee from wolves
  
8. How does the presence or absence of one species affect the environment?
  - a. one species does not have a big affect on the environment
  - b. one species can cause changes that unbalance nature's "see-saw"
  - c. one species can destroy all of the other animal life in the environment
  - d. one species can keep tourists away by causing dangerous annoyances
  
9. How do scientists feel about the reintroduction of wolves to Yellowstone?
  - a. scientists are disappointed that the reintroduction failed
  - b. scientists are hoping that the wolves will not roam outside of the park
  - c. scientists are pleased that wolves are controlling the deer population
  - d. scientists are pleased that people are learning about protecting the environment
  
10. The main idea of this article was:
  - a. Wolves are dangerous predators who cause damage in National Parks
  - b. Wolves are not aggressive to people in parks, as was once believed
  - c. Restoring and maintaining the balance of nature is an important goal
  - d. Scientists have many ways of protecting the environment

## **Appendix G**

### Essay Instructions

## Essay Instructions

Essay 1: Write a one-page response to the reading that describes the main ideas of the text. Retell what the article was about. Include as much specific information from the article as you remember.

Essay 2: Write a one-page response describing your personal reactions and feelings about the reading. Include your feelings about the passage you read, about the tasks you were asked to do, and about participating in a research study.

## **Appendix H**

### Essay Scoring Protocol

## Essay Scoring Protocol

### **Essay 1 Protocol**

#### **Thematic Responses**

Retellings \_\_\_\_\_

Elaboration \_\_\_\_\_

Interpretations \_\_\_\_\_

Evaluation of evidence \_\_\_\_\_

#### **Critical Responses**

New learning \_\_\_\_\_

Difficulty understanding text \_\_\_\_\_

Critical analysis of text ideas \_\_\_\_\_

#### **Personal Responses**

Reader engagement \_\_\_\_\_

Cognitive reactions \_\_\_\_\_

Affective reactions \_\_\_\_\_

Empathy with events or people \_\_\_\_\_

Relate to one's own life or personal experience \_\_\_\_\_

### **Essay 2 Protocol**

#### **Positive Reactions**

Research participation \_\_\_\_\_

Experimental materials \_\_\_\_\_

Essay writing \_\_\_\_\_

Choice format \_\_\_\_\_

Miscellaneous \_\_\_\_\_

#### **Negative Reactions**

Research participation \_\_\_\_\_

Experimental materials \_\_\_\_\_

Essay writing \_\_\_\_\_

Choice format \_\_\_\_\_

Miscellaneous \_\_\_\_\_

**Appendix I**  
Attitude Checklist



### Attitude Checklist

Please indicate how much you agree or disagree with each of the following statements by writing a 1, 2, 3, 4, or 5 in the blank space at the left of each statement.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

1. \_\_\_\_\_ I enjoyed participating in this study.
2. \_\_\_\_\_ I felt good about the choice of text.
3. \_\_\_\_\_ I got personally involved in what I read.
4. \_\_\_\_\_ I tried really hard in this study.
5. \_\_\_\_\_ I had a strong emotional response to the text.
6. \_\_\_\_\_ I liked what I was asked to do in this study.
7. \_\_\_\_\_ I could easily identify with what I read.
8. \_\_\_\_\_ I appreciate the choices I got to make in this study.
9. \_\_\_\_\_ I understood the deeper meanings of the text.
10. \_\_\_\_\_ I was highly motivated in this study.
11. \_\_\_\_\_ I was treated fairly in this study.
12. \_\_\_\_\_ I felt I had a great deal of control in this study.