

ABSTRACT

Title of Document: THE EFFECTS OF CONSTRUCTS OF
MOTIVATION THAT AFFIRM AND
UNDERMINE READING ACHIEVEMENT
INSIDE AND OUTSIDE OF SCHOOL ON
MIDDLE SCHOOL STUDENTS' READING
ACHIEVEMENT

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Development

The purpose of this study was to examine whether motivation for reading was multidimensional in two respects. First, central constructs were drawn from three major theories of motivation. Second, versions of each construct were formulated that were expected to correlate positively with achievement (affirming); and versions of each construct were formulated that were expected to correlate negatively with achievement (undermining). The goal of the study was to determine whether these reading motivation constructs were relatively independent and whether the multiple motivations contributed to predicting achievement.

Constructs of motivation were derived from Self-Determination Theory (Deci, Vallerand, Pelletier, & Ryan, 1991), Social Cognitive Theory (Bandura, 1977, 2001) and Social Goals (Wentzel, 2002, 2004). Constructs of motivation that affirm reading

achievement and constructs of motivation that undermine reading achievement were both examined. These constructs included, intrinsic motivation, avoidance, self-efficacy, perceived difficulty, prosocial interactions, and antisocial interactions. This study also investigated student motivations for reading for two including the Gates-MacGinitie Reading Comprehension test, a measure of inferencing ability, a motivation questionnaire for school reading, and a motivation questionnaire for outside school reading. Reading/Language Arts grades were also obtained for all students. Four objectives were addressed through the results of six research questions. Factor analyses results supported the discussion of motivation as a multidimensional construct. Three factors emerged when examining the three constructs of motivation that affirm achievement and the three constructs of motivation that undermine achievement. In addition, factor analyses results supported the perspective that undermining motivations are uniquely predictive of achievement and not simply negatively valenced affirming motivations. Two factors emerged when analyzing the affirming and undermining reasons, school and outside school.

Participants were 247 seventh grade students from two middle schools in a mid-Atlantic state. Students completed four measures, constructs of motivation in theoretical pairs. Regression analyses indicated that undermining motivations are predictive of achievement even when affirming motivations have been taken into account statistically. Some differences in these results for the school and outside school constructs are discussed. Significance of the findings was discussed in terms of the theoretical importance of the simultaneous functioning of multiple motivations for reading among adolescent students.

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CHAPTER 1: INTRODUCTION

Guiding Theory and Research

Motivation and Achievement

The earliest studies of the connection between student motivation and achievement were mainly concerned with the role of student attitude towards school. These early studies, however, were foundational in establishing the important role that motivation plays in academic achievement in the classroom. Even the first studies on achievement motivation indicate that in addition to intelligence, an important factor and influence on achievement is motivation (Turney, 1931). Initial studies in the area of motivation in educational psychology were initiated to address the disconnect researchers found between intelligence and achievement measures (Turney, 1931). Eventually, researchers came to realize that motivation was a reasonable explanation for these gaps. Turney (1931) writes that “this discrepancy is the natural result of other factors, chief among which are certain traits or types of behavior which for want of terms we may call “industry,” “persistence,” “ambition,” “school attitude,” and “dependability” (p. 427). The connection of these other factors of motivation to achievement is still an essential and growing aspect of research on academic achievement. In general, researchers accept the pivotal role that motivation plays in encouraging and moving students towards the successful completion of academic tasks.

Motivation researchers continue to make the case for the importance of the study of achievement motivation in studying academic achievement (Eccles & Wigfield, 2002; Meece, Anderman, & Anderman, 2006; Pintrich, 2003). Unlike Turney (1931), a “want

for terms” (p. 427) is no longer the problem in achievement motivation research. In an extensive review of motivation constructs Murphy and Alexander (2000) identified 20 motivation terms that are relevant to academic achievement and motivation. They found 120 achievement motivation journal articles that studied these 20 motivation terms in the literature. Thus, the association between achievement motivation and academic achievement is well studied and established in the literature (Pintrich & DeGroot, 1990). The current issue the field of motivation faces is a need for clarity of terms and comprehensive theories of motivation that form the foundation for the association between constructs of motivation (Ford, 1992). The current study addresses this concern by studying the associations between multiple existing motivational constructs in a multidimensional framework of motivation. By viewing motivation through a multidimensional lens it may be possible to bring clarity to the diverging constructs and theories of motivation that exist by merging them together into a comprehensive model of motivation (Ford, 1992).

Multidimensional Motivation

There are many motivation researchers who measure and study multiple motivation constructs in different domains and levels of specificity. In general, although these researchers are measuring several different constructs they tend to originate from the same theoretical orientation. There are examples of researchers who have investigated different combinations of motivation constructs from different theories and their effect on different outcomes (Covington, 2000; Guthrie & Wigfield, 2003). These speculations have led to increased dialogue in the way that multiple constructs of motivation may be associated with each other. As these patterns become clearer and more reliable,

researchers will be better able to formulate more specific testable hypotheses. One researcher who has successfully written about integrating different existing theories into a single comprehensive theory of motivation is Ford (1992).

Ford (1992) discusses the issues that other motivation researchers have also addressed (Murphy & Alexander, 2000). However, he goes beyond simply pointing out the vast discrepancies in the terms and definitions in the field of motivation, but proposes a much needed comprehensive conceptualization of motivation. He describes the need for “a clear, coherent, and comprehensive conceptualization of motivation that can retain the detail and precision of specialized theories but that can also integrate these ‘mini-theories’ into a broader theory focusing on the basic substance and overall organization of motivational patterns” (Ford, 1992, p. 11). These are the criteria that Motivational Systems Theory was designed to meet. Motivational Systems Theory attempts to “bring coherence to the field by recognizing and capitalizing on the strengths of existing theories and showing how they can be organized into a common framework” (p. 12). Ford’s work demonstrates the importance of acknowledging multiple motivational theories in a single comprehensive frameworks. Motivational Systems Theory points to the need for unifying the field of motivation with broader studies that begin to look at how these motivation constructs work together, as opposed to focusing on how to make them more distinct from each other.

This is an area of study, which would address the concerns of Murphy and Alexander (2000) while also expanding discussions of motivation in new and unique ways. If we are able to identify specific combinations of constructs of motivation that contribute uniquely to achievement we can better understand the complex association

between motivation and academic achievement. There are several current models, which attempt to combine existing constructs of motivation in predicting achievement (Martin, 2007; Guthrie & Wigfield, 2000). These models provide a framework for examining relationships between multiple constructs of motivation.

The purpose of the current study is to examine the interrelationships of multiple constructs of motivation. While the current study did not aim to create or test a theoretical model of multidimensional motivation (see Ford, 1992; Martin, 2007), it addressed questions pertaining to the statistically unique contribution that different motivation constructs made in predicting achievement while taking into account the contributions of other constructs of motivation. In order to accomplish this goal, motivation constructs from three different theories of motivation were studied. The three theories of motivation were Self-Determination Theory (SDT; Ryan & Deci, 2000), Social Cognitive Theory (Bandura, 1977, 2001, 2006) and Social Goals framework (Wentzel, 1999). These three theories of motivation are not an exhaustive list of available theories of motivation. However, these three theories represent three distinct aspects of the self and influences on the self-system. SDT reflects aspects of the individuals' inherent beliefs and desires to pursue a task. Social-Cognitive Theory represents self-schema beliefs pertaining to agency and perceptions of ability when completing a task. Finally, the social goals framework encompasses the social influences from peers, teachers, and parents on the creation and pursuit of social goals, which are associated with achievement outcomes (Wentzel, 1999). Therefore, these theories and frameworks of motivation account for different aspects of the self, although they do not encompass every theory of motivation currently being investigated. For example, expectancy value theory is not represented in

these theories, nor is the extensive literature on goal orientations. These theories were not included for the purposes of conceptual clarity and due to concerns about the additional complexity of the study with their inclusion. This study was also situated within the academic domain of reading. Domain specificity was an important factor in the investigation of the relationship between achievement motivation and academic achievement.

Reading Motivation and Reading Achievement

Initially, motivation researchers were interested in investigating the association between more general achievement motivation and academic achievement. There is evidence to suggest, however, that motivation can be situated within a specific context (Wigfield, 1997). Studies of motivation for reading (Wigfield, 1997; Wigfield, Guthrie, Tonks, & Perencevich, 2004) and mathematics are examples of situated studies of motivation within a specific academic domain. Some motivation theorists argue that motivation changes depending on the domain and, therefore, it should be studied at the domain specific level with domain specific questions (Wigfield et al., 2004). Other researchers take this idea one step further and argue that motivation should be situated at the task level within specific domains (Wigfield et al., 2004). There is evidence to suggest that students respond differently to the same construct of motivation, such as intrinsic motivation, when the motivation is situated in two different contexts (Gottfried, 1990). Students reported different levels of intrinsic motivation for reading than they did for mathematics (Gottfried, 1990), which supports the idea that as opposed to a more generalized sense of intrinsic motivation (Ryan & Deci, 2000), students may possess levels of motivation that differ depending on the domain. In this study, motivation was

contextualized within the domain of reading, but the context of reading was further defined as reading that occurs for school or outside of school.

School and Outside of School Contexts

In this study, constructs of motivation in the reading domain were explored, but with an additional layer of specificity for the context in which the reading activity occurs. Extending the ideas discussed within the motivation literature about the degree of specificity required when investigating reading motivation, the belief in this study is that students may possess very different levels of motivation for completing their school reading assignments than they do for reading that they do outside of school. In terms of the discussion of multidimensional motivation, students may not only possess different levels of motivation for reading inside of school compared to outside of school, they may actually possess completely different motives for reading inside of school compared to outside of school. McKenna, Kear, and Ellsworth (1995) discuss the importance of investigating reading attitudes that are both general to the task of reading and specific according to personal interest. This idea was applied to the constructs of motivation discussed in this study to investigate potential differences in students' motivations for pursuing reading for school and outside of school. This study examined the multidimensional aspect of motivation in two very specific contexts within the domain of reading. This provided valuable information about the multiple motives students may possess for reading in different contexts and it may provide some foundation on which more complex models of reading motivation can be developed. Studies of motivation, and reading motivation specifically, rarely take into account the context in which motivation questions are situated. However, there is evidence in qualitative research, that

the context of the reading may be a very important factor associated with reading motivation (Oldfather, 2002; Smith & Willhelm, 2002). Therefore, this study investigates reading motivation for school reading and for reading outside of school. Finally, this study concerns distinctions between motivations that affirm and undermine achievement.

Motivations that Affirm and Undermine Achievement

In the current theories of motivation discussed in the literature there is a general assumption that achievement motivation is an approach tendency. This means that students either possess high or low levels of motivations that help them complete a task. Based on this perspective of motivation, the practical implications for teachers have always been that it is necessary to increase students' motivation for a given academic task. There is another perspective, however, that has emerged more recently in the field which takes into account that sometimes students are motivated to avoid or undermine the achievement task. Bandura (2001) and Ryan and Deci (2000) acknowledge this aspect of motivation, using the term "undermine," yet their theories and motivation constructs reflect more of an approach tendency.

One of the purposes of this study is to investigate potential motivations that may undermine achievement in the reading domain. In SDT, intrinsic motivation is defined as behaviors people engage in for their own sake – "for the pleasure and satisfaction derived from their performance" (Deci, Vallerand, Pelletier, & Ryan, 1991, p. 327). These behaviors are initiated out of innate curiosity, interest, and the will to learn new things, even when specific rewards are not present (Ryan & Deci, 2000). Amotivation in SDT is proposed and defined as the opposite of intrinsic motivation. However, the conceptual definition of amotivation is a lack of motivation, yet the operationalization of amotivation

tends to record varying degrees of task avoidance (Legault, Green-Demers, & Pelletier, 2006). Therefore, in this study amotivation was defined as a combination of amotivation from SDT and work avoidance from Goal Theory. Amotivation “can be defined as a state in which individuals cannot perceive a relationship between their behavior and that behavior’s subsequent outcome” (Legault et al., 2004, pp. 568). This perception can lead the individual towards exhibiting work avoidance goals and behaviors, such that they “deliberately avoid engaging in academic tasks or attempt to minimize the effort required to complete academic tasks” (Dowson & McInerney, 2001, p.36). Avoidance was examined as a motivation that undermines achievement in the domain of reading. It was discussed and assessed with its theoretical approach counterpart, intrinsic motivation. A complete discussion of SDT, including conceptual definitions of intrinsic motivation and amotivation, can be found in Chapter Two.

In Social Cognitive Theory, Bandura discusses the role that self-efficacy plays in academic achievement. He discusses the importance of situating self-efficacy within the domain of interest. In this study self-efficacy was defined as “people’s beliefs in their capability to exercise some measure of control over their own functioning and over environmental events” (Bandura, 2001, p. 10). With regards to reading, self-efficacy has been defined as “beliefs regarding ability and proficiency in reading tasks” (Chapman & Tunmer, 1995, p. 154). In addition, perceptions of the difficulty of reading tasks in both contexts were theoretically discussed as a motivation that may undermine achievement in the reading domain. Work by Nicholls on the development of beliefs about the difficulty of tasks and the perception about the intelligence of individuals who succeed or fail at difficult tasks with persistent or minimal effort provided valuable information for this

study (Nicholls, 1978; Nicholls & Miller, 1984). Perceived difficulty is defined as an individual's beliefs about the complexity of the task. Perceptions of difficulty for reading are defined as, "beliefs that reading activities are hard, or problematic" (p. 154). Students who perceive that reading for school is difficult may be less willing to attempt the task or put forth effort in it. Research indicates that by 13 years of age, students come to believe that completion of difficult tasks with minimal effort is a sign of intelligence (Nicholls, 1978). Therefore, perceptions that one may struggle at a task may prevent a student from attempting the task. This may be partially due to fear of failing at the task and the risk of appearing less intelligent to peers. A complete discussion of Social Cognitive Theory, including conceptual definitions of self-efficacy and perceived difficulty, can be found in Chapter Two.

Finally, the social goals literature has mainly examined prosocial goals. Goals in this study refer to "what an individual wants to achieve in a particular situation" (Wentzel Filisett, & Looney, 2007, p. 896). This definition can be applied to the classroom context to include a student's desire to be prosocial. Prosocial goals reflect the student's desire "to help, cooperate, and follow rules in the classroom" (Wentzel et al., p. 896). In this study, prosocial goals were examined implicitly as prosocial interactions. These interactions included desires and behaviors: to share opinions about reading, show interest in classmates' and friends' reading, and offer help to classmates and friends with reading.

An additional construct of antisocial goals was also examined, which represented the theoretical opposite of prosocial goals. Building upon the understanding of prosocial goals, I define a student with antisocial goals as one who tries to avoid helping other

students, attempts to avoid interacting with other students, and makes fun of other students' opinions and comments about reading. In this study, antisocial goals were examined implicitly as antisocial interactions. These interactions included desires and behaviors: to make fun of classmates' and friends' opinions about reading, to disrespect other students' and friends' opinions about reading, and to convince classmates and friends that reading is a waste of time.

This definition is based upon the idea of creating an inverse to prosocial goals as defined by Wentzel et al. (2007). It may be that students who report low levels of prosocial goals do not at the same time hold antisocial goals. This is a research question that is yet to be addressed in the current literature on social goals. This study provides an opportunity to examine the association between prosocial and antisocial goals and between social goals and other constructs of motivation. Additionally, prosocial goals are the only approach construct in this study that has not been studied specifically in the domain of reading. Therefore, this study also provides the opportunity to investigate whether social goals have additional predictive power when applied within a specific academic domain (i.e., reading).

Including undermining motivations in the discussion of multidimensional motivation is important for at least two reasons. First, by including motivations that undermine achievement in our study of motivation we may add to the predictive ability of motivation. Students who report motivations that undermine achievement may perform differently from students who simply report low levels of motivations that affirm achievement. If this is the case, taking into account motivations that affirm and

undermine achievement may increase researchers' abilities to explain the relationship between motivation and achievement.

In addition, including motivations that undermine achievement in studies of motivation deepens researchers' ability to describe student motivation. By including undermining motivations, the high and low ends of affirming motivations can be better described and interpreted. A student who has high levels of intrinsic motivation and low levels of avoidance motivation may have a very different achievement profile from a student with high levels of intrinsic motivation and high levels of avoidance. In addition, a student with low levels of intrinsic motivation and low levels of avoidance motivation may look very different from a student with low levels of intrinsic motivation and high levels of avoidance motivation. At this point, specific hypotheses cannot be made about the direct effect of these profiles of constructs of motivation on achievement. However, there is evidence to suggest that describing students' constructs of motivation that affirm and undermine achievement may help researchers provide a richer perspective on middle school students' motivation for reading.

The inclusion of motivations that undermine motivation in this study has important implications for practitioners and researchers. For practitioners, it may be the case that strategies traditionally used to improve motivations in the classroom are most effective for students who have high levels of motivations that affirm achievement. Students with high levels of constructs of motivation that undermine achievement may require different strategies in order for researchers and teachers to see improvement in their motivation. Researchers have yet to investigate direct interventions with highly avoidant students, but qualitative research suggests that these students may require a

different kind of intervention than those traditionally used to improve motivation (Oldfather, 2002). Researchers of motivation may be further informed about the nature of motivation and the interactions between motivations that affirm and undermine achievement. This study may provide new directions for theory building and has practical implications for intervention design. The final purpose of this study, is to examine gender differences in patterns of association between reading motivations and reading achievement.

Gender

Researchers of gender differences in achievement motivation have varied on the importance placed on examining gender as a factor. Review studies have examined the role that gender plays in motivation for achievement tasks (Meece, Glienke, & Burg, 2006). Evidence suggests that student motivation often mirrors cultural stereotypes, especially in association with motivation for specific academic domains. For example, boys typically report higher levels of self-efficacy and intrinsic motivation for science and math than do girls. Conversely, girls report higher levels of self-efficacy and intrinsic motivation for reading and writing activities (Meece et al., 2006). In addition, boys and girls have been shown to vary on measures of amotivation (Green-Demers, Legault, Pelletier, & Pelletier, 2008) self-efficacy (Meece et al., 2006), interest (Preckel, Goetz, Pekrun, & Kleine, 2008), motivational orientations (Lepola, 2004; Lepola, Vaurus, & Mäki, 2000) and self-concept (Marsh, 1989). One study of intrinsic and extrinsic motivation in middle school revealed statistically significant gender effects for Hispanic students where Hispanic girls were more likely to have positive associations on involvement in reading and to be sensitive to social motivation for reading (Unrau &

Schlackman, 2005). In a study of the relationship between school adjustment and sociometric status from sixth grade to eighth grade, middle school girls in the controversial sociometric status group reported higher levels of prosocial goal pursuit than middle school boys (Wentzel, 2003). Although there are consistent findings in the literature that gender plays a role in the level of motivation students report for different academic tasks within specific constructs, this research is rarely pooled across multiple domains, motivation constructs (Baker & Wigfield, 1999) or studied in terms of motivations that affirm or undermine achievement (Marsh, Martin, & Cheng, 2008).

The purpose of this study was to address some of these points by assessing gender differences for six different constructs of reading motivation that affirm and undermine achievement. This study provided new information about gender differences in middle school students' motivations in a specific domain (reading) and with multiple constructs of motivation. In addition, this revealed interesting patterns in boys' and girls' reports of motivations that affirm and undermine reading achievement, as opposed to the more traditionally reported mean differences. Little is known about whether there are gender differences in boys' and girls' reports of motivations that undermine reading achievement or whether stereotypical patterns emerge for these kinds of constructs.

Purpose and Significance of the Study

There are four main objectives of this study. First, this study examined the multidimensional nature of motivation within the specific domain of reading. Previous studies have investigated some of these constructs of motivation together, but few have also examined them in the context of inside and outside school reading or with undermining constructs (Baker & Wigfield, 1999; Nelson & DeBacker, 2008; Wentzel,

1996; Wigfield & Guthrie, 1997). In addition, two of the previous studies cited were conducted with elementary school samples (Baker & Wigfield, 1999; Wigfield & Guthrie, 1997), while this study extends the research literature on these constructs of motivation in middle school students. This study provided evidence for the unique contributions multiple reading motivations make in predicting reading achievement within a middle school sample.

Second, this study examined multidimensional reading motivations that affirm and undermine reading achievement. While researchers are beginning to study motivations that undermine achievement, few researchers have combined these constructs together into an integrated model of reading motivations. Few researchers have investigated motivations that undermine achievement in combination with motivations that affirm achievement and even fewer have examined more than one motivation that undermines achievement in a given study. Thus, this study provides information about the association between three different motivations that undermine reading achievement as well as information about the association between motivations that undermine reading achievement and motivations that affirm achievement.

Third, this study examined the multidimensional aspect of reading motivation for reading motivations that affirm and undermine reading achievement for two specific reading contexts. These two reading contexts are reading middle school students do for school and reading that they do outside of school requirements. This does not mean that the reading activity has to happen at school or at home, but that the purpose for completing the reading activity is driven by academic reasons or reasons outside of the school context. Few studies have examined reading motivation at this level of domain

specificity. Potentially, this study reveals important information about what motivates middle school students to read for school assignments and for reading they do in other contexts. This could provide important information for teachers and parents about the motivations that students have for reading in a variety of reading contexts. This study also provides important information for researchers who are interested in designing motivation interventions in the school contexts. It may not be enough to simply design an intervention to improve intrinsic motivation, if students are motivated to avoid the work they have to complete for school.

Fourth, this study examined differences in middle school boys' and girls' constructs of reading motivation for reading motivations that affirm and undermine reading achievement inside and outside of school. The evidence in the literature suggests that there may be differences in boys' and girls' motivations for reading activities inside and outside of the classroom. This study allowed for the investigation of gender differences in several different constructs of motivation. While there is some evidence about gender differences in the multidimensional nature of motivation, there is less evidence about gender differences for motivations that undermine achievement and motivations that are situated within such a specific reading context.

There are two theoretical implications for the research community from this study. First, the inclusion of undermining motivations increases the researchers ability to describe student motivation in more complex ways. By including undermining motivations in motivation research, student profiles can be created. This allows for the subdivision of students into four distinct groups instead of two groups of high and low on one construct. The ability to describe student profiles of motivation may allow for more

accurate predictions of achievement. Second, there were more undermining than affirming motivations that predicted achievement in this study which is evidence of the power of the undermining constructs. An important point for discussion is why this occurred. One hypothesis is that undermining motivations are more closely tied to achievement because they are more salient and accurately linked to our actual ability. It may be that it is more likely that individuals hold general beliefs that overestimate their ability than underestimate them. Therefore, undermining motivations may be more closely tied to actual performance on reading tasks than affirming motivations. Another possibility is that this is a measurement effect. Students do not have a response bias for undermining questionnaire items because they are not used to answering questions phrased that way. Or, because these are middle school students they may have a response bias where they enjoy responding enthusiastically to questions that involve avoiding or disliking school activities. The research significance of the study will be discussed in more detail in Chapter 5.

This study also provides important new information to teachers and practitioners. Current practices in the classroom focus on increasing interest for reading. These strategies may not be effective for students who hold high levels of perceived difficulty and focus on antisocial interactions in the classroom. This study provides evidence for the importance of addressing students with undermining motivations in the classroom in different ways. Focusing on decreasing levels of perceived difficulty and antisocial interactions may help these students improve in reading more than focusing on increasing their interest in reading. The implications of this study for teachers and administrators will be further discussed in Chapter 5.

Research Questions

In order to increase understanding of the multifaceted nature of motivation, in terms of constructs, context and directionality, six research questions guided this study. Research questions were proposed instead of hypotheses because of the limited research studies available on these specific motivations with an adolescent sample that would allow for strong hypotheses to be generated.

1. School reading motivations that affirm and undermine achievement were examined in association with reading achievement.
 - a. To what extent do school reading motivations that undermine achievement contribute to predicting reading achievement when school reading motivations that affirm achievement have been taken into account? This question was examined in theoretical pairs of motivations that affirm and undermine achievement: intrinsic motivation and avoidance, self-efficacy and perceived difficulty, prosocial interactions and antisocial interactions.
2. School reading motivation constructs from three theoretical perspectives were examined in association with reading achievement.
 - a. To what extent are middle school students' school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) independently associated with reading achievement?
 - b. To what extent are middle school students' school reading motivations that undermine achievement (avoidance, perceived difficulty, and

antisocial interactions for reading) independently associated with reading achievement?

3. School reading motivations and outside of school reading motivations were examined for similarities and differences in their associations with reading achievement.
 - a. To what extent do outside of school reading motivations that undermine achievement contribute to predicting reading achievement when outside of school motivations that affirm achievement have been taken into account? This question was examined in theoretical pairs of motivations that affirm and undermine achievement: intrinsic motivation and avoidance, self-efficacy and perceived difficulty, prosocial interactions and antisocial interactions.
 - b. To what extent are middle school students' outside of school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) independently associated with reading achievement?
 - c. To what extent are middle school students' outside of school reading motivations that undermine achievement (avoidance, perceived difficulty, and antisocial interactions for reading) independently associated with reading achievement?

Results from these analyses were compared to the results of research questions 1a, 2a and 2b.

4. Gender differences in school reading motivations that affirm and undermine achievement were examined in association with reading achievement.
 - a. Are there gender differences in the extent to which motivations for school reading that undermine achievement contribute to predicting reading achievement when motivations for school reading that affirm achievement have been taken into account? This question was examined in theoretical pairs of motivations that affirm and undermine achievement: intrinsic motivation and avoidance, self-efficacy and perceived difficulty, prosocial interactions and antisocial interactions.
5. Gender differences were examined in the association of school reading motivation constructs from three theoretical perspectives with reading achievement.
 - a. Are there gender differences in the extent to which middle school students' school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) are independently associated with reading achievement?
 - b. Are there gender differences in the extent to which middle school students' school reading motivations that undermine achievement (avoidance, perceived difficulty, and antisocial interactions for reading) are independently associated with reading achievement?
6. Gender differences were examined when comparing school reading motivations and outside of school reading motivations in their associations with reading achievement.

- a. Are there gender differences in the extent to which outside of school reading motivations that undermine achievement contribute to predicting reading achievement when outside of school reading motivations that affirm achievement have been taken into account? This question was examined in theoretical pairs of motivations that affirm and undermine achievement: intrinsic motivation and avoidance, self-efficacy and perceived difficulty, prosocial interactions and antisocial interactions.
- b. Are there gender differences in the extent to which middle school students' outside of school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) are independently associated with reading achievement?
- c. Are there gender differences in the extent to which middle school students' outside of school reading motivations that undermine achievement (avoidance, perceived difficulty, and antisocial interactions for reading) are independently associated with reading achievement?

Results from these analyses were compared to the results of research questions 4a, 5a, and 5b.

Method

A sample of 247 seventh grade students participated in the study. Students completed four measures, including the Gates-MacGinitie Reading Comprehension test, two motivation questionnaires, the Adolescent Motivation for School Reading (AMSR) and the Adolescent Motivations for Outside of School Reading (AMOSR), and one

measure of inferencing ability. These measures were completed in the student's classroom across a 90 minute class period.

This study is correlational and utilized correlational statistical analyses in order to investigate the six research questions. Common factor analysis and principal axis factoring were used in order to derive meaningful factors from the AMSR and AMOSR. The process of conducting the factor analysis is specified in detail in Chapter Four in the Results section in subsections labeled "Scale Construction for the AMSR (AMOSR)." Once the appropriate factors were established, a series of hierarchical multiple regressions were conducted in order to address the six research questions more specifically. The "Summary" section at the beginning of Chapter Four outlines the data analyses conducted in order to answer the six research questions.

List of Definitions

Reading comprehension – "The process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (RAND, 2002, p. 11). This process entail three elements, the reader, the text, and the activity, which are all situated within a larger sociocultural context (RAND, 2002). The RAND (2002) report defines those three elements as follows: "In considering the reader, we include all the capacities, abilities, knowledge, and experiences that a person brings to the act of reading. Text is broadly construed to include any printed text or electronic text. In considering activity, we include the purposes, processes, and consequences associated with the act of reading" (p. 11).

Inferencing – Inferencing is the process of fusing new information into the mental representation of a text during reading based on the content of the text, prior

knowledge and induced relationships among them (Hanon & Daneman, 2000; Kintsch, 1988; Oakhill & Cain, 2007).

School reading – Refers to reading that a student does within the context of school. This reading could take place in the school setting, but it could also take place in other locations (i.e., home or after-school programs). The student reads because completing the reading fulfills a requirement for school.

Outside school reading – Refers to reading that a student does in a context outside of school. This reading could take place outside of the school setting, but it could also take place at school (i.e., during a student’s free time or in place of assigned school reading). The student reads because completing the reading fulfills a personal need.

Motivation – The affective and emotional drives that help or hinder people from achieving their goals. Can be composed of self-beliefs, goals, inherent desires, performance desires, as well as wishes to avoid pain and embarrassment.

Multidimensional motivation – For this study, motivation is discussed as multidimensional. This means that “motivation” (as defined previously) is composed of various different constructs. These constructs, while moderately correlated with each other represent different facets of motivation. These facets have been shown to statistically contribute uniquely to predicting variance in achievement.

Achievement motivation – motivation that pertains specifically to a student’s desire to do well and perform in academic contexts

Reading motivation - The RAND (2002) report considers motivation a characteristic brought to the reading situation by a reader. Motivation includes “a purpose for reading, interest in the content, [and] self-efficacy as a reader” (RAND, 2002, p. 11). In addition, “motivational factors, such as self-concept or interest in the topic, might change in either a positive or a negative direction during a successful or an unsuccessful reading experience” (p. 13).

Reading attitudes – “A system of feelings related to reading which causes the learner to approach or avoid a reading situation” (McKenna, Kear, & Ellsworth, 1995, p. 934).

Motivations that affirm achievement – Motivations that affirm achievement are task specific and reflect the ability of the motivation to support a specific achievement outcome. Affirming motivations for reading are motivations that support and enhance an individual’s ability to complete and achieve at a reading task.

Motivations that undermine achievement - Motivations that undermine achievement are those tendencies, which lead students to behave in a way that decreases their proficiency on achievement tasks. A student who perceives that a task is difficult or wishes to avoid specific academic tasks is motivated to undermine the learning context.

Intrinsic motivation - Behaviors people engage in for their own sake – “for the pleasure and satisfaction derived from their performance” (Deci et al., 1991, p. 327). These behaviors are initiated out of innate curiosity, interest, and the will to learn new things, even when specific rewards are not present (Ryan & Deci, 2000).

Avoidance - The conceptualization of avoidance motivation in this study is a combination of amotivation from SDT and work avoidance from Goal Theory. Amotivation “can be defined as a state in which individuals cannot perceive a relationship between their behavior and that behavior’s subsequent outcome” (Legault et al., 2004, pp. 568). This perception can lead the individual towards exhibiting work avoidance goals and behaviors, such that they “deliberately avoid engaging in academic tasks or attempt to minimize the effort required to complete academic tasks” (Dowson & McInerney, 2001, p.36).

Self-efficacy - Self-efficacy is defined as “people’s beliefs in their capability to exercise some measure of control over their own functioning and over environmental events” (Bandura, 2001, p. 10). With regards to reading, self-efficacy has been defined as “beliefs regarding ability and proficiency in reading tasks” (Chapman & Tunmer, 1995, p. 154).

Perceived difficulty - Competence beliefs as discussed by Bandura are influenced by an individual’s beliefs about the complexity of the task. Perceptions of difficulty for reading are defined as, “beliefs that reading activities are hard, or problematic” (p. 154).

Prosocial goals – Goals refer to “what an individual wants to achieve in a particular situation” (Wentzel et al., 2007, p. 896). Based on this definition, prosocial goals in the classroom context reflect the student’s desire “to help, cooperate, and follow rules in the classroom” (Wentzel et al., 2007, p. 896).

Prosocial interactions - In this study, prosocial goals were examined implicitly as prosocial interactions. These interactions included desires and behaviors: to share

opinions about reading, show interest in classmates' and friends' reading, and offer help to classmates and friends with reading.

Antisocial goals – Building upon the understanding of prosocial goals, I define a student with antisocial goals as one who tries to avoid helping other students, attempts to avoid interacting with other students, and makes fun of other students' opinions and comments about reading.

Antisocial interactions - In this study, antisocial goals were examined implicitly as antisocial interactions. These interactions included desires and behaviors: to make fun of classmates' and friends' opinions about reading, to disrespect other students' and friends' opinions about reading, and to convince classmates and friends that reading is a waste of time.

CHAPTER 2: BACKGROUND

Overview of Literature Review

The topics raised in the previous chapter include characteristics of the underlying concepts, the contexts for reading and individual differences. In this chapter, empirical evidence is presented to support the concept that motivation is a multidimensional construct. The Motivation and Engagement Wheel (Martin, 2007) are discussed as frameworks for viewing the unique contributions of multiple constructs of motivation for better understanding achievement. The Engagement Model of Reading (Guthrie & Wigfield, 2005) is discussed as a model for viewing multiple motivational constructs contextualized in the domain of reading. This section lays the foundation for discussing the multiple motivations that middle school students possess for reading in the classroom. The second section of the review expands upon the idea multidimensionality suggesting the examination of motivation constructs that both affirm and undermine reading achievement. In this section, approach and avoidance motivation as the well known conceptualization is reviewed. Also in this section, the constructs of motivation for this study are conceptually defined and situated within discussions of three theoretical frameworks of motivation: Self-Determination Theory (SDT), Social Cognitive Theory and Social Motivation. In the third section, evidence is presented to support the assumption that students may possess different motivations for the reading that they do in school than the reading that they do outside of school. Studies that have assessed motivations for reading in different contexts are reviewed and discussed. Finally, a rationale for examining gender differences in middle school students' motivation for reading is presented based on the existing literature.

Motivation and Achievement

Reading Achievement

Continuing research on the connection between motivation and achievement has steadily built a convincing case for the importance of studying motivation (Eccles & Wigfield, 2002; Meece, Anderman, & Anderman, 2006; Pintrich, 2003).

Researchers have investigated reading motivation in association with standardized measures of reading achievement (Baker & Wigfield, 1999; Guthrie et al., 2009; Mucherah & Yoder, 2008; Wigfield & Guthrie, 1997) and classroom grades (Coates & Betsey, Wentzel, 1996). Standardized reading achievement in these studies have been measured using multiple reading comprehension measures such as the Gates-MacGinitie Reading Comprehension subtest and the ISTEP+ test. In general, motivation and standardized reading achievement have a moderate correlation (Baker & Wigfield, 1999; Guthrie et al., 2009; Wigfield & Guthrie, 1997). Classroom grades are one way of subjectively measuring classroom performance in reading. While grades are often more rooted to student performance in the classroom as observed by the teacher, this can have both positive and negative effects on research studies. On the positive end, grades are often a cumulative assessment of student progress over time (an academic school year). Therefore, grades provide more of a complete picture of student performance on the reading curriculum across an academic school year. This makes grades less sensitive to performance anxiety that might occur in a standardized testing session. Standardized tests of reading achievement are administered at one time and students may not see the results of those tests for some time, if ever. Grades, on the other hand, provide automatic feedback to students both on individual assignments and at marking periods spaced

throughout the school year. This feedback can make students aware of their progress and help them adjust their work or behavior accordingly. Grades may also signal to parents the need for additional supervision or motivation outside of the classroom. All of these factors support the use of grades as an important measure of student progress and performance at reading tasks. However, grades are also influenced by additional factors that make their sole use as an outcome variable undesirable. First, grades are subjective measures that depend entirely on the teacher's assessment of the student. There are any number of factors that may influence the way that the teacher perceives and interprets a student's actions and motivations in the classroom that could effect the student's grade. These factors may or may not be directly linked to the student's reading ability. In addition, the curriculum that is taught in each classroom and the teacher's personal goals and values in the classroom greatly influence what the student learns in the classroom. An excellent grade in one teacher's classroom is not necessarily equivalent to an excellent grade in another teacher's classroom. The same material may not have been covered and the amount of material learned by students in each class are more than likely very different. Therefore, grades are greatly influenced by the teacher and are difficult to standardize and compare across different teachers.

For the purposes of this study, both classroom grades and standardized measures of reading achievement were measured. In this way, the relationship between student motivations and two different, but related, measures of reading achievement could be assessed. The research literature indicated that both of these outcome measures should be correlated with reading motivation, but that the strength of that relationship may be different depending on the motivation assessed. For example, for various reasons, social

motivations tend to be more closely related to classroom grades than to standardized measures of reading achievement (Wentzel, 1996). It was believed that this finding would be replicated in this study, which is one of the reasons that grades were also included in this study. In addition to classroom grades and standardized reading achievement, a third measure of inferencing ability was also measured in this study. Inferencing as an important component of reading comprehension is discussed in the following section.

Inferencing

The process of making meaning from text is more involved than simply decoding and deciphering the symbols and words on the page. To truly make meaning of text, the reader must be able to fuse their own knowledge with the words within the text and make meaning across the sentences. The process of making meaning from text through the use of cognitive connections within the text and to prior knowledge is called inferencing.

Inferencing has been defined by researchers with various emphases on the within text inferences readers make and the knowledge that individual readers bring to the text. Hannon and Daneman (2001) defined inferencing as “integrating newly encountered information with information encountered earlier in the text or retrieved from long term memory” (pp. 104). This process of making meaning from the available information in the text and the knowledge that exists in the text is when the reader begins to move beyond decoding to a true comprehension of the text. In many ways, comprehension requires “the reader to fill in details that are not explicitly stated in the text, either by integrating statements within the text or by incorporating general knowledge with textual information” (Oakhill & Cain, 2007, p. 49). The process of inferencing is an essential component for readers to comprehend the true meaning of any given text.

Knowledge based inferences in particular are essential to the comprehension and understanding of reading texts. The more knowledge an individual can bring to the text, the more context the reader has to make meaning from the text. Knowledge based inferences “require access to world knowledge in addition to the linguistic elements in the text. Specifically, knowledge-based inferences are directly inherited from the knowledge structures that are relevant to the text (Magliano, Baggett, & Graesser, 1996, p. 202). For our purposes, inferencing is the process of fusing new information into the mental representation of a text during reading based on the content of the text, prior knowledge and induced relationships among them.

The process of inferencing can be further subdivided into a taxonomy of different varieties of inferences a reader can make (Magliano, Baggett, & Graesser, 1996). Referential inferences occur when “readers bind a word or phrase to a previous element or constituent in the text” (p. 203). These inferences are in-text inferences that readers make to connect previous words or phrases with other elements in the text. For example, pronouns in the text require readers to make a referential inference to the previous noun in the text that the pronoun is referring to. Without this connection to previous passage content, the reader would be unable to make meaning of the pronoun. The research on referential inferences is quite extensive and indicates that referential inferences occur online during the act of reading and that they are necessary for comprehension (Magliano, Baggett & Graesser, 1996).

A second type of inference called “causal antecedent” occurs when a reader makes a causal connection between “an explicit story action, event, or state with prior passage context” (Magliano, Baggett, & Graesser, 1996, p. 205). According to research,

these inferences also seem to occur online and are essential for comprehension and establishing text coherence. A reader must be able to connect prior actions to their eventual consequences in a story or non-fiction text.

Two additional types of inferences discussed in the literature, but researched less extensively are “causal consequences” and “state inferences of declarative knowledge” (Magliano, Baggett, & Graesser, 1996). Causal consequence inferences occur when readers “predict or forecast future events and story content” (pp. 206). These kinds of predictions can aide comprehension, especially if the predictions are substantiated in later text. However, readers can also make incorrect predictions, which may not help comprehension. The research is unclear as to when causal consequence inferences occur and how much making an incorrect prediction hinders comprehension.

State inferences of declarative knowledge occur “when [readers] infer some ongoing condition or state of the world from the perspective of the time frame of the text. States can include an agent’s traits, knowledge, and beliefs, the properties of objects and concepts, and spatial locations of entities” (p. 209). In a narrative text, these states include the mental representation a reader creates for the location of objects within a room, the visual description of a character’s clothing, physical build and proximity to other objects. In a non-fiction text, states may refer to more concrete spatial knowledge of such things as the shape of the Earth, the states that border Maryland, the location of the Sun, etc. Any of the knowledge that the reader brings to the text of this information can be combined with the descriptions stated in the text to provide the reader with a richer understanding of the text content.

The border between inferencing and reading comprehension is unclear when discussing the role that inferencing plays in comprehension and vice versa. Research on inferencing has attempted to study inferencing as a separate construct and process which enables comprehension. Research on inferencing has taken many forms in the literature. Early research on inferencing required readers to read short analogies and then answer a series of True/False statements, which assessed memory for four different types of statements: those presented explicitly in the text verbatim, information presented in the text (but not verbatim), access to prior knowledge, and the integration of prior knowledge with text integration (Potts & Peterson, 1985). The results of this study indicated a very small correlation between inferencing and reading comprehension, $r = .16 - .38$ (Hannon & Daneman, 2001, pp. 107). This finding left many researchers wondering if the task itself was not an accurate measure of online inferencing as it actually occurs.

A follow-up study and revision of the Potts and Peterson (1985) task, resulted in an inferencing task that was more realistic, but still somewhat artificial (Hannon & Daneman, 2001). In a revised version of the task, researchers attempted to make the task less reliant on memorization and more reliant on in-text inferences. The procedure was similar to the original in that the subject was given 3 sentences to read and then asked a series of True/False questions about the 3 sentences (Hannon & Daneman, 2001). The sentences were more complex than the original task and required readers to make 2-4 connections in order to answer the questions correctly. This new task did increase the strength of the correlation between inferencing and reading comprehension, but it still utilized an artificial methodology that did not capture the full spectrum of inferences that readers make when actively engaged in reading. Both of the studies reviewed also used

time as a variable in order to press readers into a decision, which is not usually the case in a natural reading setting.

A slightly different perspective on measuring inferencing is discussed in the Three Pronged Method (Magliano, Baggett, & Graesser, 1996). In this model, inferences are obtained from readers using a think-aloud protocol and three questions: “How?,” “Why?,” and, “What happens next?” Readers are prompted with these questions at the end of every statement they read. The answers to these three questions are meant to elicit different types of inferences. “How?” questions refer to subordinate goals in the text. “Why?” questions attempt to assess readers’ perceptions of causal antecedent and superordinate goals in the text. “What happens next?” questions ask readers to make causal consequence inferences (Magliano, Baggett, & Graesser, 1996). This method of assessing inferences has several benefits and a few cons. The benefits are that researchers do not have to guess at what inferences they think readers should make. They can elicit those inferences online while the reader is in the process of reading. The cons are that this process takes a great deal of time and is difficult to code and score.

In this study, inferencing will be used as a cognitive control for reading comprehension. This will allow for the examination of one process that is necessary for reading comprehension and the predictability of motivation variables when this basic process is taken into account. Controlling for inferencing allows for the examination of the relationship between motivation and comprehension after one specific reading skill has been taken into account.

Multidimensional Motivation

Traditionally, motivation researchers developed specific constructs of motivation, which were then studied in conjunction with an achievement outcome (Gottfried, 1990). These initial studies generally included one construct or dimension of motivation, on which students were judged to be high or low. The results could then be discussed in terms of the achievement of students with high motivation versus the performance of students with low motivation. For example, there is a general belief that students who have high levels of intrinsic motivation will have higher achievement scores than students who have low levels of intrinsic motivation (Gottfried, 1990). There are two potential problems with this one-dimensional conceptualization. First, it assumes that the many complexities of student motivation can be captured in a single construct. Second, classifying students using artificial means into two distinct categories may not fully capture the diversity of student motivations; this may lead to a motivation classification that is less predictive of achievement outcomes. The field of motivation has begun to progress in a different direction (Boiché, Sarrazin, Grouzet, Pelletier, & Chanal, 2008).

Increasingly, studying motivation requires a perspective that motivation is multifaceted (Dweck, 2002; Levy-Tossman, Kaplan & Assor, 2007; Martin, 2007; Shell & Husman, 2008; Wigfield & Guthrie, 1997). This means that measuring a student's intrinsic motivation or self-efficacy alone does not fully capture a student's complete motivation. Researchers are now turning to a perspective of student motivation that is best described as a motivation profile (Baker & Wigfield, 1999; Guthrie et al, 2006). Creating a motivation profile allows researchers to look at different combinations of several motivation constructs, while also predicting achievement outcomes. Combining

these motivation constructs may optimize the potential of predicting achievement outcomes (Baker & Wigfield, 1999; Shell & Husman, 2008; Wigfield & Guthrie, 1997).

Measuring multiple motivations provides a broader and more robust picture of student motivation than measuring a single construct of motivation. While motivation constructs are highly correlated, research indicates that they are associated with achievement in unique ways (Chapman, Tunmer, & Prochnow, 2000; Guthrie et al, 2006). Often these constructs will statistically factor separately from each other, indicating that they actually represent unique qualities of motivation. Researchers suggest that studying multiple motivation constructs simultaneously has more explanatory power than single motivation constructs alone. Guthrie and Wigfield (2005) propose a model of engagement for reading, which captures many aspects of this description of motivation.

Guthrie and Wigfield's Engagement Model of Reading

Few models of reading comprehension include the cognitive and motivational processes, which research indicates contribute to the understanding of texts. Furthermore, few models of reading achievement attempt to encompass multiple cognitive and motivational processes. Guthrie and Wigfield (2005) propose a model of reading, which combines multiple cognitive and motivational processes as contributors to text comprehension.

There are four cognitive processes that may influence text comprehension: activating prior knowledge, forming text representation, constructing causal inferences, and integrating prior knowledge and text (Guthrie & Wigfield, 1999). These components are important for understanding the cognitive processes, which occur when an individual is reading and constructing meaning from a text. Although the purpose of this study is to

address the multidimensional nature of motivational processes, it is important to note several dimensions of cognitive processes contribute to text comprehension as well. It appears that a single process, even a cognitive one, may not stand alone in our understanding and ability to make predictions about reading comprehension. Guthrie and Wigfield (2005) discuss the way that these four cognitive strategies reflect an integrated model of text comprehension, which is in line with Kintsch's model of text-integration.

In addition to cognitive processes that influence text comprehension, Guthrie and Wigfield (2005) also discuss five motivational processes, which also contribute: task mastery goals, intrinsic motivation, self-efficacy, personal interest, and beliefs about reading. These motivational processes work in parallel in a similar fashion to the cognitive influences, in that they are related to each other, "but can be measured and manipulated independently to influence text comprehension" (Guthrie & Wigfield, 2005, p. 190). Therefore, Guthrie and Wigfield propose a model of text comprehension with multiple motivational processes, which they believe contribute in different and unique ways to reading comprehension, despite some overarching association between the motivational processes.

Within the Engagement Model of Reading, task mastery goals "refer to the nature of the reader's intentions for a given reader-text interaction" (Guthrie & Wigfield, 2005, p. 190). This aspect of motivation refers to a student's intention to completely understand the text and build an internal model of the text. Intrinsic motivation in the engagement model of reading is derived from Self-Determination Theory and refers to "an individual's participation in reading for its own sake, and positive disposition toward engaging in reading activity" (Guthrie & Wigfield, 2005, p. 190). Students with high

levels of intrinsic motivation are more likely to read for longer amounts of time and to therefore read more than those students with low levels of intrinsic motivation. Self-efficacy “refers to the reader’s belief in one’s own capacity to read effectively, compete well, and attain high recognition for reading success” (Guthrie & Wigfield, 2005, p. 190). When a student is efficacious about reading he is more likely to persist in the task in the face of difficulties and put forward more effort in completing the task. Guthrie and Wigfield (2005) also discuss personal interest, which “refers to an individual’s positive affect associated with topics that are contained in text” (p. 190). Interest in a topic may lead students to engage in deeper and more meaningful interactions with text, which may result in deeper processing. Finally, beliefs about reading refer to “students’ values relevant to a text” (p. 190). Valuing reading implies that the student thinks that reading as an activity is important, which may be associated with higher levels of comprehension. The list of motivations presented by Guthrie and Wigfield (2005) is by no means an exhaustive list of all motivations in the literature. However, the uniqueness of each construct and the evidence in the literature of its unique contribution to text comprehension makes them each important for discussing the relationship between motivation and text comprehension.

The Engagement Model of Reading lays the foundation for discussing multiple motivational constructs and their influence on reading achievement. While the motivational constructs discussed in this study are not identical to those discussed by Guthrie and Wigfield (2005), the principle still applies. Evidence supporting the Engagement Model of Reading indicates that these constructs can be measured and treated separately in predicting text comprehension is discussed below.

Research Evidence Supporting the Engagement Model of Reading

Wigfield and Guthrie (1997) examined the relationship between multiple aspects of children's reading motivation to the amount and breadth of their reading. The researchers stated three research questions as the purpose of their study. First, researchers were interested in developing a profile of children's reading motivation. Second, they wished to evaluate whether the amount and breadth of student's reading was related to their motivation for reading. Finally, assuming reading motivation is multifaceted, the researchers wished to determine which aspects of reading motivation are most salient to children.

In order to test their hypotheses, fourth and fifth grade students participated in the study by completing the Motivation for Reading Questionnaire (MRQ), as well as a measure of the student's reading breadth and frequency and the number of hours each child read outside of school (Wigfield & Guthrie, 1997). The MRQ was developed to assess 11 different aspects of motivation: social, compliance, efficacy, curiosity, involvement, recognition, grades, challenge, competition, importance, and work avoidance. The questionnaire items for the curiosity and involvement scales originated from research on intrinsic motivation. The MRQ was administered twice during the school year, in the fall (October) and spring (March). In reference to the first research question, Wigfield and Guthrie (1997) found in the fall assessment that Work Avoidance was negatively correlated with both measures of intrinsic motivation – Curiosity and Involvement. The significant negative correlations were replicated in the Spring assessment. These results confirm research, which hypothesizes a connection between

intrinsic motivation and avoidance, going beyond the construct of amotivation discussed in self-determination theory.

In addition, in reference to the second research question, work avoidance was negatively correlated with fifth graders' reading amount in the Fall and reading breadth in the Spring (Wigfield & Guthrie, 1997). In contrast, intrinsic motivation (Curiosity and Involvement) was positively associated with reading amount and reading breadth in the fall and spring for both fourth and fifth graders (with the exception of reading amount for fourth graders in the fall, which was not significantly correlated with Curiosity). These results confirm the positive associations between intrinsic motivation for reading and reading outcomes. Children who reported higher levels of reading motivation read more and had more breadth, than students who reported lower levels of intrinsic motivation. Furthermore, fifth grade students who reported high levels of work avoidance read significantly less in the Fall than students who reported lower levels of work avoidance.

One of the major conclusions the authors articulate from these results is that reading motivation is multifaceted. Student responses indicated multiple motivational constructs were salient to the student, including intrinsic motivation (Curiosity and Interest) and work avoidance. The study reports two important findings. First, intrinsic motivation and work avoidance appear to be independent motivational constructs with different influences on student reading habits. Traditionally, these two constructs are not discussed together or on a continuum. It is significant that research suggests that these two constructs may be two conceptually different constructs from each other, because it reflects the rationale behind SDT. Second, although qualitatively distinct constructs, intrinsic motivation and work avoidance share a strong negative relationship. This

relationship is a good indication that additional variance in students labeled “amotivated” within self-determination theory, could be explained with the addition of a work avoidance component.

Baker and Wigfield (1999) replicated this model of multidimensional reading motivation, again using the MRQ as a measure of reading motivation. One of the researchers’ primary goals with this study was to examine in more detail the various dimensions of reading motivation with a larger sample size and confirmatory factor analyses (CFA), which was not used in the previous study (Wigfield & Guthrie, 1997). A second goal was to extend the relationships between reading motivation and reading behavior by including reading achievement measures as well as reading amount. Fifth and sixth grade students from six elementary schools were recruited to participate in the study. The MRQ was again used to assess student motivation, as well as part of the reading activity measure used previously. Additionally, the Gates-MacGinitie Reading Test and Comprehensive Test of Basic Skills (CTBS) were administered as standardized measures of reading achievement. A performance assessment was developed in order to assess reading comprehension in a more interpretive way than a standardized test provides. All of the measures were administered in late September and early October over a 3-day period.

In terms of supporting the idea that reading motivation is a multidimensional construct, Baker and Wigfield (1999) used CFA on the larger sample size to evaluate the factor structure of the 11 construct MRQ. The researchers tested a null, one-, two-, and three-factor model on the Self-efficacy, Challenge, and Avoidance MRQ items developed by Wigfield and Guthrie (1997). The CFAs confirmed a three-factor model was the best

fit for these items. This finding indicates that items designed to assess these three constructs are qualitatively different from each other. Correlations among the scales revealed strong positive correlations for intrinsic motivation (Curiosity and Involvement) with all other motivation constructs, except work avoidance. Work avoidance on the contrary was negatively related to self-efficacy, challenge, curiosity, involvement, and positively related to competition. The positive relationship between work avoidance and competition is an interesting finding, in that it adds a degree of complexity to the interpretation and design of work avoidance behaviors. Students who report higher levels of work avoidance, report lower levels of intrinsic motivation (curiosity and involvement) and self-efficacy and higher levels of competition. These findings both confirm and extend the findings of Wigfield and Guthrie.

In summary, Baker and Wigfield (1999) found the unique factor structure of the multiple constructs of motivation represented on the MRQ was supported by CFA. For example, work avoidance and intrinsic motivation have statistically distinct motivational profiles, for fifth and sixth grade students. This means that fifth and sixth grade students are able to make separate assessments about both avoiding reading activities and their intrinsic motivation for some reading activities. If CFA revealed that these were not statistically distinct, it would mean that students really viewed avoidance and intrinsic motivation as representing one underlying construct. Work avoidance and intrinsic motivation factored separately is an indication that students viewed those items as different. The correlations, however, between work avoidance and intrinsic motivation reveal strong associations between these two constructs. On the surface it appears as

though students with high intrinsic motivation tend to report low levels of work avoidance and vice versa.

Baker and Wigfield (1999) provide evidence for the multifaceted nature of student reading motivation in the fifth and sixth grades. In addition, their findings replicate and extend the findings initially reported by Wigfield and Guthrie (1997). The existing literature on the relationship between motivation and reading achievement as discussed here and in other studies supports the aims of the current investigation. Wigfield and Guthrie (1997) and Baker and Wigfield (1999) were initial attempts to provide evidence for the importance of examining multiple motivational constructs when predicting and explaining reading achievement. These studies demonstrate that in certain situations, specific motivation constructs are more or less supportive of a reading achievement outcome for elementary age students. This research provides evidence that a multifaceted perspective of motivation provides additional information about the influence of motivation on reading achievement beyond what was previously understood from studying one motivational construct alone. The next section builds upon the idea of multi-dimensional motivation and expands it into a new and promising direction for future research – affirming and undermining motivation.

Affirming and Undermining Aspects of Motivation for Reading: Examining Relations Between Approach and Avoidance Motivation for Reading

Rationale

The empirical research of the effect of motivation on various academic tasks has grown over the past decade to include both qualitative and quantitative studies, which underscore the significant impact that motivation can have on academic performance

(Chapman & Tunmer, 1995, 2003; Guthrie, Wigfield, & VonSecker, 2000; Wigfield, & Guthrie, 1997). A review of this literature reveals that the majority of the theoretical frameworks, in which the studies are conducted, discuss motivation as an approach tendency (Pajares, 1996; Ryan & Deci, 2000, 2002; Schunk, 2003). An individual either is motivated or they lack motivation. The underlying assumption is that everyone is regularly motivated to work towards some end goal. What is not mentioned in the majority of these theories is the idea that some students are motivated towards the goal of not achieving the given task or at least not exerting much effort to do so. Instead of simply not being motivated, these students are motivated to avoid completing the task (Chapman & Tunmer, 2003; Hidi & Harackiewicz, 2000; Middleton & Midgley, 1997; Oldfather, 2002).

Theoretically, the idea of positive and negative valences for motivation has been present in the literature since researchers first began to discuss human motivation (Reviewed by Elliot & Covington, 2001). Atkinson (1957) discusses two kinds of goals, or incentive variables, that illustrate “the relative attractiveness of a specific goal” or “the relative unattractiveness of an event that might occur as a consequence of some act” (p. 360). The dual nature of incentive variables, as discussed by Atkinson, naturally leads to two classes of motives, or goals: the need to maximize a desired outcome or the aim to minimize and avoid negative outcomes. In order to support his claim that some individuals choose to partake in more difficult tasks in order to avoid negative outcomes, Atkinson hypothesized theoretically about potential outcomes and task choices based on the difficulty of the task and the motivation both to achieve success and avoid failure.

One important point that Atkinson (1957) makes is that in order to feel a sense of accomplishment, a salient goal for those with a motivation to achieve, the task completed must be adequately difficult. At the same time, the task cannot be so difficult that success appears impossible. The risk of accomplishing the task successfully must be equally tempered with a positive potential for success. Atkinson hypothesizes that if an individual, whose motivation to achieve success is strongest, is free to choose amongst several tasks he would choose the task with the point of maximum approach motivation (where the potential for success is equal to .50). On the contrary, if the motive to avoid failure is stronger, Atkinson hypothesizes that this kind of individual given a choice of activities would choose either the easiest task or the most difficult where there is very little chance for success. These are the two tasks which minimize the individual's anxiety about the future. In the first case, the task is so easy that there is very little risk of failure and in the second situation the task is so difficult that failure would be expected and no cause of embarrassment or anxiety. Atkinson concludes with a pertinent assumption based on his hypothetical data: the stronger the need to achieve success (achievement motivation) relative to the motive to avoid failure, the higher the probability of success. This research and theoretical discussion provide a basis to explore both approach (motives to achieve success) and avoidance measures with an understanding that avoidance motives are more detrimental to achievement outcomes than approach motives.

Approach and avoidance motivation continues to be discussed in the study of goal theory. In a review on the need to establish approach and avoidance motivation as central to the field of motivation, Elliot and Covington (2001) discuss five arguments for the

inclusion of approach and avoidance motivation in future motivation theory and research. The first of these arguments is one that has already been articulated here – the long and rich philosophical and psychological history of approach-avoidance tendencies. Some psychological theories that do not explicitly discuss approach and avoidance tendencies include basic assumptions of the approach and avoidance distinction (Elliot & Covington, 2001).

Their second argument references the fact that all animate life, including human, has a biological response that mimics the approach-avoidance distinction. At an evolutionary level we are programmed to move towards “potentially beneficial stimuli and away from potentially harmful stimuli” (Elliot & Covington, 2001, p. 77). Following this line of thinking, Elliot and Covington (2000) see the automaticity of these responses as a third reason to include them in our thinking about motivation. While they discuss the idea that some of our approach-avoidance motivations are automatic responses, they are careful to make the point that while our reaction may be automatic this does not mean that cognitively we will always choose to follow this response. For example, although our initial automatic response is to withdraw from a painful stimuli, such as heat from a fire, many can think of examples where one would ignore that automatic avoidance response in order to save someone that we love from a fire. This is important as it places the locus of control within the individual and discourages the perspective that people behave in consistent ways because of specific conditioning from past experiences. We are not completely dependent upon environmental stimuli to determine our actions. The fourth argument that Elliot and Covington (2001) raise is one of neurophysiological data that supports the approach-avoidance distinction at a cellular level in the brain. This research

is difficult to interpret, however, which makes it an important area for future research but not conclusive at this point to rely on.

Finally, the fifth argument they discuss is the fact that the approach-avoidance distinction makes intuitive sense. While this is not an empirically supported point, on some level it is important to acknowledge that the approach-avoidance distinction just “makes sense.” People can relate to the idea and provide examples of situations that they willingly approach and those that they work hard to avoid. When placed in this context it seems clear that we cannot only be motivated to approach all situations. Sometimes we are motivated to avoid.

For the purposes of this study, I will refer to affirming motivations, which are conceptually similar to the approach motivation discussed previously, but theoretically distinct from achievement goal theory. Approach motivation, as defined previously, is the tendency to move towards a given goal. Affirming motivations are task specific and reflect the ability of the motivation to support a specific achievement outcome. Thus, affirming motivations for reading are motivations that support and enhance an individual’s ability to complete and achieve at a reading task. Assuming the multidimensional nature of motivation, I hypothesize that there are multiple motivations that affirm and support a student’s ability to achieve academically. These multiple motivations may assist the student in different ways, but all of the motivations facilitate the students’ ability to achieve academically.

The level of intrinsic motivation that the student feels facilitates his ability to complete the task. A student’s interest and enthusiasm in the task supports the student in his ability to tackle the achievement task. In the case of reading, a student who has

intrinsic motivation for reading is better able to pursue the reading task. Thus, intrinsic motivation for reading affirms his ability to persevere in the face of difficulties and successfully complete the reading task. A student's sense of agency in completing academic tasks can be measured in his perceptions of efficacy for the task. A student who reports high levels of self-efficacy believes that he is capable of performing the reading task. Specific to reading, a student's strong beliefs about his ability to read provide support and facilitate his ability to perform the reading tasks. Avoidance motivation provides an important addition to the discussion of achievement motivation in general.

The inclusion of avoidance motivation extends our current discussion of motivation in important ways. In this study, I will discuss avoidance motivations in the context of an "undermining" framework. Motivations that undermine achievement are those tendencies, which lead students to behave in a way that decreases their proficiency on achievement tasks. Thus a student who perceives that a task is difficult or wishes to avoid specific academic tasks is motivated to undermine the learning context. Including motivations that undermine achievement in a profile of student motivations may provide additional information about student motivation, which has not been identified in traditional motivation research. These students may present a unique motivational profile, which distinguishes them from the traditionally studied motivation groups. In the majority of the current research, students who have undermining tendencies are grouped with those students who simply lack motivation. Grouping these students together limits our understanding of these two distinct groups. By acknowledging the uniqueness of students who possess undermining qualities, we can better separate these students who have previously been discussed as one group.

This discussion is important and has practical implications for both researchers and practitioners. From a research perspective, including motivations that undermine achievement in theories and research helps to extend our understanding of students typically described as having less motivation for reading. With a further understanding of these students, research may reveal that certain practices designed to motivate students in the classroom may not be as effective for students with undermining motivation (Assor, Kaplan, Kanat-Maymon, & Roth, 2005; Assor, Kaplan, & Roth, 2002; Oldfather, 2002). Preliminary research reveals that students with avoidance tendencies have different emotional responses to tasks than peers who are approach oriented (Pekrun, Elliot, & Maier, 2006). Teachers need to be aware that traditional classroom practices to increase student motivation may not be affective for students who have avoidance tendencies.

The following section will examine three theoretical frameworks of motivation, which can be discussed from an affirming and undermining standpoint. These three theories are Self-Determination Theory (SDT), Social-Cognitive Theory and Social Goals. These theories were discussed and the affirming and undermining constructs, which extend from these theories, were conceptually defined. Finally, empirical studies written by researchers who have investigated each of these constructs with respect to academic achievement outcomes and, when available, reading achievement outcomes were reviewed.

Theoretical Evidence

At the center of discussions about motivation is a set of key assumptions about the nature of people. Some theories of motivation, such as Self-Determination Theory (SDT), assume that people “possess an active tendency toward psychological growth and

integration [...] individuals tend naturally to seek challenges, to discover new perspectives, and to actively internalize and transform cultural practices” (Ryan & Deci, 2002, p. 3). Some argue that this is an idealized view of human nature, constantly striving for a better sense of self and a better relationship with the world around us.

A different perspective of motivation is the assumption that people do not possess any innate desires or motives and our behavior is purely dictated by our prior encounters with stimuli (Skinner, 1953). Based on those encounters, we form reactions, which either encourage or discourage our participation in similar activities in the future. This assumption comes from operant behaviorists who “assume there is no inherent direction to development and suggest that behavioral regulation and personality are a function of reinforcement histories and current contingencies” (Skinner, 1953). Based on this theory humans are only moved to action based on our previous experiences with specific stimuli.

Motivation has also been discussed within the social-cognitive framework, which also shies away from the assumption that people innately strive to create a more unified sense of self. In social-cognitive perspectives, individuals are believed to possess multiple senses of self, which combine together depending on environmental cues (Ryan & Deci, 2002). Bandura (1977) discusses the fact that the act of attributing behavior to motivation does not help to explain or predict when such behavior will occur again or with what intensity it will occur. In social-cognitive theory, “people are neither driven by inner forces nor buffeted by environmental stimuli. Rather, psychological functioning is explained in terms of a continuous reciprocal interaction of personal and environmental determinants” (Bandura, 1977, p. 11-12). Thus, people repeat certain behaviors because they encounter environmental reasons to, that are then integrated into the personal system

of values and beliefs. The variety of perspectives available on the source of motivation, whether an innate human capacity or the result of repeated environmental encounters, is an important one that deserves further consideration. Can one of these theoretical perspectives be all encompassing and successful at explaining human motivation or is there some combination of these ideas that would best explain human motivation and behavior?

I will first explore the theory of Self-Determination Theory (SDT). The motivation constructs of intrinsic motivation and amotivation were conceptually defined and discussed in this section. Relevant empirical studies on the association of intrinsic motivation and amotivation with academic achievement and reading achievement will also be reviewed.

Self-Determination Theory

As discussed previously, SDT is based on the assumption that people are innately driven to make connections among their inner psychological needs and desires and the social world. This assumption of innate drives can be extended when applied to the idea that humans have certain innate needs. Among these needs are the basic necessities of human life, such as food, water and shelter. In addition to these physical needs, however, are the psychological needs we require to be happy, healthy, and functioning people. Ryan and Deci (2000) outline three innate psychological needs necessary for all humans: competence, relatedness and autonomy. The need for competence refers to “feeling effective in one’s ongoing interactions with the social environment and experiencing opportunities to exercise and express one’s capacities” (Ryan & Deci, 2002, p. 7). Humans have an innate desire to feel a sense of capability when completing a task and

they strive towards the goal of gaining and maintaining this sense of ability. Relatedness refers to “feeling connected to others, to caring for and being cared for by those others, to having a sense of belongingness both with other individuals and with one’s community” (Ryan & Deci, 2002, p. 7). Socially, Ryan and Deci (2002) suggest that we all require a feeling of connectedness with those in our social environment in order to function at an optimal level. Finally, autonomy refers to “being the perceived origin or source of one’s own behavior” (Ryan & Deci, 2002, p. 8). Autonomy is the most central of the three psychological needs discussed within SDT. Humans have a need and desire to feel in control of their decisions and actions. When environmental factors cause an individual to feel they are being controlled by outside forces, his sense of autonomy diminishes and his motivation for performing the task can also be effected (Deci et al., 1991).

If we accept the assumption that people are driven by their innate propensity to integrate their inner and outer world and the assumption that people are also driven by innate needs, than the discussion turns to what happens when these innate needs are not met. These assumptions affect the way that we view and interpret behavior. For example, think about a middle school student who dislikes school and reading. This student is distracted in class and does not appear motivated to participate in classroom activities or with fellow students. Based on the assumptions of SDT, we would say that the student is still innately driven by his need for autonomy, relatedness, and competence, but that the intrinsic motivation for these needs have been undermined by the classroom environment. Perhaps the teacher is perceived as very controlling. Therefore, the student’s undermining behaviors are a direct result of the student’s need for autonomy that is not being met in the classroom environment.

Based on this idea of undermining environmental factors, Deci et al. (1991) proposed a five-step model of degrees of what they term “internalization” (See Table 1, adapted from Ryan & Deci, 2000). They discuss internalization as a “proactive process through which people transform regulation by external contingencies into regulation by internal processes” (Deci et al., 1991, p. 328). People’s motives for performing certain tasks represents a continuum of increasingly internalized reasons with optimal performance occurring when behaviors are the most internalized.

Table 1

The Self-Determination Continuum Showing Types of Motivation with Their Regulatory Styles & Loci of Causality (Ryan & Deci, 2000)

		<i>Nonsel-Determined</i>				<i>Self-Determined</i>
<i>Motivation</i>	<i>Amotivation</i>	<i>Extrinsic Motivation</i>				<i>Intrinsic Motivation</i>
<i>Regulatory Styles</i>	Non-Regulation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
<i>Perceived Locus of Causality</i>	Impersonal	External	Somewhat External	Somewhat Internal	Internal	Internal

Within SDT, intrinsic motivation is at one end of a continuum with four different forms of extrinsic motivation in the middle and amotivation at the opposite end. In SDT, intrinsically motivated behaviors are those that people engage in for their own sake – “for the pleasure and satisfaction derived from their performance” (Deci et al., 1991, p. 327). These behaviors are initiated out of innate curiosity, interest, and the will to learn new things, even when specific rewards are not present (Ryan & Deci, 2000). Within the SDT

framework, intrinsic motivation is “an evolved propensity,” which is either sustained or subdued, given external conditions (Ryan & Deci, 2000, p. 70).

At the farthest end of the extrinsic motivation continuum is external regulation, which “refers to behaviors for which the locus of initiation is external to the person” (Deci et al., 1991). According to Ryan and Deci (2000), the least autonomous extrinsically motivated behaviors are externally regulated (p. 72). In external regulation individuals perform behaviors “to satisfy an external demand or reward contingency” (p. 72). While people may execute the behavior, their motive for performing the behavior rests outside of the self. This is the most externalized form of extrinsic motivation.

Introjected regulation “involves taking in a regulation but not fully accepting it as one’s own” (Ryan & Deci, 2000, p. 72). The motives for performing the behavior are more closely associated with enhancing the ego or avoiding anxiety. Introjection “is a relatively controlled form of regulation in which behaviors are performed to avoid guilt or anxiety or to attain ego enhancements such as pride” (p. 72). Thus, the individual is not motivated internally based on personal values or beliefs, but through external feelings of inadequacy or the potential to excel.

In contrast, identified regulation “reflects a conscious valuing of a behavioral goal or regulation, such that the action is accepted or owned as personally important” (Ryan & Deci, 2000, p. 72). In identified regulation, the primary motive for performing the behavior is still external to the activity itself, but the individual has identified with the ultimate goal. For example, if a student does reading outside of school, because they believe it is essential for getting into college the activity of reading is still extrinsically motivated because the student is not reading because it is interesting on its own.

Identified regulation differs from introjected regulation because the behaviors are self-determined in the sense that the decision comes from inside as opposed to external pressures.

The most autonomous form of extrinsic motivation is integrated regulation. Integrated regulation, “occurs when identified regulations are fully assimilated to the self, which means they have been evaluated and brought into congruence with one’s other values and needs” (Ryan & Deci, 2000, p. 73). Integrated regulation shares many characteristics with intrinsic motivation, but differs from it in that the behaviors are not completed out of inherent interest (p. 73).

Outside of the extrinsic motivation continuum Ryan and Deci (2000) discussed an additional level of motivation, which they considered non-regulation. According to Ryan and Deci (2000) amotivation is “the state of lacking the intention to act . . . [which] results from not valuing an activity, not feeling competent to do it, or not expecting it to yield a desired outcome” (Ryan & Deci, 2000, p. 72). As an example, people who are amotivated either choose not to act or they just go through the motions without any intentions (Ryan & Deci, 2002). Within SDT, intrinsic motivation and amotivation, though opposite ends of a continuum, are “theoretically, experientially, and functionally distinct types of motivation” (Ryan & Deci, 2000, p. 72). Research suggests that each of these forms of motivation builds upon each other and are most closely related to those next to them. In addition, each form of motivation within SDT predicts different academic outcomes (Otis, Grouzet, & Pelletier, 2005). This means that intrinsic motivation and amotivation are not dichotomous opposites, but qualitatively different

constructs. In this study, intrinsic motivation and amotivation were discussed and studied in more detail than has previously been the case.

Intrinsic motivation. Within SDT, intrinsic motivation is at one end of a continuum with four different forms of extrinsic motivation in the middle and amotivation at the opposite end. In SDT, intrinsically motivated behaviors are those that people engage in for their own sake – “for the pleasure and satisfaction derived from their performance” (Deci et al., 1991, p. 327). These behaviors are initiated out of innate curiosity, interest, and the will to learn new things; even when specific rewards are not present (Ryan & Deci, 2000). Within the SDT framework, intrinsic motivation is “an evolved propensity,” which is either sustained or subdued, given external conditions (Ryan & Deci, p. 70). For the purposes of this study, intrinsic motivation was defined within the reading domain as students’ enjoyment and pleasure in reading for the sake of reading.

Studies of intrinsic motivation and achievement. Intrinsic motivation is a frequently studied construct within academic achievement (Schiefele, 1991) and in relationship to other motivation constructs such as goal theory (Rawsthorne & Elliott, 1999). Intrinsic motivation has been linked to mastery goals and high levels of academic achievement (Deci et al., 1991). Intrinsic motivation has been studied in terms of general academic motivation, but it has also been studied in the specific domains of reading (Baker & Wigfield, 1999; Gottfried, 1990; Unrau & Schlackman, 2008; Wigfield & Guthrie, 1997). In general, students with high levels of intrinsic motivation for reading perform better on reading achievement tasks (Baker & Wigfield, 1999; Wigfield & Guthrie, 1997)

Amotivation. Because of the relative newness of this construct, like many motivational constructs, firm conceptual and operational definitions have yet to be written. Additional conceptual definitions beyond those discussed previously from Ryan and Deci (2000) are much more vague. Boiché et al. (2008) conceptually define amotivated individuals as those who “lack perceived competence because they do not feel able to perform the behavior, or they lack perceived control because they think their actions will not be adequate or sufficient to achieve a desired outcome” (Boiché et al., 2008). The most definitive and comprehensive study of the construct of amotivation states, “Amotivation can be defined as a state in which individuals cannot perceive a relationship between their behavior and that behavior’s subsequent outcome” (Legault et al., 2006, p. 568). These conceptual definitions of amotivation seem to range in terms of the source of the motivation and the action that occurs when amotivation is encountered.

Increasingly, amotivation has received attention as a construct of interest in SDT. Controlling for gender and age, amotivation has been shown to lead to poor adjustment for university students, higher levels of stress, and greater psychological distress while studying (Baker, 2004). Interestingly, in the same study neither extrinsic, intrinsic or amotivated behaviors were significantly related to achievement (Baker, 2004). Other researchers have attempted to study amotivation as a multidimensional construct. Amotivation has been shown through confirmatory factor analysis, to consist of four dimensions: ability beliefs, effort beliefs, characteristics of the academic task, and value placed on the task (Legault et al., 2006). In an additional study, findings revealed that two subtypes of amotivation, low-ability and low-effort, were statistically significantly negatively associated with academic performance (Legault et al., 2006).

Studies of amotivation and achievement. Some researchers have taken a one-dimensional approach to studying amotivation (Grouzet, Otis, & Pelletier, 2006; Ratelle, Guay, Vallerand, Larose, & Senecal, 2007) while others have examined amotivation as a multidimensional construct (Legault et al., 2006; Urdan, Ryan, Anderman, & Gheen, 2002). Legault et al. (2006) describe four dimensions of academic amotivation: ability beliefs, effort beliefs, characteristics of the academic tasks and value placed on the task. The idea of ability beliefs is heavily influenced by the discussion of Bandura's conceptualization of self-efficacy beliefs (Legault et al., 2006). Effort beliefs are related to the "student's desire and a capacity to invest the energy or effort demanded by a given behavior (Legault et al., p. 568). Thus, again relying on social cognitive theory, this dimension of amotivation is closely related to perceptions of ability. Individuals who believe they can achieve a specific task are more likely to put forth the effort to achieve the task. Value of the task refers to a student's belief that performing the task is of importance to him. Students who do not value academic activities are less likely to perform them or expend any effort on them. Finally, characteristics of the task may influence the degree to which a student wishes to engage in the academic activity. Examples of tasks that may promote amotivated behaviors include: "when a task is void of interesting or stimulating qualities and when it is boring, routine, tedious, arduous, or irrelevant" (Legault et al., p. 569).

Of particular interest for this study is the connection between the conceptual definition and the operationalization of amotivation. In studies that do not assume the multidimensional perspective of amotivation, item numbers and types vary. Questionnaire items from four studies of amotivation are listed in Table 2 along with the

conceptual definition stated in the original journal article. Examining the operationalization of amotivation, two trends emerge. First, amotivation as it has been previously examined is an affective construct reflecting dislike or disinterest in a specific task. Knowing a student's affective response to these items does not necessarily lend itself to predictive information about the student's behavior, because it only implies what the student is uninterested in, not how the student actually behaves. However, if we think of avoidance as a behavioral action which is the result of amotivated thinking then more applicable information is revealed. Thus, the more powerful predictor is not the amotivation, but the avoidance behavior, which more than likely results from the amotivation. It matters less whether a student agrees that they can't seem to invest the effort that is required, than avoiding the task because the student does not want to put forth the required effort.

Table 2

Conceptual Definitions and Sample Items from Four Studies of Amotivation

Reference	Conceptual Definition and Items
Boiché, Sarrazin, Grouzet, Pelletier, Chanal, (2008)	<p>“Amotivated individuals lack perceived competence because they do not feel able to perform the behavior, or they lack perceived control because they think their actions will not be adequate or sufficient to achieve a desired outcome” (p. 689)</p>
	<p>Three items - $\alpha = .78$</p> <ol style="list-style-type: none"> <li data-bbox="594 1562 1406 1629">1. I don't know why I go in gymnastics, if I could, I would get exempted. <li data-bbox="594 1635 1414 1667">2. But it doesn't seem worth it, I feel that I'm wasting my time. <li data-bbox="594 1673 1203 1703">3. I don't see why we should have gymnastics.

Legault, Green-Demers, & Pelletier (2006)	<p>“An absence of motivation” (p. 567).</p> <p>“Amotivation can be defined as a state in which individuals cannot perceive a relationship between their behavior and that behavior’s subsequent outcome” (p. 568).</p> <p>“Amotivated individuals cannot predict the consequences of their behavior, nor can they see the motive behind it. They may feel disintegrated or detached from their action and will thus invest little effort or energy in its effectuation” (p. 568).</p> <p>“The four subtypes of academic amotivation we propose are academic amotivation based on ability beliefs, effort beliefs, characteristics of the task, and value placed on the task” (p. 568).</p>
Value ($\alpha = .87$)	<ol style="list-style-type: none"> 1. Because, for me, school holds no interest. 2. Because studying is not valuable to me. 3. Because I have no good reason to study. 4. Because studying is not important to me.
Task ($\alpha = .87$)	<ol style="list-style-type: none"> 1. Because I find that studying is boring. 2. I don’t like studying. 3. Because I have the impression that it’s always the same thing everyday. 4. Because my schoolwork is not stimulating.
Ability ($\alpha = .86$)	<ol style="list-style-type: none"> 1. Because I don’t have what it takes to do well in school. 2. Because I don’t have the knowledge required to succeed in school. 3. Because I’m not good at school. 4. Because the tasks demanded of me surpass my abilities.
Effort ($\alpha = .76$)	<ol style="list-style-type: none"> 1. Because I’m a bit lazy. 2. Because I’m not energetic enough. 3. Because I can’t seem to invest the effort that is required. 4. Because I don’t have the energy to study.
Ratelle, Guay, Vallerand, Larose, & Sénécal (2007)	<p>“Amotivation refers to the lack or absence of motivation and is observed when individuals do not perceive the contingencies between their actions and their consequences” (p. 735).</p> <p>4 items - $\alpha = .85$</p> <ol style="list-style-type: none"> 1. Honestly, I don’t know; I really feel that I am wasting my time in school. 2. I once had good reasons for going to school; however, now I wonder whether I should continue. 3. I can’t see why I go to school and frankly, I couldn’t care

less.

4. I don't know; I can't understand what I am doing in school.

Walker, Greene, & Mansell (2006)	Based on SDT, but amotivation was not the primary focus of the study and was not conceptually defined.
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4 items - $\alpha = .85$

1. Honestly, I don't know, I really feel I am wasting my time in school.
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Urduan et al. (2002) identify four different avoidance behaviors: self-handicapping, avoidance of help seeking, avoidance of challenge and novelty, and cheating. These avoidance behaviors result from being amotivated to perform certain tasks. Based on the evidence from studies of the amotivation construct, amotivation and avoidance behaviors are very closely linked. It is unclear whether this is a vestige of the conceptual definitions of amotivation utilized in these studies or the operationalization of amotivation as avoidance behaviors.

The construct of work avoidance may be helpful in explaining this aspect of amotivation. Work avoidance goals "represent a type of goal orientation where students deliberately avoid engaging in academic tasks or attempt to minimize the effort required to complete academic tasks" (Dowson & McInerney, 2001, p.36). While distinct from mastery and performance goals, work avoidance goals may have an effect on student engagement and academic achievement. The work avoidant construct represents the absence of an achievement goal in an achievement setting, rather than the presence of a particular type of achievement goal (Elliot, 1999). Avoidance represents a distinct area of achievement goal theory that may help to extend discussions of amotivated behavior. Work avoidance has also been discussed as a reduction in effort when a failure is

anticipated (Jagacinski & Nicholls, 1990). University students were shown to report that they anticipated other students to reduce their effort when confronted with a difficult task with a high likelihood of failure. Interestingly, these same students reported that they would not reduce their own effort if confronted with the same situation. Thus, work avoidance has many dimensions of conscious and unconscious levels of awareness. Discussion of amotivation for this study will focus on the avoidance behaviors students engage in as the result of amotivated behavior.

The next section of the review discusses the second theory of motivation, social cognitive theory. Two additional constructs of motivation, self-efficacy and perceived difficulty, are conceptually defined. Relevant research studies on the relationship between these constructs and academic achievement, and where applicable, reading achievement, are discussed.

Social Cognitive Theory

If SDT is a theory based on our innate drives and desires, Social Learning Theory was originally based on the desires and drives we internalize based on prior experiences and encounters with environmental stimuli (Bandura, 1977). More recently, Bandura has emphasized that social cognitive theory assumes an agentic perspective of human development (Bandura, 2001). Bandura defines an agent as one who “intentionally make[s] things happen by one’s actions” (Bandura, 2001, p. 2). According to Bandura, the individual is both a *product* of the environment and a *creator* of the environment (Bandura, 2006). Thus, the idea of agency “embodies the endowments, belief systems, self-regulatory capabilities and distributed structures and functions through which personal influence is exercised” (Bandura, 2001, p. 2). People are capable of utilizing

multiple systems that allow them to operate as agents within the environmental world that they live and operate. Bandura goes on to describe that the main features of agency “enable people to play a part in their self-development, adaptation, and self-renewal with changing times” (p. 2). Within the context of discussing the multi-dimensional quality of motivation and the affirming and undermining aspects of motivation, this agentic perspective becomes particularly relevant. If the individual possess free agency to regulate his or her decisions and responses to the environment and also exercises an influence over the environment itself, than a more complex perspective of motivation is necessary to understand these multiple influences.

Bandura’s agentic perspective of social cognitive theory discusses four core features of personal agency: 1) intentionality, 2) forethought, 3) self-reactiveness, and 4) self-reflectiveness. According to Bandura (2001), *intentionality* involves “the representation of a future course of action that goes beyond an expectation or prediction of future actions and involves a proactive commitment to bringing them about” (p. 6). The representation of a future action does not necessarily incorporate a specific outcome. Often intentions can be enacted with unexpected and unwanted consequences. However, the ability to form these expectations and actively move towards them is the foundation of personal agency within social cognitive theory. *Forethought* requires that “people set goals, anticipate the likely consequences of prospective actions, and select and create courses of action likely to produce desired outcomes and avoid detrimental ones” (Bandura, 2001, p. 7). Forethought involves the constant reevaluations of prior goals and future goals in order to assure their alignment with our current state and goals.

Another important feature of agency for the purposes of this study is *self-reactiveness*. Bandura describes the importance of self-reactiveness in relation to self-evaluation and personal standards. In a sense, people “do things that give them self-satisfaction and a sense of pride and self-worth, and refrain from behaving in ways that give rise to self-dissatisfaction, self-devaluation, and self-censure” (Bandura, 2001, p. 8). Relating this perspective to affirming and undermining motivations, people are motivated to complete the activities that they feel they can accomplish and are motivated to avoid those things that do not paint them in the best light. Thus at times, people may find themselves in the position of acting in a way that undermines their capability to successfully perform the task, because they do not believe that they are capable of successfully performing it.

Finally, the fourth feature of agency is *self-reflectiveness*. Self-reflectiveness addresses one of the most fundamental constructs of personal agency and is directly related to our discussion of motivation. Bandura discusses our unique ability to metacognitively examine our thoughts and actions. Our ability to self-evaluate our performance is unique and can operate as a great motivator for either accomplishing a task or avoiding it. These beliefs about our abilities are referred to as self-efficacy. Our perceived self-efficacy “occupies a pivotal role in the causal structure of social cognitive theory because efficacy beliefs affect adaptation and change” (Bandura, 2001, p. 10). From an agentic perspective, these beliefs do not always enable us to perform a specific task. They can also influence us to avoid and not attempt certain tasks. Efficacy beliefs “influence whether people think pessimistically or optimistically and in ways that are self-enhancing or self-hindering” (p. 10). Thus, efficacy beliefs play a crucial role in the

activities that individuals choose to engage in and the environments that they choose to operate in.

Bandura (2001) further distinguishes between three different modes of human agency: 1) personal, 2) proxy, and 3) collective. Personal agency was discussed previously and is essentially the individual acting for his own sake based on his own perceptions of his ability to perform the task. Proxy agency acknowledges the fact that individuals cannot be experts in everything and that often the social structure of society requires individuals to seek the help of others. Thus, “people try by one means or another to get those who have access to resources or expertise or who wield influence and power to act at their behest to secure the outcomes they desire” (Bandura, 2001, p. 13). While the goal of proxy agency is to achieve a goal or objective, Bandura also emphasizes that proxy agency can also “impede the cultivation of personal competencies” (p. 13). Proxy agency is dependent upon the ability to access and choose individuals who can best meet our needs. We do not advance our competencies if we choose to rely on the wrong people to meet these needs. Finally, collective agency reflects the understanding that people are social individuals who often must work together based on some shared belief. This collective agency is not independent of the individuals making up the group. It exists solely due to the groups shared beliefs in their ability as a group to accomplish the goal. For the purposes of this study, we will focus on personal and proxy agency, as collective agency is beyond the interests of this study.

Social cognitive theory and the idea of human agency provides an interesting and comprehensive theoretical framework for discussing the affirming and undermining

aspects of motivation. This study builds upon the social cognitive framework to discuss self-efficacy and perceptions of difficulty.

Self-efficacy. Self-efficacy is defined as “people’s beliefs in their capability to exercise some measure of control over their own functioning and over environmental events” (Bandura, 2001, p. 10). A meta-analysis of self-efficacy found that it is a consistent predictor of academic achievement and that domain specificity is important in order for people to make more precise and accurate efficacy beliefs (Multon, Brown, & Lent, 1991). Therefore, this study will specifically address self-efficacy beliefs for reading. Self-efficacy for reading reflects a student’s perceptions of competence or, “beliefs regarding ability and proficiency in reading tasks” (Chapman & Tunmer, 1995, p. 154). Self-efficacy for reading, therefore, refers to a student’s perceptions of competence and beliefs in his ability to complete a reading task.

Studies of self-efficacy and reading achievement. Studies of self-efficacy are generally situated within a specific domain because of the way that Bandura defines and explains self-efficacy as a motivation. In general, researchers have found that high levels of self-efficacy for reading specific tasks lead to higher levels reading achievement performance (Baker & Wigfield, 1999; Schunk, 2003; Wigfield & Guthrie, 1997). In addition, students with high levels of self-efficacy for reading persist longer at the task and put forth more effort to accomplish the reading task (Schunk, 2003). Students who believe that they are good readers tend to be correct in their assessments and actually perform better than their peers who do not believe that they are good readers.

Perceived difficulty. One of the factors that may influence a student’s decision to avoid a task is the perceived difficulty of the task. Because self-efficacy is based on an

individual's perception of their ability to perform a specific task, if a student perceives that the task may be too difficult they will be less likely to perform well on the task. Difficulty can be helpful, as people expend more effort for a task that they perceive as more difficult (Schunk, 2003). However, there is a fine balance between a difficult task which students are willing to expend a greater amount of effort to achieve and a task that is perceived to be impossible to accomplish.

Studies of perceived difficulty and reading achievement. In their development of the Reading Self-Concept Scale (RSCS), Chapman and Tunmer (1995) wanted to distinguish between children's competence beliefs and their perceptions of difficulty. They defined perceptions of competence as, "beliefs regarding ability and proficiency in reading tasks" (Chapman & Tunmer, p. 154). They differentiate competency beliefs from perceptions of difficulty, which they define as, "beliefs that reading activities are hard, or problematic" (p. 154). The example they offer is helpful in explaining the distinction between these two concepts:

Because young children can hold positive self-perceptions of ability while also have self-perceptions of difficulty in academic work, we propose that negative academic self-perceptions may not be revealed by young children solely on the basis of low ratings on self-concept items that refer positively to competence (e.g., "I am a good reader"; p. 154).

Essentially, they argue that asking a student whether or not they are a good reader may not be fruitful, because students' responses often do not provide a full profile of their self-perceptions. Students are capable of saying they are a good reader, while at the same

time acknowledging that some aspects of reading are still difficult for them (Chapman & Tunmer, 1995).

In the development of the RSCS, Chapman and Tunmer (1995) initially conducted 4 studies to verify the factor structure, validity, and predictive ability of the three factors: perceptions of competence, perceptions of difficulty and attitudes. The first two studies confirmed the three factor model, which led to the next two studies on the predictive ability of these constructs. In the first of these studies, Chapman and Tunmer found strong positive correlations between reading and reading-related performance and the difficulty subscale for students in the first year of school. By the fourth year of school, there was a strong relationship between performance, competence and difficulty, which only increased in the fifth grade (Chapman & Tunmer, 1995). In a later paper, Chapman and Tunmer (2003) discussed the long term implications of reading difficulty early on for children:

Beginning readers who experience initial success in learning to read can engage in reading for information as well as for pleasure, whereas those who experience difficulty are usually encumbered by the less rewarding process of developing basic word-level competence. (Chapman &

Tunmer, 2003, p. 6)

These statements have implications for this study, because it may be an indication of a precursor to avoidance behavior as well. If students experience difficulty early on with the routine task of learning to reading they may develop avoidance strategies that undermine the student's ability to learn to read.

These researchers also found evidence that children with negative academic self-concepts in the second year have significantly poorer phonological sensitivity skills and letter-name knowledge at the beginning of schooling than those with positive academic self-concepts (Chapman, Tunmer, & Prochnow, 2000). Chapman and colleagues conducted a study on first, second and third graders reading self-concept, development of academic self-concept and early reading-related skills and performance. Chapman et al. (2000) used the Perception of Ability Scale for Students to assess academic self-concept in the students. The scores on this measure from the end of the second year were used to assign children to either the positive, negative, or typical academic self-concept group. The researchers grouped the children based on their academic self-concepts in the middle of the three-year longitudinal study. Reading self-concepts for children with negative academic self-concepts were already more pessimistic toward reading than the attitudes of the positive and typical self-concept groups at 6 to 8 weeks into the first semester of school (Chapman et al., 2000). Previous research had suggested that children begin school with an optimistic attitude that remains until two or three years into the schooling process when inflated self-perceptions more accurately begin to reflect real academic performance. Because reading self-concepts in this study appeared so rapidly in conjunction with reading difficulties, Chapman and colleagues concluded that domain-specific self-concepts may develop sooner than more general academic self-concept.

These articles support the argument for the distinctive nature of perceived difficulty as compared to self-efficacy statements. Children who are emergent readers are able to distinguish between their perceptions of the difficulty of reading, while at the same time holding self-efficacy beliefs about their ability as readers. Traditionally, when

discussing efficacy beliefs researchers have focused on students either holding self-efficacy beliefs that contribute to their reading, or not holding them at all. Chapman and Tunmer (1997) extend that discussion to include students who may hold efficacy beliefs, while also perceiving difficulty about reading. The addition presents a more complex and multi-dimensional view of motivation than can be discussed from the traditional self-efficacy model.

Next, the role of social influences will be discussed in the framework of social motivations and social goals. Social motivation will be defined within the social aspects of achievement goal theory, social motivations that undermine and affirm achievement will be conceptually defined and relevant literature will be reviewed.

Social Motivation

Social motivation is currently an understudied aspect of student motivation in the classroom, which is surprising given the extensive attention paid to the influence of peers, parents, and teachers in the developmental psychology literature. There are signs that this oversight is changing with the growing body of work on prosocial goals (Wentzel, 2003) and a recent special issue of *Journal of Experimental Education* entitled “The role of interpersonal relationships in student motivation” (Anderman & Kaplan, 2008). This growing literature indicates that peers in the classroom context may have a profound influence on the goals, motivations, and behaviors of their peers (Urdan & Schoenfelder, 2006). Peers of similar academic achievement tend to associate together in peer groups and share certain motivational and behavioral characteristics (Ryan, 2001). There is even some evidence that peer groups can influence individual motivation over time, including intrinsic value and attitudes about school (Kindermann, 1993;

Kindermann, McCollam, & Gibson, 1996) and academic engagement (Kindermann, 2007). Research on the influence of peers on achievement motivation is therefore an important aspect of the culture that students exist in.

Researchers of social motivation utilize several different constructs of motivation to capture the relationship between social factors and motivation. Recent social motivation researchers have examined the relationship between parents and children (Bong, 2008), the role of peer climate and best friends (Nelson & Debacker, 2008), student belongingness (Nichols, 2008), and prosocial goals (Wentzel, Filisetti, & Looney, 2007). For the purposes of this study, prosocial interactions will be examined which are loosely situated within the Social Goals framework.

The literature on the influence of achievement goals in the classroom on academic achievement is extensive. In a recent review, achievement goal theory is discussed as one of the “most prominent theories of motivation” (Meece et al., 2006, p. 489). Achievement goal theory is situated in a social-cognitive view of motivation, however it does not focus on ability beliefs or self-perceptions. Achievement goal theorists believe that behavior is “purposeful, intentional, and directed toward the attainment of certain goals” (Meece et al., 2006, p. 490). Specifically, achievement goal researchers are interested in the goals students have which involve the “development or demonstration of competence” (p. 490). In general, achievement goal theory has focused on the orientation that students have to accomplish specific tasks. The research has mainly focused on distinctions between mastery goals and performance goals. Mastery goals are “defined in terms of focus on developing one’s abilities, mastering a new skill, trying to accomplish something challenging, and trying to understand learning materials” (Meece et al., 2006, p. 490). In

this way, the construct is similar to intrinsic motivation discussed previously from SDT. Conversely, performance goals “focus on demonstrating high ability relative to others, striving to be better than others, and using social comparison standards to make judgments of ability and performance” (Meece et al., 2006, p. 490). While this theoretical orientation has produced an extensive line of research and correlates in meta-analyses with intrinsic motivation (Rawsthorne & Elliott, 1999), there is an additional branch of researchers interested in the role of student’s social goals which has received far less attention (Covington, 2000). Though Covington (2000) discusses that our understanding of prosocial goals are “not nearly as advanced as our understanding of the role of academic goals” he acknowledges that the study of social goals may allow for a deeper understanding of academic achievement than the study of goal orientations on their own. Urdan and Shoenfelder (2006) commented that “although the processes through which peers and friends influence each other in school is not fully understood, the belief that social and academic goals are necessarily in conflict has been replaced with the view that the desire to affiliate with friends and peers can undermine, enhance, or have little effect on motivation and achievement” (p. 342). Thus, social goals are now viewed as a converging influence on student achievement with achievement goals, as opposed to a conflicting model where students possess one or the other.

Social competence and social goals have been examined in a variety of settings and contexts (Wentzel, 1991; Wentzel, 2005; and Wentzel, Baker, & Russel, 2009). Social competence is an individual’s belief that he or she can successfully navigate the interactions and relationships in a particular context. Social competence can be further investigated as a student’s achievement of social goals (Wentzel, 2005). Social aspects of

the classroom can also be studied in terms of a peers acceptance or rejection and social status within the educational context (Wentzel et al., 2009). Based on all of the various facets of social goals framework, it is important in this study to specifically define both the goals and interactions of interest.

A recent study of social goals, self-efficacy and achievement goals with middle school students found that adolescents who felt that their classmates valued their opinion and respected them reported more adaptive motivations for school (Nelson & DeBacker, 2008). This study did not explain the relationship between social influence and achievement, however, the implications for the relationship between peer influences and motivation is important for the current study. In a similar study, social goals, self-efficacy and intrinsic value for reading, and academic goal pursuit were investigated longitudinally in relationship to English grades and self-reported efforts in English class (Wentzel, 1996). Results indicated that social goals was a predictor of 6th and 8th-grade English classes even after controlling for academic motivation variables (Wentzel, 1996). This study lays the foundation for the examination of social goals in relationship with other academic motivations. The fact that social goals predicted English grades after taking into account other academic motivations reveals the important role that social goals play in motivating student achievement. Prosocial goals are most often discussed as an affirming motivation, however, there is evidence that this construct can also be studied through an undermining framework (Elliot, Gable, & Mapes, 2006). In their study, Elliot et al. investigated social-approach and avoidance goals within friendships with the aim of testing the connections between friendship goals and relational outcomes (i.e., relationship satisfaction, loneliness, and the frequency and impact of positive and

negative relational events). They found longitudinal support for an approach-avoidance hierarchical model of motivation within the social domain (Elliot et al.). This study provides evidence for the belief in a relevant undermining characteristic of prosocial goals which has not been previously discussed or defined within the social goal literature.

Prosocial goals. Theoretically, prosocial goals stem from the study of the extensive system of personal goals an individual possesses. There are multiple definitions of personal goals in the social domain. First, goals have been defined as “what an individual wants to achieve in a particular situation” (Wentzel et al., 2007, p. 896). Second, personal goals in the social domain have been defined as “reasons for engaging in certain types of behavior” (Wentzel et al., p. 896). Thus, the combination of these definitions allows for the study of both the content of students’ social goals in the classroom and their reason for why these goals are important. There is a fine distinction between the purposes and intentions behind achievement goals versus prosocial goals. Wentzel (1996) elaborates on this distinction: “With respect to motivation at school, a focus on what students are trying to accomplish in the classroom is in contrast to academic goal orientations that focus on why students try to achieve academically” (p. 393). Thus, the purpose of prosocial goals is the action the student is attempting to accomplish plus the rationale behind the action. Specifically, in the classroom context, researchers are interested in prosocial goals to achieve prosocial outcomes in the classroom, such as “to help, cooperate, and follow rules in the classroom” (Wentzel et al., 2007, p. 896). Research evidence suggests that students who want to pursue these goals in the classroom, typically engage in the behavior they have the goal to achieve (Wentzel, 1996; Wentzel et al., 2007). In this study, prosocial goals were examined implicitly as

prosocial interactions. These interactions included desires and behaviors: to share opinions about reading, show interest in classmates' and friends' reading, and offer help to classmates and friends with reading.

Students may choose to adopt prosocial goals for a variety of reasons. Wentzel et al. (2007) discuss three different reasons that students may have for pursuing prosocial goals: external reasons, introjected reasons, or internal reasons. An example of an external reason for a student to pursue prosocial goals would be if a student behaved in class purely because the teacher threatened punishment if the student did not comply with the classroom rules (Wentzel et al., 2007). The student's reason for pursuing prosocial goals is external to himself, as it originates from the teacher. An example of an introjected reason for a student to pursue prosocial goals would be if a student desired to help or cooperate in the classroom in order to gain a positive sense of self or to avoid feeling guilty about not helping. The student creates prosocial goals, which will enable her to maintain a certain sense of self that has been internalized to some degree, but not integrated into the full self-system. A student who has internal reasons for pursuing prosocial goals, helps, cooperates and follows the rules in his classroom because he values prosocial behavior (Wentzel et al., 2007). This system of classification for the rationales behind students' prosocial goals is not necessarily hierarchical, but instead it represents the range of reasons for pursuing prosocial goals that students bring into the classroom context (Wentzel et al., 2007).

As one of the focuses of this study is the association between motivation and reading achievement, I am interested in applying the idea of prosocial interactions to the reading domain. Thus, referring back to the first definition of prosocial goals, the

“particular situation” in this study is a reading task. The amount of research, which indicates that students approach the classroom context with goals to actively contribute and assist in the social fabric of the classroom, indicates that it may be possible to apply these same goals in a more specific situation. Thus, prosocial goals for reading refer to the intention to assist other students in reading activities, the goal to exchange reactions to reading and the aim of enjoying relating to other students about the content of reading. Thus, the individual possesses the goal to help, cooperate, and follow the rules with other students in a reading specific context. Interacting interpersonally with other students in reference to reading enhances the well-being of the individual, the self and the relationship.

We can discuss this idea in the context of two student examples. A student who wishes to pursue prosocial goals in a reading context may willingly offer to help peers who are struggling to accomplish certain reading tasks. He may have various reasons for desiring to provide assistance to the struggling student. For example, he may know that if he does not help the other student he will get a poor grade on the assignment or his teacher will scold him. He may want to help because it will make him look good in front of his peers and show off his reading ability. Or he may want to help because he truly values helping other people as part of his identity as a student in the class. That is not to say, however, that only excellent readers may pursue prosocial goals for reading.

Another student may not be the best reader in the class, and therefore, may not be as capable of offering help to other students. However, she can still cooperate with other students and teachers in her reading class. This may involve listening quietly to other students when they share their opinions about reading, showing respect for other

student's ideas, and participating in the classroom dialogue about reading assignments. She may have a variety of reasons for wishing to cooperate with other students. First, she may be afraid of her teacher giving her a low grade for not participating or listening quietly. She may have introjected reasons for pursuing goals of cooperation with classmates, such as an increased feeling of competence when she's successfully able to participate in the classroom dialogue about reading activities. Finally, she may have internal reasons for valuing prosocial behavior that is congruent with cooperating in the classroom environment on the reading assignment with teachers and other students.

These examples illustrate the idea that the construct of prosocial interactions, which have been historically discussed in reference to the classroom context in general, could be applied to the domain specific context of reading. Evaluating a student's prosocial interactions for reading may help to explain associations with reading achievement better than measuring prosocial interactions in the academic setting in general. Research evidence on domain specific motivation has shown that student's often hold very different motivational beliefs depending on the academic domain (Wigfield et al., 2004). Thus, it is not too much of a stretch to propose that evaluating students' prosocial interactions for reading may yield new information in the association with reading achievement that research on prosocial interactions in general has not yet investigated.

Antisocial goals. Antisocial goals have not been discussed fully or empirically defined conclusively in the literature at this point. Researchers have investigated antisocial behavior and have found positive associations with loneliness, peer rejection, lack of friends and low academic performance (Bandura, Caprara, Barbaranelli, Gerbino,

& Pastorelli, 2003; Wentzel & Erdley, 1993). The construct of antisocial behavior, however, is not well defined or articulated. For the purposes of this study, antisocial goals will be defined in contrast to prosocial goals discussed previously. Building upon the understanding of prosocial interactions, Building upon the understanding of prosocial goals, I define a student with antisocial goals as one who tries to avoid helping other students, attempts to avoid interacting with other students, and makes fun of other students' opinions and comments about reading. In this study, antisocial goals were examined implicitly as antisocial interactions. These interactions included desires and behaviors: to make fun of classmates' and friends' opinions about reading, to disrespect other students' and friends' opinions about reading, and to convince classmates and friends that reading is a waste of time.

This definition is based upon the idea of providing an inverse to prosocial goals as discussed by Wentzel et al. (2007). The term "antisocial" in this situation should be distinguished from the definition of antisocial, which has been extensively researched in the human development literature. The term "antisocial" in this study reflects the intention of students to not comply with the formal or informal rules of social settings surrounding reading activities. Therefore, while aggressive acts could be associated with this kind of goal, they are not at the core of this study.

As in prosocial goals, this student may have a variety of reasons for pursuing antisocial goals. A student may have introjected reasons for avoiding interactions with peers in the classroom setting. For example, she may wish to avoid not performing well in front of her classmates or she may feel that participating with peers slows her down. She may also have peers who view her as a student who does not value school and by not

cooperating and following the rules in the classroom, she is upholding peer or teacher expectations. She may also have internal reasons for not trying to participate socially in the classroom. Perhaps she has internalized the perspective that antisocial behavior is valuable to her identity and sense of self as a student in the classroom. This profile may make more sense if we consider students who by middle school have adopted the identity of a rejected or difficult student in the classroom. Other students and teachers can identify this student as the one who regularly engages in antisocial behavior. I would hypothesize that this student has internalized antisocial goals.

Applying this concept to the reading domain, antisocial goals for reading refer to the intention to avoid assisting other students in reading activities, goal to avoid exchanging reactions with others about reading and an aim of avoiding relating with other students about reading (or relating in a teasing or other negative way). Consider a student who pursues antisocial goals in reading class. He is a good reader, but he does not help other students when they are having problems reading. He would rather read his own books that he brings from home, than waste time trying to help other students who do not read as well. His reasons for not helping other students may be linked to his identification within the classroom as someone who is a loner without a lot of friends. He may also feel that antisocial behavior keeps him from being ridiculed by classmates or peers for being too smart. This student may comply to the teachers rules, but may avoid social interactions with peers to the extent that he is able. The hypothesis would be, however, that although he is a good reader, by restricting the social aspect of his engagement in the classroom he is hindering his reading progress. Perhaps is he was more willing to help

and cooperate socially with others on reading activities his knowledge of reading and confidence about his reading ability would improve.

A different example of a student who might pursue antisocial goals for reading is a student who uses antisocial goals to undermine the reading activity. This student is unwilling to help or cooperate with others and fails to follow the rules in the classroom. The reasons behind this student's antisocial goal pursuit may be the result of poor reading skills, which the student wishes to hide from peers. Perhaps when she has interacted socially in the past with other students in reading contexts she stumbled on words and was unable to make meaning out of the text. Negative social reactions in that context may now cause her to undermine those activities by refusing to cooperate with other students ridiculing their ideas.

These examples illustrate that the pursuit of antisocial goals for reading is not necessarily restricted to students with high or low levels of reading achievement. Of crucial interest is the reason why students are pursuing specific goals in the classroom. In the case of antisocial goals, students may have a wide variety of reasons for why they desire to avoid social interactions pertaining to reading. Understanding the different social goals students hold and their reasons for why they pursue these goals will aide in providing a more complete profile of student motivation than traditional achievement motivations have investigated in the past.

Including both prosocial and antisocial interactions in this investigation will allow for exploration of the affirming and undermining aspect of students' social goal pursuits for reading inside school and outside school. Some students, who are not particularly prosocial, may be associated very differently with reading achievement than those

students who choose to pursue antisocial interactions. Thus, by including both the affirming and undermining aspects of social motivation we can further capture the complete range of students' social interactions in the classroom specific to reading.

In summary, in this study I will investigate six constructs of motivation derived from two different theories of motivation and one conceptual framework of social goals incorporating affirming and undermining aspects of motivation. The conceptual definitions of these six constructs along with their theoretical origins can be viewed in Table 3.

The next section of the review examines the effect of the context for reading on student motivation. Relevant literature that has examined the importance of reading context will be reviewed and school and outside of school contexts will be conceptually defined.

Table 3

Theoretical Origins and Conceptual Definitions for Six Affirming and Undermining Constructs of Motivation

Theory	Motivation Construct	Conceptual Definition
Self Determination Theory (SDT)	Intrinsic Motivation	Behaviors people engage in for their own sake – “for the pleasure and satisfaction derived from their performance” (Deci et al., 1991, p. 327). These behaviors are initiated out of innate curiosity, interest, and the will to learn new things, even when specific rewards are not present (Ryan & Deci, 2000).
	Avoidance	The conceptualization of avoidance motivation in this study is a combination of amotivation from SDT and work avoidance from Goal Theory. Amotivation “can be defined as a state in which individuals cannot perceive a relationship between their behavior and that behavior’s subsequent outcome” (Legault et al., 2004, pp. 568). This perception can lead the individual towards exhibiting work avoidance goals and behaviors, such that they “deliberately avoid engaging in academic tasks or attempt to minimize the effort

		required to complete academic tasks” (Dowson & McInerney, 2001, p.36).
Social-Cognitive Theory	Self-Efficacy	Self-efficacy is defined as “people’s beliefs in their capability to exercise some measure of control over their own functioning and over environmental events” (Bandura, 2001, p. 10). With regards to reading, self-efficacy has been defined as “beliefs regarding ability and proficiency in reading tasks” (Chapman & Tunmer, 1995, p. 154).
	Perceived Difficulty	Competence beliefs as discussed by Bandura are influenced by an individual’s beliefs about the complexity of the task. Perceptions of difficulty for reading are defined as, “beliefs that reading activities are hard, or problematic” (p. 154).
Social Goals	Prosocial Goals	Goals refer to “what an individual wants to achieve in a particular situation” (Wentzel et al., 2007, p. 896). Based on this definition, prosocial goals in the classroom context reflect the student’s desire “to help, cooperate, and follow rules in the classroom” (Wentzel et al., 2007, p. 896).
	Prosocial Interactions	In this study, prosocial goals were examined implicitly as prosocial interactions. These interactions included desires and behaviors: to share opinions about reading, show interest in classmates’ and friends’ reading, and offer help to classmates and friends with reading.
	Antisocial Goals	Building upon the understanding of prosocial goals, I define a student with antisocial goals as one who tries to avoid helping other students, attempts to avoid interacting with other students, and makes fun of other students’ opinions and comments about reading.
	Antisocial Interactions	In this study, antisocial goals were examined implicitly as antisocial interactions. These interactions included desires and behaviors: to make fun of classmates’ and friends’ opinions about reading, to disrespect other students’ and friends’ opinions about reading, and to convince classmates and friends that reading is a waste of time.

Changes in Reading Motivation for School and Non-School Contexts

Rationale for Importance of Context

The majority of research conducted on reading comprehension and reading motivation occurs in the classroom setting (Chapman & Tunmer, 2003; Chapman et al.,

2000; Cox & Guthrie, 2001; Meece & Miller, 1999; Meece & Miller, 2001). Often, this fact is overlooked when reporting and discussing reading motivation findings. Reporting these findings while disregarding the context may make it difficult to separate the motivations students feel for reading for school and for their own enjoyment. This assumption does not allow for the examination of variation in the diverse motivations and interests students have in reading inside and outside of the school context (McKenna et al., 1995). Research on reading motivation discussed previously has laid out the idea that students possess multiple motivations, which help or hinder their progress in accomplishing reading tasks (Guthrie & Wigfield, 1999; Wigfield & Guthrie, 1997).

An additional factor influencing student motivation and reading comprehension is the context for the reading. Guthrie and Wigfield (2005) discuss this as “situational motivation.” In their discussion of this concept, they mainly focus on situational interest in a reading topic. However, situational motivation can also be discussed in reference to the context in which the student is reading. Students who only read, because they are in school, or at home because reading homework has been assigned, may be motivated in very different ways from students who choose to read at home or in school for their own information, pleasure or enjoyment. Traditionally, the latter students are discussed in terms of having intrinsic motivation for reading (Gottfried, 1990). The question examined here is whether students possess intrinsic motivation for reading in school. The way that researchers have worded and assessed intrinsic motivation in the past has not addressed the specific readings that students’ do for their own enjoyment. For example, Gottfried (1990) examined young children’s motivation for math and reading as well as their perceptions of difficulty. In her definition of intrinsic motivation, she states that academic

intrinsic motivation is “enjoyment of school learning; an orientation toward mastery, curiosity, and persistence; and an orientation to learn challenging, difficult, and novel tasks” (Gottfried, 1990, p. 528). Thus, she asserts that she is interested in *academic* intrinsic motivation. However, the items that the students responded to were not grounded in the school or academic context. An example of academic intrinsic motivation for reading was, “I like learning new things in reading” (Gottfried, 1990, p. 527).

The researcher did not indicate whether the students were provided with explicit instructions focusing them to think about reading that they do for school. In a second example from the same study, self-perception of competence, was assessed by asking students to rate whether the following statement was *Very True*, *A Little True* or *Not True*: “I do well in reading” (Gottfried, 1990, p. 528). This efficacy statement could be in relationship to any reading that the student does, not necessarily his or her perceptions about academic reading specifically. Given the previous discussions of the differing motives students may have which influence their motivation for reading, it seems reasonable to hypothesize that there may be some students who are efficacious about reading that they do at home, but do not possess as high efficacy beliefs about reading that they do in school. Few studies have examined the reading context when studying student motivation for reading, and the studies that have were designed to aide classroom teachers more than motivational researchers (McKenna & Kear, 1990).

Evidence Supporting Importance of the Reading Context

The Elementary Reading Attitude Survey (ERAS) was developed in order to measure elementary school students’ attitudes towards recreational and academic reading

(McKenna et al., 1995). In the discussion of ways that the ERAS may be a useful tool for teachers, the researchers describe four general response patterns that can result from students' attitudes towards the two different contexts for reading (McKenna & Kear, 1990). When thinking about a student's attitudes towards reading recreationally and academically, we can consider both ends of the spectrum first. A student may express negative attitudes towards reading recreational and academic books. This student is who teachers and researchers often discuss as being low in motivation and engagement. A second complimentary profile exists in those students who are high in both academic and recreational reading. This student has positive attitudes for reading, regardless of the context. Perhaps the most interesting profiles for our purposes, however, are those students who have some combination of the two attitudes towards recreation and academic reading. A student may have positive attitudes towards recreational reading, but low attitudes for academic reading. This student enjoys reading for fun, but does not enjoy reading books provided for academic purposes. An alternative profile would be those students who have high attitudes for academic reading, but negative attitudes for recreational reading. This profile is perhaps less intuitive, but perhaps this student lacks the appropriate resources outside of the classroom context to foster high attitudes towards recreational reading. Knowing of these two profiles provides new and important information for classroom teachers and researchers who are interested in improving engagement in reading. Students' attitudes may vary based on the purpose and intention of the reading activity provided them and their own preferences.

It seems likely, therefore, that if attitudes can vary greatly depending on the recreational or academic context that students' intrinsic motivation, avoidance, self-

efficacy, perceptions of difficulty, prosocial and antisocial goals might be associated with the context as well. Careful attention should be paid to the reading context referenced in motivation questionnaire items; in the directions and in the items themselves. We cannot assume that students are referring to the reading context we intended unless we are specific about what that context is in the items.

For the purposes of this study, reading for school will be defined as reading that students complete for the purpose of meeting the goals of an assignment initiated by the teacher. The assignment does not have to be completed in school, but the purpose behind the assignment is directly associated with school (i.e., homework assigned by the teacher). Reading outside of school will be defined as reading that students complete for the purpose of their own enjoyment or interest. The assignment does not have to be completed outside of school, but the purpose behind reading is not related with any assignments from school.

Reading Motivation in Adolescent Students

Rationale for Importance of Studying Adolescent Readers

There is abundant evidence in the research literature that adolescence in middle school is an excellent time to investigate achievement motivation in the classroom (Meece et al., 2006; Patrick, Ryan, & Kaplan, 2007). Middle school in particular is an important time of transition and change academically, motivationally and socially. Reviews of the literature on achievement goals during this time period indicate that middle school is a time of increasing performance goals and decreasing mastery goals as a result of the change in classroom structure (Eccles, Wigfield, Midgley, & Reuman, 1993), instruction (Meece, et al., 2006) and reward structure (Wentzel, 1999). These

results are an indication that the middle school years are a prime time for transition and changes in motivation for students. In addition, longitudinal studies of elementary students (Gottfried, 1990) and middle school students (Caprara, Fida, Vecchione, Del Bove, Vecchio, Barbaranelli, & Bandura, 2008; Gottfried, 1985) show that motivation declines in middle school. These studies in the middle school years demonstrate that students enter middle school with decreasing amounts of interest and intrinsic motivation for classroom activities and that decline continues throughout middle school (Eccles, Wigfield, Midgley, Reuman, Mac Iver, & Feldlaufer, 1993).

Several longitudinal studies have investigated the role of motivation on academic achievement through the middle school years. These studies have included investigations of the longitudinal changes in self-efficacy (Caprara et al., 2008; Davis-Kean, Huesmann, Jager, Collins, Bates, & Lansford, 2008), achievement goals (Shim, Ryan, & Anderson, 2008;), competence beliefs (Wigfield & Eccles, 1994), and goal orientations (Levy-Tossman, Kaplan, & Assor, 2007). These longitudinal empirical studies support the findings of the review analyses that motivation for school in general across multiple constructs declines during the middle school years.

An adolescent sample is also of interest for the current study because of the interest in the role that prosocial and antisocial goals play in achievement motivation. Evidence certainly suggests that middle school students begin to rely increasingly on their peers in order to validate and define important aspects of their identity in the school context and outside of it (Levy-Tossman et al., 2007; Nichols, 2008). Although there is evidence to suggest that among the social impacts on students, teachers may be more influential than peers (Wentzel, 1998) there is also evidence that peers contribute greatly

to a students' social and achievement goals in the classroom (Barry & Wentzel, 2006). The influence of peers has also been studied in more diverse urban settings (Long, Monoi, Harper, Knoblauch, & Murphy, 2007). While the literature appears extensive on middle school students and the association between achievement motivation and academic achievement, far fewer studies have examined the effects of the social and contextual factors in middle school on reading motivation and reading achievement specifically.

Evidence Supporting Importance of Adolescent Readers as a Sample

One of the original studies on reading motivation in middle school revealed that intrinsic motivation declined from fourth grade to seventh grade and at the same time extrinsic motivation for reading increases (Gottfried, 1985). Baker and Wigfield (1999) examined multiple motivation constructs in fifth and sixth grade students. This study was described previously, but illustrates the differences in middle school and elementary school students' reading motivation. Baker and Wigfield (1999) found significant differences between fifth and sixth grade students' on the social and recognition scales. Interestingly, fifth grade students had higher mean scores on the social and recognition scales than sixth grade students. There is some evidence to suggest that reading motivation for middle school students is different from reading motivation in elementary school students.

Evidence for the Association of Gender and Motivation

The literature on the association between motivation and achievement has examined gender as an additional variable of interest. Broadly, researchers have found

that girls' motivation for achievement tends to be more positive than boys' motivation for achievement (Marsh et al., 2008; Martin, 2004). However, there is evidence from extensive literature reviews on the relationship between gender and motivation, which suggest that this relationship is moderated by ability, ethnicity, socio economic status, and classroom context (Meece et al., 2006). In addition, the differences in motivation by gender can be explored in terms of gender stereotypes. Boys report higher interests and academic abilities in mathematics and science subjects than girls. Girls report higher levels of interest and self-efficacy for reading and writing tasks (Meece et al., 2006). These findings support the general stereotypes of boys and girls abilities in science and math versus reading and writing subjects. Evidence suggests that these stereotypical patterns of motivation develop early and become stronger and more salient as students age (Lepola, 2004; Meece et al., 2006). In addition to these affirming motivation findings, research also indicates that boys are more likely to adopt motivations that undermine academic performance (Martin, 2004). Using language from the Student Motivation Wheel, boys were more likely to report higher levels of the motivation "guzzler" of self-sabotage than girls (Martin, 2004). Far less is known about the association between motivations that undermine and gender than motivations that affirm.

Samples in studies on the association of gender and motivation and achievement outcomes range from early elementary school (Lepola, 2004), later elementary school (Eccles, Wigfield, Harold, & Blumenfeld, 1993), middle school (Preckel, Goetz, Pekrun, & Kleine, 2008) and high school samples (Chouinard, & Normand, 2008). A few longitudinal studies have been conducted, which indicate that from early adolescence to early adulthood gender stereotypes exist and persist across time (Marsh, 1989). The

existence of significant gender findings in studies representing various ages across the lifespan provides evidence for gender differences in boys' and girls' motivation that develop early and remain consistent across time.

However, these studies are not consistent across the type of construct studied or the achievement outcome studied. Table 4 illustrates three recent studies of the association between motivation and achievement with gender differences as a main research question. As this table summarizes, there have not been any recent studies of the gender effect on reading motivation or reading achievement. In addition, none of these studies were conducted with a sample from the United States. Finally, the majority of these studies are utilizing achievement goal theory to operationalize motivation (with the exception of Marsh et al., 2008). Only one study investigated gender differences for motivations that undermine achievement (Marsh et al., 2008).

Table 4

Recent Studies with Gender Differences as a Main Research Question: Sample, Motivation Constructs, Achievement Outcomes, and Significant Findings

Article	Sample	Motivation Construct	Achievement Outcome	Significant gender effect?
Chouinard & Norman (2008)	Grades 7-9; 9-11 (Mean age = 12.85 & 14.85); Canadian	Perceived competence, utility value, achievement goals	Mathematics	*
Marsh, Martin, & Cheng (2008)	Year 8 and Year 10 (Ages 12-13 and 15-16); Australian	Self-efficacy, valuing, mastery orientation, anxiety, failure avoidance, uncertain control	Academic achievement	*
Preckel, Goetz, Pekrun, & Kleine (2008)	Grade 6; German	Academic self-concept, interest, motivation (achievement goals)	Mathematics	*

There are numerous researchers who have studied the relationship between reading motivation and reading achievement and have reported statistically significant gender differences (Baker & Wigfield, 1999). On the MRQ, analyses revealed statistically significant gender effects for all motivational constructs except Competition and Work Avoidance. In all significant cases, girls had higher mean scores than boys (Baker & Wigfield, 1999). This supports the trend indicated by Marsh et al. (2008) that girls' motivations that affirm achievement are higher than boys' and that boys' motivations that undermine achievement tend to be higher than girls'. Baker and Wigfield did not report correlation matrices for boys' and girls' motivation constructs and achievement. Meece et al. (2006) discuss some of these findings in their review of gender and motivation in four theories of achievement motivation: attribution, expectancy-value, self-efficacy, and achievement goals.

Based on the existing literature, gender remains an important question to examine in this dissertation study. As discussed here the majority of studies on gender differences report statistically significant mean differences in boys' and girls' motivation for academic achievement and reading (Baker & Wigfield, 1999). Few studies have examined whether boys' and girls' motivation is associated with achievement differently. Baker and Wigfield (1999) reported differences in the association of motivation with achievement for different ethnicities, but did not report these associations for gender. However, since the majority of the studies investigating gender differences in motivation have not focused on reading motivation, specific predictions and hypotheses are difficult to generate. Thus, research questions will be proposed to continue this line of research and also examine gender differences in the associations of girls' and boys' reading

motivations that affirm and undermine reading achievement. It is also important to note that studies reporting gender differences typically have not specified the context or purpose behind the reading activity as it will be specified in this study. Results from this study will provide information about boys' and girls' school and outside of school reading motivations that affirm and undermine reading achievement.

Summary

This research study will investigate the relationship between motivation and academic achievement. Previous research has investigated the effect of motivation on domain specific achievement in reading and this study will use similar techniques of self-report measures to assess motivation for reading. However, previous research studies have traditionally viewed motivation as a one-dimensional concept composed of only one motivational construct such as intrinsic motivation or self-efficacy. Increasingly, research has begun to investigate motivation as a multi-dimensional construct. One of the purposes of this study is to investigate the predictive ability and interrelationships of three different theoretical constructs of motivation: intrinsic motivation, self-efficacy, and perceived social support of reading. These three constructs represent three different aspects of the self, which individually have been associated with predicting achievement and originate from three theories: SDT, Social Cognitive Theory, and Social Goals. Intrinsic motivation highlights the enjoyment and pleasure that an individual receives from participating in an activity. Self-efficacy reflects an individual's perceptions and beliefs about their ability to perform certain activities, which can then have an effect on their actual performance on the task. Prosocial goals reflects a student's willingness to interact with peers, parents and teachers in a way that supports the learning process.

In addition to examining the multi-dimensional nature of motivation for reading, this study will also investigate the approach and avoidance aspects of motivation, which I will discuss as motivations that affirm reading activities and motivations that undermine reading activities. There is a long history in the literature of discussing motivations that help performance on a task, however, motivation researchers often overlook the aspects of motivation that can undermine performance on various activities. The importance of also studying motivations that undermine achievement are best understood through an example. Traditionally, if a researcher was interested in motivation he would measure a construct, such as intrinsic motivation, and then split the sample into high and low intrinsic motivation. He would then be able to say that students with low motivation were associated with low reading achievement. However, if a researcher were also to consider avoidance as a motivation construct, the low intrinsic motivation group could be further subdivided and more clearly defined.

Another way of describing this is to say that just because a student does not find reading inherently enjoyable, this does not mean that this student would avoid performing the task. There are degrees of low intrinsic motivation within the group, which are possibly associated with different degrees of reading achievement. Without studying undermining motivations these students who are very resistant to reading may be overlooked. In the present study, corresponding undermining motivations will be examined which parallel the affirming motivations. These undermining motivations are also derived from SDT and Social-Cognitive Theory. These constructs are avoidance, perceived difficulty, and perceived social dismissal of reading. The term avoidance has been used to describe multiple aspects of motivation in the literature. In this study

avoidance refers to intentionally performing activities that prevent oneself from completing a reading activity or shorten the duration of the activity. Perceived difficulty is a concept discussed by Bandura as perceptions or beliefs about a task that it will be hard to complete. For reading, these perceptions could refer to a topic, text difficulty, word difficulty, or the length of a book, as examples. Perceptions of social dismissal of reading refer to an individual's belief that their peer group devalues and dismisses the individual's reading as an activity.

Finally, this research study will investigate two contexts that reading occurs in: in school and outside of school. Traditionally, motivation researchers have investigated motivation in the classroom context. Their questionnaires and data analyses, however, have not always taken this context into account. Questions about intrinsic motivation, such as, "I enjoy reading" were asked in the classroom context, but it is unclear whether a student when answering this question is thinking about reading in the classroom or reading that they do for fun outside of school. It is important to make this distinction, because it may be that students have very different motivations for reading for school than they do for outside of school for pleasure. This would have important implications for teachers and it would also further inform the literature on achievement motivation. The present study will address this question by utilizing parallel measures of motivation with each item grounded in reading for school and reading for pleasure.

Research Questions

In order to increase our understanding of the multifaceted nature of motivation, in terms of constructs, context and directionality, six research questions guided this study. Research questions were proposed instead of hypotheses because of the limited research

studies available on these specific motivations with an adolescent sample that would allow for strong hypotheses to be generated.

1. School reading motivations that affirm and undermine achievement were examined in association with reading achievement.
 - a. To what extent do school reading motivations that undermine achievement contribute to predicting reading achievement when school reading motivations that affirm achievement have been taken into account? This question was examined in theoretical pairs of motivations that affirm and undermine achievement: intrinsic motivation and avoidance, self-efficacy and perceived difficulty, prosocial interactions and antisocial interactions.
2. School reading motivation constructs from three theoretical perspectives were examined in association with reading achievement.
 - a. To what extent are middle school students' school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) independently associated with reading achievement?
 - b. To what extent are middle school students' school reading motivations that undermine achievement (avoidance, perceived difficulty, and antisocial interactions for reading) independently associated with reading achievement?

3. School reading motivations and outside of school reading motivations were examined for similarities and differences in their associations with reading achievement.
 - a. To what extent do outside of school reading motivations that undermine achievement contribute to predicting reading achievement when outside of school motivations that affirm achievement have been taken into account? This question were examined in theoretical pairs of motivations that affirm and undermine achievement: intrinsic motivation and avoidance, self-efficacy and perceived difficulty, prosocial interactions and antisocial interactions.
 - b. To what extent are middle school students' outside of school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) independently associated with reading achievement?
 - c. To what extent are middle school students' outside of school reading motivations that undermine achievement (avoidance, perceived difficulty, and antisocial interactions for reading) independently associated with reading achievement?

Results from these analyses were compared to the results of research questions 1a, 2a and 2b.

4. Gender differences in school reading motivations that affirm and undermine achievement were examined in association with reading achievement.

- a. Are there gender differences in the extent to which motivations for school reading that undermine achievement contribute to predicting reading achievement when motivations for school reading that affirm achievement have been taken into account? This question was examined in theoretical pairs of motivations that affirm and undermine achievement: intrinsic motivation and avoidance, self-efficacy and perceived difficulty, prosocial interactions and antisocial interactions.
5. Gender differences were examined in the association of school reading motivation constructs from three theoretical perspectives with reading achievement.
 - a. Are there gender differences in the extent to which middle school students' school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) are independently associated with reading achievement?
 - b. Are there gender differences in the extent to which middle school students' school reading motivations that undermine achievement (avoidance, perceived difficulty, and antisocial interactions for reading) are independently associated with reading achievement?
6. Gender differences were examined when comparing school reading motivations and outside of school reading motivations in their associations with reading achievement.
 - a. Are there gender differences in the extent to which outside of school reading motivations that undermine achievement contribute to predicting reading achievement when outside of school reading motivations that

affirm achievement have been taken into account? This question was examined in theoretical pairs of motivations that affirm and undermine achievement: intrinsic motivation and avoidance, self-efficacy and perceived difficulty, prosocial interactions and antisocial interactions.

- b. Are there gender differences in the extent to which middle school students' outside of school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) are independently associated with reading achievement?
- c. Are there gender differences in the extent to which middle school students' outside of school reading motivations that undermine achievement (avoidance, perceived difficulty, and antisocial interactions for reading) are independently associated with reading achievement?

Results from these analyses were compared to the results of research questions 4a, 5a, and 5b.

CHAPTER 3: METHOD

Design

This study examined individual differences in the relationship between middle school students' motivation for reading and their reading achievement. This correlational study incorporated a within-subjects design where each student received all of the motivation questionnaires and cognitive assessments (Gates and Inferencing). A total of 245 students were administered motivation questionnaires measuring intrinsic motivation, self-efficacy, prosocial interactions, avoidance, perceived difficulty, and antisocial interactions for school and outside of school reading, a measure of reading comprehension and a measure of inferencing ability. This design allowed for comparisons of seventh grade students to each other and revealed differences in their motivation and achievement. Participants completed the Gates-MacGinitie reading comprehension subtest 6 weeks prior to completing the Adolescent Motivation for School Reading (AMSR), Inferencing test, and Adolescent Motivation for Outside of School Reading (AMOSR).

Participants

This study was conducted with 245 seventh grade students from two middle schools in a mid-Atlantic public school system. Demographic characteristics of the sample are shown in Table 5. The sample is representative of the population of this county that ranges widely across the socioeconomic and educational scales and is predominately Caucasian (approximately 6% of this population is African-American).

The sample consisted of all students from four teachers (two male and two female) with parent permission.

Table 5

Participant Demographic Information

	Gender		Total (<i>N</i> = 257)	Total %
	Males (<i>n</i> = 125)	Females (<i>n</i> = 132)		
Ethnicity				
African American	15	10	25	10
Asian	2	3	5	2
Caucasian	106	115	221	86
Hispanic	2	3	5	2
Other	0	1	1	0

Four teachers in two middle schools taught the students in this study. There were two male teachers and two female teachers and all of the teachers were Caucasian. The years of teaching experience ranged from 9 to 32 years. Years of teaching experience in the county ranged from 3 to 22 years. All teachers held a bachelor's degree in elementary education for grades 1-6/middle and two teachers held master's degrees.

Measures

Students completed four measures for this study. Two of the measures were questionnaires assessing student motivation for reading for school and outside of school. The third and fourth measures were cognitive measures of reading comprehension and inferencing ability. Reading/Language Arts (LA) grades were also obtained from the school district. The complete battery of student measures can be found in Appendix B.

Adolescent Motivation for School Reading (AMSR) Questionnaire

The AMSR questionnaire measured the students' intrinsic motivation, avoidance, self-efficacy, perceived difficulty, prosocial interactions and antisocial interactions for reading that the student experiences for school. Students were told that readings for school could include any of the following: non-fiction books, fiction books, textbooks, websites, newspapers, or magazines. Conceptual definitions for each of the motivation constructs along with a sample item are listed below. A complete list of the items by construct for the AMSR questionnaire can be found in Appendix E.

Intrinsic motivation. In SDT, intrinsically motivated behaviors are those that people engage in for their own sake – “for the pleasure and satisfaction derived from their performance” (Deci et al., 1991, p. 327). These behaviors are initiated out of innate curiosity, interest, and the will to learn new things, even when specific rewards are not present (Ryan & Deci, 2000). Within the SDT framework, intrinsic motivation is “an evolved propensity,” which is either sustained or subdued, given external conditions (Ryan & Deci, p. 70). In this measure, intrinsic motivation for school reading reflects intrinsic interest in reading the books and materials provided for classroom activities—including homework (i.e., “I enjoy the challenge of reading for school.”) Items for intrinsic motivation were adapted from previous research studies to fit the purposes of this study (Baker & Wigfield, 1999; Wigfield & Guthrie, 1997).

Avoidance. The conceptualization of avoidance motivation in this study is a combination of amotivation from SDT and work avoidance from Goal Theory. Amotivation “can be defined as a state in which individuals cannot perceive a relationship between their behavior and that behavior’s subsequent outcome” (Legault et

al., 2004, pp. 568). This perception can lead the individual towards exhibiting work avoidance goals and behaviors, such that they “deliberately avoid engaging in academic tasks or attempt to minimize the effort required to complete academic tasks” (Dowson & McInerney, 2001, p.36). In this measure, work avoidance for school reading reflects behaviors and strategies, which allow a student to evade reading the books and materials provided in the classroom (i.e., “I guess a lot when reading in Reading/Language Arts so I can finish quickly.”) Items for avoidance were adapted from previous research on amotivation and work-avoidance (Baker & Wigfield, 1999; Legault et al., 2004; Meece & Miller, 1999; Meece & Miller, 2001; Wigfield & Guthrie, 1997).

Self-efficacy. Reading self-efficacy items reflect a student’s perceptions of competence or, “beliefs regarding ability and proficiency in reading tasks” (Chapman & Tunmer, 1995, p. 154). In this measure, self-efficacy for school reading reflects a student’s perceptions and beliefs about his ability to read the material assigned for school and perform well in his Reading/Language Arts class (i.e., “I believe I am doing well reading for Reading/Language Arts.”) Self-efficacy items were adapted from previous research studies (Baker & Wigfield, 1999; Chapman & Tunmer, 1995; Wigfield & Guthrie, 1997).

Perceived difficulty. A student’s perceptions of difficulty with a reading task is defined as, “beliefs that reading activities are hard, or problematic” (Chapman & Tunmer, 1995, p. 154). In this measure, perceived difficulty for school reading reflects a student’s perceptions that the reading materials for school are hard or difficult (i.e., “The materials I read for Reading/Language Arts are too difficult.”) Perceived difficulty items were

adapted from previous research studies (Baker & Wigfield, 1999; Chapman & Tunmer, 1995; Wigfield & Guthrie, 1997).

Prosocial Interactions. Goals refer to “what an individual wants to achieve in a particular situation” (Wentzel et al., 2007, p. 896). Based on this definition, prosocial goals in the classroom context reflect the student’s desire “to help, cooperate, and follow rules in the classroom” (Wentzel et al., 2007, p. 896). In this study, prosocial goals were examined implicitly as prosocial interactions. These interactions included desires and behaviors: to share opinions about reading, show interest in classmates’ reading, and offer help to classmates with reading. Prosocial interaction items were adapted from previous work on prosocial goals (Wentzel et al., 2007).

Antisocial Interactions. Building upon the understanding of prosocial interactions, I define a student with antisocial goals as one who tries to avoid helping other students, attempts to avoid interacting with other students, and makes fun of other students’ opinions and comments about reading. In this study, antisocial goals were examined implicitly as antisocial interactions. These interactions included desires and behaviors: to make fun of classmates’ opinions about reading, to disrespect other students’ opinions about reading, and to convince classmates that reading is a waste of time. Antisocial interaction items were adapted from previous work on prosocial goals (Wentzel et al., 2007).

Detailed information on scale construction for the AMSR can be found at the beginning of the “Results” section.

The Adolescent Motivation for Outside of School Reading (AMOSR) Questionnaire

The AMOSR questionnaire consists of 42 items, which refer to the students' intrinsic motivation, avoidance, self-efficacy, perceived difficulty, prosocial interactions and antisocial interactions that the student possesses for reading not required for school. Students were told that these readings could include any of the following that was not required reading for school: non-fiction books, fiction books, textbooks, websites, newspapers, or magazines. Conceptual definitions and sample items for the six constructs of motivation are described below. A complete list of the items for the AMOSR questionnaire by construct can be found in Appendix F.

Intrinsic motivation. In this measure, intrinsic motivation for reading outside of school reflects interest in reading books and materials outside of the school context and for the student's own purposes (i.e., "I enjoy reading outside of school.") Items for intrinsic motivation were adapted from previous research studies to fit the purposes of this study (Baker & Wigfield, 1999; Wigfield & Guthrie, 1997).

Avoidance. In this measure, work avoidance for reading outside of school reflects behaviors and strategies, which allow a student to evade reading the books and materials available outside of school (i.e., "I choose to do other things instead of reading outside of school.") Items for avoidance were adapted from previous research on amotivation and work-avoidance (Baker & Wigfield, 1999; Legault et al., 2004; Meece & Miller, 1999; Meece & Miller, 2001; Wigfield & Guthrie, 1997).

Self-efficacy. In this measure, self-efficacy for reading outside of school reflects a student's perceptions and beliefs about their ability to read the materials available at home or outside of school (i.e., "I believe I am a good reader outside of school.") Self-

efficacy items were adapted from previous research studies (Baker & Wigfield, 1999; Chapman & Tunmer, 1995; Wigfield & Guthrie, 1997).

Perceived difficulty. In this measure, perceived difficulty for reading outside of school reflected a student's perceptions that the reading materials available at home or outside of school are hard or difficult (i.e., "It is hard for me to understand reading materials outside of school.") Perceived difficulty items were adapted from previous research studies (Baker & Wigfield, 1999; Chapman & Tunmer, 1995; Wigfield & Guthrie, 1997).

Prosocial interactions. Goals refer to "what an individual wants to achieve in a particular situation" (Wentzel et al., 2007, p. 896). Based on this definition, prosocial goals outside the classroom context reflect the student's desire "to help, cooperate, and follow rules, [outside] the classroom" (Wentzel et al., 2007, p. 896). In this study, prosocial goals were examined implicitly as prosocial interactions. These interactions included desires and behaviors: to share opinions about reading, show interest in friends' reading, and offer help to friends with reading. Prosocial interaction items were adapted from previous work on prosocial goals (Wentzel et al., 2007).

Antisocial interactions. Building upon the understanding of prosocial interactions, I define a student with antisocial interactions as one who tries to avoid helping friends, attempts to avoid interacting with other students, and makes fun of friends' opinions and comments about reading. In this study, antisocial goals were examined implicitly as antisocial interactions. These interactions included desires and behaviors: to make fun of friends' opinions about reading, to disrespect friends' opinions about reading, and to

convince friends that reading is a waste of time. Antisocial interaction items were adapted from previous work on prosocial goals (Wentzel et al., 2007).

Detailed information on scale construction for the AMOSR can be found at the beginning of the “Results” section.

Inferencing

The Inferencing test was constructed to assess student ability to make text-to-text and text-to-knowledge inferences while reading. The process of making meaning from text is more involved than simply decoding and deciphering the symbols and words on the page. To truly make meaning of text, the reader must be able to fuse their own knowledge with the words within the text and make meaning across the sentences. The process of making meaning from text through the use of cognitive connections within the text and to prior knowledge is called inferencing.

Inferencing has been defined by researchers with various emphases on the within text inferences readers make and the knowledge that individual readers bring to the text. Hannon and Daneman (2001) defined inferencing as “integrating newly encountered information with information encountered earlier in the text or retrieved from long term memory” (pp. 104). This process of making meaning from the available information in the text and the knowledge that exists in the text is when the reader begins to move beyond decoding to a true comprehension of the text. In many ways, comprehension requires “the reader to fill in details that are not explicitly stated in the text, either by integrating statements within the text or by incorporating general knowledge with textual information” (Oakhill & Cain, 2007, p. 49). The process of inferencing is an essential component for readers to comprehend the true meaning of any given text.

Knowledge based inferences in particular are essential to the comprehension and understanding of reading texts. The more knowledge an individual can bring to the text, the more context the reader has to make meaning from the text. Knowledge based inferences “require access to world knowledge in addition to the linguistic elements in the text. Specifically, knowledge-based inferences are directly inherited from the knowledge structures that are relevant to the text (Magliano, Baggett, & Graesser, 1996, p. 202). For our purposes, inferencing is the process of fusing new information into the mental representation of a text during reading based on the content of the text, prior knowledge and induced relationships among them.

The process of inferencing can be further subdivided into a taxonomy of different varieties of inferences a reader can make (Magliano, Baggett, & Graesser, 1996). Referential inferences occur when “readers bind a word or phrase to a previous element or constituent in the text” (p. 203). These inferences are in-text inferences that readers make to connect previous words or phrases with other elements in the text. For example, pronouns in the text require readers to make a referential inference to the previous noun in the text that the pronoun is referring to. Without this connection to previous passage content, the reader would be unable to make meaning of the pronoun. The research on referential inferences is quite extensive and indicates that referential inferences occur online during the act of reading and that they are necessary for comprehension (Magliano, Baggett & Graesser, 1996).

A second type of inference called “causal antecedent” occurs when a reader makes a causal connection between “an explicit story action, event, or state with prior passage context” (Magliano, Baggett, & Graesser, 1996, p. 205). According to research,

these inferences also seem to occur online and are essential for comprehension and establishing text coherence. A reader must be able to connect prior actions to their eventual consequences in a story or non-fiction text.

Two additional types of inferences discussed in the literature, but researched less extensively are “causal consequences” and “state inferences of declarative knowledge” (Magliano, Baggett, & Graesser, 1996). Causal consequence inferences occur when readers “predict or forecast future events and story content” (p. 206). These kinds of predictions can aide comprehension, especially if the predictions are substantiated in later text. However, readers can also make incorrect predictions, which may not help comprehension. The research is unclear as to when causal consequence inferences occur and how much making an incorrect prediction hinders comprehension.

State inferences of declarative knowledge occur “when [readers] infer some ongoing condition or state of the world from the perspective of the time frame of the text. States can include an agent’s traits, knowledge, and beliefs, the properties of objects and concepts, and spatial locations of entities” (p. 209). In a narrative text, these states include the mental representation a reader creates for the location of objects within a room, the visual description of a character’s clothing, physical build and proximity to other objects. In a non-fiction text, states may refer to more concrete spatial knowledge of such things as the shape of the Earth, the states that border Maryland, the location of the Sun, etc. Any of the knowledge that the reader brings to the text of this information can be combined with the descriptions stated in the text to provide the reader with a richer understanding of the text content.

In the current study, a measure was developed including some elements of previous work and creating a new inferencing task by modifying a Maze task. Students are provided with answer choices embedded within the text that require the student to make various types of inferences in order to answer correctly. We believe that these inferences occur almost automatically for more skilled readers and that, particularly referential inferences, should be easy to make within the passages. The difficulty of the inferences are manipulated in three ways: passage difficulty, content, and inference difficulty. Five different passages were selected, which reflect five different reading levels. With increasing levels of reading difficulty readers are expected to need to make increasingly more complex inferences. In addition, the content is more familiar in the easier passages and less familiar in the more difficult ones. By varying the level of prior knowledge, readers should be forced to make different types of inferences. Finally, it is believed that referential and causal antecedent inferences occur almost automatically and are therefore “easier” to make. Whereas, causal consequence and state inferences of declarative knowledge require more complex connection between the passage and prior knowledge, making them more “difficult.” Each passage includes one of each inference type (See Table 6).

The authors constructed three different forms of the Inferencing test, each sharing sample passages and one test passage in common, as well as four additional unique passages. Each form consisted of five passages total. Each test passage contained four imbedded boxes with three answer choices to complete the sentence; there were 20 items total on the test. Passages were determined a priori to represent different degrees of

difficulty. Each passage contained four inferencing items, one each for the four different inference types. Therefore, each form consisted of five items per inference type.

Table 6

Inference Types and Definitions for Inferencing Test

Inference Type	Definition
Referential	Binding a word or phrase to a previous element or constituent in the text.
Causal Antecedent	Making a causal connection between an explicit story action, event, or state with prior passage context.
Causal Consequence	When readers predict or forecast future events and story content.
State	States can include an agent's traits, knowledge, and beliefs, the properties of objects and concepts, and spatial locations of entities.

Students were instructed to circle the word or phrase on the test booklet that best fit the question. Students were given 11 minutes to complete the test and were instructed to stop working and put their pencils down when the time expired. Overall reliability for each form of the Inferencing test ranged from .45 to .66 for seventh grade students. A former director of science education for a school district in a major U. S. city and teacher of the year in his state, who was not involved in the creation of the measure, was asked to evaluate the content validity of the passages and questions. He classified 13 of the 20 items to the same categories as the authors (65% agreement). He assigned a "High" or "Medium" science content rating to all of the passages, indicating they were factually accurate, appropriate to the concept and organized in an understandable way.

Gates-MacGinitie Reading Test

Reading comprehension was assessed using the Comprehension section of the Gates-MacGinitie Reading Test (4th edition). The Gates-MacGinitie consists of 11 passages with 48 multiple-choice items. The 11 passages were fiction and nonfiction and ranged in terms of content and writing style (MacGinitie, MacGinitie, Maria, Dreyer, 2000). The 48 multiple-choice items ranged in terms of format and purpose. Some questions utilized a fill-in-the blank strategy while others asked for the main idea of the passage or required the test-taker to make inferences from the passages. The Vocabulary section of the Gates-MacGinitie Reading Test was not used in this study due to time constraints. The Gates-MacGinitie Reading Test is suitable for most students in grade 7 classrooms. Form S of The Gates-MacGinitie Reading Test has been shown to be reliable and valid with national samples (MacGinitie et al., 2000). The Gates-MacGinitie Comprehension Test was correlated with the Vocabulary subtest $r = .76$ for grade seven students. The reliabilities of the differences was $r = .60$ for grade seven students (MacGinitie et al., 2000).

Students completed the Gates-MacGinitie using scantron forms that were hand scored by the researcher using an answer key provided by Riverside Publishing. The raw scores were converted into grade equivalent scores and extended scale scores using the *Manual for Scoring and Interpretation* provided by Riverside Publishing. The extended scale scores were used in the analyses.

Reading/Language Arts (LA) Grades

Student grades in Reading/LA classes were obtained from the district for the four marking periods in the 2008-2009 academic year. Grades in each marking period ranged

from F to A and were reflective of percentages according to the Student Handbook for the 2008-2009 school year (*St. Mary's County Public Schools 2008-2009 Student Handbook*, 2008). For the purposes of this study, an average grade across all four marking periods was calculated. First, student letter grades were converted to numerical codes that are reported in Table 7. Then, grades for each marking period were summed and divided by four for each student to create an average Reading/LA grade. Table 8 contains the simple correlations, means, and standard deviations for each marking period. The median correlation for all four marking periods is $r = .66, p \leq .001$, which was statistically significant and reflective of the reliability of student grades across the four marking periods.

Table 7

Reading Language Arts Letter Grades, Percentages, and Numerical Codes

Letter Grade	Percentage*	Code
A	90%-100%	5
B	80%-89%	4
C	70%-79%	3
D	60%-69%	2
F	0%-59%	1

Notes. * All percent scores are rounded to the nearest whole number. Anything below .5 rounds down and anything .5 and above rounds up.

Table 8

Correlation Coefficients, Means, Standard Deviations and Sample Sizes for Reading/LA Grades

	MP1	MP2	MP3	MP4	<i>Mean</i>	<i>SD</i>	<i>N</i>
Marking Period 1	—				4.02	.94	240
Marking Period 2	.70	—			3.81	1.13	245
Marking Period 3	.66	.60	—		3.80	.98	249
Marking Period 4	.66	.63	.66	—	3.98	1.09	249

Note. All correlations statistically significant at $p \leq .001$.

Procedures

Twelve seventh-grade classrooms in two mid-Atlantic public middle schools were recruited for participation in this study. Because these schools were already participating in a larger intervention study, consent forms were already on file for all students. Parents were asked to consent to the use of their student's data, as participating in the assessment session was required by the school district. Students were informed that their grade would not be affected by their performance on the assessments, that they could stop at any time and that neither their teachers nor parents would see their answers.

In the last week of April, students completed the Gates-MacGinitie reading comprehension subtest along with three other measures of motivation and cognition. The Gates-MacGinitie reading comprehension subtest was completed at the beginning of the assessment session. Reading/LA teachers administered the test in the students' classroom.

In the first week of June, four classroom teachers administered two 42-item questionnaires (84 items total), the AMSR and AMOSR, and the inferencing test on a whole-class basis to all students. Administration took place in one 90-minute period in

each class. Administering the AMSR, AMOSR, Inferencing tests took approximately 35 minutes. At the start of the testing session the teacher read students general directions and information about the surveys. A make-up day was held after the main assessment date for students who were absent. The researcher administered make-up exams in one school and a research assistant administered the make-up exams in the other school. Make-up exams were given in a quiet room during the student's Reading/Language Arts period.

The measures were administered to all students as follows: Gates, AMSR, Inferencing, and AMOSR. The motivation measures were administered following the cognitive measures to separate the motivation items and place emphasis on the different reading purposes. First, students completed the AMSR. Two sample items were read out loud to the students so they could practice using the rating scale, which ranges from "not at all like me" to "a lot like me." The students completed the 42 questionnaire items at their own pace, but were told they had approximately 10 minutes to complete the questionnaire. The teacher was instructed to emphasize to each class the importance of paying attention to the reading context that the questionnaire referred (reading for school or in free time outside of school). Then, students completed the Inferencing test. Students took one of three different forms based on the form that they had taken during previous assessments and a predetermined counterbalance plan. The three different forms consisted of different passages and there was rotation of the order the passages were presented within each form. Teachers read two sample items out loud to students to acquaint them with the format of the test. Students were given 11 minutes to complete the Inferencing test and were told to stop when the time expired. Finally, students were administered the AMOSR. A sample item was read out loud and the students were able to

practice using the rating scale, which ranges from “not at all like me” to “a lot like me.” The teacher again emphasized to each class the importance of paying attention to the reading purpose that the questionnaire referenced. Table 9 contains a list of the four measures and the administration times. The teacher was asked to refrain from looking at the students’ surveys during collection and administration of all measures.

Table 9

Assessment Administration Schedule

Measures	Time (min.)		
	Directions	Assessment	Total
1. Gates	5	35	40
2. AMSR	5	10	15
3. Inferencing	5	11	16
4. AMOSR	5	10	15

Data Entry and Coding

The Gates MacGinitie Reading Comprehension Subtest (Levels 7/9) was hand scored using the scoring guide provided by Riverside Publishing. Student raw scores were converted to standard scores following the guidelines in the Gates-MacGinitie Scoring Guide and both scores were recorded in the SPSS dataset for each student. Missing data were entered using a “9.”

Student data from the two motivation questionnaires were entered into an SPSS dataset. Responses for each item on the AMSR and AMOSR were scored individually

and numerically. Coding for the AMSR and AMOSR individual items were as follows: “Not at all like me” = 1, “Not like me” = 2, “Somewhat like me” = 3, “A lot like me” = 4. None of the motivation items required reverse coding. This coding system ensured that higher scores on an item indicated stronger agreement with the item for both undermining and affirming motivation constructs.

Student responses for each item on the Inferencing test were entered into SPSS. Answer responses were coded as follows: “A” = 1, “B” = 2, “C” = 3. Responses for each item were then recoded correct or incorrect using SPSS syntax. Correct responses were coded “1” and incorrect responses were coded “0.” A total score variable was calculated for each student using SPSS syntax to sum the correct responses. In addition, a percent correct variable was calculated for each student by dividing the total number correct by 20 (the total number of items). Missing data on the Gates, AMSR, Inferencing and AMOSR were entered using a “9.” Missing data were excluded from the analyses.

After initial data entry and coding of measures, the range, minimum and maximum scores for all measures were examined. This served as a data entry check, by identifying any keystroke errors (i.e., a “5”), and allowed for the examination of the distribution of scores on the motivation items.

CHAPTER 4: RESULTS

Summary

The Results section begins with a detailed discussion of scale construction for the AMSR and AMOSR questionnaires. This discussion is followed by descriptive statistics for each measure and a correlation matrix of all measures. Next, the analyses proceeded in the order of the research questions. Research questions 1a, 2a, and 2b refer to motivations for school reading. Research question 3 refers to motivations for outside of school reading. Research questions 4, 5, and 6 refer to gender differences in student motivations for reading, with research questions 4a, 5a and 5b referring to gender differences in motivations for school reading and research questions 6a, 6b, and 6c referring to gender differences in motivations for outside of school reading. All research questions are addressed using quantitative statistical analyses.

Scale Construction for the AMSR

Data Entry

The response format for the AMSR was a Likert type scale containing four response options: “Not at all like me,” “Not like me,” “Somewhat like me,” and “A lot like me.” The response format was scored from 1-4, where 4 = “A lot like me”. Therefore, a high score indicated high agreement with the construct. A student scoring high on the avoidance scale indicated perceptions of high levels of avoidance in reading. Similarly, high scores on the intrinsic motivations scale indicated high levels of intrinsic motivation for reading. A Likert type scale was chosen based on previous motivation studies, which have demonstrated that this method of collecting self-reports serves as a

reliable source of student motivation constructs (Chapman & Tunmer, 1995). A four point scale was chosen in order to force a decision between high and low agreement with the construct and to eliminate a neutral point in the scale. The responses of “A lot like me,” “Somewhat like me,” “Not like me,” and “Not at all like me” have been used successfully in previous motivation questionnaires such as the Young Reader Motivation Questionnaire (Coddington & Guthrie, 2009).

Sampling Adequacy

Factor analysis guidelines vary in terms of the minimum number of participants required to generate a reliable factor structure. The general rule of thumb is that a sample of less than 50 is too small to perform factor analysis and ideally the sample size would be larger than 100 (Pett, Lackey, & Sullivan, 2003). A more specific rule is to have five times as many observations as the number of items in the measure (Hair, Black, Babin, Anderson, & Tatham, 2006). With a total of 42 questionnaire items in the AMSR, I required a minimum of 210 participants in order to conduct the factor analyses, and I met this criterion.

Measures of Intercorrelation

The correlation matrices for each affirming and undermining pair of AMSR constructs were examined in order to identify any problematic items that were either too highly correlated ($r > .80$; Hair et al., 2006) or not correlated highly enough ($r < .30$; Hair et al., 2006). These matrices can be found in Appendix D. Identifying these items before conducting the factor analyses prevented multicollinearity issues as well as prevented the extraction of too many factors if the items were not correlated strongly enough (Lett et

al., 2003). The anti-image correlation matrices for each pair were also examined in order to determine whether the partial correlations were too high ($r > .70$; Hair et al., 2006). For the pairs of AMSR constructs (i.e., intrinsic motivation and avoidance, self-efficacy and perceived difficulty, and prosocial and antisocial interactions) examining the correlation and anti-image correlation matrices indicated that factor analysis was appropriate.

The anti-image correlation matrices were also examined for the measure of sampling adequacy (MSAs). In almost all cases, the MSAs were .80 or above, which is “meritorious” according to Kaiser (1974). The exceptions were two items with MSAs in the prosocial and antisocial interactions anti-image matrix, which were .78 and .77. These MSAs would be interpreted as “middling” according to Kaiser’s guidelines, which is still well above the overall guideline of MSAs of .50 in order to conduct factor analysis (Hair et al., 2006, p. 115).

Bartlett’s test of sphericity, which indicates the statistical significance that the correlation matrix has significant correlations among the variables, was also conducted on items from each pair of constructs on the AMSR. All three chi-square analyses reached statistical significance at $p < .01$, indicating that the correlation matrices were suitable for factor analysis. Results for the items from pairs of AMSR constructs can be seen in Table 10.

The Kaiser-Meyer-Olkin Test (KMO) was also consulted to determine whether the strength of the relationship among items was strong enough for factor analysis. The KMO values for intrinsic motivation and avoidance items and self-efficacy and perceived difficulty items were greater than .90, which can be interpreted as “marvelous” (Pett et al., 2003, p. 78). The KMO value for prosocial and antisocial goal items was greater than

.80, a “meritorious” finding. The KMO results for each pair of items indicated that factor analysis was appropriate with this data for items from all three pairs of constructs (Table 10).

Table 10

Bartlett’s Test of Sphericity and KMO Results for Items from AMSR Constructs of Motivation

	<i>Approximate X²</i>	<i>df</i>	<i>Significance</i>	<i>KMO</i>	<i>Interpretation</i>
Intrinsic Motivation and Avoidance	2110.342	91	$p < .01$	.95	Marvelous
Self-Efficacy and Perceived Difficulty	2301.55	91	$p < .01$	.94	Marvelous
Prosocial interactions and Antisocial Interactions	1309.51	91	$p < .01$	.86	Meritorious

Determining the Factor Analysis Technique

There are two methods of partitioning variance, common factor analysis and component analysis. The two criterion for selecting between the two methods are the objectives of the factor analysis and the amount of prior knowledge about the variance in the variables (Hair et al., 2006). Component analysis is used when the purpose is to summarize the most variance over the least number of factors. Principal components analysis (PCA) is a data reduction technique that is most often used to select the most relevant factors of a larger set of items or factors. One example where PCA would be useful is if a researcher was interested in taking a long questionnaire and making a short form that would still explain a large amount of the variance.

In contrast, common factor analysis, or principal axis factoring (PAF), is used primarily to identify latent dimensions or constructs from the original variables (Hair et al., 2006). PAF was selected as the appropriate method for examining the AMSR constructs, because the objective of this study was to identify constructs of motivation from the original items. In addition, little is known about the amount of additional sources of variance in this study. Utilizing principal axis factoring controls for these additional kinds of variance (specific and error) by basing factors only on the common variance. It is important to note, while principal components analysis and common factor analyses are different techniques, and debate is ongoing over which technique is most appropriate, researchers suggest that in the end the results from the two techniques are very similar as long as there are at least 30 variables (Hair et al., 2006).

Factor Analysis Procedure

For each pair of constructs, a PCA was conducted first in order to determine the number of underlying factors in the original 14 items. PCA was chosen because it allows for the same number of factors to be extracted as the number of items, where PAF would have only allowed 13 factors to be extracted. An unrotated solution was initially requested in order to allow the 14 factors extracted to account for 100% of the variance. The results of the PCA were examined in order to determine the number of factors to extract in the PAF. Then, a PAF was conducted with oblique (oblimin) rotation. A rotated solution is desirable in order to aide in the interpretation of the factors. Factor rotation redistributes the explained variance such that later factors account for larger amounts of variance, which leads to a simpler factor solution. Oblimin rotation was utilized because oblique rotation allows for the factors to be correlated (Hair et al., 2006). Orthogonal

rotation techniques assume that the underlying factors are uncorrelated to each other. It was anticipated that the motivation constructs would be correlated, and therefore an oblique rotation technique was selected. Other researchers have also used oblique rotation techniques when constructing motivation measures (Legault, Green-Demers, & Pelletier, 2006).

First, the items for intrinsic motivation and avoidance were factor analyzed. Second, the items for self-efficacy and perceived difficulty were analyzed as a set. Third, the items for prosocial interactions and antisocial interactions were factor analyzed. This yielded data about the relative independence of the affirming and undermining motivations for each major theoretical construct. Fourth, the items for intrinsic motivation, self-efficacy, and prosocial interactions were factor analyzed. Fifth, the items for avoidance, self-efficacy and antisocial interactions were factor analyzed. The fourth and fifth analyses yielded information about whether the constructs representing different theoretical formulations show relatively independent factors. Loadings of the fourth and fifth PCA factor analyses can be found in Appendix I.

Intrinsic Motivation and Avoidance

Initial extraction. A Principal Components Analysis (PCA) was conducted in order to determine the number of underlying factors in the 14 intrinsic motivation and avoidance items. PCA was chosen because it allows for the same number of factors to be extracted as the number of items. An unrotated solution was initially requested in order to allow the 14 factors extracted to account for 100% of the variance. The eigenvalues, and percent of explained variance for the 14 intrinsic motivation and avoidance items can be found in Table 11.

Determining the number of factors to extract. There are many criteria to use in order to determine the number of factors to extract. These criteria depend on theoretical knowledge about the potential underlying factors, as well as established criteria in terms of the size of the eigenvalue and cumulative percentage of explained variance. Examining the size of the eigenvalue, or the latent root criterion, is the most commonly used technique for factor selection (Hair et al., 2006). With this criterion, any individual factor should account for “at least a single variable if it is to be retained for interpretation” (Hair et al., 2006, p. 120). Thus all factors which obtain an eigenvalue of 1.0 or higher are retained and interpreted while all factors with eigenvalues less than 1.0 are considered insignificant and disregarded. Based on this criterion, two factors should be retained from the intrinsic motivation and avoidance items. While retaining all factors with eigenvalues greater than 1.0 is the most commonly used criterion in factor analysis research, there is controversy about the reliability of this method. Guidelines indicate that this criterion is most reliable when the number of variables is between 20 and 50. The PCA for the intrinsic motivation and avoidance items only contained 14 variables, thus additional criteria were also considered in order to determine the number of factors to retain.

Another criterion that can be applied to factor selection is to examine the percentage of explained variance. While there are no absolute thresholds for how much total variance extracted factors should explain, it is common in the social sciences to consider a factor solution that accounts for 60 percent of the total variance satisfactory (Hair et al., 2006). Based on this criterion, a two-factor solution would be appropriate for the intrinsic motivation and avoidance items, because the first two factors account for 62.3% of the cumulative variance.

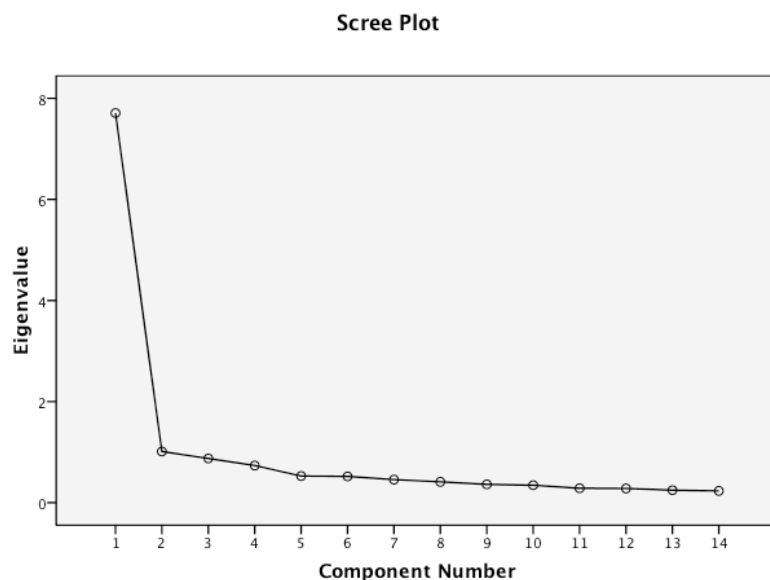
Table 11

Initial Eigenvalues for PCA of AMSR Intrinsic Motivation and Avoidance Items (Unrotated)

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative Variance
1	7.71	55.07	55.07
2	1.01	7.22	62.30
3	.88	6.24	68.54
4	.74	5.25	73.79
5	.53	3.77	77.56
6	.52	3.71	81.27
7	.46	3.27	84.53
8	.41	2.94	87.48
9	.36	2.58	90.06
10	.35	2.47	92.53
11	.29	2.04	94.56
12	.28	2.01	96.57
13	.25	1.77	98.34
14	.23	1.66	100.00

The third criterion used to determine the number of factors to extract was an examination of the scree plot. This test plots the latent roots (eigenvalues) and “is used to identify the optimum number of factors that can be extracted before the amount of unique variance begins to dominate the common variance structure” (Hair et al., 2006, p. 120). When examining the scree plot, researchers visually identify the point at which the slope of the line between points begins to level out horizontally. The scree plot for the intrinsic motivation and avoidance items produced from SPSS can be viewed below.

Figure 1

Scree Plot of Intrinsic Motivation and Avoidance for School Reading

The scree plot for the intrinsic motivation and avoidance items could be interpreted in two ways. It is possible to view the scree plot as indicative of a one-factor solution as a line drawn through the eigenvalues from component 2 to 14 is fairly horizontal. However, one could also view the slope from component 2 to 4 as different from the slope of the line from component 5 to 14. This second perspective would indicate that retaining four factors would be reasonable. Generally, the scree test results in the extraction of one to three more factors being considered for inclusion than the latent root (eigenvalue) criterion (Hair et al., 2006). Combining the results from the latent root criterion, percentage of explained variance and scree test with a priori knowledge of a possible two-factor structure, a two-factor solution was selected for the intrinsic motivation and avoidance items on the AMSR.

Item loadings, item selection and scale interpretation. A PAF with Oblimin rotation was conducted for the 14 intrinsic motivation and avoidance items on the AMSR.

A two-factor solution was requested, based on the criterion previously described. Item loadings can be found in Table 12. Two criteria were used when selecting items to retain for each factor. First, factor loadings of $\pm .40$ or higher were considered significant. This criteria was established based on suggested guidelines for a sample size of 200, which indicate that a sample of 200 is needed for a factor loading of $\pm .40$ to be considered significant (Hair et al., 2006). With a sample of 250 a factor loading of $\pm .35$ could be considered significant, but I chose to retain the more conservative cut-off of $\pm .40$ based on my sample of 247 students. Second, an item was considered to be double loaded if it exceeded $\pm .40$ on both factors and was not greater than $.60$ on one of the two factors.

Based on these criteria, only one item (Item 9) was double loaded and subsequently excluded from the scale and additional analyses. Two items written to represent the avoidance construct negatively loaded with the intrinsic motivation items (Items 15 and 32). Upon closer examination, it was determined that these two items reflected more affective aspects of avoidance and theoretically represent the opposite of intrinsic motivation. Thus, there is a theoretical rationale for including these items in the construct of intrinsic motivation. The remaining four avoidance items, however, formed a second factor from intrinsic motivation. These items represent avoidance behaviors such as skipping words and choosing to do other things besides read for language arts or reading class.

Table 12

AMSR Intrinsic Motivation and Avoidance Item Loadings – PAF with Oblimin Rotation

	Factors	
	1	2
41. I like to read for LA/Reading class.	.93	
27. I enjoy reading in my free time for LA/Reading class.	.88	
13. I enjoy reading for LA/Reading class.	.88	
15. Reading for LA/Reading class is boring to me.	-.73	
1. I enjoy the challenge of reading for LA/Reading class.	.63	
12. I enjoy it when reading materials for LA/Reading make me think.	.58	
32. Reading for LA/Reading class is a waste of time.	-.54	
7. I enjoy finding new things to read for LA/Reading class.	.54	
9. I read as little as possible for LA/Reading class.	-.45	.42
10. I feel successful when I read for LA/Reading class.	.41	
14. I choose easy books to read for LA/Reading class so I don't have to work hard.		.80
17. I skip words when reading for LA/Reading class.		.63
39. I avoid reading for LA/Reading class.		.54
3. I choose to do other things besides read for LA/Reading class.		.48

A two-factor structure yielded two constructs of motivation that were distinct and theoretically meaningful. These two factors were labeled Intrinsic Motivation ($\alpha = .92$; 9 items) and Avoidance ($\alpha = .75$; 4 items). The guideline for construct reliability is that a scale reliability of .70 or higher suggests good reliability and internal consistency of the

items (Hair et al., 2006, p. 778). The Intrinsic Motivation and Avoidance scales exceeded this guideline and can be viewed as internally consistent and their items are representative of the same latent constructs.

Self-Efficacy and Perceived Difficulty

Initial extraction. A Principal Components Analysis (PCA) was conducted in order to determine the number of underlying factors in the 14 self-efficacy and perceived difficulty items. PCA was chosen because it allows for the same number of factors to be extracted as the number of items. An unrotated solution was initially requested in order to allow the 14 factors extracted to account for 100% of the variance. The eigenvalues, and percent of explained variance for the 14 self-efficacy and perceived difficulty can be found in Table 13.

Table 13

Initial Eigenvalues for PCA of AMSR Self-Efficacy and Perceived Difficulty Items (Unrotated)

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative Variance
1	7.82	55.86	55.86
2	1.23	8.80	64.66
3	.87	6.18	70.84
4	.62	4.42	75.26
5	.56	3.99	79.25
6	.53	3.81	83.07
7	.47	3.37	86.44
8	.39	2.79	89.22
9	.32	2.25	91.47
10	.31	2.23	93.70
11	.28	2.01	95.70
12	.25	1.81	97.52
13	.19	1.35	98.87
14	.16	1.13	100.00

Determining the number of factors to extract. There are many criteria to use in order to determine the number of factors to extract. These criteria depend on a combination of theoretical knowledge about the potential underlying factors, as well as established criteria in terms of the size of the eigenvalue and cumulative percentage of explained variance. Examining the size of the eigenvalue, or the latent root criterion, is the most commonly used technique for factor selection (Hair et al., 2006). With this criterion, any individual factor should account for “at least a single variable if it is to be retained for interpretation” (Hair et al., 2006, p. 120). Thus all factors that obtain an eigenvalue of 1.0 or higher are retained and interpreted while all factors with eigenvalues less than 1.0 are considered insignificant and disregarded. Based on this criterion, two factors should be retained from the self-efficacy and perceived difficulty items. While retaining all factors with eigenvalues greater than 1.0 is the most commonly used criterion in factor analysis research, there is controversy about the reliability of this method. Guidelines indicate that this criterion is most reliable when the number of variables is between 20 and 50. The PCA for the self-efficacy and perceived difficulty items only contained 14 variables, thus additional criteria were also considered in order to determine the number of factors to retain.

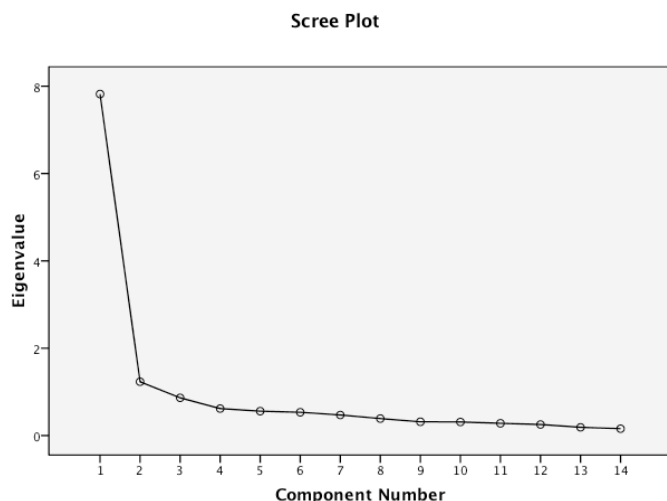
Another criterion that can be applied to factor selection is to examine the percentage of explained variance. While there are no absolute thresholds for how much total variance extracted factors should explain, it is common in the social sciences to consider a factor solution that accounts for 60 percent of the total variance satisfactory (Hair et al., 2006). Based on this criterion, a two-factor solution would be appropriate for

the self-efficacy and perceived difficulty items, because the first two factors account for 64% of the cumulative variance.

The third criterion used to determine the number of factors to extract was an examination of the scree plot. This test plots the latent roots (eigenvalues) and “is used to identify the optimum number of factors that can be extracted before the amount of unique variance begins to dominate the common variance structure” (Hair et al., 2006, p. 120). When examining the scree plot, researchers visually identify the point at which the slope of the line between points begins to level out horizontally. The scree plot for the self-efficacy and perceived difficulty items produced from SPSS can be viewed below.

Figure 2

Scree Plot of Self-Efficacy and Perceived Difficulty for School Reading



The scree plot for the self-efficacy and perceived difficulty items could be interpreted in two ways. It is possible to view the scree plot as indicative of a one factor solution as a line drawn through the eigenvalues from component 2 to 14 is fairly horizontal.

However, one could also view the slope from component 2 to 4 as different from the slope of the line from component 4 to 14. This second perspective would indicate that

retaining three factors would be reasonable. Generally, the scree test results in the extraction of one to three more factors being considered for inclusion than the latent root (eigenvalue) criterion (Hair et al., 2006).

Combining the results from the latent root criterion, percentage of explained variance and scree test with a priori knowledge of a possible two-factor structure, a two-factor solution was selected for the self-efficacy and perceived difficulty items on the AMSR.

Table 14

AMSR Self-Efficacy and Perceived Difficulty Item Loadings – PAF with Oblimin Rotation

	Factors	
	1	2
22. Reading materials for LA/Reading class are difficult to read.	.90	
24. Reading for LA/Reading class is difficult for me.	.88	
23. Reading for LA/Reading class is usually difficult.	.83	
25. It is hard for me to understand reading materials for LA/Reading class.	.81	
30. I think reading for LA/Reading class is hard.	.68	
19. I have a hard time recognizing words in books for LA/Reading class.	.56	
36. I make lots of mistakes reading for LA/Reading class.	.51	
6. I believe I am a good reader for LA/Reading class.		.95
28. I think I am a good reader for LA/Reading class.		.86
11. I am good at reading for LA/Reading class.		.85
4. I can figure out difficult words in reading materials for LA/Reading class.		.60
35. I recognize words easily when I read for LA/Reading class.		.59

34. I am good at remembering words I read for LA/Reading class.	.52
42. I think I can read the books in LA/Reading class.	.46

Item loadings, item selection and scale interpretation. A PAF with Oblimin rotation was conducted for the 14 self-efficacy and perceived difficulty items on the AMSR. A two-factor solution was requested, based on the criterion previously described. Item loadings can be found in Table 14. Two criteria were used when selecting items to retain for each factor. First, factor loadings of $\pm .40$ or higher were considered significant. This criteria was established based on suggested guidelines for a sample size of 200, which indicate that a sample of 200 is needed for a factor loading of $\pm .40$ to be considered significant (Hair et al., 2006). With a sample of 250 a factor loading of $\pm .35$ could be considered significant, but I chose to retain the more conservative cut-off of $\pm .40$ based on my sample of 247 students. Second, an item was considered to be double loaded if it exceeded $\pm .40$ on both factors and was not greater than $.60$ on one of the two factors.

Based on these criteria, the fourteen items loaded as theoretically anticipated with items written to represent self-efficacy forming one factor and items written to represent perceived difficulty forming the second factor. The two-factor structure yielded two constructs of motivation that were distinct and theoretically meaningful. These two factors for school reading were labeled Self-Efficacy ($\alpha = .89$; 7 items) and Perceived Difficulty ($\alpha = .92$; 7 items). The guideline for construct reliability is that a scale reliability of $.70$ or higher suggests good reliability and internal consistency of the items (Hair et al., 2006, p. 778). The Self-Efficacy and Perceived Difficulty scales exceeded

this guideline and can be viewed as internally consistent and representative of the same latent construct.

Prosocial and Antisocial Interactions

Initial extraction. A Principal Components Analysis (PCA) was conducted in order to determine the number of underlying factors in the 14 prosocial and antisocial interactions items. PCA was chosen because it allows for the same number of factors to be extracted as the number of items. An unrotated solution was initially requested in order to allow the 14 factors extracted to account for 100% of the variance. The eigenvalues, and percent of explained variance for the 14 prosocial and antisocial goal items can be found in Table 15.

Table 15

Initial Eigenvalues for PCA of AMSR Prosocial and Antisocial Interactions Items (Unrotated)

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative Variance
1	5.11	36.50	36.50
2	1.98	14.12	50.61
3	1.06	7.54	58.15
4	.95	6.76	64.92
5	.79	5.65	70.57
6	.72	5.16	75.73
7	.64	4.54	80.27
8	.56	3.96	84.23
9	.49	3.49	87.72
10	.45	3.24	90.96
11	.43	3.07	94.02
12	.32	2.29	96.31
13	.27	1.89	98.20
14	.25	1.80	100.00

Determining the number of factors to extract. There are many criteria to use in order to determine the number of factors to extract. These criteria depend on a combination of theoretical knowledge about the potential underlying factors, as well as established criteria in terms of the size of the eigenvalue and cumulative percentage of explained variance. Examining the size of the eigenvalue, or the latent root criterion, is the most commonly used technique for factor selection (Hair et al., 2006). With this criterion, any individual factor should account for “at least a single variable if it is to be retained for interpretation” (Hair et al., 2006, p. 120). Thus, all factors that obtain an eigenvalue of 1.0 or higher are retained and interpreted while all factors with eigenvalues less than 1.0 are considered insignificant and disregarded. Based on this criterion, three factors should be retained from the prosocial and antisocial interactions items. While retaining all factors with eigenvalues greater than 1.0 is the most commonly used criterion in factor analysis research, there is controversy about the reliability of this method. Guidelines indicate that this criterion is most reliable when the number of variables is between 20 and 50. The PCA for the prosocial and antisocial interactions items only contained 14 variables, thus additional criteria were also considered in order to determine the number of factors to retain.

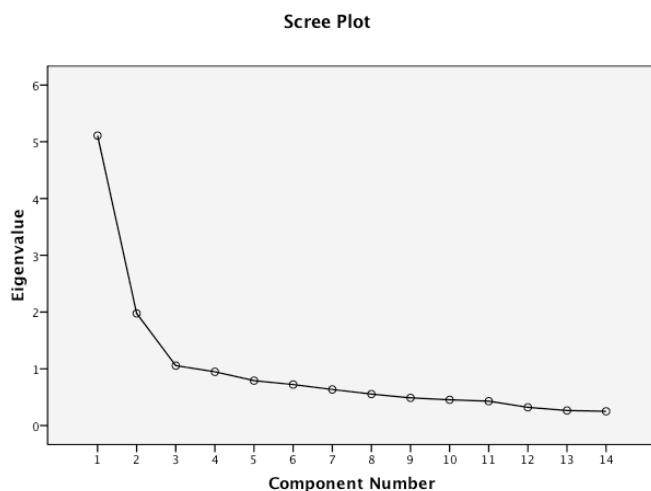
Another criterion that can be applied to factor selection is to examine the percentage of explained variance. While there are no absolute thresholds for how much total variance extracted factors should explain, it is common in the social sciences to consider a factor solution that accounts for 60 percent of the total variance satisfactory (Hair et al., 2006). Based on this criterion, a four-factor solution would be appropriate for

the prosocial and antisocial interactions items, because the first four factors account for 64% of the cumulative variance.

The third criterion used to determine the number of factors to extract was an examination of the scree plot. This test plots the latent roots (eigenvalues) and “is used to identify the optimum number of factors that can be extracted before the amount of unique variance begins to dominate the common variance structure” (Hair et al., 2006, p. 120). When examining the scree plot, researchers visually identify the point at which the slope of the line between points begins to level out horizontally. The scree plot for the prosocial and antisocial interactions items produced from SPSS can be viewed below.

Figure 3

Scree Plot of Prosocial and Antisocial Interactions for School Reading



The scree plot for the prosocial and antisocial interactions items could be interpreted in two ways. It is possible to view the scree plot as indicative of a two-factor solution as a line drawn through the eigenvalues from component 3 to 14 is fairly horizontal.

However, one could also view the slope from component 3 to 5 as different from the slope of the line from component 4 to 14. This second perspective would indicate that

retaining four factors would be reasonable. Generally, the scree test results in the extraction of one to three more factors being considered for inclusion than the latent root (eigenvalue) criterion (Hair et al., 2006).

Combining the results from the latent root criterion, percentage of explained variance and scree test four-, three- and two-factor solutions were requested and examined. A priori theoretical understanding was used to interpret the resulting components and combined with the criterion listed above; a two-factor solution was determined to be appropriate. However, results from the three-factor solution can be found in Appendix J.

Table 16

AMSR Prosocial and Antisocial Interactions Item Loadings – PAF with Oblimin Rotation

	Factors	
	1	2
20. I share what I learn from reading for LA/Reading class with my classmates.	.78	
2. I share my opinion about what I read for LA/Reading class with my classmates.	.65	
26. I keep what I learn from reading for LA/Reading class to myself.	-.60	
21. I show interest in what my classmates read for LA/Reading class.	.59	
31. I offer to help my classmates with reading for LA/Reading class.	.56	
37. I keep my opinion about what I read for LA/Reading class to myself.	-.53	
40. I try to cheer my classmates up if they have problems with reading in LA/Reading class.	.48	-.36
38. I am uninterested in what other students read for LA/Reading class.	-.43	
33. I leave my classmates alone when they have problems reading for LA/Reading class.	-.41	
5. I make fun of my classmates' opinions about what they read for LA/Reading class.		.82
29. I make fun of other students' comments about what they read in LA/Reading class.		.80
18. I respect other students' comments about what they read in LA/Reading class.		-.70
8. I respect my classmates' opinions about what they read in LA/Reading class.		-.65
16. I try to convince my classmates that the reading for LA/Reading class is a waste of time.	-.22	.39

Item loadings, item selection and scale interpretation. A PAF with Oblimin rotation was conducted for the 14 prosocial and antisocial interactions items on the AMSR. A two-factor solution was requested, based on the criterion previously described. Item loadings can be found in Table 16. Two criteria were used when selecting items to retain for each factor. First, factor loadings of $\pm .40$ or higher were considered significant. This criteria was established based on suggested guidelines for a sample size of 200, which indicate that a sample of 200 is needed for a factor loading of $\pm .40$ to be considered significant (Hair et al., 2006). With a sample of 250 a factor loading of $\pm .35$ could be considered significant, but I chose to retain the more conservative cut-off of $\pm .40$ based on my sample of 247 students. Second, an item was considered to be double loaded if it exceeded $\pm .40$ on both factors and was not greater than $.60$ on one of the two factors.

Based on these criteria, two items were excluded from additional analyses and interpretation. One item double loaded (Item 40) and one item failed to reach significance on either factor (Item 16). The remaining twelve items loaded higher than $\pm .40$ on one of the two factors and was considered for interpretation of the factor. Several items negatively loaded, meaning the item that was written to represent an affirming construct loaded with undermining items and vice versa. The first factor is composed of four prosocial interactions items and four negatively loaded antisocial interactions items. Upon closer examination, these antisocial interactions items represent disinterest in sharing reading experiences with classmates, which is the opposite of maintaining the goal to share what one has learned with classmates. These statements reflect neutrality or disinterest in social interactions with peers, but do not reflect actual antisocial behaviors.

The second factor, however, represents acts of antisocial behavior. Two of the items are antisocial items reflecting the goal to make fun of classmates about their reading. The other two items on the second factor are negatively loaded prosocial interactions items, which refer to respecting classmates' opinions. In the context of the negative loading, these items represent the idea of actively disrespecting classmates, which is theoretically consistent with making fun of classmates. The two-factor structure yielded two constructs of motivation that were distinct and theoretically meaningful. These two factors for school reading were labeled Prosocial Interactions ($\alpha = .80$; 8 items) and Antisocial Interactions ($\alpha = .84$; 4 items). The guideline for construct reliability is that a scale reliability of .70 or higher suggests good reliability and internal consistency of the items (Hair et al., 2006, p. 778). The Prosocial Interactions and Antisocial Interactions scales exceeded this guideline and can be viewed as internally consistent and representative of the same latent construct.

A list of AMSR items by construct, as determined by the PAF analyses, and reliabilities for each construct can be found in Appendix G.

Scale Construction for the AMOSR

Data Entry

The response format for the AMOSR was a Likert type scale containing four response options: "Not at all like me," "Not like me," "Somewhat like me," and "A lot like me." The response format was scored from 1-4, where 4 = "A lot like me". Therefore, a high score indicated high agreement with the construct. A student scoring high on the avoidance scale indicated perceptions of high levels of avoidance in reading.

Similarly, high scores on the intrinsic motivation scale indicated high levels of intrinsic motivation for reading outside of school. A Likert type scale was chosen based on previous motivation studies, which have demonstrated that this method of collecting self-reports serves as a reliable source of student motivation constructs (Chapman & Tunmer, 1995). A four point scale was chosen in order to force a decision between high and low agreement with the construct and to eliminate a neutral point in the scale. The responses of “A lot like me,” “Somewhat like me,” “Not like me,” and “Not at all like me” have been used successfully in previous motivation questionnaires such as the Motivation for Reading Questionnaire (Coddington & Guthrie, 2009).

Sampling Adequacy

Factor analysis guidelines vary in terms of the minimum number of participants required to generate a reliable factor structure. The general rule of thumb is that a sample of less than 50 is too small to perform factor analysis and ideally the sample size would be larger than 100 (Pett, Lackey, & Sullivan, 2003). A more specific rule is to have five times as many observations as the number of items in the measure (Hair, Black, Babin, Anderson, & Tatham, 2006). With a total of 42 questionnaire items in the AMOSR, I required a minimum of 210 participants in order to conduct the factor analyses, and I met this criterion.

Measures of Intercorrelation

The correlation matrices for each affirming and undermining pair of AMOSR constructs were examined in order to identify any problematic items that were either too highly correlated ($r > .80$; Hair et al., 2006) or not correlated highly enough ($r < .30$; Hair

et al., 2006). These matrices can be found in Appendix D. Identifying these items before conducting the factor analyses prevented multicollinearity issues as well as prevented the extraction of too many factors if the items were not correlated strongly enough (Lett et al., 2003). The anti-image correlation matrices for each pair were also examined in order to determine whether the partial correlations were too high ($r > .70$; Hair et al., 2006). For the pairs of AMOSR constructs (i.e., intrinsic motivation and avoidance, self-efficacy and perceived difficulty, and prosocial and antisocial interactions) examining the correlation and anti-image correlation matrices indicated that factor analysis was appropriate.

The anti-image correlation matrices were also examined for the measure of sampling adequacy (MSAs). In almost all cases, the MSAs were .80 or above, which is “meritorious” according to Kaiser (1974). The exceptions were two items with MSAs in the prosocial and antisocial interactions anti-image matrix, which were .72 and .73. These MSAs would be interpreted as “middling” according to Kaiser’s guidelines, which is still well above the overall guideline of MSAs of .50 in order to conduct factor analysis (Hair et al., 2006, p. 115).

Table 17

Bartlett’s Test of Sphericity and KMO Results for Items from AMOSR Constructs of Motivation

	<i>Approximate X^2</i>	<i>df</i>	<i>Significance</i>	<i>KMO</i>	<i>Interpretation</i>
Intrinsic Motivation and Avoidance	2865.76	91	$p < .01$	.96	Marvelous
Self-Efficacy and Perceived Difficulty	2380.93	91	$p < .01$	.94	Marvelous
Prosocial Interactions and Antisocial Interactions	1517.00	91	$p < .01$	.83	Meritorious

Bartlett's test of sphericity, which indicates the statistical significance that the correlation matrix has significant correlations among the variables, was also conducted on items from each pair of constructs on the AMOSR. All three chi-square analyses reached statistical significance at $p < .01$, indicating that the correlation matrices were suitable for factor analysis. Results for the items from pairs of AMSR constructs can be seen in Table 17.

The Kaiser-Meyer-Olkin Test (KMO) was also consulted to determine whether the strength of the relationship among items was strong enough for factor analysis. The KMO values for intrinsic motivation and avoidance items and self-efficacy and perceived difficulty items were greater than .90, which can be interpreted as "marvelous" (Pett et al., 2003, p. 78). The KMO value for prosocial and antisocial goal items was greater than .80, a "meritorious" finding. The KMO results for each pair of items indicated that factor analysis was appropriate with this data for items from all three constructs. The KMO values for the AMOSR can also be viewed in Table 17.

Determining the Factor Analysis Technique

There are two methods of partitioning variance, common factor analysis and component analysis. The two criterion for selecting between the two methods are the objectives of the factor analysis and the amount of prior knowledge about the variance in the variables (Hair et al., 2006). Component analysis is used when the purpose is to summarize the most variance over the least number of factors. Principal components analysis (PCA) is a data reduction technique that is most often used to select the most relevant factors of a larger set of items or factors. One example where PCA would be

useful is if a researcher was interested in taking a long questionnaire and making a short form that would still explain a large amount of the variance.

In contrast, common factor analysis, or principal axis factoring (PAF), is used primarily to identify latent dimensions or constructs from the original variables (Hair et al., 2006). PAF was selected as the appropriate method for examining the AMSR constructs, because the objective of this study was to identify constructs of motivation from the original items. In addition, little is known about the amount of additional sources of variance in this study. Utilizing principal axis factoring controls for these additional kinds of variance (specific and error) by basing factors only on the common variance. It is important to note, while principal components analysis and common factor analyses are different techniques, and debate is ongoing over which technique is most appropriate, researchers suggest that in the end the results from the two techniques are very similar as long as there are at least 30 variables (Hair et al., 2006).

Factor Analysis Procedure

For each pair of constructs, a PCA was conducted first in order to determine the number of underlying factors in the original 14 items. PCA was chosen because it allows for the same number of factors to be extracted as the number of items, where PAF would have only allowed 13 factors to be extracted. An unrotated solution was initially requested in order to allow the 14 factors extracted to account for 100% of the variance. The results of the PCA were examined in order to determine the number of factors to extract in the PAF. Then, a PAF was conducted with oblique (oblimin) rotation. A rotated solution is desirable in order to aide in the interpretation of the factors. Factor rotation redistributes the explained variance such that later factors account for larger amounts of

variance, which leads to a simpler factor solution. Oblimin rotation was utilized because oblique rotation allows for the factors to be correlated (Hair et al., 2006). Orthogonal rotation techniques assume that the underlying factors are uncorrelated to each other. It was anticipated that the motivation constructs would be correlated, and therefore an oblique rotation technique was selected.

Several factor analyses were conducted on the school reading motivation questionnaire. First, the items for intrinsic motivation and avoidance were factor analyzed. Second, the items for self-efficacy and perceived difficulty were analyzed as a set. Third, the items for prosocial interactions and antisocial interactions were factor analyzed. This yielded data about the relative independence of the affirming and undermining motivations for each major theoretical construct. Fourth, the items for intrinsic motivation, self-efficacy, and prosocial interactions were factor analyzed. Fifth, the items for avoidance, self-efficacy and antisocial interactions were factor analyzed. The fourth and fifth analyses yielded information about whether the constructs representing different theoretical formulations show relatively independent factors. This was identified for the affirming (fourth) and undermining (fifth) constructs.

Intrinsic Motivation and Avoidance

Initial extraction. A Principal Components Analysis (PCA) was conducted in order to determine the number of underlying factors in the 14 intrinsic motivation and avoidance items. PCA was chosen because it allows for the same number of factors to be extracted as the number of items. An unrotated solution was initially requested in order to allow the 14 factors extracted to account for 100% of the variance. The eigenvalues, and

percent of explained variance for the 14 intrinsic motivation and avoidance items can be found in Table 18.

Table 18

Initial Eigenvalues for PCA of AMOSR Intrinsic Motivation and Avoidance Items (Unrotated)

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative Variance
1	8.93	63.80	63.80
2	.86	6.11	69.91
3	.69	4.29	74.84
4	.60	4.30	79.15
5	.48	3.40	82.55
6	.44	3.12	85.66
7	.41	2.92	88.58
8	.36	2.56	91.15
9	.29	2.07	93.21
10	.27	1.93	95.14
11	.24	1.69	96.83
12	.20	1.46	98.29
13	.13	.94	99.23
14	.11	.77	100.00

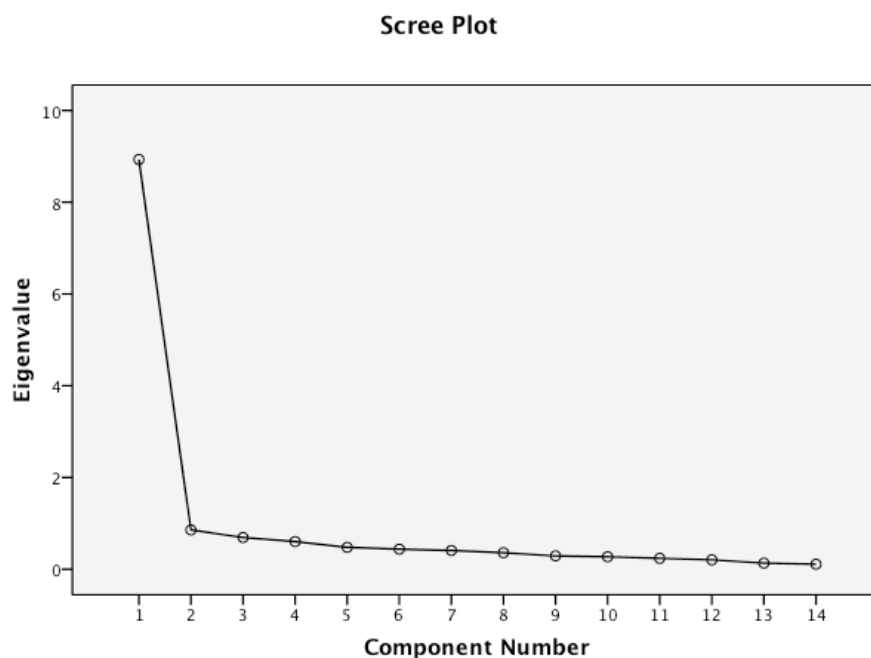
Determining the number of factors to extract. There are many criteria to use in order to determine the number of factors to extract. These criteria depend on a combination of theoretical knowledge about the potential underlying factors, as well as established criteria in terms of the size of the eigenvalue and cumulative percentage of explained variance. Examining the size of the eigenvalue, or the latent root criterion, is the most commonly used technique for factor selection (Hair et al., 2006). With this criterion, any individual factor should account for “at least a single variable if it is to be retained for interpretation” (Hair et al., 2006, p. 120). Thus all factors which obtain an eigenvalue of 1.0 or higher are retained and interpreted while all factors with eigenvalues

less than 1.0 are considered insignificant and disregarded. Based on this criterion, one factor should be retained from the intrinsic motivation and avoidance items. While retaining all factors with eigenvalues greater than 1.0 is the most commonly used criterion in factor analysis research, there is controversy about the reliability of this method. Guidelines indicate that this criterion is most reliable when the number of variables is between 20 and 50. The PCA for the intrinsic motivation and avoidance items only contained 14 variables, thus additional criteria were also considered in order to determine the number of factors to retain.

Another criterion that can be applied to factor selection is to examine the percentage of explained variance. While there are no absolute thresholds for how much total variance extracted factors should explain, it is common in the social sciences to consider a factor solution that accounts for 60 percent of the total variance satisfactory (Hair et al., 2006). Based on this criterion, a one-factor solution would be appropriate for the intrinsic motivation and avoidance items, because the first two factors account for 63.8% of the cumulative variance.

The third criterion used to determine the number of factors to extract was an examination of the scree plot. This test plots the latent roots (eigenvalues) and “is used to identify the optimum number of factors that can be extracted before the amount of unique variance begins to dominate the common variance structure” (Hair et al., 2006, p. 120). When examining the scree plot, researchers visually identify the point at which the slope of the line between points begins to level out horizontally. The scree plot for the intrinsic motivation and avoidance items produced from SPSS can be viewed below.

Figure 4

Scree Plot of Intrinsic Motivation and Avoidance for Outside School Reading

The scree plot for the intrinsic motivation and avoidance items is indicative of a one factor solution as a line drawn through the eigenvalues from component 2 to 14 is fairly horizontal. Generally, the scree test results in the extraction of one to three more factors being considered for inclusion than the latent root (eigenvalue) criterion (Hair et al., 2006).

Combining the results from the latent root criterion, percentage of explained variance and scree test suggests a one-factor solution. Theoretically, a two-factor solution was anticipated, however, the context of reading done outside of school in many ways implies intrinsic motivation alone. Students who avoid reading do not read outside of school, therefore it makes sense that in the outside of school context, avoidance items may not form a salient unique factor. Based on the criterion previously discussed and the

theoretical considerations, a one-factor solution was selected for the intrinsic motivation and avoidance items on the AMSR.

Item loadings, item selection and scale interpretation. A PAF was conducted for the 14 intrinsic motivation and avoidance items on the AMOSR. A one-factor solution was requested, based on the criterion previously described. Item loadings can be found in Table 19. Two criterion were used when selecting items to retain for each factor. First, factor loadings of $\pm .40$ or higher were considered significant. This criteria was established based on suggested guidelines for a sample size of 200, which indicate that a sample of 200 is needed for a factor loading of $\pm .40$ to be considered significant (Hair et al., 2006). With a sample of 250 a factor loading of $\pm .35$ could be considered significant, but I chose to retain the more conservative cut-off of $\pm .40$ based on my sample of 247 students. Second, an item was considered to be double loaded if it exceeded $\pm .40$ on both factors and was not greater than $.60$ on one of the two factors.

Based on these criterion initially all items were maintained and considered to contribute to the component. However, one item (Item 12) was dropped from further analyses and interpretation after conducting reliability analyses and consulting the communalities for all items. The single factor of intrinsic motivation was composed of seven intrinsic motivation items and six avoidance items that negatively loaded. As discussed previously, while this was not the anticipated loading pattern, it is rationale that students when thinking specifically about reading that they do in their free time outside of reading for school do not have to avoid reading. The one factor was labeled Intrinsic Motivation ($\alpha = .96$; 13 items) for outside of school reading is a theoretically meaningful and interpretable construct. The guideline for construct reliability is that a scale reliability

of .70 or higher suggests good reliability and internal consistency of the items (Hair et al., 2006, p. 778). The Intrinsic Motivation scale exceeded this guideline and can be viewed as internally consistent and representative of the same latent construct.

Table 19

AMOSR Intrinsic Motivation and Avoidance Item Loadings – PAF

	Factor
	1
13. Reading outside of school is boring to me.	-.90
28. I like to read outside of school.	.89
20. I enjoy reading outside of school.	.89
27. I avoid reading outside of school.	-.87
41. I enjoy reading in my free time outside of school.	.85
9. Reading outside of school is a waste of time.	-.84
24. I enjoy finding new things to read outside of school.	.83
7. I enjoy the challenge of reading outside of school.	.83
42. I enjoy it when reading materials outside of school make me think.	.76
39. I read as little as possible outside of school.	-.74
15. I choose to do other things instead of read outside of school.	-.68
30. I choose to read easy books at home so I don't have to work hard.	-.63
1. I feel successful when I read outside of school.	.63
12. I skip words when reading outside of school.	-.50

Self-Efficacy and Perceived Difficulty

Initial extraction. A Principal Components Analysis (PCA) was conducted in order to determine the number of underlying factors in the 14 self-efficacy and perceived difficulty items. PCA was chosen because it allows for the same number of factors to be extracted as the number of items. An unrotated solution was initially requested in order to allow the 14 factors extracted to account for 100% of the variance. The eigenvalues, and percent of explained variance for the 14 self-efficacy and perceived difficulty can be found in Table 20.

Table 20

Initial Eigenvalues for PCA of AMOSR Self-Efficacy and Perceived Difficulty Items (Unrotated)

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative Variance
1	8.18	58.43	58.43
2	1.15	8.18	66.61
3	.77	5.52	72.13
4	.56	3.97	76.10
5	.51	3.66	79.76
6	.45	3.45	83.20
7	.45	3.19	86.39
8	.38	2.74	89.13
9	.33	2.32	91.45
10	.31	2.22	93.67
11	.29	2.06	95.73
12	.22	1.55	97.28
13	.20	1.40	98.68
14	.19	1.32	100.00

Determining the number of factors to extract. There are many criteria to use in order to determine the number of factors to extract. These criteria depend on a combination of theoretical knowledge about the potential underlying factors, as well as

established criteria in terms of the size of the eigenvalue and cumulative percentage of explained variance. Examining the size of the eigenvalue, or the latent root criterion, is the most commonly used technique for factor selection (Hair et al., 2006). With this criterion, any individual factor should account for “at least a single variable if it is to be retained for interpretation” (Hair et al., 2006, p. 120). Thus all factors that obtain an eigenvalue of 1.0 or higher are retained and interpreted while all factors with eigenvalues less than 1.0 are considered insignificant and disregarded. Based on this criterion, two factors should be retained from the self-efficacy and perceived difficulty items. While retaining all factors with eigenvalues greater than 1.0 is the most commonly used criterion in factor analysis research, there is controversy about the reliability of this method. Guidelines indicate that this criterion is most reliable when the number of variables is between 20 and 50. The PCA for the self-efficacy and perceived difficulty items only contained 14 variables, thus additional criteria were also considered in order to determine the number of factors to retain.

Another criterion that can be applied to factor selection is to examine the percentage of explained variance. While there are no absolute thresholds for how much total variance extracted factors should explain, it is common in the social sciences to consider a factor solution that accounts for 60 percent of the total variance satisfactory (Hair et al., 2006). Based on this criterion, a two-factor solution would be appropriate for the self-efficacy and perceived difficulty items, because the first two factors account for 66.6% of the cumulative variance.

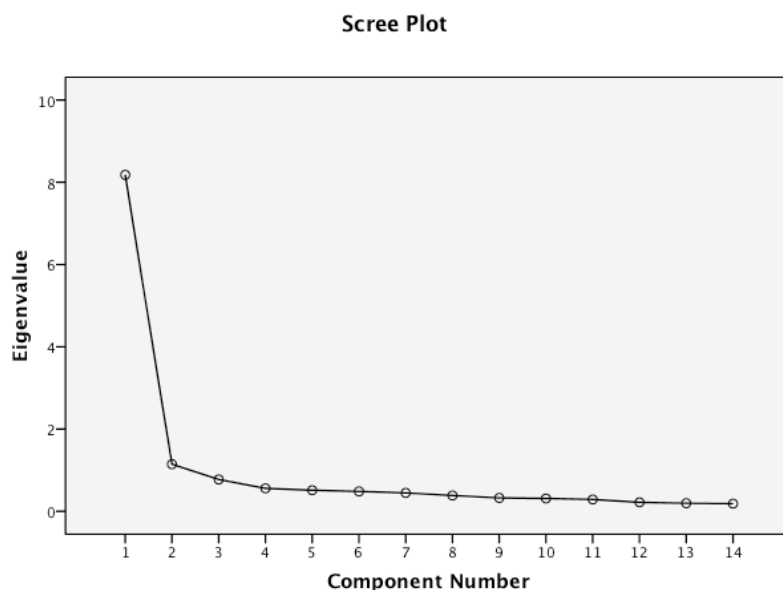
The third criterion used to determine the number of factors to extract was an examination of the scree plot. This test plots the latent roots (eigenvalues) and “is used to

identify the optimum number of factors that can be extracted before the amount of unique variance begins to dominate the common variance structure” (Hair et al., 2006, p. 120).

When examining the scree plot, researchers visually identify the point at which the slope of the line between points begins to level out horizontally. The scree plot for the self-efficacy and perceived difficulty items produced from SPSS can be viewed below.

Figure 5

Scree Plot of Self-Efficacy and Perceived Difficulty for Outside School Reading



The scree plot for the self-efficacy and perceived difficulty items could be interpreted as indicative of a three factor solution as a line drawn through the eigenvalues from component 4 to 14 is fairly horizontal. The scree test indicates that retaining three factors would be reasonable. Generally, the scree test results in the extraction of one to three more factors being considered for inclusion than the latent root (eigenvalue) criterion (Hair et al., 2006).

Combining the results from the latent root criterion, percentage of explained variance and scree test with a priori knowledge of a possible two-factor structure, a two-

factor solution was selected for the self-efficacy and perceived difficulty items on the AMOSR.

Item loadings, item selection and scale interpretation. A PAF with Oblimin rotation was conducted for the 14 self-efficacy and perceived difficulty items on the AMOSR. A two-factor solution was requested, based on the criterion previously described. Item loadings can be found in Table 21.

Table 21

AMOSR Self-Efficacy and Perceived Difficulty Item Loadings – PAF with Oblimin Rotation

	Factors	
	1	2
17. I believe I am a good reader outside of school.	.91	
29. I think I am a good reader outside of school.	.91	
5. I am good at reading outside of school.	.81	
22. I think I can read books outside of school.	.79	
21. I am good at remember words I read outside of school.	.62	
18. I can figure out difficult words in reading materials outside of school.	.55	
25. I recognize words easily when I read outside of school.	.47	
26. Reading materials outside of school are difficult to read.		.94
31. I make lots of mistakes in reading outside of school.		.77
3. Reading outside of school is difficult for me.		.74
4. It is hard for me to understand reading materials outside of school.		.67
37. Reading outside of school is usually difficult.		.64

19. I have a hard time recognizing words in books outside of school.	.60
40. I think reading outside of school is hard.	.53

Two criterion were used when selecting items to retain for each factor. First, factor loadings of $\pm .40$ or higher were considered significant. This criteria was established based on suggested guidelines for a sample size of 200, which indicate that a sample of 200 is needed for a factor loading of $\pm .40$ to be considered significant (Hair et al., 2006). With a sample of 250 a factor loading of $\pm .35$ could be considered significant, but I chose to retain the more conservative cut-off of $\pm .40$ based on my sample of 247 students. Second, an item was considered to be double loaded if it exceeded $\pm .40$ on both factors and was not greater than .60 on one of the two factors.

Based on these criteria, the fourteen items loaded as theoretically anticipated with items written to represent self-efficacy forming one factor and items written to represent perceived difficulty forming the second factor. The two-factor structure yielded two constructs of motivation that were distinct and theoretically meaningful. These two factors for outside of school reading were labeled Self-Efficacy ($\alpha = .92$; 7 items) and Perceived Difficulty ($\alpha = .91$; 7 items). The guideline for construct reliability is that a scale reliability of .70 or higher suggests good reliability and internal consistency of the items (Hair et al., 2006, p. 778). The Self-Efficacy and Perceived Difficulty scales exceeded this guideline and can be viewed as internally consistent and representative of the same latent construct.

Prosocial and Antisocial Interactions

Initial extraction. A Principal Components Analysis (PCA) was conducted in order to determine the number of underlying factors in the 14 prosocial and antisocial interactions items. PCA was chosen because it allows for the same number of factors to be extracted as the number of items. An unrotated solution was initially requested in order to allow the 14 factors extracted to account for 100% of the variance. The eigenvalues, and percent of explained variance for the 14 prosocial and antisocial goal items can be found in Table 22.

Table 22

Initial Eigenvalues for PCA of AMOSR Prosocial and Antisocial Interactions Items (Unrotated)

Component	Initial Eigenvalues		
	Eigenvalues	% of Variance	Cumulative Variance
1	5.148	36.771	36.771
2	2.259	16.134	52.905
3	1.341	9.581	62.486
4	.902	6.440	68.926
5	.745	5.322	74.248
6	.633	4.523	78.771
7	.551	3.936	82.707
8	.489	3.495	86.202
9	.409	2.919	89.121
10	.385	2.751	91.871
11	.359	2.564	94.436
12	.332	2.371	96.806
13	.257	1.838	98.645
14	.190	1.355	100.000

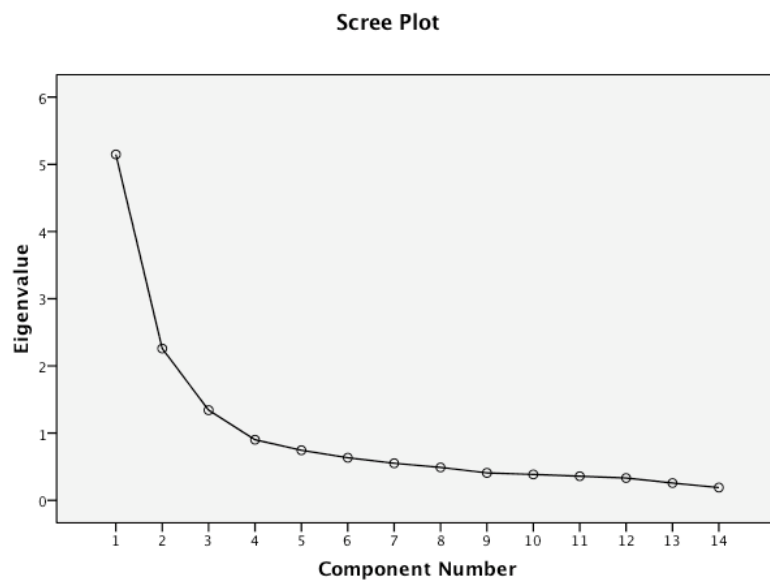
Determining the number of factors to extract. There are many criteria to use in order to determine the number of factors to extract. These criteria depend on a combination of theoretical knowledge about the potential underlying factors, as well as established criteria in terms of the size of the eigenvalue and cumulative percentage of explained variance. Examining the size of the eigenvalue, or the latent root criterion, is the most commonly used technique for factor selection (Hair et al., 2006). With this criterion, any individual factor should account for “at least a single variable if it is to be retained for interpretation” (Hair et al., 2006, p. 120). Thus, all factors that obtain an eigenvalue of 1.0 or higher are retained and interpreted while all factors with eigenvalues less than 1.0 are considered insignificant and disregarded. Based on this criterion, three factors should be retained from the prosocial and antisocial interactions items. While

retaining all factors with eigenvalues greater than 1.0 is the most commonly used criterion in factor analysis research, there is controversy about the reliability of this method. Guidelines indicate that this criterion is most reliable when the number of variables is between 20 and 50. The PCA for the prosocial and antisocial interactions items only contained 14 variables, thus additional criteria were also considered in order to determine the number of factors to retain.

Another criterion that can be applied to factor selection is to examine the percentage of explained variance. While there are no absolute thresholds for how much total variance extracted factors should explain, it is common in the social sciences to consider a factor solution that accounts for 60 percent of the total variance satisfactory (Hair et al., 2006). Based on this criterion, a four-factor solution would be appropriate for the prosocial and antisocial interactions items, because the first three factors account for 62.5% of the cumulative variance.

The third criterion used to determine the number of factors to extract was an examination of the scree plot. This test plots the latent roots (eigenvalues) and “is used to identify the optimum number of factors that can be extracted before the amount of unique variance begins to dominate the common variance structure” (Hair et al., 2006, p. 120). When examining the scree plot, researchers visually identify the point at which the slope of the line between points begins to level out horizontally. The scree plot for the prosocial and antisocial interactions items produced from SPSS can be viewed below.

Figure 6

Scree Plot of Prosocial and Antisocial Interactions for Outside School Reading

The scree plot for the prosocial and antisocial interactions items could be interpreted as indicating a four- or five-factor solution, as the slope beyond component 6 seems to level into a horizontal line. Generally, the scree test results in the extraction of one to three more factors being considered for inclusion than the latent root (eigenvalue) criterion (Hair et al., 2006).

Combining the results from the latent root criterion, percentage of explained variance and scree test four-, three- and two-factor solutions were requested and examined. A priori theoretical understanding was used to interpret the resulting components and combined with the criterion listed above; a two-factor solution was determined to be appropriate. However, the results from the three-factor solution can be found in Appendix J.

Item loadings, item selection and scale interpretation. A PAF with Oblimin rotation was conducted for the 14 prosocial and antisocial interactions items on the

AMOSR. A two-factor solution was requested, based on the criterion previously described. Item loadings can be found in Table 23.

Table 23

AMOSR Prosocial and Antisocial Interactions Item Loadings – PAF with Oblimin Rotation

	Factors	
	1	2
36. I share my opinion about what I read outside of school with my friends.	.79	
14. I share what I learn from reading outside of school with my friends.	.75	
38. I try to cheer my friends up if they have problems with reading outside of school.	.69	
34. I show interest in what my friends read outside of school.	.59	
2. I offer to help my friends with reading outside of school.	.59	
33. I keep my opinion about what I read outside of school to myself.	-.55	
32. I keep what I learn from reading outside of school to myself.	-.53	
6. I leave my friends alone when they have problems reading outside of school.	-.33	
16. I make fun of my friends' comments if they read outside of school.		.88
10. I make fun of my friends' opinions about reading outside of school.		.82
35. I make fun of my friends if they read outside of school.		.75
8. I respect my friends' opinions about what they read outside of school.		-.58
11. I respect my friends' comments about what they read outside of school.		-.54
23. I try to convince my friends that reading outside of school is a waste of time.		.54

Two criteria were used when selecting items to retain for each factor. First, factor loadings of $\pm .40$ or higher were considered significant. This criteria was established based on suggested guidelines for a sample size of 200, which indicate that a sample of 200 is needed for a factor loading of $\pm .40$ to be considered significant (Hair et al., 2006). With a sample of 250 a factor loading of $\pm .35$ could be considered significant, but I chose to retain the more conservative cut-off of $\pm .40$ based on my sample of 247 students. Second, an item was considered to be double loaded if it exceeded $\pm .40$ on both factors and was not greater than $.60$ on one of the two factors.

Based on these criteria, one item (Item 6) was excluded from additional analyses and interpretation, because the item loading was less than $\pm .40$. The remaining twelve items loaded higher than $\pm .40$ on one of the two factors and was considered for interpretation of the factor. Several items negatively loaded, meaning the item that was written to represent an affirming construct loaded with undermining items and vice versa. The first factor is composed of five prosocial interactions items and two negatively loaded antisocial interactions items. Upon closer examination, these antisocial interactions items represent disinterest in sharing reading experiences with friends, which is the opposite of maintaining the goal to share what one has learned with friends. These statements reflect neutrality or disinterest in social interactions with peers, but do not reflect actual antisocial behaviors. The second factor, however, represents acts of antisocial behavior. Four of the items are antisocial items reflecting the goal to make fun of classmates about their reading. The other two items on the second factor are negatively loaded prosocial interactions items, which refer to respecting classmates' opinions. In the context of the negative loading, these items represent the idea of actively disrespecting

classmates, which is theoretically consistent with making fun of classmates. The two-factor structure yielded two constructs of motivation that were distinct and theoretically meaningful. These two factors for school reading were labeled Prosocial interactions ($\alpha = .82$; 8 items) and Antisocial Interactions ($\alpha = .86$; 4 items). The guideline for construct reliability is that a scale reliability of .70 or higher suggests good reliability and internal consistency of the items (Hair et al., 2006, p. 778). The Prosocial interactions and Antisocial Interactions scales exceeded this guideline and can be viewed as internally consistent and representative of the same latent constructs.

AMOSR items by construct, as determined by the PAF analyses, can be found in Appendix H. Construct reliabilities for the AMSR and AMOSR can be found in Table 24 along with the number of items in each construct.

Table 24

AMSR and AMOSR Construct Reliabilities and Number of Items

	AMSR		AMOSR	
	α	Number of Items	α	Number of Items
Intrinsic Motivation	.92	9	.96	13
Avoidance	.75	4	—	—
Self-Efficacy	.89	7	.92	7
Perceived Difficulty	.92	7	.91	7
Prosocial interactions	.80	8	.82	8
Antisocial Interactions	.84	4	.86	6

Descriptive Statistics

Total Sample

New variables were calculated for items that negatively loaded by reverse coding those items in SPSS. This means that if a student originally responded with a “4 – A Lot Like Me” on the item, their response was recoded as a “1 – Not At All Like Me.” The recoding was done using SPSS and the transformation key was as follows: 1 = 4, 2 = 3, 3 = 2, 4 = 1. The recoded reverse items were used in scale construction. Mean scores for each construct were calculated by summing the items determined to form each construct and dividing by the total number of items in the construct. Descriptive statistics for the dissertation measures are reported in Table 25.

Table 25

Descriptive Statistics for AMSR, AMOSR, Gates, Inferencing, and Reading/Language Arts Grades

<i>Measure</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
AMSR					
Intrinsic Motivation	245	1.00	4.00	2.56	.77
Avoidance	245	1.00	4.00	2.40	.71
Self-Efficacy	242	1.00	4.00	3.20	.63
Perceived Difficulty	245	1.00	4.00	1.86	.69
Prosocial interactions	245	1.00	4.00	2.61	.57
Antisocial	245	1.00	4.00	1.65	.65
Interactions					
AMOSR					

Intrinsic Motivation	243	1.00	4.00	2.45	.89
Self-Efficacy	242	1.00	4.00	3.15	.73
Perceived Difficulty	244	1.00	4.00	1.82	.73
Prosocial interactions	246	1.00	4.00	2.46	.63
Antisocial	243	1.00	4.00	1.74	.62
Interactions					
Gates ESS	242	421.00	619.00	537.78	41.75
Inferencing (Per. Corr.)	246	15.00	95.00	66.00	15.00
LA/Reading Grades	237	1.00	5.00	3.92	.88

Notes. Gates ESS = Gates Reading Comprehension Extended Scale Scores. Per. Corr. = Percent Correct.

Responses ranged from 1 to 4 on the motivation constructs with means ranging from 1.65 to 3.20. The range of scores indicate that students utilized all response categories on the questionnaire. The range of mean scores show that there do not appear to be any ceiling or floor effects in student responses. The standard deviations on the motivation constructs ranged from .57 to .89. Gates-MacGinitie ESS ranged from 421 to 619 with a mean score of 537.78. The standard deviation was 41.75. On the Inferencing measure, student scores ranged from 15% correct to 95% correct with an average score of 66% correct. The standard deviation on the Inferencing measure was 15%. Finally, for LA/Reading grades, average student grades for the year ranged from 1 (“F”) to 5 (“A”) with an average grade of 3.92. The standard deviation of average student LA/Reading grades was .88.

The correlation matrix of the AMSR and AMOSR constructs with each other and the Gates-MacGinitie reading comprehension subtest, inferencing test, and Reading/LA

grades are reported in Table 26. Correlations ranged from .15 to .82 and were statistically significant $p \leq .01$, except for prosocial and antisocial interactions for school reading and prosocial interactions for outside school reading with the Inferencing measure, which were statistically significant $p \leq .05$. The general pattern of correlations reflected theoretical understanding of the construct a priori. Meaning that affirming and undermining theoretical constructs were statistically significantly negatively correlated with each other. In addition, the affirming constructs of motivation were positively correlated with each other and the undermining constructs of motivation were also positively correlated with each other, regardless of the reading purpose (i.e., school vs. outside school). The magnitude of the correlations of the motivation constructs with the Inferencing measure ranged from .15 to .38, with prosocial interactions for school reading correlating least strongly and in a negative direction while perceived difficulty outside of school correlated most strongly also in a negative direction. The magnitude of the correlations of motivation constructs with the standardized reading comprehension measure (Gates-MacGinitie) ranged from .21 to .52, with antisocial interactions for school correlating least strongly in a negative direction and perceived difficulty outside of school correlating most strongly, also in a negative direction. Finally, the magnitude of the correlations of the motivation constructs with Reading/LA grades ranged from .28 to .41, with prosocial interactions for outside school reading correlating least strongly in a negative direction and perceived difficulty for school reading correlating most strongly in a negative direction.

In terms of the achievement measures, the Gates-MacGinitie reading comprehension subtest correlated statistically significantly positively with the Inferencing

measure, $r = .72$, while Reading/LA grades also correlated significantly and positively with Inferencing, $r = .38$, and Gates-MacGinitie scores, $r = .44$.

Divided by Gender

Descriptive statistics separated by gender were run and reported in Table 27 for each construct of motivation on the AMSR and AMOSR as well as the Gates, Inferencing measure, and Reading/LA grades. Correlations were also calculated between the constructs of motivation with each other and with the achievement measures for males and females separately. The correlation matrices of all measures for males and females can be viewed in Table 28.

Table 26

Correlations for all Measures

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Intrinsic Motivation (AMSR)	—													
2. Avoidance (AMSR)	-.71	—												
3. Self-Efficacy (AMSR)	.56	-.48	—											
4. Perceived Difficulty (AMSR)	-.37	.42	-.74	—										
5. Prosocial interactions (AMSR)	.65	-.54	.52	-.38	—									
6. Antisocial Interactions (AMSR)	-.48	.40	-.42	.33	-.40	—								
7. Intrinsic Motivation (AMOSR)	.82	-.68	.46	-.36	.57	-.41	—							
8. Self-Efficacy (AMOSR)	.60	-.52	.79	-.67	.42	-.44	.65	—						
9. Perceived Difficulty (AMOSR)	-.43	.46	-.71	.79	-.40	.33	-.46	-.78	—					
10. Prosocial interactions (AMOSR)	.61	-.54	.41	-.31	.71	-.45	.67	.48	-.35	—				
11. Antisocial Interactions (AMOSR)	-.48	.38	-.36	.36	-.40	.66	-.50	-.47	.42	-.42	—			
12. Inferencing (Per. Corr.)	.21	-.22	.29	-.37	.15*	-.15*	.24	.31	-.38	.13*	-.18	—		
13. Gates	.29	-.26	.45	-.47	.24	-.21	.34	.44	-.52	.26	-.29	.72	—	
14. Reading/LA Grades	.36	-.31	.38	-.41	.33	-.32	.36	.39	-.39	.28	-.33	.38	.44	—

Notes. Gates = Gates-MacGinitie reading comprehension subtest. Reading/LA Grades = Reading/Language Arts grades. All correlations are significant at the $p \leq .01$ level unless otherwise indicated; * $p < .05$

Table 27

Descriptive Statistics for all Measures by Gender

Measure	Males					Females				
	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
AMSR										
IM	118	1.00	4.00	2.41	.75	127	1.00	4.00	2.70	.77
A	118	1.00	4.00	2.46	.70	127	1.00	4.00	2.36	.72
SE	116	1.00	4.00	3.16	.65	126	1.14	4.00	3.24	.61
PD	118	1.00	4.00	1.94	.69	127	1.00	4.00	1.79	.70
PG	118	1.00	3.75	2.52	.59	127	1.50	4.00	2.71	.53
AG	118	1.00	4.00	1.81	.68	127	1.00	3.50	1.49	.57
AMOSR										
IM	115	1.00	4.00	2.24	.83	128	1.00	4.00	2.63	.90
SE	116	1.00	4.00	3.07	.72	125	1.00	4.00	3.22	.73
PD	117	1.00	4.00	1.86	.71	127	1.00	4.00	1.79	.75
PG	117	1.00	3.75	2.31	.57	129	1.00	4.00	2.60	.65
AG	115	1.00	4.00	1.91	.66	128	1.00	3.33	1.58	.55
Gates ESS	114	439.00	619.00	534.29	42.16	128	421.00	619.00	540.89	41.30
Infer. (%)	117	30.00	95.00	66.32	15.35	129	15.00	95.00	65.81	14.44
Grades	112	1.00	5.00	3.64	.91	125	2.00	5.00	4.18	.77

Notes. AMSR = Adolescent Motivation for School Reading questionnaire. IM = Intrinsic Motivation. A = Avoidance. SE = Self-efficacy. PD = Perceived Difficulty. PG = Prosocial interactions. AG = Antisocial Interactions. AMOSR = Adolescent Motivation for Outside School Reading. Gates ESS = Gates Extended Scale Scores. Infer. (%) = Inferencing Percent Correct. Grades = Avg. Reading/LA Grades.

Table 28

Correlations for all Measures by Gender

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Intrinsic Motivation (AMSR)	—	-.76	.48	-.29	.66	-.52	.82	.49	-.39	.63	-.48	.20*	.23*	.24*
2. Avoidance (AMSR)	-.67	—	-.51	.41	-.59	.46	-.72	-.62	.52	-.52	.47	-.24	-.30	-.31
3. Self-Efficacy (AMSR)	.62	-.44	—	-.73	.45	-.40	.39	.78	-.72	.28	-.29	.29	.47	.33
4. Perceived Difficulty (AMSR)	-.43	.44	-.74	—	-.23*	.27	-.33	.72	.80	-.13 ⁺	.23*	-.38	-.44	-.34
5. Prosocial interactions (AMSR)	.62	-.48	.58	-.51	—	-.43	.58	.31	-.28	.71	-.35	.17 ⁺	.22*	.29
6. Antisocial Interactions (AMSR)	-.40	.34	-.44	.38	-.30	—	-.40	-.37	.27	-.41	.59	-.22*	-.16 ⁺	-.24*
7. Intrinsic Motivation (AMOSR)	.80	-.65	.52	-.36	.53	-.35	—	.57	-.41	.68	-.55	.23*	.25*	.23*
8. Self-Efficacy (AMOSR)	.69	-.51	.80	-.63	.52	-.50	.71	—	-.82	.29	-.42	.35	.43	.29
9. Perceived Difficulty (AMOSR)	-.46	.40	-.70	.79	-.51	.39	-.51	-.74	—	-.18 ⁺	.34	-.32	-.39	-.32
10. Prosocial interactions (AMOSR)	.56	-.55	.51	-.43	.69	-.42	.64	.62	-.49	—	-.34	.19*	.18 ⁺	.15 ⁺
11. Antisocial Interactions (AMOSR)	-.44	.28	.44	.47	-.41	.69	-.39	-.52	-.51	-.41	—	-.17 ⁺	-.21*	-.20*
12. Inferencing	.23	-.20*	.30	-.38	.13 ⁺	-.10 ⁺	.27	.28	-.44	.10 ⁺	-.22*	—	.73	.41
13. Gates-MacGinitie	.32	-.21*	.42	-.49	.24	-.24	.41	.43	-.64	.31	-.35	.71	—	.40
14. Reading/LA Grades	.42	-.30	.42	-.47	.32	-.29	.40	.47	-.48	.30	-.35	.42	.48	—

Notes. Correlations for males are above the diagonal. Correlations for females are below the diagonal. All correlations are significant at the $p \leq .01$ level unless otherwise indicated; * $p \leq .05$, + *n.s.*

Research Question 1

1) To what extent do school reading motivations that undermine achievement contribute to predicting reading achievement when school reading motivations that affirm achievement have been taken into account? Four multiple regressions were conducted for each pair of affirming and undermining constructs that emerged from the AMSR (See *Scale construction* in the Measures section). The independent variables were entered in two blocks in theoretical pairs of affirming and undermining motivations, with the affirming motivation constructs entered first and the undermining constructs entered second. The dependent variables were extended scale scores on the Gates-MacGinitie Reading Comprehension subtest and Reading/Language Arts grades. In order to account for the likelihood of Type I errors when conducting multiple analyses, I utilized a Bonferroni correction. This was calculated by dividing the p value of .05 by the number of multiple regressions conducted (4) to yield a revised statistical significance criterion level of $p \leq .01$. Marginal significance levels of $p \leq .05$ were also reported.

Intrinsic motivation and avoidance for school reading predicting Gates scores. In the first regression, intrinsic motivation and avoidance for school reading were entered in two blocks as the independent variables and extended scale scores on the Gates-MacGinitie reading comprehension subtest were entered as the dependent variable. Intrinsic motivation for school reading explained 8% of the variance, $F(1, 233) = 20.75$, $p \leq .001$, in reading comprehension scores. The final beta for intrinsic motivation, $\beta = .21$, $p \leq .05$, was marginally significant, based on the stricter significance criterion of $p \leq .01$, established using a Bonferroni correction.

Intrinsic motivation and avoidance for school reading predicting

Reading/Language Arts grades. In the second regression, intrinsic motivation and avoidance for school reading were entered in two blocks as independent variables and Reading/Language Arts grades were entered as the dependent variable. Intrinsic motivation for school reading explained 13% of the variance in Reading/Language Arts grades, $F(1, 233) = 34.93, p \leq .001$. The final beta for intrinsic motivation, $\beta = .29$, was statistically significant, $p \leq .001$. The statistically significant positive beta for intrinsic motivation for school reading predicting Reading/LA grades indicated that students who reported higher levels of intrinsic motivation for school reading earned statistically significantly higher grades than students who reported lower levels of intrinsic motivation for school reading. Conversely, students who reported lower levels of intrinsic motivation for school reading earned statistically significantly lower grades in Reading/LA than students who reported higher levels of intrinsic motivation for school reading.

Intrinsic motivation and avoidance for school reading predicting Gates when

statistically controlling for inferencing. The third regression examined the contribution of motivation for predicting reading comprehension scores when reading ability was statistically controlled. Inferencing scores were entered first as an independent variable and intrinsic motivation and avoidance for school reading were entered in a second block. The dependent variable was Gates-MacGinitie reading comprehension scores. Inferencing scores explained 51% of the variance in Gates-MacGinitie reading comprehension scores, $F(1, 233) = 244.50, p \leq .001$, and intrinsic motivation and avoidance for school reading explained an additional 2% of the variance in Gates-

MacGinitie reading comprehension scores after inferencing scores were taken into account, $F(2, 231) = 4.82, p \leq .01$. The final beta for inferencing, $\beta = .69, p \leq .001$, was statistically significant. The final beta for intrinsic motivation, $\beta = .13, p < .05$, was marginally significant based on the stricter criterion level of $p \leq .01$.

Intrinsic motivation and avoidance for school reading predicting Reading/LA grades when statistically controlling for inferencing scores. The fourth regression examined the contribution of motivation for predicting Reading/Language Arts grades when reading ability was statistically controlled. Inferencing scores were entered first as an independent variable and intrinsic motivation and avoidance for school reading were entered in a second block. The dependent variable was Reading/Language Arts grades. Inferencing scores explained 14% of the variance in Reading/Language arts grades, $F(1, 230) = 37.77, p \leq .001$, and intrinsic motivation and avoidance for school reading explained an additional 9% of the variance in Reading/Language Arts grades after inferencing scores were taken into account, $F(2, 228) = 12.83, p \leq .001$. The final beta for inferencing, $\beta = .31, p \leq .001$, was statistically significant. The final beta for intrinsic motivation for school reading, $\beta = .25, p \leq .01$, was also statistically significant. The statistically significant beta for inferencing indicated that inferencing ability predicts Reading/LA grades after taking into account the effect of intrinsic motivation and avoidance for school reading. The positive valence of the beta for inferencing indicates that students who score higher on the inferencing test tend to receive higher grades than students who score lower on the inferencing test, or vice versa. Students who score lower on the inferencing test tend to receive lower grades than students who score higher on the inferencing test. The statistically significant positive beta for intrinsic motivation for

school reading indicates that students who report higher levels of intrinsic motivation are more likely to receive higher grades in Reading/LA when statistically controlling for the effect of inferencing ability. The reverse is also true. Students who report lower levels of intrinsic motivation tend to receive statistically significantly lower Reading/LA grades when statistically controlling for the effect of inferencing ability. Results for hierarchical regressions for intrinsic motivation and avoidance for school reading can be found in Table 29.

Table 29

Hierarchical Regressions of Intrinsic Motivation and Avoidance for School Reading Predicting Gates Reading Comprehension and Reading/Language Arts Grades

Model	IVs	Final β s			R^2	ΔR^2	ΔF	dfs
		Infer	IM	A				
2-block model (DV = Gates)								
1	IM	—	.29 ^{***}	—	.08	.08	20.75 ^{***}	1, 233
2	IM + A	—	.21 [*]	-.11	.09	.01	1.53	1, 232
2-block model (DV = Grades)								
1	IM	—	.36 ^{***}	—	.13	.13	34.93 ^{***}	1, 230
2	IM + A	—	.29 ^{***}	-.11	.14	.01	1.58	1, 229
2-block model (DV = Gates) Controlling for Inferencing								
1	Infer	.72 ^{***}	—	—	.51	.51	244.50 ^{***}	1, 233
2	Infer + [IM + A]	.69 ^{***}	.13 [*]	-.02	.53	.02	4.82 ^{**}	2, 231
2-block model (DV = Grades) Controlling for Inferencing								
1	Infer	.38 ^{***}	—	—	.14	.14	37.77 ^{***}	1, 230
2	Infer + [IM + A]	.31 ^{***}	.25 ^{**}	-.07	.23	.09	12.83 ^{***}	2, 228

Notes. IVs = Independent Variables. Infer = Inferencing. IM = Intrinsic Motivation. A = Avoidance. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. Variables in brackets [] entered in single block.

Self-efficacy and perceived difficulty for school reading predicting Gates scores.

In the first regression, self-efficacy and perceived difficulty for school reading were entered in two blocks as the independent variables and extended scale scores on the Gates-MacGinitie reading comprehension subtest were entered as the dependent variable. Self-efficacy for school reading explained 20% of the variance in reading comprehension scores, $F(1, 230) = 57.63, p \leq .001$, and adding perceived difficulty to the regression equation explained an additional 5% of the variance in reading comprehension after self-efficacy was taken into account, $F(1, 229) = 13.95, p \leq .001$. The final beta for self-efficacy, $\beta = .22, p \leq .01$ was statistically significant. The statistically significant positive beta for self-efficacy indicates that students who reported higher levels of self-efficacy for school reading scored higher on the Gates-MacGinitie reading test than students who reported lower levels of self-efficacy for school reading, when taking into account the effect of perceived difficulty for school reading. The opposite is also true. Students who reported lower levels of self-efficacy for school reading scored lower on the Gates-MacGinitie reading test than students who reported higher levels of self-efficacy for school reading, when taking into account the effect of perceived difficulty for school reading.

The final beta for perceived difficulty for school reading, $\beta = -.32, p \leq .001$, was also statistically significant. The statistically significant negative beta for perceived difficulty indicates that students who reported higher levels of perceived difficulty for school reading scored lower on the Gates-MacGinitie reading test than students who reported lower levels of perceived difficulty, when taking into account the effect of self-efficacy for school reading. The opposite is also true. Students who reported lower levels

of perceived difficulty for school reading scored higher on the Gates-MacGinitie reading test than students who reported higher levels of perceived difficulty, when taking into account the effect of self-efficacy for school reading.

Self-efficacy and perceived difficulty for school reading predicting Reading/LA grades. In the second regression, self-efficacy and perceived difficulty for school reading were entered in two blocks as independent variables and Reading/Language Arts grades were entered as the dependent variable. Self-efficacy for school reading explained 14% of the variance in Reading/Language Arts grades, $F(1, 227) = 37.75, p \leq .001$, and adding perceived difficulty to the regression equation explained an additional 4% of the variance in Reading/Language Arts grades after self-efficacy was taken into account, $F(1, 226) = 10.70, p \leq .001$. The final beta for perceived difficulty for school reading, $\beta = -.29, p \leq .001$, was statistically significant. The statistically significant negative beta for perceived difficulty indicates that students who reported higher levels of perceived difficulty received statistically significantly lower Reading/LA grades than those students who reported lower levels of perceived difficulty for school reading, after taking into account self-efficacy for school reading. Conversely, students who reported lower levels of perceived difficulty received statistically significantly higher Reading/LA grades than those students who reported higher levels of perceived difficulty for school reading, after taking into account student reports of self-efficacy for school reading.

Self-efficacy and perceived difficulty for school reading predicting Gates when statistically controlling for inferencing scores. The third regression examined the contribution of motivation for predicting reading comprehension scores when reading ability was statistically controlled. Inferencing scores were entered first as an independent

variable and self-efficacy and perceived difficulty for school reading were entered in a second block. The dependent variable was Gates-MacGinitie reading comprehension scores. Inferencing scores explained 51% of the variance in Gates-MacGinitie Reading comprehension scores, $F(1, 230) = 241.35, p \leq .001$, and self-efficacy and perceived difficulty for school reading explained an additional 7% of the variance in Gates-MacGinitie reading comprehension scores after inferencing scores were taken into account, $F(2, 228) = 18.16, p \leq .001$. The final beta for inferencing, $\beta = .62, p \leq .001$, was statistically significant. The statistically significant positive beta for inferencing indicates that students who scored higher on the inferencing test also scored higher on the Gates-MacGinitie reading test, after taking into account their self-efficacy and perceived difficulty for school reading. Conversely, students who scored lower on the inferencing test tended to score lower on the Gates-MacGinitie reading test, after taking into account the effect of self-efficacy and perceived difficulty for school reading on predicting Gates scores.

The final beta for self-efficacy, $\beta = .19, p \leq .01$, was also statistically significant. The statistically significant positive beta for self-efficacy indicated that students who reported higher levels of self-efficacy for school reading tended to score higher on the Gates-MacGinitie reading test than students who reported lower levels of self-efficacy, when taking into account their inferencing ability and perceived difficulty for school reading. Conversely, students who reported lower levels of self-efficacy for school reading tended to score lower on the Gates-MacGinitie reading test than students who reported higher levels of self-efficacy, when taking into account their inferencing ability and perceived difficulty for school reading.

Self-efficacy and perceived difficulty for school reading predicting Reading/LA grades when statistically controlling for inferencing scores. The fourth regression examined the contribution of motivation for predicting Reading/Language Arts grades when reading ability was statistically controlled. Inferencing scores were entered first as an independent variable and self-efficacy and perceived difficulty for school reading were entered in a second block. The dependent variable was Reading/Language Arts grades. Inferencing scores explained 14% of the variance in Reading/Language arts grades, $F(1, 227) = 37.27, p \leq .001$, and self-efficacy and perceived difficulty for school reading explained an additional 10% of the variance in Reading/Language Arts grades after inferencing scores were taken into account, $F(2, 225) = 14.22, p \leq .001$. The final beta for inferencing, $\beta = .26, p \leq .001$, was statistically significant. The statistically significant positive beta for inferencing indicated that students who scored higher on the inferencing test tended to receive higher Reading/LA grades than students who scored lower on the inferencing test, when taking into account their self-efficacy and perceived difficulty for school reading. The opposite is also true. Students who scored lower on the inferencing test tended to receive lower Reading/LA grades than students who scored higher on the inferencing test, when taking into account statistically their self-efficacy and perceived difficulty for school reading.

The final beta for perceived difficulty for school reading, $\beta = -.20, p \leq .05$, was marginally significant based on the stricter criterion level of $p \leq .01$. Had this beta reached the higher significance criterion of $p \leq .01$, it would have indicated that students who reported higher levels of perceived difficulty for school reading tended to receive lower Reading/LA grades than students who reported lower levels of perceived difficulty,

when taking into account statistically their inferencing ability and self-efficacy for school reading. Conversely, students who reported lower levels of perceived difficulty for school reading tended to receive higher Reading/LA grades than students who reported higher levels of perceived difficulty, when taking into account statistically their inferencing ability and self-efficacy for school reading. Results for hierarchical regressions for self-efficacy and perceived difficulty for school reading can be found in Table 30.

Table 30

Hierarchical Regressions of Self-Efficacy and Perceived Difficulty for School Reading Predicting Gates Reading Comprehension and Reading/Language Arts Grades

Model	IVs	Final β s			R^2	ΔR^2	ΔF	dfs
		Infer	SE	PD				
2-block model (DV = Gates)								
1	SE	—	.45 ^{***}	—	.20	.20	57.63 ^{***}	1, 230
2	SE + PD	—	.22 ^{**}	-.32 ^{***}	.24	.05	13.95 ^{***}	1, 229
2-block model (DV = Grades)								
1	SE	—	.38 ^{***}	—	.14	.14	37.75 ^{***}	1, 227
2	SE + PD	—	.16	-.29 ^{***}	.18	.04	10.70 ^{***}	1, 226
2-block model (DV = Gates) Controlling for Inferencing								
1	Infer	.72 ^{***}	—	—	.51	.51	241.35 ^{***}	1, 230
2	Infer + [SE + PD]	.62 ^{***}	.19 ^{**}	-.10	.58	.07	18.16 ^{***}	2, 228
2-block model (DV = Grades) Controlling for Inferencing								
1	Infer	.38 ^{***}	—	—	.14	.14	37.27 ^{***}	1, 227
2	Infer + [SE + PD]	.26 ^{***}	.15	-.20 [*]	.24	.10	14.22 ^{***}	2, 225

Notes. IVs = Independent Variables. Infer = Inferencing. SE = Self-Efficacy. PD = Perceived Difficulty. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. Variables in brackets [] entered in single block.

Prosocial and antisocial interactions for school reading predicting Gates scores.

In the first regression, prosocial and antisocial interactions for school reading were

entered in two blocks as the independent variables and extended scale scores on the Gates-MacGinitie reading comprehension subtest were entered as the dependent variable. Prosocial interactions for school reading explained 6% of the variance in reading comprehension scores, $F(1, 229) = 14.21, p \leq .001$, and adding antisocial interactions to the regression equation explained an additional 2% of the variance in reading comprehension after prosocial interactions were taken into account, $F(1, 232) = 3.91, p \leq .05$. The final beta for prosocial interactions, $\beta = .19, p \leq .01$, was statistically significant. The statistically significant positive beta for prosocial interactions indicated that students who reported higher levels of prosocial interactions tended to score higher on the Gates-MacGinitie reading test than students who reported lower levels of prosocial interactions, when taking into account statistically their reports of antisocial interactions for school reading. Conversely, students who reported lower levels of prosocial interactions for school reading tended to score lower on the Gates-MacGinitie reading test than students who reported higher levels of prosocial interactions, when taking into the effect of antisocial interactions in predicting Gates. The final beta for antisocial interactions for school reading, $\beta = -.14, p \leq .05$, was marginally significant based on the stricter criterion level of $p \leq .01$.

Prosocial and antisocial interactions for school reading predicting Reading/LA grades. In the second regression, prosocial and antisocial interactions for school reading were entered in two blocks as independent variables and Reading/Language Arts grades were entered as the dependent variable. Prosocial interactions for school reading explained 11% of the variance in Reading/Language Arts grades, $F(1, 230) = 28.74, p \leq .001$, and adding antisocial interactions to the regression equation explained an additional

4% of the variance in Reading/Language Arts grades after prosocial interactions were taken into account, $F(1, 229) = 11.22, p \leq .001$. The final beta for prosocial interactions, $\beta = .25, p \leq .001$, and antisocial interactions, $\beta = -.22, p \leq .001$, were statistically significant. The statistically significant positive beta for prosocial interactions indicates that students who reported higher levels of prosocial interactions for school reading tended to receive higher Reading/LA grades than students who reported lower levels of prosocial interactions, after statistically controlling for the effect of antisocial interactions in predicting grades. Conversely, students who reported lower levels of prosocial interactions for school reading tended to receive lower Reading/LA grades than students who reported higher levels of prosocial interactions for school reading, after taking into account statistically the effect of antisocial interactions for school reading in predicting grades. The statistically significant negative beta for antisocial interactions indicates that students who reported higher levels of antisocial interactions for school reading tended to receive lower Reading/LA grades than students who reported lower levels of antisocial interactions, when taking into account the effect of prosocial interactions for school reading in predicting grades. Conversely, students who reported lower levels of antisocial interactions for school reading tended to receive higher Reading/LA grades than students who reported higher levels of antisocial interactions, when taking into account the effect of prosocial interactions for school reading in predicting grades.

Prosocial and antisocial interactions for school reading predicting Gates when statistically controlling for inferencing. The third regression examined the contribution of motivation for predicting reading comprehension scores when reading ability was statistically controlled. Inferencing scores were entered first as an independent variable

and prosocial and antisocial interactions for school reading were entered in a second block. The dependent variable was Gates-MacGinitie reading comprehension scores. Inferencing scores explained 51% of the variance in Gates-MacGinitie Reading comprehension scores, $F(1, 233) = 244.50, p \leq .001$, and prosocial and antisocial interactions for school reading explained an additional 2% of the variance in Gates-MacGinitie reading comprehension scores after inferencing scores were taken into account, $F(2, 228) = 5.31, p \leq .01$. The final beta for inferencing, $\beta = .69, p \leq .001$, was statistically significant. The statistically significant positive beta for inferencing indicates that students who scored higher on the inferencing test also scored higher on the Gates-MacGinitie reading test, after taking into account their self-efficacy and perceived difficulty for school reading. The converse is also true. Students who scored lower on the inferencing test tended to score lower on the Gates-MacGinitie reading test, after taking into account their prosocial and antisocial interactions for school reading. The final beta for prosocial interactions, $\beta = .12, p \leq .05$, was marginally significant.

Prosocial and antisocial interactions for school reading predicting Reading/LA grades when statistically controlling for inferencing. The fourth regression examined the contribution of motivation for predicting Reading/Language Arts grades when reading ability was statistically controlled. Inferencing scores were entered first as an independent variable and prosocial and antisocial interactions for school reading were entered in a second block. The dependent variable was Reading/Language Arts grades. Inferencing scores explained 14% of the variance in Reading/Language Arts grades, $F(1, 230) = 37.77, p \leq .001$, and prosocial and antisocial interactions for school reading explained an additional 11% of the variance in Reading/Language Arts grades after inferencing scores

were taken into account, $F(2, 228) = 16.40, p \leq .001$. The final beta for inferencing, $\beta = .32$, and prosocial interactions, $\beta = .21$, were statistically significant, $p \leq .001$. The statistically significant positive beta for inferencing indicates that students who scored higher on the inferencing test also received higher grades in Reading/LA arts than students who scored lower on the inferencing test, after taking into account their prosocial and antisocial interactions for school reading. The converse is also true. Students who scored lower on the inferencing test tended to receive lower Reading/LA grades than students who scored higher on the inferencing test, after taking into account their prosocial and antisocial interactions for school reading. Results for hierarchical regressions for prosocial and antisocial interactions for school reading can be found in Table 31.

Table 31

Hierarchical Regressions of Prosocial Interactions and Antisocial Interactions for School Reading Predicting Gates Reading Comprehension and Reading/Language Arts Grades

Model	IVs	Final β s			R^2	ΔR^2	ΔF	dfs
		Infer	PG	AG				
2-block model (DV = Gates)								
1	PG	—	.24***	—	.06	.06	14.21***	1, 233
2	PG + AG	—	.19**	-.14*	.07	.02	3.91*	1, 232
2-block model (DV = Grades)								
1	PG	—	.33***	—	.11	.11	28.74***	1, 230
2	PG + AG	—	.25***	-.22***	.15	.04	11.22***	1, 229
2-block model (DV = Gates) Controlling for Inferencing								
1	Infer	.72***	—	—	.51	.51	244.50***	1, 233
2	Infer + [PG + AG]	.69***	.12*	-.06	.53	.02	5.31**	2, 228
2-block model (DV = Grades) Controlling for Inferencing								
1	Infer	.38***	—	—	.14	.14	37.77***	1, 230
2	Infer + [PG + AG]	.32***	.21***	-.19**	.25	.11	16.40***	2, 228

Notes. IVs = Independent Variables. Infer = Inferencing. PG = Prosocial Interactions. AG = Antisocial Interactions. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. Variables in brackets [] entered in single block.

Research Questions 2a and 2b

2a) To what extent are middle school students' school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) independently associated with reading achievement? 2b) To what extent are middle school students' school reading motivations that undermine achievement (avoidance, perceived difficulty, and antisocial interactions for reading) independently associated with reading achievement? These research questions were addressed with four

multiple regressions using the constructs from the AMSR. The dependent variables were Gates-MacGinitie reading comprehension subtest scores and Reading/Language Arts grades. In order to account for the likelihood of Type I errors when conducting multiple analyses, I utilized a Bonferroni correction for the four analyses described for research questions 2a and 2b. This was calculated by dividing the p value of .05 by the number of multiple regressions conducted (4) to yield a revised statistical significance criterion level of $p \leq .01$. Marginal significance of $p \leq .05$ were also reported.

Affirming motivations for school reading predicting Gates scores. In the first regression, the school motivations that affirm reading achievement were entered as predictor variables. The independent variables were entered in separate blocks in the following order: prosocial interactions, intrinsic motivation, and self-efficacy. This order was chosen based on the examination of the simple correlations of the motivation constructs with the dependent variable, Gates-MacGinitie reading comprehension subtest scores. The motivation constructs were entered in order by strength of correlation with the construct with the weakest correlation entered first. This procedure provided the opportunity to examine the contribution of all three variables in the final model, although final beta weights were ultimately used in determining the statistical significance of the constructs contribution to predicting reading achievement. Prosocial interactions for school reading initially explained 6% of the variance in predicting Gates-MacGinitie reading comprehension scores, $F(1, 230) = 14.02, p \leq .001$. Intrinsic motivation for school reading explained an additional 3% of the variance in Gates-MacGinitie reading comprehension scores after prosocial interactions were taken into account, $F(1, 229) = 7.36, p \leq .01$. Finally, self-efficacy explained an additional 12% of variance in Gates-

MacGinitie reading comprehension scores after prosocial interactions and intrinsic motivation were both taken into account, $F(1, 228) = 33.11, p \leq .001$. The final beta for self-efficacy, $\beta = .42, p \leq .001$, was statistically significant. The significant positive beta for self-efficacy indicates that students who reported higher levels of self-efficacy were more likely to score higher on the Gates-MacGinitie reading test than students who reported lower levels of self-efficacy for school reading, when taking into account the effect of prosocial interactions and intrinsic motivation in predicting Gates scores. Conversely, students who reported lower levels of self-efficacy for school reading were more likely to score lower on the Gates-MacGinitie reading test than students who reported higher levels of self-efficacy for school reading, even when taking into account the effect of prosocial interactions and intrinsic motivation in predicting Gates scores.

Affirming motivations for school reading predicting Reading/Language Arts grades. In the second regression, the school motivations that affirm reading achievement were entered as predictor variables. The independent variables were entered in separate blocks in the following order: prosocial interactions, intrinsic motivation, and self-efficacy. This order was chosen based on the examination of the simple correlations of the motivation constructs with the dependent variable, Language Arts/Reading grades. The motivation constructs were entered in order by strength of correlation with the construct with the weakest correlation entered first. This procedure provided the opportunity to examine the contribution of all three variables in the final model, although final beta weights were ultimately used in determining the statistical significance of the constructs contribution to predicting reading achievement. Prosocial interactions for school reading initially explained 11% of the variance in Reading/Language Arts grades,

$F(1, 227) = 28.36, p \leq .001$. Intrinsic motivation for school reading explained an additional 4% of the variance in Reading/Language Arts grades after prosocial interactions were taken into account, $F(1, 226) = 9.86, p \leq .01$. Finally, self-efficacy explained an additional 4% of variance in Reading/Language Arts grades after prosocial interactions and intrinsic motivation were both taken into account, $F(1, 225) = 9.54, p \leq .01$. The final beta for self-efficacy, $\beta = .23, p \leq .001$, was statistically significant. The significant positive beta for self-efficacy indicates that students who reported higher levels of self-efficacy were more likely to receive high Reading/LA grades than students who reported lower levels of self-efficacy for school reading, when taking into account the effect of prosocial interactions and intrinsic motivation in predicting grades. Conversely, students who reported lower levels of self-efficacy for school reading were more likely to lower Reading/LA grades than students who reported higher levels of self-efficacy for school reading, even when taking into account the effect of prosocial interactions and intrinsic motivation in predicting grades.

The final beta for intrinsic motivation, $\beta = .17, p \leq .05$, was marginally significant based on the stricter criterion level of $p \leq .01$. Results for hierarchical regressions of affirming motivations for school reading predicting Gates-MacGinitie reading comprehension scores and Reading/Language Arts Grades can be found in Table 32.

Table 32

Hierarchical Regressions of Affirming Motivations for School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/Language Arts Grades

Model	IVs	Final β s			R^2	ΔR^2	ΔF	dfs
		PG	IM	SE				
3-block model (DV = Gates)								
1	PG	.24***	—	—	.06	—	14.02***	1, 230
2	PG + IM	.09	.23**	—	.09	.03	7.36**	1, 229
3	PG + IM + SE	-.02	.07	.42***	.20	.12	33.11***	1, 228
3-block model (DV = Grades)								
1	PG	.33***	—	—	.11	—	28.36***	1, 227
2	PG + IM	.17*	.25**	—	.15	.04	9.86**	1, 226
3	PG + IM + SE	.11	.17*	.23**	.18	.04	9.54**	1, 225

Notes. IVs = Independent Variables. PG = Prosocial Interactions. IM = Intrinsic Motivation. SE = Self-Efficacy. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Undermining motivations for school reading predicting Gates scores. In the third regression, the school motivations that undermine reading achievement were entered as predictor variables. The independent variables were entered in separate blocks in the following order: antisocial interactions, avoidance, and perceived difficulty. This order was chosen based on the examination of the simple correlations of the motivation constructs with the dependent variable, Gates-MacGinitie reading comprehension subtest scores. The motivation constructs were entered in order by strength of correlation with the construct with the weakest correlation entered first. This procedure provided the opportunity to examine the contribution of all three variables in the final model, although final beta weights were ultimately used in determining the statistical significance of the constructs contribution to predicting reading achievement. Antisocial interactions for school reading initially explained 4% of the variance in predicting Gates-MacGinitie

reading comprehension scores, $F(1, 233) = 10.74, p \leq .001$. Avoidance for school reading explained an additional 4% of the variance in Gates-MacGinitie reading comprehension scores after antisocial interactions was taken into account, $F(1, 232) = 9.05, p \leq .01$. Finally, perceived difficulty explained an additional 15% of variance in Gates-MacGinitie reading comprehension scores after antisocial interactions and avoidance were both taken into account, $F(1, 231) = 44.99, p \leq .001$. The final beta for perceived difficulty, $\beta = -.44, p \leq .001$ was statistically significant. The statistically significant negative beta for perceived difficulty indicated that students who reported higher levels of perceived difficulty tended to score lower on the Gates-MacGinitie reading test, than students who reported lower levels of perceived difficulty, taking into account the effect of antisocial interactions and avoidance of school reading in predicting Gates scores. Conversely, students who reported lower levels of perceived difficulty tended to score higher on the Gates-MacGinitie reading test, than students who reported higher levels of perceived difficulty, taking into account the effect of antisocial interactions and avoidance of school reading in predicting Gates scores.

Undermining motivations for school reading predicting Reading/LA grades. In the fourth regression, the school motivations that undermine reading achievement were entered as predictor variables. The independent variables were entered in separate blocks in the following order: antisocial interactions, avoidance, and perceived difficulty. This order was chosen based on the examination of the simple correlations of the motivation constructs with the dependent variable, Reading/LA grades. The motivation constructs were entered in order by strength of correlation with the construct with the weakest correlation entered first. This procedure provided the opportunity to examine the

contribution of all three variables in the final model, although final beta weights were ultimately used in determining the statistical significance of the constructs contribution to predicting reading achievement. Antisocial interactions for school reading initially explained 10% of the variance in Reading/Language Arts grades, $F(1, 230) = 26.11, p \leq .001$. Avoidance for school reading explained an additional 4% of the variance in Reading/Language Arts grades after antisocial interactions were taken into account, $F(1, 229) = 10.75, p \leq .001$. Finally, perceived difficulty explained an additional 7% of variance in Reading/LA grades after antisocial interactions and avoidance were both taken into account, $F(1, 228) = 21.24, p \leq .001$. The final beta for perceived difficulty, $\beta = -.31, p \leq .001$, was statistically significant, indicating that students who reported higher levels of perceived difficulty for school reading tended to receive lower Reading/LA grades than students who reported lower levels of perceived difficulty, taking into account the effect of antisocial interactions and avoidance in predicting grades. Conversely, students who reported lower levels of perceived difficulty for school reading tended to receive higher Reading/LA grades than students who reported higher levels of perceived difficulty, taking into account the effect of antisocial interactions and avoidance for school reading in predicting grades.

The final beta for antisocial interactions, $\beta = -.17, p \leq .01$, was also statistically significant indicating that students who reported higher levels of antisocial interactions were more likely to receive lower Reading/LA grades than students who reported lower levels of antisocial interactions, taking into account statistically the effect of avoidance and perceived difficulty in predicting grades. Stated in another way, students who reported lower levels of antisocial interactions were more likely to receive higher

Reading/LA grades than students who reported higher levels of antisocial interactions, taking into account statistically the effect of avoidance and perceived difficulty for school reading in predicting grades. Results for hierarchical regressions of affirming motivations for school reading predicting Gates-MacGinitie reading comprehension scores and Reading/Language Arts Grades can be found in Table 33.

Table 33

Hierarchical Regressions of Undermining Motivations for School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/Language Arts Grades

Model	IVs	Final β s			R^2	ΔR^2	ΔF	dfs
		AG	A	PD				
3-block model (DV = Gates)								
1	AG	-.21***	—	—	.04	—	10.74***	1, 233
2	AG + A	-.13	-.21**	—	.08	.04	9.05**	1, 232
3	AG + A + PD	-.04	-.05	-.44***	.23	.15	44.99***	1, 231
3-block model (DV = Grades)								
1	AG	-.32***	—	—	.10	—	26.11***	1, 230
2	AG + A	-.23***	-.22***	—	.14	.04	10.75***	1, 229
3	AG + A + PD	-.17**	-.11	-.31***	.22	.07	21.24***	1, 228

Notes. IVs = Independent Variables. AG = Antisocial Interactions. A = Avoid. PD = Perceived Difficulty. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Research Questions 3a, 3b and 3c

3a) To what extent do outside of school reading motivations that undermine achievement contribute to predicting reading achievement when outside of school motivations that affirm achievement have been taken into account? Research question 3a was addressed in a similar procedure described for research question 1a. Four multiple regressions were conducted for each pair of affirming and undermining constructs that emerged from the AMOSR (See *Scale construction* in the Measures section). The

independent variables were entered in two blocks in theoretical pairs of affirming and undermining motivations, with the affirming motivation constructs entered first and the undermining constructs entered second. The dependent variables were extended scale scores on the Gates-MacGinitie Reading Comprehension subtest and Reading/Language Arts grades. In order to account for the likelihood of Type I errors when conducting multiple analyses, I utilized a Bonferroni correction. This was calculated by dividing the p value of .05 by the number of multiple regressions conducted (4) to yield a revised statistical significance criterion level of $p \leq .01$. Marginal significance levels of $p \leq .05$ were also reported.

Self-efficacy and perceived difficulty for outside school reading predicting Gates scores. In the first regression, self-efficacy and perceived difficulty for outside school reading were entered in two blocks as the independent variables and extended scale scores on the Gates-MacGinitie reading comprehension subtest were entered as the dependent variable. Self-efficacy for outside school reading explained 19% of the variance in reading comprehension scores, $F(1, 229) = 53.52, p \leq .001$, and adding perceived difficulty to the regression equation explained an additional 9% of the variance in reading comprehension after self-efficacy was taken into account, $F(1, 228) = 27.42, p \leq .001$. The final beta for perceived difficulty for outside school reading, $\beta = -.47$, was statistically significant, $p < .001$, indicating that students who reported higher levels of perceived difficulty for outside school reading tended to score lower on the Gates-MacGinitie reading comprehension test than students who reported lower levels of perceived difficulty for outside school reading, after statistically controlling for self-efficacy for outside school reading. Conversely, students who reported lower levels of

perceived difficulty for outside school reading were more likely to score higher on the Gates-MacGinitie reading comprehension test than students who reported higher levels of perceived difficulty for outside school reading, taking into account the effect of self-efficacy for outside school reading on predicting Gates.

Self-efficacy and perceived difficulty for outside school reading predicting Reading/LA grades. In the second regression, self-efficacy and perceived difficulty for outside school reading were entered in two blocks as independent variables and Reading/Language Arts grades were entered as the dependent variable. Self-efficacy for outside school reading explained 15% of the variance in Reading/Language Arts grades, $F(1, 225) = 40.65, p \leq .001$, and adding perceived difficulty to the regression equation explained an additional 2% of the variance in Reading/Language Arts grades after self-efficacy was taken into account, $F(1, 224) = 5.01, p \leq .05$. The final beta for self-efficacy, $\beta = -.22, p \leq .05$ and perceived difficulty for outside school reading, $\beta = -.22, p \leq .05$, were marginally significant based on the stricter criterion of $p < .01$.

Self-efficacy and perceived difficulty for outside school reading predicting Gates scores while statistically controlling for inferencing. The third regression examined the contribution of motivation for outside school reading in predicting reading comprehension scores when reading ability was statistically controlled. Inferencing scores were entered first as an independent variable and self-efficacy and perceived difficulty for outside school reading were entered in a second block. The dependent variable was Gates-MacGinitie reading comprehension scores. Inferencing scores explained 51% of the variance in Gates-MacGinitie reading comprehension scores, $F(1, 229) = 240.30, p \leq .001$. Self-efficacy and perceived difficulty for outside school reading

explained an additional 8% of the variance in Gates-MacGinitie reading comprehension scores after inferencing scores were taken into account, $F(2, 227) = 20.86, p \leq .001$. The final beta for inferencing, $\beta = .60, p \leq .001$, and perceived difficulty for outside school reading, $\beta = -.26, p \leq .001$, were statistically significant. The statistically significant positive beta for inferencing shows that students who score higher on the inferencing test are more likely to score higher on the Gates-MacGinitie reading comprehension test, taking into account the effect of self-efficacy and perceived difficulty for outside school reading on predicting Gates scores. Conversely, students who score lower on the inferencing test are more likely to score lower on the Gates-MacGinitie reading comprehension test, when the effect of self-efficacy and perceived difficulty for outside school reading is statistically taken into account. The statistically significant negative beta for perceived difficulty indicates that students who report higher levels of perceived difficulty for outside school reading are more likely to score lower on the Gates-MacGinitie reading test, while students who report lower levels of perceived difficulty for outside school reading are more likely to score higher, regardless of their inferencing ability or self-efficacy for outside school reading.

Self-efficacy and perceived difficulty for outside school reading predicting Reading/LA grades while statistically controlling for inferencing. The fourth regression examined the contribution of motivation for outside school reading in predicting Reading/Language Arts grades when reading ability was statistically controlled. Inferencing scores were entered first as an independent variable and self-efficacy and perceived difficulty for outside school reading were entered in a second block. The dependent variable was Reading/Language Arts grades. Inferencing scores explained

14% of the variance in Reading/Language arts grades, $F(1, 225) = 36.94, p \leq .001$, and self-efficacy and perceived difficulty for outside school reading explained an additional 9% of the variance in Reading/Language Arts grades after inferencing scores were taken into account, $F(2, 223) = 12.96, p \leq .001$. The final beta for inferencing, $\beta = .26, p < .001$, was statistically significant. The statistically significant positive beta for inferencing scores indicates that students who scored higher on the inferencing test were more likely to receive higher grades in Reading/LA than students who scored lower on the inferencing test, while students who scored lower on the inferencing test were more likely to receive lower Reading/LA grades than students who scored higher on the inferencing test, regardless of their inferencing ability or self-efficacy for outside school reading. The final beta for self-efficacy for school reading, $\beta = .21, p < .05$ was marginally significant based on the stricter criterion level of $p < .01$. Results for the hierarchical regressions of self-efficacy and perceived difficulty for reading outside school predicting Gates-MacGinitie reading comprehension scores and Reading/Language Arts grades can be found in Table 34.

Table 34

Hierarchical Regressions of Self-Efficacy and Perceived Difficulty for Reading Outside School Predicting Gates Reading Comprehension and Reading/Language Arts Grades

Model	IVs	Final β s			R^2	ΔR^2	ΔF	dfs
		Infer	SE	PD				
2-block model (DV = Gates)								
1	SE	—	.44***	—	.19	.19	53.52***	1, 229
2	SE + PD	—	.07	-.47***	.28	.09	27.42***	1, 228
2-block model (DV = Grades)								
1	SE	—	.39***	—	.15	.15	40.65***	1, 225
2	SE + PD	—	.22*	-.22*	.17	.02	5.01*	1, 224
2-block model (DV = Gates) Controlling for Inferencing								
1	Infer	.72***	—	—	.51	.51	240.30***	1, 229
2	Infer + [SE + PD]	.60***	.05	-.26***	.59	.08	20.86***	2, 227
2-block model (DV = Grades) Controlling for Inferencing								
1	Infer	.38***	—	—	.14	.14	36.94***	1, 225
2	Infer + [SE + PD]	.26***	.21*	-.13	.23	.09	12.96***	1, 223

Notes. IVs = Independent Variables. Infer = Inferencing. SE = Self-Efficacy. PD = Perceived Difficulty. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. Variables in brackets [] entered in single block.

Prosocial and antisocial interactions for outside school reading predicting Gates scores. In the first regression, prosocial and antisocial interactions for school reading were entered in two blocks as the independent variables and extended scale scores on the Gates-MacGinitie reading comprehension subtest were entered as the dependent variable. Prosocial interactions for outside school reading explained 7% of the variance in reading comprehension scores, $F(1, 227) = 37.27, p \leq .001$. Adding antisocial interactions to the regression equation explained an additional 4% of the variance in reading comprehension after prosocial interactions were taken into account, $F(2, 225) = 13.56, p \leq .001$. The

final beta for antisocial interactions, $\beta = -.22$, $p < .01$, was statistically significant, indicating that students who reported higher levels of antisocial interactions tended to score lower on the Gates-MacGinitie reading test than students who reported lower levels of antisocial interactions, taking into account the effect of prosocial interactions for outside school reading in predicting Gates scores. Conversely, students who reported lower levels of antisocial interactions tended to score higher on the Gates-MacGinitie reading test than students who reported higher levels of antisocial interactions, taking into account the effect of prosocial interactions for outside school reading in predicting Gates scores. The final beta for prosocial interactions for outside school reading, $\beta = .17$, $p < .05$, was marginally significant based on the stricter criterion level of $p < .01$.

Prosocial and antisocial interactions for outside school reading predicting Reading/LA grades. In the second regression, prosocial and antisocial interactions for outside school reading were entered in two blocks as independent variables and Reading/Language Arts grades were entered as the dependent variable. Prosocial interactions for school reading explained 8% of the variance in Reading/Language Arts grades, $F(1, 227) = 19.86$, $p \leq .001$. Adding antisocial interactions to the regression equation explained an additional 6% of the variance in Reading/Language Arts grades after prosocial interactions were taken into account, $F(1, 226) = 14.82$, $p \leq .001$. The final betas for prosocial interactions, $\beta = .18$, $p \leq .001$, and antisocial interactions, $\beta = -.26$, $p \leq .001$, were statistically significant. The statistically significant positive beta for prosocial interactions indicates that students who reported high levels of prosocial interactions for outside school reading tended to receive higher Reading/LA grades, while students who reported lower levels of prosocial interactions for outside school reading

tended to receive lower grades, regardless of the effect of antisocial interactions for outside school reading in predicting grades. The statistically significant negative beta for antisocial interactions indicates that students who reported higher levels of antisocial interactions for outside school reading tended to receive lower Reading/LA grades, while students who reported lower levels of antisocial interactions tended to receive higher Reading/LA grades while statistically controlling for prosocial interactions for outside school reading.

Prosocial and antisocial interactions for outside school reading predicting Gates scores while statistically controlling for inferencing scores. The third regression examined the contribution of motivation for predicting reading comprehension scores when reading ability was statistically controlled. Inferencing scores were entered first as an independent variable and prosocial and antisocial interactions for outside school reading were entered in a second block. The dependent variable was Gates-MacGinitie reading comprehension scores. Inferencing scores explained 51% of the variance in Gates-MacGinitie Reading comprehension scores, $F(1, 231) = 242.40, p \leq .001$. Prosocial and antisocial interactions for school reading explained an additional 4% of the variance in Gates-MacGinitie reading comprehension scores after inferencing scores were taken into account, $F(2, 229) = 9.46, p \leq .001$. The final beta for inferencing, $\beta = .69, p < .001$, was statistically significant. The statistically significant positive beta for inferencing scores shows that students who scored high on the inferencing measure tended to score high on the Gates-MacGinitie reading comprehension test, while students who scored low on the inferencing measure tended to score low on the Gates-MacGinitie reading test, while statistically controlling for prosocial and antisocial interactions. The final beta for

prosocial interactions, $\beta = .12$, $p < .05$, and antisocial interactions, $\beta = -.11$, $p \leq .05$, were marginally significant.

Prosocial and antisocial interactions for outside school reading predicting Reading/LA grades while statistically controlling for inferencing scores. The fourth regression examined the contribution of motivation for predicting Reading/Language Arts grades when reading ability was statistically controlled. Inferencing scores were entered first as an independent variable and prosocial and antisocial interactions for outside school reading were entered in a second block. The dependent variable was Reading/Language Arts grades. Inferencing scores explained 14% of the variance in Reading/Language Arts grades, $F(1, 227) = 37.27$, $p \leq .001$. Prosocial and antisocial interactions for school reading explained an additional 9% of the variance in Reading/Language Arts grades after inferencing scores were taken into account, $F(2, 225) = 13.56$, $p \leq .001$. The final betas for inferencing, $\beta = .32$, $p \leq .001$, prosocial interactions, $\beta = .15$, $p \leq .001$, and antisocial interactions, $\beta = -.21$, $p \leq .001$, were statistically significant. The statistically significant positive beta for inferencing indicates that students who scored high on the inferencing measure were more likely to receive high Reading/LA grades, while students who scored low on the inferencing measure tended to receive low Reading/LA grades, while taking into account the effect of prosocial and antisocial interactions in predicting grades. The statistically significant positive beta for prosocial interactions indicates that students who reported high levels of prosocial interactions tended to receive high Reading/LA grades, while students who reported low levels of prosocial interactions for outside school reading tended to receive low Reading/LA grades, while taking into account the effect of inferencing ability and

antisocial interactions. The statistically significant negative beta for antisocial interactions shows that students who reported high levels of antisocial interactions were more likely to receive low Reading/LA grades, while students who reported low levels of antisocial interactions were more likely to receive high Reading/LA grades, after taking the effect of inferencing ability and prosocial interactions predicting grades, statistically into account. Results for the hierarchical regressions of prosocial and antisocial interactions for reading outside school predicting Gates-MacGinitie reading comprehension scores and Reading/Language Arts grades can be found in Table 35.

Table 35

Hierarchical Regressions of Prosocial Interactions and Antisocial Interactions for Reading Outside of School Predicting Gates Reading Comprehension and Reading/Language Arts Grades

Model	IVs	Final β s			R^2	ΔR^2	ΔF	dfs
		Infer	PG	AG				
2-block model (DV = Gates)								
1	PG	—	.26***	—	.07	.07	16.26***	1, 231
2	PG + AG	—	.17*	-.22**	.11	.04	10.17**	1, 230
2-block model (DV = Grades)								
1	PG	—	.28***	—	.08	.08	19.86***	1, 227
2	PG + AG	—	.18**	-.26***	.14	.06	14.82***	1, 226
2-block model (DV = Gates) Controlling for Inferencing								
1	Infer	.72***	—	—	.51	.51	242.40***	1, 231
2	Infer + [PG + AG]	.68***	.12*	-.11*	.55	.04	9.46***	2, 229
2-block model (DV = Grades) Controlling for Inferencing								
1	Infer	.38***	—	—	.14	.14	37.27***	1, 227
2	Infer + [PG + AG]	.32***	.15**	-.21***	.23	.09	13.56***	2, 225

Notes. IVs = Independent Variables. Infer = Inferencing. PG = Prosocial Interactions. AG = Antisocial Interactions. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. Variables in brackets [] entered in single block.

3b) To what extent are middle school students' outside of school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) independently associated with reading achievement? 3c) To what extent are middle school students' outside of school reading motivations that undermine achievement (avoidance, perceived difficulty, and antisocial interactions for reading) independently associated with reading achievement? Research question 3b and 3c were addressed in a similar procedure as that described for research question 2a and

2b, but utilizing the AMOSR items. These research questions were addressed with four multiple regressions using the constructs from the AMOSR. The dependent variables were Gates-MacGinitie reading comprehension subtest scores and Reading/Language Arts grades. In order to account for the likelihood of Type I errors when conducting multiple analyses, I utilized a Bonferroni correction. This was calculated by dividing the p value of .05 by the number of multiple regressions conducted (4) to yield a revised statistical significance criterion level of $p \leq .01$. Marginal significance of $p \leq .05$ were also reported.

Affirming motivations for outside school reading predicting Gates scores. In the first regression, the outside school motivations that affirm reading achievement were entered as predictor variables. The independent variables were entered in separate blocks in the following order: prosocial interactions, intrinsic motivation, and self-efficacy. This order was chosen based on the examination of the simple correlations of the motivation constructs with the dependent variable, Gates-MacGinitie reading comprehension subtest scores. The motivation constructs were entered in order by strength of correlation with the construct with the weakest correlation entered first. This procedure provided the opportunity to examine the contribution of all three variables in the final model, although final beta weights were ultimately used in determining the statistical significance of the constructs contribution to predicting reading achievement. Prosocial interactions for outside school reading initially explained 7% of the variance in predicting Gates-MacGinitie reading comprehension scores, $F(1, 229) = 16.12, p \leq .001$. Intrinsic motivation for school reading explained an additional 5% of the variance in Gates-MacGinitie reading comprehension scores after prosocial interactions were taken into

account, $F(1, 228) = 13.32, p \leq .001$. Finally, self-efficacy explained an additional 8% of variance in Gates-MacGinitie reading comprehension scores after prosocial interactions and intrinsic motivation were both taken into account, $F(1, 227) = 22.09, p \leq .001$. The final beta for self-efficacy for outside school reading, $\beta = .37, p < .001$, was statistically significant indicating that students who reported high levels of self-efficacy for outside school reading were more likely to score high on the Gates-MacGinitie, while students who reported low levels of self-efficacy for outside school reading were more likely to score low on the Gates-MacGinitie, after taking into account the effect of prosocial interactions and intrinsic motivation in predicting Gates scores.

Affirming motivations for outside school reading predicting Reading/Language Arts grades. In the second regression, the outside school motivations that affirm reading achievement were entered as predictor variables. The independent variables were entered in separate blocks in the following order: prosocial interactions, intrinsic motivation, and self-efficacy. This order was chosen based on the examination of the simple correlations of the motivation constructs with the dependent variable, Language Arts/Reading grades. The motivation constructs were entered in order by strength of correlation with the construct with the weakest correlation entered first. This procedure provided the opportunity to examine the contribution of all three variables in the final model, although final beta weights were ultimately used in determining the statistical significance of the constructs contribution to predicting reading achievement. Prosocial interactions for outside school reading initially explained 8% of the variance in Reading/Language Arts grades, $F(1, 225) = 19.68, p \leq .001$. Intrinsic motivation for school reading explained an additional 5% of the variance in Reading/Language Arts grades after prosocial

interactions were taken into account, $F(1, 224) = 13.85, p \leq .001$. Finally, self-efficacy explained an additional 4% of variance in Reading/Language Arts grades after prosocial interactions and intrinsic motivation were both taken into account, $F(1, 223) = 11.04, p \leq .001$. The final beta for self-efficacy, $\beta = .27, p < .001$, was statistically significant indicating that students who reported high levels of self-efficacy for outside school reading were more likely to receive high Reading/LA grades, while students who reported low levels of self-efficacy for outside school reading were more likely to receive low Reading/LA grades, after statistically controlling for the effect of prosocial interactions and intrinsic motivation in predicting Reading/LA grades. Results for hierarchical regressions of affirming motivations for school reading predicting Gates-MacGinitie reading comprehension scores and Reading/Language Arts Grades can be found in Table 36.

Table 36

Hierarchical Regressions of Affirming Motivations for Outside of School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/Language Arts Grades

Model	IVs	Final β s			R^2	ΔR^2	ΔF	dfs
		PG	IM	SE				
3-block model (DV = Gates)								
1	PG	.26***	—	—	.07	—	16.12***	1, 229
2	PG + IM	.05	.31***	—	.12	.05	13.32***	1, 228
3	PG + IM + SE	.02	.09	.37***	.20	.08	22.09***	1, 227
3-block model (DV = Grades)								
1	PG	.28***	—	—	.08	—	19.68***	1, 225
2	PG + IM	.07	.31***	—	.13	.05	13.85***	1, 224
3	PG + IM + SE	.05	.16	.27***	.18	.04	11.04***	1, 223

Notes. IVs = Independent Variables. PG = Prosocial Interactions. IM = Intrinsic Motivation. SE = Self-Efficacy. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Undermining motivations for outside school reading predicting Gates scores. In the third regression, the outside school motivations that undermine reading achievement were entered as predictor variables. The independent variables were entered in separate blocks in the following order: antisocial interactions and perceived difficulty. This order was chosen based on the examination of the simple correlations of the motivation constructs with the dependent variable, Gates-MacGinitie reading comprehension subtest scores. The motivation constructs were entered in order by strength of correlation with the construct with the weakest correlation entered first. This procedure provided the opportunity to examine the contribution of all three variables in the final model, although final beta weights were ultimately used in determining the statistical significance of the constructs contribution to predicting reading achievement. Antisocial interactions for

outside school reading initially explained 8% of the variance in predicting Gates-MacGinitie reading comprehension scores, $F(1, 231) = 20.84, p \leq .001$. Perceived difficulty explained an additional 20% of variance in Gates-MacGinitie reading comprehension scores after antisocial interactions were taken into account, $F(1, 230) = 63.26, p \leq .001$. The final beta for perceived difficulty, $\beta = -.49, p < .001$, was statistically significant which showed that students who reported high levels of perceived difficulty for outside school reading tended to score low on the Gates-MacGinitie reading test, while students who reported low levels of perceived difficulty tended to score high on the Gates-MacGinitie reading test, after taking into account statistically antisocial interactions for reading outside school.

Undermining motivations for school reading predicting Reading/LA grades. In the fourth regression, the school motivations that undermine reading achievement were entered as predictor variables. The independent variables were entered in separate blocks in the following order: antisocial interactions and perceived difficulty. This order was chosen based on the examination of the simple correlations of the motivation constructs with the dependent variable, Reading/LA grades. The motivation constructs were entered in order by strength of correlation with the construct with the weakest correlation entered first. This procedure provided the opportunity to examine the contribution of all three variables in the final model, although final beta weights were ultimately used in determining the statistical significance of the constructs contribution to predicting reading achievement. Antisocial interactions for outside school reading initially explained 11% of the variance in Reading/Language Arts grades, $F(1, 227) = 28.58, p \leq .001$. Perceived difficulty explained an additional 8% of variance in Reading/Language Arts grades after

antisocial interactions were taken into account, $F(1, 226) = 21.28, p \leq .001$. The final betas for perceived difficulty, $\beta = -.30, p < .001$, and antisocial interactions, $\beta = -.21, p < .01$, were statistically significant. The statistically significant negative beta for perceived difficulty indicated that students who reported high levels of perceived difficulty for outside school reading were more likely to receive low Reading/LA grades, while students who reported low levels of perceived difficulty tended to receive high Reading/LA grades, regardless of antisocial interactions for outside school reading. The statistically significant negative beta for antisocial interactions indicated that students who reported high levels of antisocial interactions for outside school reading were more likely to receive low Reading/LA grades, while students who reported low levels of antisocial interactions for outside school reading tended to receive high Reading/LA grades, while taking into account the effect of perceived difficulty for outside school reading in predicting grades. Results for hierarchical regressions of affirming motivations for outside school reading predicting Gates-MacGinitie reading comprehension scores and Reading/Language Arts Grades can be found in Table 37.

Table 37

Hierarchical Regressions of Undermining Motivations for Outside of School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/Language Arts Grades

Model	IVs	Final β s			R^2	ΔR^2	ΔF	dfs
		AG	A	PD				
2-block model (DV = Gates)								
1	AG	-.29***	—	—	.08	—	20.84***	1, 231
2	AG + PD	-.09	—	-.49***	.28	.20	63.26***	1, 230
2-block model (DV = Grades)								
1	AG	-.33***	—	—	.11	—	28.58***	1, 227
2	AG + PD	-.21**	—	-.30***	.19	.08	21.28***	1, 226

Notes. IVs = Independent Variables. AG = Antisocial Interactions. A = Avoid. PD = Perceived Difficulty. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Research Question 4a

4a) Are there gender differences in the extent to which motivations for school reading that undermine achievement contribute to predicting reading achievement when motivations for school reading that affirm achievement have been taken into account? In order to examine the association between school reading motivation and reading achievement by gender, a dummy code was created for gender so that interaction terms could be entered into the regression equations. Gender was dummy coded as follows: males = 1, females = 0 (Aiken & West, 1991; Frazier, Tix, & Barron, 2004).

Interaction terms were calculated for each motivation construct on the AMSR, resulting in six new variables for the AMSR constructs (i.e., gender x intrinsic motivation). Interaction terms were calculated by creating mean centered variables for each construct (i.e., construct value minus mean of construct). Then, interaction terms were created by computing a variable in SPSS equal to dummy coded gender times the

mean centered construct. For example, an interaction term for intrinsic motivation for school reading and gender was the product of gender dummy coded times the mean centered intrinsic motivation for school reading variable.

Research question 4a was addressed with six multiple regressions using the constructs that emerged from the AMSR (See *Scale construction* in the Measures section). The dependent variables were Gates-MacGinitie reading comprehension extended scale scores and Reading/LA grades. The independent variables were main effects for gender, the two motivation constructs of affirming and undermining motivation, and the two gender interaction terms for each affirming and undermining motivation construct.

In order to account for the likelihood of Type I errors when conducting multiple analyses, I utilized a Bonferroni correction for the six analyses described for research questions 4a. This was calculated by dividing the p value of .05 by the number of multiple regressions conducted (6) to yield a revised statistical significance criterion level of .01. Results that achieved marginal significance of $p < .05$ were also reported.

Intrinsic motivation and avoidance for school reading predicting Gates while controlling for gender. In the first regression, dummy coded gender, intrinsic motivation, avoidance, gender x intrinsic motivation, and gender x avoidance were entered in separate blocks as the independent variables. Gates-MacGinitie reading comprehension extended scale scores were entered as the dependent variable. Intrinsic motivation contributed 8% of the variance in Gates-MacGinitie scores after taking into account gender, which was statistically significant, $F(1, 232) = 19.28, p \leq .001$. In addition, the final beta for intrinsic motivation for school reading, $\beta = .32, p \leq .001$, was statistically

significant indicating that students who reported high levels of intrinsic motivation for school reading were more likely to score high on the Gates-MacGinitie reading comprehension test, while students who reported low levels of intrinsic motivation were more likely to score low on the Gates-MacGinitie test, regardless of gender. Avoidance did not significantly contribute to predicting Gates-MacGinitie scores, nor did gender significantly interact with intrinsic motivation or avoidance for school reading in predicting Gates-MacGinitie scores.

Intrinsic motivation and avoidance for school reading predicting Reading/LA grades while controlling for gender. In the second regression, gender, intrinsic motivation, avoidance, gender x intrinsic motivation, and gender x avoidance were entered in separate blocks as the independent variables. Reading/LA grades were entered as the dependent variable. Gender explained 10% of the variance in Reading/LA grades, while intrinsic motivation explained an additional 10% of the variance in Reading/LA grades after taking the effect of gender into account. Both gender, $F(1, 230) = 24.13, p \leq .001$, and intrinsic motivation for school reading, $F(1, 229) = 27.53, p \leq .001$, statistically significantly contributed to explaining Reading/LA grades. The final beta for gender, $\beta = -.26, p \leq .001$, and intrinsic motivation, $\beta = .35, p \leq .001$, were both statistically significant. The negative beta for gender has to be interpreted with the coding of gender (males = 1, females = 0) in mind. The statistically significant beta for gender indicates that males were more likely than females to receive lower Reading/LA grades, while females were more likely to receive higher Reading/LA grades than males, after taking into account the effect of intrinsic motivation and avoidance in predicting grades. The statistically significant positive beta for intrinsic motivation indicates that students

who reported high levels of intrinsic motivation were more likely to receive high Reading/LA grades, while students who reported low levels of intrinsic motivation tended to receive low Reading/LA grades, regardless of the student's gender or avoidance of school reading. Avoidance did not significantly contribute to predicting Reading/LA grades, nor did gender significantly interact with intrinsic motivation or avoidance for school reading in predicting Reading/LA grades.

Results for hierarchical regressions for intrinsic motivation and avoidance can be found in Table 38. Unstandardized *B* values are reported in italics for gender interaction terms, per the recommendation of Frazier, Tix, & Barron (2004). The process of centering the variables, then multiplying by the dummy code means that the beta values are no longer standardized. Standardized beta values are reported for all other independent variables.

Self-efficacy and perceived difficulty for school reading predicting Gates while controlling for gender. In the first regression, dummy coded gender, self-efficacy, perceive difficulty, gender x self-efficacy, and gender x perceived difficulty were entered in separate blocks as the independent variables. Gates-MacGinitie reading comprehension extended scale scores were entered as the dependent variable. Self-efficacy contributed 20% of the variance in Gates-MacGinitie scores after taking into account gender, which was statistically significant, $F(1, 229) = 56.48, p \leq .001$. Perceived difficulty contributed an additional 4% of the variance in Gates-MacGinitie scores after taking into account gender and self-efficacy for school reading, which was statistically significant, $F(1, 228) = 13.45, p \leq .001$. In addition, the final beta for perceived difficulty for school reading, $\beta = -.39, p \leq .001$, was statistically significant indicating that students who reported high

levels of perceived difficulty for school reading were more likely to score low on the Gates-MacGinitie reading comprehension test, while students who reported low levels of self-efficacy were more likely to score high on the Gates-MacGinitie test, regardless of gender. Self-efficacy and gender did not significantly contribute to predicting Gates-MacGinitie scores once perceived difficulty was taken into account. Gender did not significantly interact with intrinsic motivation or avoidance for school reading in predicting Gates-MacGinitie scores.

Self-efficacy and perceived difficulty for school reading predicting Reading/LA grades while controlling for gender. In the second regression, dummy coded gender, self-efficacy, perceived difficulty, gender x self-efficacy, and gender x perceived difficulty were entered in separate blocks as the independent variables. Reading/LA grades were entered as the dependent variable. Gender explained 10% of the variance in Reading/LA grades, while self-efficacy explained an additional 13% of the variance in Reading/LA grades after taking the effect of gender into account. Perceived difficulty contributed an additional 3% of variance in Reading/LA grades after taking into account the effect of gender and self-efficacy for school reading. Gender, $F(1, 227) = 23.81, p \leq .001$, self-efficacy, $F(1, 226) = 37.37, p \leq .001$, and perceived difficulty for school reading, $F(1, 225) = 9.02, p \leq .01$, statistically significantly contributed to explaining Reading/LA grades. The final betas for gender, $\beta = -.27, p \leq .001$, and perceived difficulty, $\beta = -.31, p \leq .001$, were both statistically significant. The negative beta for gender has to be interpreted with the coding of gender (males = 1, females = 0) in mind. The statistically significant beta for gender indicates that males were more likely than females to receive lower Reading/LA grades, while females were more likely to receive higher Reading/LA

grades than males, after taking into account the effect of self-efficacy, perceived difficulty and gender interactions in predicting grades. The statistically significant negative beta for perceived difficulty indicates that students who reported high levels of perceived difficulty were more likely to receive low Reading/LA grades, while students who reported low levels of perceived difficulty tended to receive high Reading/LA grades, regardless of the student's gender or self-efficacy for school reading. Self-efficacy did not significantly contribute to predicting Reading/LA grades, nor did gender significantly interact with intrinsic motivation or avoidance for school reading in predicting Reading/LA grades.

Results for hierarchical regressions for self-efficacy and perceived difficulty can be found in Table 39. Unstandardized *B* values are reported in italics for gender interaction terms, per the recommendation of Frazier, Tix, & Barron (2004). The process of centering the variables, then multiplying by the dummy code means that the beta values are no longer standardized. Standardized beta values are reported for all other independent variables.

Prosocial and antisocial interactions for school reading predicting Gates while controlling for gender. In the first regression, dummy coded gender, prosocial interactions, antisocial interactions, gender x prosocial interactions, and gender x antisocial interactions were entered in separate blocks as the independent variables. Gates-MacGinitie reading comprehension extended scale scores were entered as the dependent variable. Prosocial interactions contributed 5% of the variance in Gates-MacGinitie scores after taking into account gender, which was statistically significant, $F(1, 232) = 13.03, p \leq .001$. The final betas for prosocial interactions for school reading, β

= .20, $p \leq .05$, and antisocial interactions, $\beta = -.21$, $p \leq .05$, were marginally significant. Gender did not significantly contribute to predicting Gates-MacGinitie scores once prosocial interactions and antisocial interactions were taken into account. Gender did not significantly interact with prosocial or antisocial interactions for school reading in predicting Gates-MacGinitie scores.

Prosocial and antisocial interactions for school reading predicting Reading/LA grades while controlling for gender. In the second regression, dummy coded gender, prosocial interactions, antisocial interactions, gender x prosocial interactions, and gender x antisocial interactions were entered in separate blocks as the independent variables. Reading/LA grades were entered as the dependent variable. Gender explained 9% of the variance in Reading/LA grades, which was statistically significant, $F(1, 230) = 24.13$, $p \leq .001$. Prosocial interactions explained an additional 8% of the variance in Reading/LA grades, which was statistically significant, $F(1, 229) = 22.87$, $p \leq .001$, after taking the effect of gender into account. Antisocial interactions contributed an additional 2% of variance in Reading/LA grades, which was also statistically significant, $F(1, 228) = 6.88$, $p \leq .01$, after taking into account the effect of gender and prosocial interactions for school reading. The final betas for gender, $\beta = -.31$, $p \leq .001$ and prosocial interactions, $\beta = .24$, $p \leq .01$, were statistically significant, while the final beta for antisocial interactions, $\beta = -.22$, $p \leq .05$, was marginally significant. The negative beta for gender has to be interpreted with the coding of gender (males = 1, females = 0) in mind. The statistically significant beta for gender indicates that males were more likely than females to receive lower Reading/LA grades, while females were more likely to receive higher Reading/LA grades than males, after taking into account the effect of prosocial interactions, antisocial

interactions and gender interactions in predicting grades. The statistically significant positive beta for prosocial interactions indicates that students who reported high levels of prosocial interactions were more likely to receive high Reading/LA grades, while students who reported low levels of prosocial interactions tended to receive low Reading/LA grades, regardless of the student's gender or antisocial interactions for school reading. Results for hierarchical regressions for prosocial and antisocial interactions can be found in Table 40. Unstandardized *B* values are reported in italics for gender interaction terms, per the recommendation of Frazier, Tix, & Barron (2004). The process of centering the variables, then multiplying by the dummy code means that the beta values are no longer standardized. Standardized beta values are reported for all other independent variables.

Table 38

Hierarchical Regressions of Intrinsic Motivation and Avoidance for School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/LA Grades

Model	Independent Variables	Final Bs and β s					R^2	ΔR^2	ΔF	dfs
		G	IM	A	GxIM	GxA				
Five block model, DV = Gates (M=1, F=0)										
1	G	-.08	—	—	—	—	.01	—	1.47	1, 233
2	G + IM	-.03	.28***	—	—	—	.08	.08	19.28***	1, 232
3	G + IM + A	-.04	.20*	-.12	—	—	.09	.01	1.63	1, 231
4	G + IM + A + (GxIM)	-.04	.24*	-.12	<i>-5.38[†]</i>	—	.09	.00	.59	1, 230
5	G + IM + A + (GxIM) + (GxA)	-.04	.32***	.01	<i>-17.68</i>	<i>-18.20</i>	.10	.01	2.81	1, 229
Five block model, DV = Grades (M=1, F=0)										
1	G	-.31***	—	—	—	—	.10	—	24.13***	1, 230
2	G + IM	-.25***	.32***	—	—	—	.19	.10	27.53***	1, 229
3	G + IM + A	-.26***	.21**	-.14	—	—	.20	.01	2.81	1, 228
4	G + IM + A + (GxIM)	-.26***	.27**	-.15	<i>-.16</i>	—	.21	.00	1.27	1, 227
5	G + IM + A + (GxIM) + (GxA)	-.26***	.35**	-.04	<i>-.39</i>	<i>-.34</i>	.22	.01	2.51	1, 226

Notes. G = Gender. IM = Intrinsic Motivation. A = Avoidance. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.[†] For interaction terms, B values are reported in italics; for all other independent variables β values are reported.

Table 39

Hierarchical Regressions of Self-Efficacy and Perceived Difficulty for School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/LA Grades

Model	Independent Variables	Final Bs and β s					R^2	ΔR^2	ΔF	dfs
		G	SE	PD	GxSE	GxPD				
Five block model, DV = Gates (M=1, F=0)										
1	G	-.08	—	—	—	—	.01	—	1.44	1, 230
2	G + SE	-.05	.44***	—	—	—	.20	.20	56.48***	1, 229
3	G + SE + PD	-.03	.22**	-.31***	—	—	.25	.04	13.45***	1, 228
4	G + SE + PD + (GxSE)	-.03	.21*	-.31***	<i>1.40[†]</i>	—	.25	.00	.03	1, 227
5	G + SE + PD + (GxSE) + (GxPD)	-.03	.14	-.39***	<i>9.60</i>	<i>10.03</i>	.25	.00	.03	1, 226
Five block model, DV = Grades (M=1, F=0)										
1	G	-.31***	—	—	—	—	.10	—	23.81***	1, 227
2	G + SE	-.29***	.36***	—	—	—	.22	.13	37.37***	1, 226
3	G + SE + PD	-.27***	.17*	-.26**	—	—	.24	.03	9.02**	1, 225
4	G + SE + PD + (GxSE)	-.27***	.19	-.26**	-.06	—	.24	.00	.12	1, 224
5	G + SE + PD + (GxSE) + (GxPD)	-.27***	.15	-.31**	<i>.06</i>	<i>.14</i>	.24	.00	.40	1, 223

Notes. G = Gender. SE = Self-efficacy. PD = Perceived Difficulty. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

[†] For interaction terms, B values are reported in italics; for all other independent variables β values are reported.

Table 40

Hierarchical Regressions of Prosocial and Antisocial Interactions for School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/LA Grades

Model	Independent Variables	Final <i>B</i> s and β s					R^2	ΔR^2	ΔF	<i>dfs</i>
		G	PG	AG	GxPG	GxAG				
Five block model, DV = Gates (M=1, F=0)										
1	G	-.08	—	—	—	—	.01	—	1.47	1, 233
2	G + PG	-.04	.23***	—	—	—	.06	.05	13.03***	1, 232
3	G + PG + AG	-.02	.28**	-.13	—	—	.07	.01	3.55	1, 231
4	G + PG + AG + (GxPG)	-.02	.22*	-.14	<i>-5.59[†]</i>	—	.08	.00	.34	1, 230
5	G + PG + AG + (GxPG) + (GxAG)	-.01	.20*	-.21*	<i>-2.23</i>	<i>8.26</i>	.08	.00	.80	1, 229
Five block model, DV = Grades (M=1, F=0)										
1	G	-.31***	—	—	—	—	.09	—	24.13***	1, 230
2	G + PG	-.26***	.29***	—	—	—	.17	.08	22.87***	1, 229
3	G + PG + AG	-.23***	.23***	.09**	—	—	.19	.02	6.88**	1, 228
4	G + PG + AG + (GxPG)	-.23***	.26**	-.28**	<i>-.08</i>	—	.19	.00	.18	1, 227
5	G + PG + AG + (GxPG) + (GxAG)	-.23***	.24**	-.22*	<i>-.04</i>	<i>.11</i>	.19	.00	.37	1, 226

Notes. G = Gender. PG = Prosocial Interactions. AG = Antisocial Interactions. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. [†] For interaction terms, *B* values are reported in italics; for all other independent variables β values are reported.

Research Questions 5a and 5b

5a) Are there gender differences in the extent to which middle school students' school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) are independently associated with reading achievement? 5b) Are there gender differences in the extent to which middle school students' school reading motivations that undermine achievement (avoidance, perceived difficulty, and antisocial interactions for reading) are independently associated with reading achievement? In order to examine the association between school reading motivation and reading achievement by gender, a dummy code was created for gender so that interaction terms could be entered into the regression equations. Gender was dummy coded as follows: males = 1, females = 0 (Aiken & West; Frazier, Tix, & Barron, 2004).

Interaction terms were calculated for each motivation construct on the AMSR, resulting in six new variables for the AMSR constructs (i.e., gender x intrinsic motivation). Interaction terms were calculated by creating mean centered variables for each construct (i.e., construct value minus mean of construct). Then, interaction terms were created by computing a variable in SPSS equal to dummy coded gender times the mean centered construct. For example, an interaction term for intrinsic motivation for school reading and gender was the product of gender dummy coded times the mean centered intrinsic motivation for school reading variable.

Research question 5a was addressed with two multiple regressions using the affirming motivation constructs that emerged from the AMSR (See *Scale construction* in the Measures section). The dependent variable for the first regression was Gates-MacGinitie reading comprehension extended scale scores. The dependent variable for the

second regression was Reading/LA grades. The independent variables for both regressions were main effects for gender, the three affirming motivation constructs and the three gender interaction terms for each affirming motivation construct.

Research question 5b was addressed with two multiple regressions using the undermining motivation constructs that emerged from the AMSR (See *Scale construction* in the Measures section). The dependent variable for the first regression was Gates-MacGinitie reading comprehension extended scale scores. The dependent variable for the second regression was Reading/LA grades. The independent variables for both regressions were main effects for gender, the three undermining motivation constructs and the three gender interaction terms for each undermining motivation construct.

In order to account for the likelihood of Type I errors when conducting multiple analyses, I utilized a Bonferroni correction for the four analyses described for research questions 5a and 5b. This was calculated by dividing the p value of .05 by the number of multiple regressions conducted (4) to yield a revised statistical significance criterion level of .01. Results that achieved marginal significance of $p < .05$ were also reported.

Affirming motivations for school reading predicting Gates scores while controlling for gender. In the first regression, dummy coded gender, prosocial interactions, intrinsic motivation, self-efficacy, gender x prosocial interactions, gender x intrinsic motivation, gender x self-efficacy, were entered in separate blocks as the independent variables. Gates-MacGinitie reading comprehension extended scale scores were entered as the dependent variable. Prosocial interactions contributed 5% of the variance in Gates-MacGinitie scores, which was statistically significant, $F(1, 229) = 12.86, p \leq .001$, after taking into account gender. Intrinsic motivation for school reading

contributed an additional 3% of the variance in Gates-MacGinitie scores, which was statistically significant, $F(1, 228) = 7.05, p \leq .01$, after taking gender and prosocial interactions into account. Self-efficacy for school reading contributed an additional 12% of variance in Gates-MacGinitie scores, which was statistically significant, $F(1, 227) = 33.45, p \leq .001$, after taking gender, prosocial interactions and intrinsic motivation into account. The final beta for self-efficacy for school reading, $\beta = .40, p \leq .001$, was statistically significant, which indicated that students who reported high levels of self-efficacy were more likely to score high on the Gates-MacGinitie, while students who reported low levels of self-efficacy were more likely to score low on the Gates-MacGinitie, after taking into account the effect of prosocial interactions, intrinsic motivation and gender. Gender did not significantly contribute to predicting Gates-MacGinitie scores once prosocial interactions, intrinsic motivation, self-efficacy and gender interaction terms were taken into account. Gender did not significantly interact with prosocial interactions, intrinsic motivation or self-efficacy for school reading in predicting Gates-MacGinitie scores.

Affirming motivations for school reading predicting Reading/LA grades while controlling for gender. In the second regression, dummy coded gender, prosocial interactions, intrinsic motivation, self-efficacy, gender x prosocial interactions, gender x intrinsic motivation, gender x self-efficacy, were entered in separate blocks as the independent variables. Reading/LA grades were entered as the dependent variable. Gender contributed 10% of the variance in Reading/LA grades, which was statistically significant, $F(1, 227) = 23.81, p \leq .001$. Prosocial interactions contributed 8% of the variance in Reading/LA grades, which was statistically significant, $F(1, 226) = 22.57, p$

$\leq .001$, after taking gender into account. Intrinsic motivation for school reading contributed an additional 3% of the variance in Reading/LA grades, which was statistically significant, $F(1, 225) = 7.90, p \leq .01$, after taking gender and prosocial interactions into account. Self-efficacy for school reading contributed an additional 4% of variance in Reading/LA grades, which was statistically significant, $F(1, 224) = 12.03, p \leq .001$, after taking gender, prosocial interactions and intrinsic motivation into account. The final beta for gender was statistically significant, $\beta = -.26, p \leq .001$, while the final betas for intrinsic motivation, $\beta = .22, p \leq .05$, and self-efficacy for school reading, $\beta = .24, p \leq .05$, were marginally significant. The statistically significant negative beta for gender has to be interpreted with the coding of gender (males = 1, females = 0) in mind. The statistically significant negative beta for gender indicates that males were more likely than females to receive lower Reading/LA grades, while females were more likely to receive higher Reading/LA grades than males, after taking into account the effect of prosocial interactions, intrinsic motivation, self-efficacy and gender interactions in predicting grades. However, gender did not significantly interact with prosocial interactions, intrinsic motivation or self-efficacy for school reading in predicting Reading/LA grades. Results for hierarchical regressions for affirming motivations for school reading can be found in Table 41. Unstandardized *B* values are reported in italics for gender interaction terms, per the recommendation of Frazier, Tix, & Barron (2004). The process of centering the variables, then multiplying by the dummy code means that the beta values are no longer standardized. Standardized beta values are reported for all other independent variables.

Undermining motivations for school reading predicting Gates scores while controlling for gender. In the third regression, dummy coded gender, antisocial interactions, avoidance, perceived difficulty, gender x antisocial interactions, gender x avoidance, gender x perceived difficulty, were entered in separate blocks as the independent variables. Gates-MacGinitie reading comprehension extended scale scores were entered as the dependent variable. Antisocial interactions contributed 4% of the variance in Gates-MacGinitie scores, which was statistically significant, $F(1, 232) = 9.37, p \leq .01$, after taking into account gender. Avoidance of school reading contributed an additional 4% of the variance in Gates-MacGinitie scores, which was statistically significant, $F(1, 231) = 9.12, p \leq .01$, after taking gender and antisocial interactions into account. Perceived difficulty for school reading contributed an additional 15% of variance in Gates-MacGinitie scores, which was statistically significant, $F(1, 230) = 44.57, p \leq .001$, after taking gender, antisocial interactions and avoidance into account. The final beta for perceived difficulty for school reading, $\beta = -.48, p \leq .001$, was statistically significant. The statistically significant negative beta for perceived difficulty shows that students who reported high levels of perceived difficulty were more likely to score low on the Gates-MacGinitie, while students who reported low levels of perceived difficulty were more likely to score high on the Gates-MacGinitie. Gender did not significantly contribute to predicting Gates-MacGinitie scores once antisocial interactions, avoidance, perceived difficulty and gender interaction terms were taken into account. Gender did not significantly interact with antisocial interactions, avoidance, perceived difficulty for school reading in predicting Gates-MacGinitie scores.

Undermining motivations for school reading predicting Reading/LA grades while controlling for gender. In the fourth regression, dummy coded gender, antisocial interactions, avoidance, perceived difficulty, gender x antisocial interactions, gender x avoidance, gender x perceived difficulty, were entered in separate blocks as the independent variables. Reading/LA grades were entered as the dependent variable. Gender contributed 10% of the variance in Reading/LA grades, which was statistically significant, $F(1, 230) = 24.13, p \leq .001$. Antisocial interactions contributed an additional 6% of the variance in Reading/LA grades, which was statistically significant, $F(1, 229) = 17.12, p \leq .001$, after taking into account gender. Avoidance of school reading contributed an additional 4% of the variance in Reading/LA grades, which was statistically significant, $F(1, 228) = 12.45, p \leq .001$, after taking gender and antisocial interactions into account. Perceived difficulty for school reading contributed an additional 7% of variance in Reading/LA grades, which was statistically significant, $F(1, 227) = 21.15, p \leq .001$, after taking gender, antisocial interactions and avoidance into account.

The final beta for gender, $\beta = -.24, p \leq .001$, was statistically significant. The statistically significant negative beta for gender has to be interpreted with the coding of gender (males = 1, females = 0) in mind. The statistically significant negative beta for gender indicates that males were more likely than females to receive lower Reading/LA grades, while females were more likely to receive higher Reading/LA grades than males, after taking into account the effect of antisocial interactions, avoidance, perceived difficulty and gender interactions in predicting grades. However, gender did not

significantly interact with antisocial interactions, avoidance or perceived difficulty for school reading in predicting Reading/LA grades.

The final beta for perceived difficulty for school reading, $\beta = -.34, p \leq .001$, was also statistically significant. The statistically significant negative beta for perceived difficulty shows that students who reported high levels of perceived difficulty were more likely to receive low Reading/LA grades, while students who reported low levels of perceived difficulty were more likely to receive high Reading/LA grades regardless of gender, antisocial interactions or avoidance of school reading. Results for hierarchical regressions for undermining motivations for school reading can be found in Table 42. Unstandardized *B* values are reported in italics for gender interaction terms, per the recommendation of Frazier, Tix, & Barron (2004). The process of centering the variables, then multiplying by the dummy code means that the beta values are no longer standardized. Standardized beta values are reported for all other independent variables.

Table 41

Hierarchical Regressions of Affirming Motivations for School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/LA Grades

Model	Independent Variables	Final Bs and β s							R^2	ΔR^2	ΔF	dfs
		G	PG	IM	SE	Gx PG	Gx IM	Gx SE				
7 block model, DV = Gates (M=1, F=0)												
1	G	-.08	—	—	—	—	—	—	.01	—	1.45	1, 230
2	G + PG	-.04	.23***	—	—	—	—	—	.06	.05	12.86***	1, 229
3	G + PG + IM	-.02	.09	.22**	—	—	—	—	.09	.03	7.05**	1, 228
4	G + PG + IM + SE	-.05	-.02	.06	.43***	—	—	—	.21	.12	33.45***	1, 227
5	G + PG + IM + SE + (GxPG)	-.05	-.03	.06	.43***	.84 [†]	—	—	.21	.00	.01	1, 226
6	G + PG + IM + SE + (GxPG) + (GxIM)	-.05	-.06	.10	.42***	5.1 0	- 4.92	—	.21	.00	.33	1, 225
7	G + PG + IM + SE + (GxPG) + (GxIM) + (GxSE)	-.05	-.05	.11	.40***	4.3 7	- 5.67	2.3 5	.21	.00	.05	1, 224
7 block model, DV = Grades (M=1, F=0)												
1	G	- .31***	—	—	—	—	—	—	.10	—	23.811***	1, 227
2	G + PG	- .26***	.29***	—	—	—	—	—	.18	.08	22.57***	1, 226
3	G + PG + IM	- .24***	.15	.22**	—	—	—	—	.21	.03	7.90**	1, 225
4	G + PG + IM + SE	- .26***	.08	.12	.25***	—	—	—	.25	.04	12.03***	1, 224
5	G + PG + IM + SE + (GxPG)	- .26***	.07	.12	.25***	.03	—	—	.25	.00	.03	1, 223
6	G + PG + IM + SE + (GxPG) + (GxIM)	- .26***	.01	.22*	.25***	.23	-.24	—	.25	.01	1.77	1, 222
7	G + PG + IM + SE +	-	.02	.22*	.24*	.22	-.25	.03	.25	.00	.02	1,

(GxPG) + (GxIM) + .26^{***}
 (GxSE)

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Notes. G = Gender. PG = Prosocial Interactions. IM = Intrinsic Motivation. SE = Self-efficacy. DV = Dependent Variable. M = Males. F = Females. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. † For interaction terms, *B* values are reported in italics; for all other independent variables β values are reported. Interpretation of gender *B* dependent on coding.

Table 42

Hierarchical Regressions of Undermining Motivations for School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/LA Grades

Model	Independent Variables	Final Bs and β s							R^2	ΔR^2	ΔF	dfs
		G	AG	A	PD	GxA G	Gx A	GxP D				
7 block model, DV = Gates (M=1, F=0)												
1	G	-.08	—	—	—	—	—	—	.01	—	1.47	1, 233
2	G + AG	-.03	—	—	—	—	—	—	.05	.04	9.37**	1, 232
			.20***									
3	G + AG + A	-.04	-.12	—	—	—	—	—	.08	.04	9.12**	1, 231
				.21***								
4	G + AG + A + PD	-.02	-.04	-.05	—	—	—	—	.23	.15	44.57***	1, 230
					.44***							
5	G + AG + A + PD + (GxAG)	-.02	-.06	-.06	—	2.7	—	—	.23	.00	.12	1, 229
					.43***	2						
6	G + AG + A + PD + (GxAG) + (GxA)	-.02	-.08	.00	—	6.2	-7.82	—	.23	.00	1.07	1, 228
					.43***	6						
7	G + AG + A + PD + (GxAG) + (GxA) + (GxPD)	-.02	-.07	.02	—	5.0	-9.80	5.6	.24	.00	.50	1, 227
					.48***	9		3				
7 block model, DV = Grades (M=1, F=0)												
1	G	—	—	—	—	—	—	—	.10	—	24.13***	1, 230
		.31***										
2	G + AG	—	—	—	—	—	—	—	.16	.06	17.12***	1, 229
		.24***	.26***									
3	G + AG + A	—	—	—	—	—	—	—	.20	.04	12.45***	1, 228
		.25***	-.17**									
4	G + AG + A + PD	—	—	—	—	—	—	—	.27	.07	21.15***	1, 227
		.24***	-.11	-.12		.30***						
5	G + AG + A + PD + (GxAG)	—	—	—	—	.02	—	—	.27	.00	.02	1, 226
		.24***	-.12	-.12		.30***						
6	G + AG + A + PD +	—	—	—	—	.05	-.06	—	.27	.00	.16	1, 225

7	(GxAG) + (GxA)	.24 ^{***}			.30 ^{***}							
	G + AG + A + PD +	-	<i>-.12</i>	<i>-.09</i>	-	<i>.03</i>	<i>-.10</i>	<i>.12</i>	<i>.27</i>	<i>.00</i>	<i>.48</i>	1, 224
	(GxAG) + (GxA) +	.24 ^{***}			.34 ^{***}							
	(GxPD)											

Notes. G = Gender. AG = Antisocial Interactions. A = Avoidance. PD = Perceived Difficulty. DV = Dependent Variable. M = Males. F = Females. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. † For interaction terms, *B* values are reported in italics; for all other independent variables β values are reported. Interpretation of gender *B* dependent on coding.

Research Questions 6a, 6b, and 6c

6a) Are there gender differences in the extent to which outside of school reading motivations that undermine achievement contribute to predicting reading achievement when outside of school reading motivations that affirm achievement have been taken into account? In order to examine the association between school reading motivation and reading achievement by gender, a dummy code was created for gender so that interaction terms could be entered into the regression equations. Gender was dummy coded as follows: males = 1, females = 0 (Aiken & West, 1991; Frazier, Tix, & Barron, 2004).

Interaction terms were calculated for each motivation construct on the AMOSR, resulting in six new variables for the AMOSR constructs (i.e., gender x intrinsic motivation). Interaction terms were calculated by creating mean centered variables for each construct (i.e., construct value minus mean of construct). Then, interaction terms were created by computing a variable in SPSS equal to dummy coded gender times the mean centered construct. For example, an interaction term for intrinsic motivation for outside school reading and gender was the product of gender dummy coded times the mean centered intrinsic motivation for outside school reading variable.

Research question 6a was addressed with four multiple regressions using the constructs that emerged from the AMOSR (See *Scale construction* in the Measures section). The dependent variables for the regressions were Gates-MacGinitie reading comprehension extended scale scores and Reading/LA grades. The independent variables were main effects for gender, the two motivation constructs of affirming and undermining motivation, and the two gender interaction terms for each affirming and undermining motivation construct.

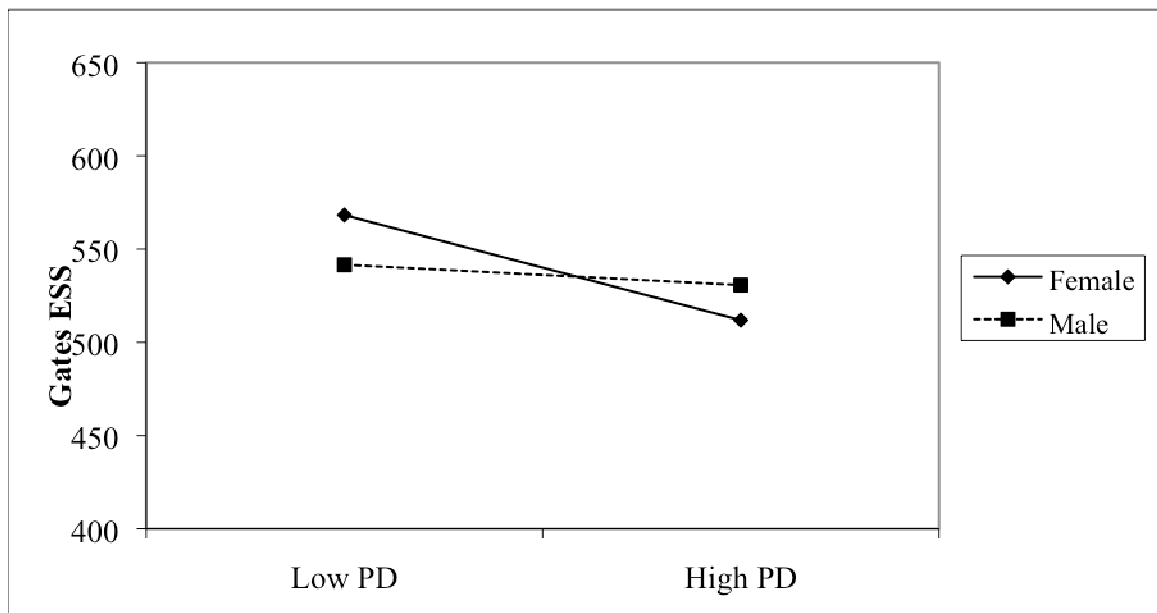
In order to account for the likelihood of Type I errors when conducting multiple analyses, I utilized a Bonferroni correction for the four analyses described for research question 6a. This was calculated by dividing the p value of .05 by the number of multiple regressions conducted (4) to yield a revised statistical significance criterion level of .01. Results that achieved marginal significance of $p < .05$ were also reported.

Self-efficacy and perceived difficulty for outside school reading predicting Gates while controlling for gender. In the first regression, dummy coded gender, self-efficacy, perceive difficulty, gender x self-efficacy, and gender x perceived difficulty were entered in separate blocks as the independent variables. Gates-MacGinitie reading comprehension extended scale scores were entered as the dependent variable. Self-efficacy contributed 18% of the variance in Gates-MacGinitie scores after taking into account gender, which was statistically significant, $F(1, 228) = 51.92, p \leq .001$. Perceived difficulty contributed an additional 9% of the variance in Gates-MacGinitie scores after taking into account gender and self-efficacy for outside school reading, which was statistically significant, $F(1, 227) = 27.78, p \leq .001$. The gender x perceived difficulty interaction term contributed an additional 3% of the variance in Gates-MacGinitie scores after taking into account gender, self-efficacy and perceived difficulty for outside school reading, which was statistically significant, $F(1, 225) = 8.82, p \leq .01$. In addition, the final beta for perceived difficulty for outside school reading, $\beta = -.68, p \leq .001$, was statistically significant indicating that students who reported high levels of perceived difficulty for outside school reading were more likely to score low on the Gates-MacGinitie reading comprehension test, while students who reported low levels of self-efficacy were more likely to score high on the Gates-MacGinitie test, regardless of gender. Self-efficacy and

gender did not significantly contribute to predicting Gates-MacGinitie scores once perceived difficulty was taken into account. The final B of gender x perceived difficulty for outside school reading, $B = 31.61$, $p \leq .001$, was statistically significant, while the final B value of gender x self-efficacy, $B = 23.64$, $p \leq .05$, was marginally significant. The statistically significant B value for gender x perceived difficulty for outside school reading indicates that females who reported high levels of perceived difficulty scored lower on the Gates, than males who reported high levels of perceived difficulty, while females who reported low levels of perceived difficulty scored higher on the Gates than males who reported low levels of perceived difficulty. This interaction is graphically represented in Figure 7.

Figure 7

Perceived Difficulty for Outside School Reading by Gender Predicting Gates ESS



Self-efficacy and perceived difficulty for outside school reading predicting Reading/LA grades while controlling for gender. In the second regression, dummy coded gender, self-efficacy, perceived difficulty, gender x self-efficacy, and gender x perceived

difficulty were entered in separate blocks as the independent variables. Reading/LA grades were entered as the dependent variable. Gender explained 9% of the variance in Reading/LA grades, while self-efficacy explained an additional 13% of the variance in Reading/LA grades after taking the effect of gender into account. Perceived difficulty contributed an additional 2% of variance in Reading/LA grades after taking into account the effect of gender and self-efficacy for outside school reading. Gender, $F(1, 225) = 23.60, p \leq .001$, self-efficacy, $F(1, 224) = 37.62, p \leq .001$, and perceived difficulty for outside school reading, $F(1, 223) = 6.66, p \leq .01$, statistically significantly contributed to explaining Reading/LA grades. The final beta for gender, $\beta = -.28, p \leq .001$, was statistically significant, while the final beta for perceived difficulty, $\beta = -.26, p \leq .05$, was marginally significant. The statistically significant negative beta for gender has to be interpreted with the coding of gender (males = 1, females = 0) in mind. The statistically significant beta for gender indicates that males were more likely than females to receive lower Reading/LA grades, while females were more likely to receive higher Reading/LA grades than males, after taking into account the effect of self-efficacy, perceived difficulty and gender interactions in predicting grades. Self-efficacy did not significantly contribute to predicting Reading/LA grades, nor did gender significantly interact with intrinsic motivation or avoidance for outside school reading in predicting Reading/LA grades.

Results for hierarchical regressions for self-efficacy and perceived difficulty for outside school reading can be found in Table 43. Unstandardized *B* values are reported in italics for gender interaction terms, per the recommendation of Frazier, Tix, & Barron (2004). The process of centering the variables, then multiplying by the dummy code

means that the beta values are no longer standardized. Standardized beta values are reported for all other independent variables.

Table 43

Hierarchical Regressions of Self-Efficacy and Perceived Difficulty for Outside School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/LA Grades

Model	Independent Variables	Final Bs and β s					R^2	ΔR^2	ΔF	dfs
		G	SE	PD	GxSE	GxPD				
Five block model, DV = Gates (M=1, F=0)										
1	G	-.08	—	—	—	—	.01	—	1.44	1, 229
2	G + SE	-.03	.43***	—	—	—	.19	.18	51.92***	1, 228
3	G + SE + PD	-.05	.06	-.48***	—	—	.28	.09	27.78***	1, 227
4	G + SE + PD + (GxSE)	-.05	.07	-.48***	<i>-1.54[†]</i>	—	.28	.00	.06	1, 226
5	G + SE + PD + (GxSE) + (GxPD)	-.05	-.09	-.68***	<i>23.64*</i>	<i>31.61**</i>	.31	.03	8.82**	1, 225
Five block model, DV = Grades (M=1, F=0)										
1	G	-.31***	—	—	—	—	.09	—	23.60***	1, 225
2	G + SE	-.27***	.36***	—	—	—	.22	.13	37.62***	1, 224
3	G + SE + PD	-.28***	.18	-.24**	—	—	.24	.02	6.66**	1, 223
4	G + SE + PD + (GxSE)	-.28***	.23*	-.24**	<i>-.16</i>	—	.24	.00	1.18	1, 222
5	G + SE + PD + (GxSE) + (GxPD)	-.28***	.22	-.26*	<i>-.13</i>	<i>.04</i>	.24	.00	.03	1, 221

Notes. G = Gender. SE = Self-efficacy. PD = Perceived Difficulty. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

[†] For interaction terms, B values are reported in italics; for all other independent variables β values are reported.

Prosocial and antisocial interactions for outside school reading predicting Gates while controlling for gender. In the third regression, dummy coded gender, prosocial interactions, antisocial interactions, gender x prosocial interactions, and gender x antisocial interactions were entered in separate blocks as the independent variables. Gates-MacGinitie reading comprehension extended scale scores were entered as the dependent variable. Prosocial interactions contributed 6% of the variance in Gates-MacGinitie scores after taking into account gender, which was statistically significant, $F(1, 230) = 14.74, p \leq .001$. Antisocial interactions contributed an additional 4% of the variance in Gates-MacGinitie scores after taking into account gender and prosocial interactions, which was statistically significant, $F(1, 229) = 10.14, p \leq .01$. The final beta for antisocial interactions for outside school reading, $\beta = -.31, p \leq .01$, was statistically significant, while the final beta for prosocial interactions for outside school reading, $\beta = -.2, p \leq .05$, was marginally significant. The statistically significant negative beta for antisocial interactions indicates that students who reported high levels of perceived difficulty for outside school reading were more likely to score low on the Gates-MacGinitie, while students who reported low levels of perceived difficulty were more likely to score high on the Gates-MacGinitie. Gender did not significantly contribute to predicting Gates-MacGinitie scores once prosocial interactions and antisocial interactions were taken into account. Gender did not significantly interact with prosocial or antisocial interactions for outside school reading in predicting Gates-MacGinitie scores.

Prosocial and antisocial interactions for school reading predicting Reading/LA grades while controlling for gender. In the fourth regression, dummy coded gender, prosocial interactions, antisocial interactions, gender x prosocial interactions, and gender

x antisocial interactions were entered in separate blocks as the independent variables. Reading/LA grades was entered as the dependent variable. Gender explained 9% of the variance in Reading/LA grades, which was statistically significant, $F(1, 227) = 23.81, p \leq .001$. Prosocial interactions explained an additional 5% of the variance in Reading/LA grades, which was statistically significant, $F(1, 226) = 12.39, p \leq .001$, after taking the effect of gender into account. Antisocial interactions contributed an additional 4% of variance in Reading/LA grades, which was also statistically significant, $F(1, 225) = 10.21, p \leq .01$, after taking into account the effect of gender and prosocial interactions for school reading. The final betas for gender, $\beta = -.22, p \leq .001$ and antisocial interactions, $\beta = -.29, p \leq .01$, were statistically significant. The negative beta for gender has to be interpreted with the coding of gender (males = 1, females = 0) in mind. The statistically significant beta for gender indicates that males were more likely than females to receive lower Reading/LA grades, while females were more likely to receive higher Reading/LA grades than males, after taking into account the effect of prosocial interactions, antisocial interactions and gender interactions in predicting grades. The statistically significant negative beta for antisocial interactions indicates that students who reported high levels of antisocial interactions for outside school reading were more likely to receive low Reading/LA grades, while students who reported low levels of antisocial interactions for outside school reading tended to receive high Reading/LA grades, regardless of the student's gender or prosocial interactions for outside school reading. Results for hierarchical regressions for prosocial and antisocial interactions for outside school reading can be found in Table 44. Unstandardized *B* values are reported in italics for gender interaction terms, per the recommendation of Frazier, Tix, & Barron (2004). The

process of centering the variables, then multiplying by the dummy code means that the beta values are no longer standardized. Standardized beta values are reported for all other independent variables.

Table 44

Hierarchical Regressions of Prosocial and Antisocial Interactions for Outside School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/LA Grades

Model	Independent Variables	Final Bs and β s					R^2	ΔR^2	ΔF	dfs
		G	PG	AG	GxPG	GxAG				
Five block model, DV = Gates (M=1, F=0)										
1	G	-.08	—	—	—	—	.00	—	1.45	1, 231
2	G + PG	-.02	.25***	—	—	—	.07	.06	14.74***	1, 230
3	G + PG + AG	-.02	.17*	-.22**	—	—	.11	.04	10.14**	1, 229
4	G + PG + AG + (GxPG)	-.02	.22**	-.23**	<i>-7.77†</i>	—	.11	.00	.79	1, 228
5	G + PG + AG + (GxPG) + (GxAG)	-.02	.20*	-.31**	<i>-4.06</i>	<i>9.95</i>	.11	.00	1.09	1, 227
Five block model, DV = Grades (M=1, F=0)										
1	G	-.31***	—	—	—	—	.09	—	23.81***	1, 227
2	G + PG	-.26***	.22***	—	—	—	.14	.05	12.39***	1, 226
3	G + PG + AG	-.22***	.14*	-.22**	—	—	.18	.04	10.21**	1, 225
4	G + PG + AG + (GxPG)	-.22***	.19*	-.22***	<i>-.15</i>	—	.18	.00	.74	1, 224
5	G + PG + AG + (GxPG) + (GxAG)	-.22***	.16	-.29**	<i>-.10</i>	<i>.16</i>	.18	.00	.66	1, 223

Notes. G = Gender. PG = Prosocial Interactions. AG = Antisocial Interactions. DV = Dependent Variable. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. † For interaction terms, B values are reported in italics; for all other independent variables β values are reported.

6b) Are there gender differences in the extent to which middle school students' outside of school reading motivations that affirm achievement (intrinsic motivation, self-efficacy, and prosocial interactions for reading) are independently associated with reading achievement? 6c) Are there gender differences in the extent to which middle school students' outside of school reading motivations that undermine achievement (avoidance, perceived difficulty, and antisocial interactions for reading) are independently associated with reading achievement? In order to examine the association between outside school reading motivation and reading achievement by gender, a dummy code was created for gender so that interaction terms could be entered into the regression equations. Gender was dummy coded as follows: males = 1, females = 0 (Aiken & West; Frazier, Tix, & Barron, 2004).

Interaction terms were calculated for each motivation construct on the AMOSR, resulting in six new variables for the AMOSR constructs (i.e., gender x intrinsic motivation). Interaction terms were calculated by creating mean centered variables for each construct (i.e., construct value minus mean of construct). This followed the guidelines and recommendation for using centered data when creating interaction terms as outlined by Aiken and West (1991). Then, interaction terms were created by computing a variable in SPSS equal to dummy coded gender times the mean centered construct. For example, an interaction term for intrinsic motivation for outside school reading and gender was the product of gender dummy coded times the mean centered intrinsic motivation for outside school reading variable.

Research question 6b was addressed with two multiple regressions using the affirming motivation constructs that emerged from the AMOSR (See *Scale construction*

in the Measures section). The dependent variable for the first regression was Gates-MacGinitie reading comprehension extended scale scores. The dependent variable for the second regression was Reading/LA grades. The dependent variables were not centered because it is not necessary to center the criterion variables even when centering the predictor variables and leaving the dependent variable in its original scale makes interpretation of significant interactions easier (Aiken & West, 1991). The independent variables for both regressions were main effects for gender, the three affirming motivation constructs and the three gender interaction terms for each affirming motivation construct.

Research question 6c was addressed with two multiple regressions using the undermining motivation constructs that emerged from the AMOSR (See *Scale construction* in the Measures section). The dependent variable for the first regression was Gates-MacGinitie reading comprehension extended scale scores. The dependent variable for the second regression was Reading/LA grades. The independent variables for both regressions were main effects for gender, the three undermining motivation constructs and the three gender interaction terms for each undermining motivation construct.

In order to account for the likelihood of Type I errors when conducting multiple analyses, I utilized a Bonferroni correction for the four analyses described for research questions 6b and 6c. This was calculated by dividing the p value of .05 by the number of multiple regressions conducted (4) to yield a revised statistical significance criterion level of .01. Results that achieved marginal significance of $p \leq .05$ were also reported.

Affirming motivations for outside school reading predicting Gates scores while controlling for gender. In the first regression, dummy coded gender, prosocial

interactions, intrinsic motivation, self-efficacy, gender x prosocial interactions, gender x intrinsic motivation, gender x self-efficacy, were entered in separate blocks as the independent variables. Gates-MacGinitie reading comprehension extended scale scores were entered as the dependent variable. Prosocial interactions contributed 6% of the variance in Gates-MacGinitie scores, which was statistically significant, $F(1, 228) = 14.61, p \leq .001$, after taking into account gender. Intrinsic motivation for outside school reading contributed an additional 5% of the variance in Gates-MacGinitie scores, which was statistically significant, $F(1, 227) = 13.17, p \leq .001$, after taking gender and prosocial interactions into account. Self-efficacy for outside school reading contributed an additional 8% of variance in Gates-MacGinitie scores, which was statistically significant, $F(1, 226) = 22.08, p \leq .001$, after taking gender, prosocial interactions and intrinsic motivation into account. The final beta for self-efficacy for outside school reading, $\beta = .30, p \leq .05$, was marginally significant. Gender did not significantly contribute to predicting Gates-MacGinitie scores once prosocial interactions, intrinsic motivation, self-efficacy and gender interaction terms were taken into account. Gender did not significantly interact with prosocial interactions, intrinsic motivation or self-efficacy for outside school reading in predicting Gates-MacGinitie scores.

Affirming motivations for outside school reading predicting Reading/LA grades while controlling for gender. In the second regression, dummy coded gender, prosocial interactions, intrinsic motivation, self-efficacy, gender x prosocial interactions, gender x intrinsic motivation, gender x self-efficacy, were entered in separate blocks as the independent variables. Reading/LA grades were entered as the dependent variable. Gender contributed 10% of the variance in Reading/LA grades, which was statistically

significant, $F(1, 225) = 23.60, p \leq .001$. Prosocial interactions contributed an additional 10% of the variance in Reading/LA grades, which was statistically significant, $F(1, 224) = 12.28, p \leq .001$, after taking gender into account. Intrinsic motivation for outside school reading contributed an additional 5% of the variance in Reading/LA grades, which was statistically significant, $F(1, 223) = 12.21, p \leq .001$, after taking gender and prosocial interactions into account. Self-efficacy for outside school reading contributed an additional 5% of variance in Reading/LA grades, which was statistically significant, $F(1, 222) = 13.55, p \leq .001$, after taking gender, prosocial interactions and intrinsic motivation into account. The final betas for gender, $\beta = -.25, p \leq .001$, and self-efficacy for outside school reading, $\beta = .33, p \leq .01$, were statistically significant. The statistically significant positive beta for self-efficacy for outside school reading indicates that students who reported high levels of self-efficacy for outside school reading were more likely to receive high Reading/LA grades, while students who reported low levels of self-efficacy were more likely to receive low Reading/LA grades regardless of gender, prosocial interactions or intrinsic motivation for reading outside of school.

The statistically significant negative beta for gender has to be interpreted with the coding of gender (males = 1, females = 0) in mind. The statistically significant negative beta for gender indicates that males were more likely than females to receive lower Reading/LA grades, while females were more likely to receive higher Reading/LA grades than males, after taking into account the effect of prosocial interactions, intrinsic motivation, self-efficacy and gender interactions in predicting grades. However, gender did not significantly interact with prosocial interactions, intrinsic motivation or self-efficacy for outside school reading in predicting Reading/LA grades. Results for

hierarchical regressions for affirming motivations for outside school reading can be found in Table 45. Unstandardized *B* values are reported in italics for gender interaction terms, per the recommendation of Frazier, Tix, & Barron (2004). The process of centering the variables, then multiplying by the dummy code means that the beta values are no longer standardized. Standardized beta values are reported for all other independent variables.

Table 45

Hierarchical Regressions of Affirming Motivations for Outside School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/LA Grades

Model	Independent Variables	Final Bs and β s							R^2	ΔR^2	ΔF	dfs
		G	PG	IM	SE	GxP G	GxI M	GxS E				
7 block model, DV = Gates (M=1, F=0)												
1	G	-.08	—	—	—	—	—	—	.01	—	1.44	1, 229
2	G + PG	-.02	.23***	—	—	—	—	—	.07	.06	14.61***	1, 228
3	G + PG + IM	.00	.05	.31***	—	—	—	—	.12	.05	13.17***	1, 227
4	G + PG + IM + SE	-.02	.02	.09	.37** *	—	—	—	.20	.08	22.08***	1, 226
5	G + PG + IM + SE + (GxPG)	-.02	.02	.09	.37** *	-.48	—	—	.20	.00	.00	1, 225
6	G + PG + IM + SE + (GxPG) + (GxIM)	-.02	-.03	.16	.38** *	8.51	- 9.21 [†]	—	.20	.01	1.37	1, 224
7	G + PG + IM + SE + (GxPG) + (GxIM) + (GxSE)	-.02	-.01	.20	.30* *	7.90	- 13.56	8.64	.20	.00	.83	1, 223
7 block model, DV = Grades (M=1, F=0)												
1	G	-.31***	—	—	—	—	—	—	.10	—	23.60***	1, 225
2	G + PG	-.26***	.22***	—	—	—	—	—	.14	.10	12.28***	1, 224
3	G + PG + IM	-.24***	.03	.29** *	—	—	—	—	.19	.05	12.21***	1, 223
4	G + PG + IM + SE	-.25***	.01	.12	.29** *	—	—	—	.23	.05	13.55***	1, 222
5	G + PG + IM + SE + (GxPG)	-.25***	.02	.12	.28** *	-.04	—	—	.23	.00	.04	1, 221
6	G + PG + IM + SE + (GxPG) + (GxIM)	-.25***	-.01	.16	.29** *	.08	-.12	—	.24	.00	.54	1, 220
7	G + PG + IM + SE +	-.25***	-.02	.14	.33** *	.09	-.07	-.09	.24	.00	.22	1, 219

(GxPG) + (GxIM) +
(GxSE)

Notes. G = Gender. PG = Prosocial Interactions. IM = Intrinsic Motivation. SE = Self-efficacy. DV = Dependent Variable. M = Males. F = Females. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. † For interaction terms, *B* values are reported in italics; for all other independent variables β values are reported. Interpretation of gender *B* dependent on coding.

Undermining motivations for outside school reading predicting Gates scores while controlling for gender. In the third regression, dummy coded gender, antisocial interactions, perceived difficulty, gender x antisocial interactions, and gender x perceived difficulty, were entered in separate blocks as the independent variables. Gates-MacGinitie reading comprehension extended scale scores were entered as the dependent variable. Antisocial interactions contributed 8% of the variance in Gates-MacGinitie scores, which was statistically significant, $F(1, 230) = 19.18, p \leq .001$, after taking gender into account. Perceived difficulty of outside school reading contributed an additional 20% of the variance in Gates-MacGinitie scores, which was statistically significant, $F(1, 229) = 63.41, p \leq .001$, after taking gender and antisocial interactions into account. The final beta for perceived difficulty for outside school reading, $\beta = -.60, p \leq .001$, was statistically significant. The statistically significant negative beta for perceived difficulty shows that students who reported high levels of perceived difficulty were more likely to score low on the Gates-MacGinitie, while students who reported low levels of perceived difficulty were more likely to score high on the Gates-MacGinitie. Gender did not significantly contribute to predicting Gates-MacGinitie scores once antisocial interactions, avoidance, perceived difficulty and gender interaction terms were taken into account. Gender did not significantly interact with antisocial interactions or perceived difficulty for outside school reading in predicting Gates-MacGinitie scores.

Undermining motivations for outside school reading predicting Reading/LA grades while controlling for gender. In the fourth regression, dummy coded gender, antisocial interactions, perceived difficulty, gender x antisocial interactions, and gender x perceived difficulty, were entered in separate blocks as the independent variables.

Reading/LA grades were entered as the dependent variable. Gender contributed 7% of the variance in Reading/LA grades, which was statistically significant, $F(1, 227) = 23.81, p \leq .001$. Antisocial interactions contributed an additional 7% of the variance in Reading/LA grades, which was statistically significant, $F(1, 226) = 18.23, p \leq .001$, after taking into account gender. Perceived difficulty for outside school reading contributed an additional 9% of variance in Reading/LA grades, which was statistically significant, $F(1, 225) = 25.75, p \leq .001$, after taking gender and antisocial interactions into account.

The final beta for gender, $\beta = -.26, p \leq .001$, was statistically significant. The statistically significant negative beta for gender has to be interpreted with the coding of gender (males = 1, females = 0) in mind. The statistically significant negative beta for gender indicates that males were more likely than females to receive lower Reading/LA grades, while females were more likely to receive higher Reading/LA grades than males, after taking into account the effect of antisocial interactions, perceived difficulty and gender interactions in predicting grades. However, gender did not significantly interact with antisocial interactions or perceived difficulty for outside school reading in predicting Reading/LA grades.

The final beta for perceived difficulty for outside school reading, $\beta = -.35, p \leq .001$, was also statistically significant. The statistically significant negative beta for perceived difficulty shows that students who reported high levels of perceived difficulty for outside school reading were more likely to receive low Reading/LA grades, while students who reported low levels of perceived difficulty for outside school reading were more likely to receive high Reading/LA grades, regardless of gender or antisocial interactions for outside school reading. Results for hierarchical regressions for

undermining motivations for outside school reading can be found in Table 46.

Unstandardized *B* values are reported in italics for gender interaction terms, per the recommendation of Frazier, Tix, & Barron (2004). The process of centering the variables, then multiplying by the dummy code means that the beta values are no longer standardized. Standardized beta values are reported for all other independent variables.

Table 46

Hierarchical Regressions of Undermining Motivations for Outside School Reading Predicting Gates-MacGinitie Reading Comprehension Scores and Reading/LA Grades

Model	Independent Variables	Final Bs and β s					R^2	ΔR^2	ΔF	dfs
		G	AG	PD	GxAG	GxPD				
5 block model, DV = Gates (M=1, F=0)										
1	G	-.08	—	—	—	—	.01	—	1.45	1, 231
2	G + AG	-.00	-.29***	—	—	—	.08	.08	19.18***	1, 230
3	G + AG + PD	-.03	-.07	-.49***	—	—	.28	.20	63.41***	1, 229
4	G + AG + PD + (G x AG)	-.03	-.11	-.49***	4.49 [†]	—	.28	.00	.32	1, 228
5	G + AG + PD + (GxAG) + (GxPD)	-.04	-.05	-.60***	-2.32	12.96	.29	.01	3.25	1, 227
5 block model, DV = Grades (M=1, F=0)										
1	G	-.31***	—	—	—	—	.10	—	23.81***	1, 227
2	G + AG	-.24***	-.27***	—	—	—	.16	.07	18.23***	1, 226
3	G + AG + PD	-.26***	-.13*	-.32***	—	—	.25	.09	25.75***	1, 225
4	G + AG + PD + (G x AG)	-.26***	-.18	-.32***	-.38	—	.25	.00	.38	1, 224
5	G + AG + PD + (GxAG) + (GxPD)	-.26***	-.16	-.35***	.07	.08	.25	.00	.24	1, 223

Notes. G = Gender. AG = Antisocial Interactions. PD = Perceived Difficulty. DV = Dependent Variable. M = Males. F = Females. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. [†] For interaction terms, *B* values are reported in italics; for all other independent variables β values are reported. Interpretation of gender *B* dependent on coding.

CHAPTER 5: DISCUSSION

Summary and Interpretations of Findings

Overview

There were four main purposes to this dissertation study that were investigated through six research questions. The first purpose of this study was to examine whether motivation was a multidimensional construct consisting of multiple facets that identify different aspects of human desires for reading according to several theoretical frameworks. The existing literature provides evidence that there are many different aspects of motivation that individually predict achievement, but that combining some of these different constructs together may provide a foundation for making more reliable predictions about achievement.

The second purpose of this study was to examine the contribution of undermining motivation in explaining achievement. This purpose centered on the idea that traditionally motivation has been viewed as an approach tendency, but that there are often reasons why an undermining or “avoidance” tendency may be equally important to investigate (Elliot & Covington, 2001). This study systematically examined the contribution of motivations that undermine achievement in conjunction with those that affirm achievement in predicting reading achievement.

The third purpose of this study was to examine the extent to which the purpose (inside vs. outside school) for reading influenced the relationship between motivation and achievement. Items representing the constructs of motivation were written to focus students’ attention to reading that they do for school and reading that they do outside school. Studies of reading attitudes have revealed that students often have very different

attitudes towards academic reading than they do about recreational reading (McKenna, Kear, & Ellsworth, 1995).

Finally, the fourth purpose of this study was to examine the relationship between gender, motivations for reading and reading achievement. Previously literature has consistently revealed gender findings where females outperform males on standardized measures of reading achievement and on classroom grades (Baker & Wigfield, 1999). Generally, these findings are discussed as mean differences between males and females achievement and their levels of motivation. Gender differences were examined in this study as differences in the relationship between motivation and achievement for males and females.

In the sections that follow, these four purposes are discussed in more detail. The results from the six research questions guiding the study are used throughout these sections to support the discussion of these purposes with new evidence.

Multidimensional Motivation

One purpose of this study was to examine the multidimensional nature of motivation. Researchers have proposed theories of motivation that incorporate multiple constructs of motivation, but these constructs are generally reflective of a single underlying theoretical perspective of motivation (Deci et al., 1991). This was addressed by investigating six different constructs of motivation derived from three theories of motivation. From SDT, items were generated to reflect intrinsic motivation for reading and avoidance of reading. The constructs of self-efficacy and perceived difficulty were conceptualized based on Social Cognitive Theory as described by Bandura (2001). Finally, prosocial and antisocial goal items were written to reflect the Social Goals

framework (Wentzel, 2002; Wentzel, 2004). The results from this study confirm the findings of other motivation researchers who propose that achievement motivation is multidimensional (Baker & Wigfield, 1999; Guthrie & Wigfield, 2005). Evidence for a multidimensional perspective of motivation comes from the factor structure of the two motivation measures, the Adolescent Motivation for School Reading (AMSR) questionnaire and the Adolescent Motivation for Outside School Reading (AMOSR) questionnaire. Support for the multidimensional structure of motivation also comes from the finding that multiple motivation constructs predicted achievement, even when effects of the other constructs have been taken into account.

Factor structure. The constructs of the AMSR and AMOSR formed separate factors, which supports the results of the factor structure of other measures of multiple constructs of motivation (Baker & Wigfield, 1999; Chapman, Tunmer, & Prochnow, 2000; Wigfield & Guthrie, 1997). Results of the initial factor analyses for school reading indicated a multidimensional structure to adolescent motivation for reading. The affirming constructs of, intrinsic motivation, self-efficacy, and prosocial interactions formed three separate factors for school reading. In addition, the undermining constructs of, avoidance, perceived difficulty, and antisocial interactions, also formed three separate factors. This factor structure provides evidence that students' motivations may simultaneously include constructs that are central to several important theoretical formulations. Each of the factors reveals an underlying latent construct that reflects an association between those items and distinctiveness from groups of items representing other constructs. Results of the factor analyses for outside school reading also supported a multidimensional structure of adolescent motivation for reading.

In addition, the motivation constructs related to each other in expected ways, with affirming motivations correlating positively with each other, undermining motivations correlating positively with each other, and affirming and undermining motivations correlating negatively with each other (Baker & Wigfield, 1999; Wigfield & Guthrie, 1997). All of the constructs were significantly correlated to each other indicating that they are associated to each other. This is representative of the overarching idea that each of the individual constructs is related with a broader category of general motivation. However, the positive and negative valences combined with the distinct factor structure provide support that while these constructs are related, they are also unique in meaningful ways.

Predicting achievement from motivations for school reading. Results of the regression analyses indicated a multidimensional structure to adolescent motivation for reading. When looking across the findings for motivations for school reading, there is evidence for multidimensionality in the fact that self-efficacy, perceived difficulty and antisocial interactions all contributed to predicting achievement. For the affirming motivations for school reading, self-efficacy was the only significant predictor of both standardized reading scores and grades when taking into account the contribution of prosocial interactions and intrinsic motivation. This finding illustrates to the power of beliefs in the ability to perform on reading tasks to aide in actual performance. For the undermining motivations for school reading perceived difficulty was statistically significant in predicting standardized reading achievement when the other constructs were taken into account. However, both antisocial interactions and perceived difficulty for school reading significantly predicted Reading/LA grades. These results indicate that

a multidimensional perspective of motivation is supported for predicting classroom performance. Classroom performance was best understood when the contribution of students' willingness to tease classmates and voice their opinion about reading for school being a waste of time was combined with their perceptions of the difficulty of school reading.

Predicting achievement from motivations for outside school reading. For outside school reading, the findings were very similar. Self-efficacy was the single significant predictor of both standardized reading scores and grades. For undermining motivations for outside school reading, perceived difficulty was the single significant predictor of standardized reading scores, but both antisocial interactions and perceived difficulty contributed to predicting classroom performance (i.e., grades). Thus, classroom performance was best understood when students' antisocial interactions for reading outside of the classroom and students' perceptions of the difficulty of reading outside of school are taken into account.

Summary. Looking across these results, what is important to note is that there were three constructs of motivation that had strong predictive ability in explaining reading achievement, regardless of the reading purpose (inside vs. outside school). These three constructs represent aspects of Social Cognitive Theory and Social Goals. While the constructs of self-efficacy and perceived difficulty have been examined individually and have been found to be predictive of achievement in previous studies, there are few published investigations of these constructs in conjunction with social goals. One of the purposes of this study was to illustrate that combining constructs from multiple theoretical frameworks may explain achievement more fully than selecting constructs

from only one theory. The results just discussed illustrate this point as constructs from two theories of motivation contributed to predicting achievement, even when the others were statistically taken into account. Thus, there is some evidence to support the idea that more information was gained by examining intrinsic motivation, avoidance, self-efficacy, perceived difficulty, prosocial interactions and antisocial interactions together than if any one of these constructs had been examined alone.

One explanation for the clean factor analysis results for the self-efficacy and perceived difficulty items is that those items were pilot tested and many were adapted from existing measures of self-efficacy and perceived difficulty for reading. This measurement explanation means that the items may be more accurate operationalizations of the two constructs than the operationalizations of the other four constructs. One problem with this argument, however, is that the intrinsic motivation and avoidance items were also pilot tested and have also been adapted from existing scales, yet they did not factor as cleanly as the self-efficacy and perceived difficulty items. A second, more theoretical explanation is that self-efficacy and perceived difficulty are more distinct constructs than the other two theoretical pairings (intrinsic motivation and avoidance; prosocial and antisocial interactions). Theoretically, holding both self-efficacy beliefs and perceptions of difficulty at the same time is logically consistent. Whether the individual situates the items in specific tasks, contexts, or domains, people are able to hold general beliefs about their ability to perform a task and beliefs that certain kinds of tasks are difficult for him or her to perform. It may be that theoretically, it is more difficult to hold both intrinsic motivation and avoidance or prosocial and antisocial beliefs at the same time. This perspective would support the results of the factor analyses.

One method of examining the multidimensional nature of motivation further would be to conduct additional factor analyses with all of the items included together. In the current study, inside and outside school motivation items were investigated in separate analyses. Conducting one factor analysis with inside and outside of school motivation items together would allow for the examination of the separation of the constructs regardless of the reading context. If the items for school and outside school factored together for each construct, there would be additional evidence of multidimensional motivation.

Contribution of Motivations that Undermine Reading in Predicting Achievement

The second purpose of this dissertation study was to examine the contribution of motivations that undermine reading achievement in predicting achievement. Some motivation researchers have discussed the value of examining both the approach and avoidance aspects of motivation (Elliot & Covington, 2001). Specifically, this study examined whether motivations that undermine achievement help to explain and predict achievement when studied in conjunction with the more traditionally studied motivations that affirm achievement. Most of the studies conducted on motivation constructs that undermine achievement have focused on the school context. Results from this study showed that in some cases undermining motivations explained additional variance in predicting achievement, but this was not consistently the case.

Intrinsic motivation and avoidance for school reading. Intrinsic motivation for school reading was the overwhelming predictor for both standardized reading scores and grades. Avoidance did not significantly contribute to explaining achievement. This finding was contradictory to previous research, which indicated that for school reading

avoidance was a stronger predictor of achievement than intrinsic motivation (Guthrie, Coddington, & Wigfield, in press). The previous study, however, was conducted with an elementary school sample of mainly low achieving students. The differences in the age and the achievement level of the students in this sample may have contributed to the different findings. In addition, the reliability for the avoidance construct in this study was lower than the other constructs, which may have contributed to the predictive power of the avoidance construct in the regression. However, the reliability for avoidance was not below commonly held thresholds for acceptable reliability. The avoidance construct also had the fewest items of any of the other constructs (4 items), with the exclusion of antisocial interactions. The reliability for the antisocial interactions construct was higher than that of avoidance, but the small number of items may also have contributed to the avoidance construct having less predictive power than in previous studies. Finally, the items in the avoidance construct all pertained to avoidance behaviors in the classroom, which are somewhat different from the avoidance items in previous studies (Guthrie, et al., in press). It may be that the construct is a more powerful predictor when the negative affect statements are incorporated into the construct with the avoidance behaviors.

Self-efficacy and perceived difficulty for school reading. The results for self-efficacy and perceived difficulty indicated different findings from intrinsic motivation and avoidance. When predicting standardized reading scores, both self-efficacy and perceived difficulty significantly contributed to explaining variance in achievement scores. In addition, both self-efficacy and perceived difficulty were significant predictors when controlling for the other. This indicates that for school reading, it is important to know both students' self-efficacy beliefs about their reading ability and students'

perceptions of the difficulty of reading for school in order to most accurately predict achievement in the form of standardized test scores. Both constructs of motivation provide unique and important information in predicting standardized reading test scores. This finding supports previous research on perceived difficulty and self-efficacy with first grade students. Coddington and Guthrie (2009) found that when predicting standardized achievement with first grade students, self-efficacy and perceived difficulty both contributed significantly.

Interestingly, when predicting classroom performance as measured by Reading/LA grades, however perceived difficulty was the only significant construct. Thus, in predicting students' grades in reading class, the most important information in making that prediction is the degree to which students find reading for school difficult. This finding supports the existing literature, although few studies have examined the predictive ability of the construct of perceived difficulty in predicting grades. This study provides information that suggests that perceived difficulty may be especially important in explaining classroom performance.

Prosocial and antisocial interactions for school reading. The results of prosocial and antisocial interactions for school reading reveal similar findings to self-efficacy and perceived difficulty. When predicting standardized reading scores, prosocial interactions was a significant predictor, while antisocial interactions was only marginally significant. Antisocial interactions was marginally significant in predicting achievement, once prosocial interactions for school reading were taken into account. This means that only prosocial interactions for school reading were necessary to explain differences in students' standardized reading scores, while antisocial interactions for school reading did

not provide enough additional explanatory information. This finding supports existing literature that reveals the importance of prosocial interactions when predicting classroom achievement (Wentzel et al., 2007).

For grades, however, the results are similar to those for self-efficacy and perceived difficulty. Both prosocial interactions and antisocial interactions for school reading significantly contributed to predicting classroom performance even when the other was taken into account. This means that for classroom grades, it was important to know both students' interactions to contribute and share their thoughts about reading with the class and their willingness to tease others about their reading in class. Both the affirming and undermining aspects of social interactions for school reading contributed to predicting classroom performance. This finding provides new information that extends our current understanding of social interactions in the classroom. Previous literature on social interactions has focused extensively on the power of prosocial goals in predicting classroom achievement (Wentzel, 1996; Wentzel et al., 2007). The results of this study indicate that it may be valuable to also consider the importance of a student's antisocial interactions in the classroom when attempting to explain their classroom performance fully. This finding also supports literature about the importance of teacher-student relationships in the classroom as it illustrates the power that student's goals in the classroom have over the assessment of their performance in the classroom as determined by their teacher (Assor, Kaplan & Roth, 2002; Wentzel, 1993).

Self-efficacy and perceived difficulty for outside school reading. Perceived difficulty for outside school reading was a significant predictor of standardized reading scores, while self-efficacy for outside school reading was not. Thus, student perceptions

of the difficulty of reading outside of school were the single significant predictor of student performance on the standardized reading measure. This finding provides evidence for the importance of assessing undermining aspects of motivation, as the more commonly studied self-efficacy did not provide additional explanatory power once student perceptions of difficulty were also taken into account. This finding was not replicated when predicting classroom grades. Self-efficacy and perceived difficulty for outside school reading were both marginally significant in predicting classroom grades. There are few studies that have examined the predictive power of motivations for reading outside of school specifically. Therefore, this finding provides new evidence for the importance of specifying the reading purpose when examining motivations for reading. This finding is especially important when compared with the results of self-efficacy and perceived difficulty for school reading. For school reading, both self-efficacy and perceived difficulty were significant predictors of achievement on standardized test scores, whereas outside school, only perceived difficulty was a significant predictor. This finding reveals important information about student perceptions outside of the classroom about reading and the effects of those perceptions on achievement that have not been examined previously.

Prosocial and antisocial interactions for outside school reading. The findings for social interactions for outside school reading provided evidence for the importance of assessing motivations that undermine and affirm reading. Antisocial interactions predicted standardized reading scores while prosocial interactions were only marginally significant. Again, this suggests that knowing students' desires to be antisocial about reading outside of school may be more important than knowing their desires to be

prosocial when explaining differences in standardized reading scores. Both prosocial and antisocial interactions for outside school reading contributed to explaining Reading/LA grades. This indicates that including antisocial interactions provides additional explanatory power in understanding differences in classroom grades. Again, the outside school reading purpose has not been explicitly examined in relationship with prosocial interactions. This finding presents new information on the understanding of the relationship between student interactions towards reading when not in the classroom context. It also reemphasizes the potential additional information provided by including antisocial interactions in explaining achievement.

Summary. The results of this study revealed mixed findings in terms of the importance of assessing both affirming and undermining motivations for reading. The constructs of motivation derived from SDT, intrinsic motivation and avoidance, did not consistently reveal a pattern where including the undermining construct provided additional information necessary for explaining reading achievement. This finding differs from previous studies examining intrinsic motivation and avoidance with a younger and a normatively lower achieving sample (Guthrie, Coddington, & Wigfield, in press). However, for the constructs of motivation derived from Social Cognitive Theory and the Social Goal framework there is evidence that the constructs of motivation that undermine reading may provide additional information about students that is not revealed from examining the motivations that affirm reading ability alone. This finding supports the results of some previous studies on self-efficacy and perceived difficulty with first grade students (Coddington & Guthrie, 2009) and also extends the existing literature on prosocial goals (Wentzel, 2002, 2004; Wentzel et al., 2007). Examining perceived

difficulty and antisocial interactions for school and outside school reading provided additional information for explaining students' performance on standardized reading tests and classroom grades, than if self-efficacy or prosocial interactions were examined alone.

Importance of the Reading Purpose – Inside vs. Outside School Reading

The third purpose of this study was to examine differences in student motivations for reading for multiple purposes. Students were asked to answer questions about reading they do for “Reading/LA class” and reading they do “outside of school.” The results of predicting achievement, using items from the AMSR and AMOSR questionnaires, reveal some differences in student perceptions depending on the reading purpose. This supports some of the findings of researchers who have examined attitudes towards recreational and academic reading (McKenna et al., 1995; McKenna & Kear, 1990).

Factor structures. One of the main differences between the AMSR and AMOSR was the factor structure for the intrinsic motivation and avoidance items. For the AMSR, the intrinsic motivation and avoidance items formed two distinct factors, indicating that students perceived avoidance items as distinct from intrinsic motivation and not simply as the negative valence or opposite of intrinsic motivation. A profile perspective of intrinsic motivation and avoidance for school reading is possible with students holding different combinations of high and low intrinsic motivation and avoidance. Some students may have reported high intrinsic motivation and high avoidance specific to school reading. However, the intrinsic motivation and avoidance items on the AMOSR did not form two factors. When students contextualized their intrinsic motivation and avoidance to reading outside of school, the items represented a single latent construct with positive and negative valences. One possible explanation for this finding is that when students think

about reading that they do outside of school it is reading that they choose to do. Whereas when they think about reading that they do for school it involves reading that they choose, but also reading that they are told to do and may not enjoy or be interested in at all. Therefore, the opportunity to avoid exists in school, where it does not exist in reading outside school. This finding provides additional information and support to the existing literature on students attitudes for recreational versus academic reading (McKenna & Kear, 1990)

Relationship to standardized reading scores. Results indicate that there are some differences in the way that student reports of motivation for school reading and outside school reading predict standardized achievement in reading. Student reports of self-efficacy and perceived difficulty for school reading both contributed to predicting Gates-MacGinitie reading comprehension scores, while only perceived difficulty for outside school reading was a significant predictor. Thus, beliefs about reading ability and perceptions of difficulty were both important in predicting achievement when students thought about the reading that they do for school. However, only their perceptions of how difficult reading is outside of school and not their beliefs about their ability to read outside of school contributed to explaining their score on a standardized measure of reading achievement. This finding supports the existing literature (Coddington & Guthrie, 2009), but it also provides new information for the discussion of the importance of studying perceived difficulty in addition to self-efficacy that has not been previously articulated in the literature.

Prosocial interactions for school reading and antisocial interactions for outside school reading were both significant predictors of standardized reading scores. When

students referenced reading that they do for school, their prosocial desires to share what they learned with other students was more important in predicting their Gates scores than their antisocial interactions such as their inclination to disrupt the classroom and ridicule fellow students. However, when students referenced reading they do outside school, their desires to ridicule friends and convince others that reading outside school was a waste of time were more important than their prosocial interactions in predicting their standardized reading scores. These findings extend the current literature on prosocial interactions, by both emphasizing the importance of antisocial interactions and illustrating the role that the reading purpose plays in the relationship between social interactions and achievement.

When examining only the affirming motivations for reading, self-efficacy for school reading and self-efficacy outside school reading were the significant predictors of standardized reading achievement. For the undermining motivations for reading, perceived difficulty for school reading and perceived difficulty outside school reading were the significant predictors of standardized reading achievement. Therefore, the results for school and outside school reading were the same in predicting standardized reading achievement scores when constructs were grouped in affirming and undermining sets. This finding provides additional information about the consistency of the constructs of self-efficacy and perceived difficulty in predicting achievement regardless of the reading purpose. This is a result that has not been specifically examined in the existing literature and it helps to extend our understanding of the importance of student perceptions in predicting achievement.

It is possible that mediations are occurring within these sets of motivations. For example it is possible that the effects of intrinsic motivation and prosocial interactions on test scores were mediated by self-efficacy. That is students who were intrinsically motivated were very highly efficacious, and likewise students with low intrinsic motivation had very low self-efficacy. In this situation, the effect of intrinsic motivation on tested achievement will be mediated in a statistical sense. A similar pattern could occur for students with prosocial interactions. This requires a mediation analysis that was not attempted in this dissertation, but could be the focus of future research.

Relationship to classroom achievement. Results show that there are also differences in the way that student reports of motivation for school and outside school reading predict Reading/LA grades. Student reports of perceived difficulty for school reading significantly contributed to predicting Reading/LA grades, while neither self-efficacy or perceived difficulty for outside school reading significantly contributed to predicting classroom achievement. These findings indicate that student perceptions about the difficulty of reading for school are more important than student perceptions about the difficulty of reading outside school, or their beliefs about their ability to read books outside school, in explaining student achievement in the reading classroom. This finding provides additional information to the existing literature about the importance of specifying the reading purpose before assessing motivation for reading. When predicting grades, it is more important to assess student perceptions of difficulty for the books that they have to read for school than to examine their beliefs about their ability to read outside of school or their perceptions of difficulty for reading outside of school. This is an interesting finding because it focuses attention away from the idea that students who

are efficacious readers outside of the classroom will automatically perform well in the classroom. These results reveal that even if the student is efficacious outside of the classroom, if they perceive that the books in the classroom are difficult, their grades in the class may suffer.

There were no differences in prosocial and antisocial interactions inside and outside school predicting grades. Both prosocial interactions and antisocial interactions for school reading significantly contributed to predicting student performance in the Reading/LA classroom. The same is true for prosocial and antisocial interactions for outside school reading. Thus, regardless of the reading purpose, when predicting classroom grades, both prosocial and antisocial interactions contributed to explaining student achievement in the Reading/LA classroom. Again, this finding provides new information to the existing literature, as prosocial interactions have not been contextualized to a specific reading purpose. The fact that there are no differences between the inside and outside context illustrates the strength of the constructs. Prosocial and antisocial interactions for reading are equally important in predicting performance on standardized reading measures and in the classroom, regardless of whether students are behaving prosocially or antisocially towards classmates or friends outside of school.

For reading outside of school it is possible that antisocial interactions lead students to avoid reading and limit their time in school activities such as homework. Students who demean their peers' reading are likely to do less school work, less reading, less writing about text (notetaking, summarizing) and consequently will not develop their cognitive competencies to the same level as a student who is less antisocial. Assuming these motivations are stable over 2-3 years, doing 50% less reading homework

will result in many hundreds fewer pages read, which will yield lack of growth in reading comprehension.

When examining only the affirming motivation constructs, self-efficacy for school and self-efficacy for outside school reading were the significant predictors of Reading/LA grades. However, for the undermining motivations antisocial interactions and perceived difficulty for school reading and antisocial interactions and perceived difficulty for outside school reading both significantly contributed to predicting Reading/LA grades. Thus, the results for inside school reading and outside school reading were identical when the constructs were grouped by affirming and undermining classifications. This finding is very interesting because it illustrates that self-efficacy regardless of the reading purpose is a very strong and powerful predictor of reading performance on standardized measures of achievement and in the classroom. It also reveals the interesting finding that both antisocial interactions and perceived difficulty are important predictors in explaining reading achievement, regardless of the reading purpose. Both students' interactions to subvert reading activities and perceptions about the difficulty of reading for any reason contribute to how well students perform in reading. These results provide new information in the understanding of how undermining and affirming motivations can be combined to predict achievement.

Summary. When examining the inside and outside school constructs in affirming and undermining pairs some differences exist in the predictability of the constructs. These findings suggest that asking students to specifically reference reading in school versus reading they do outside school can result in different patterns of motivations that predict achievement on standardized measures and classroom achievement. This finding

supports the results of previous studies which have examined student attitudes towards recreational and academic reading (McKenna & Kear, 1990). However, there was no difference in the pattern of results when asking the question of which of the affirming or undermining constructs were the best predictors of achievement. Grouping the constructs as affirming and undermining resulted in the same predictors of standardized reading achievement and Reading/LA grades regardless of the reading purpose students referenced.

One point of discussion is the fact that there were more significant predictors for inside school motivations than outside school motivations. One potential explanation is that the assessment measures were administered in the classroom and are therefore more closely related to the motives that students hold while inside school. Outside school, students may not enjoy reading in their free time and may avoid doing the activity, but this does not mean that these same students avoid the reading that is assigned for school. Therefore, motives that students have for completing school readings and their beliefs about their ability to perform well on school reading tasks may be more predictive of reading assessments that occur in the same context. One future direction that may address this discrepancy involves actually measuring the amount and type of reading students do inside and outside school. This may actually mediate the relationship between inside and outside school motivations and achievement. Amount of reading could possibly be used as a proxy variable for reading achievement outside school. This might provide a more accurate measure of reading achievement that is more closely associated with reading motivations outside school.

Relationship Between Gender, Motivation and Achievement

The relationship of gender to motivation and achievement was examined for each construct in theoretical affirming and undermining pairs and with the constructs grouped as affirming or undermining. While mean level differences in males' and females' motivations for reading are frequently reported in the existing literature, relationship differences are less frequently reported or examined (Baker & Wigfield, 1999; Martin, 2004; Marsh et al., 2008; Meece, Glienke, & Burg, 2006). In addition, this study provided new information about the relationship between undermining motivations and gender (Marsh et al., 2008). In this study, there were main effects for gender, specifically when predicting classroom grades. There was only one significant gender interaction term in all of the analyses.

Gender main effects and interactions in predicting Gates. There were no statistically significant gender main effects in predicting student standardized achievement scores. This finding indicates that there was not a significant relationship between students' gender and their scores on the Gates-MacGinitie reading comprehension test. This finding provides new information that extends the existing literature about mean differences in males' and females' motivation for reading (Baker & Wigfield, 1999; Coddington & Guthrie, 2009; Meece, Glienke, & Burg, 2006). In this study, gender did not systematically relate to standardized achievement.

There was, however, one statistically significant interaction between gender and perceived difficulty for outside school reading. This finding indicated that females who reported high levels of perceived difficulty scored significantly lower on the Gates than males who reported high levels of perceived difficulty for outside school reading. In

addition, females who reported low levels of perceived difficulty scored significantly higher on the Gates than males who reported low levels of perceived difficulty for outside school reading. Thus, predicting females' and males' Gates scores depended on knowing their level of perceived difficulty. Aside from this finding, there were no other significant gender interactions.

Gender main effects and interactions in predicting Reading/LA grades. Gender was a significant contributor in every regression predicting Reading/LA grades. This was the case regardless of the motivational construct examined and the school or outside school reading purpose. Also in every case the association was negative, indicating that males received significantly lower Reading/LA grades than females regardless of their reports of their motivation. Females performing better in Reading/LA is a commonly reported mean difference, however this result suggests the relationship differences in males' and females' performance in the classroom (Gottfried, 1990; Wentzel, 1996). There were no significant gender interactions in predicting Reading/LA grades, which indicated that students' level of motivation was not systematically related to their gender.

Because there was only one significant gender interaction I believe that this finding was more a statistical anomaly than a significant finding. However, the interaction indicates that girls' Gates scores are more affected by holding perceptions of difficulty for reading outside school, than boys' Gates scores. One potential explanation for this interaction, if it is not a statistically anomaly, is that the expectation that girls enjoy reading and are better at reading than boys may somehow compound the negative effects of perceiving that reading outside of school is difficult. If there is an expectation that you should be good at something, holding the belief that you are not good at that

activity may harm you more than if there was no expectation for you to perform well at the task. Future studies should investigate this interaction further in order to determine whether it is in fact a statistical anomaly.

Summary. In general, gender did not predict standardized reading scores and student scores on the Gates were independent of the student's gender. However, in one case gender significantly interacted with perceived difficulty outside of school when predicting standardized reading scores. In predicting Reading/LA grades, gender was a consistent contributor in predicting achievement, even when taking motivation into account. These results indicate that males were consistently more likely to receive lower Reading/LA grades, regardless of their motivations for reading. This finding provides additional information to the discussion of the relationship between gender and reading achievement. The finding confirms the commonly held belief that females perform better in Reading/LA class than boys, but does so in a way that differs from reporting mean differences in student performance.

Limitations

Characteristics of the Sample

There are two limitations of this study that are related to the sample. First, a larger sample size may be desirable for conducting the analyses in this research study due to the increased power to detect contributions of multiple constructs to achievement. Second, this sample was ethnically limited and did not permit ethnic comparisons. Third, the sample consisted mainly of moderate to high achieving students, which may limit the generalizability of the results to other achievement groups.

Sample size. Approximately 250 students were included in this research study. This sample size was adequate according to guidelines for factor analysis and regression analysis (Hair et al., 2006). However, because multiple factor analyses and regression analyses were conducted a Bonferonni correction was utilized which required a stricter significance criterion. A larger sample size may have contributed to more statistical power, which would have enabled more statistically significant results at the stricter significance level. There were several results that reached marginal levels of significance that with a larger sample size may have reached statistical significance with the Bonferonni correction. Thus, a limitation of the current study was the sample size of 250, considering the number of analyses performed.

Ethnic diversity. The sample in this study was predominantly Caucasian. This does not change the significant findings reported in this study, but it does affect the ability to generalize these findings to a diverse population. The study results are limited in that they reflect the motivations and achievement of a predominantly Caucasian sample, which may not be an accurate reflection of the motivations and achievement of other ethnic groups. In fact, there is existing literature that suggests Caucasian and African American students have different motivation profiles and that those profiles relate to achievement in different ways (Guthrie, Coddington, & Wigfield, in press). While the current study contributes new information to our understanding of Caucasian students' motivation for reading and the relationship of those constructs of motivation to achievement, it is limited because it does not provide new information concerning African-American students or other ethnic groups.

Achievement level. Students in the current sample were moderate to high achievers. Seventy-five percent of the sample received a grade equivalence score of seventh grade or higher, with twenty-five percent of the sample scoring at the post-high school reading level on the Gates-MacGinitie. The results in this study are reflective of a high achieving population. Results may be different with low achieving students. Previous studies with mainly low achieving samples have found different relationships between motivation for reading and achievement than were revealed in this study (Guthrie et al., in press; Unrau & Schlackman, 2006).

Teacher effects. There were four different Reading/LA teachers included in this study. Each of these teachers taught from a similar curriculum dictated by the county school system, however, individual differences between teachers are expected. These differences can have a direct effect on the performance, ability, and motivations of the students in each classroom. Teacher effects were not statistically controlled in this study, which limits the generalizability of the data.

Concurrent Data

This study investigated student motivation and achievement for reading during one semester. This concurrent collection of data allows for relationships among the variables to be examined at one point in time, but it does not allow for the examination of causal connections or changes in motivation and achievement over time. While the current study provided valuable information about the way that students' motivation for reading was related to achievement, the results are limited because they do not illustrate connections and changes in motivation over time. Longitudinal data would allow for more meaningful descriptions of how motivation for reading is related to achievement

across the academic year or even across multiple grades. For the purposes of the questions in this study, the method of collecting data at one time point was appropriate and acceptable. However, examining these constructs of motivation and their relationship to achievement longitudinally may reveal additional information.

Item Specificity

Prosocial interactions and antisocial interactions were the motivation constructs of interest in this study. The wording of the prosocial and antisocial goal items did not explicitly express intentionality. For example, the item “I share what I learn from reading for LA/Reading class with my classmates” could be read as a behavioral statement. Response to this item could simply be a behavioral index of what a student has or has not attempted to actually do in the classroom. In order to make the goal statement and intention more explicit in the item, “try to” should have been inserted in the statement. For example, the previous item could have been worded, “I try to share what I learn from reading for LA/Reading class with my classmates.” In this statement, the goal or intention is explicit. The fact that intention is implicit in the items used in this study, as opposed to explicit, is a limitation of the social interactions findings. Future studies should use the more explicit goal statement so as to better separate student intentions from behaviors.

Theoretical Significance

The theoretical significance of this study involves the discussion of the multidimensionality of motivation and the complexity of an individual holding both affirming and undermining motivations at the same time. This is not a logical

inconsistency in the individual but is people, task or place based. Theoretically, studying conflicting motives that are working at the same time increases the complexity and our descriptive ability as researchers. This study creates a pathway to study profiles of student motivation that go further than discussing a single continuum of high and low motivations. This step towards profiles is important because it allows researchers to discuss student motivation at a more complex descriptive level than before.

The study is also significant because it reveals the importance of undermining constructs. In this study, undermining constructs often had higher betas than the affirming constructs. An important point to consider is why this might have occurred. Part of this discussion involves understanding that an individual who reports having low levels of an affirming motivation is not the same as an individual who reports having high levels of undermining motivations. These are qualitatively different even if they are in some ways numerical opposites. Having low self-efficacy is not the same as having high perceived difficulty. Thus, by adding undermining motivations to the investigation of affirming motivations the variance that can be explained is stretched.

Practical Significance

This study provides information for practitioners about the significance of undermining motivations. It is important that teachers understand undermining motivations in their classroom and develop strategies to counteract these undermining motives instead of purely focusing on increasing interest in reading. Often, teachers are focused on increasing student interest in reading through various strategies. This focus on making the reading task more enjoyable and interesting for students may be effective for the students in the class who simply have low levels of intrinsic motivation for reading.

The results of this study, however, indicate that there are students who not only have low levels of intrinsic motivation, but they have high levels of beliefs about how difficult reading is and avoidance behaviors with regards to reading. These students who have high levels of motivations that undermine reading achievement may require different strategies to counteract the high levels of undermining motivations. Instead of focusing on increasing these students interest in reading, steps might be taken to help these students select books that are not too difficult for them to read. In addition, providing these students with books that are appropriate for their reading level, but also appropriate developmentally in terms of content and material is especially important. This strategy would help these students decrease their high levels of perceived difficulty and avoidance of reading. This study, therefore, provides new information about dealing with students with more complex motivation profiles than previously discussed in the literature or addressed by practitioners.

Future Directions

There were four purposes in this study, which were examined through six research questions. The results of this study revealed interesting and new information about each of the purposes of this study. Findings from this study support the discussion of motivation as a multidimensional construct, composed of multiple facets representing different existing theories of motivation. Self-efficacy, perceived difficulty and antisocial interactions were all found to contribute to predicting achievement, even when controlling for the effect of the others. Thus, all three of these constructs provide important information in explaining the relationship between motivation and achievement. While researchers have examined several of the constructs in this study

together, there are several additional factors that make this study unique (Baker & Wigfield, 1999; Davis-Kean et al., 2008; Wentzel, 1996; Wigfield & Guthrie, 1997). First, this study included items that were specific to motivations for reading and reading for school and outside of school contexts. The level of domain specificity provides a new perspective for examining the relationship between these six constructs of motivation and achievement. This study also investigated undermining as well as affirming motivations, which increases the complexity of what it means to study multidimensional motivation. Finally, this study was specific to middle school students, while several of the previous studies investigated similar constructs of affirming motivations focused on elementary school students (Baker & Wigfield, 1999; Wigfield & Guthrie, 1997). Finding a way to systematically incorporate constructs representing several existing theories of motivation together may help to move the field of motivation forward in new directions (Ford, 2002).

The examination of undermining constructs also revealed new information for the field of motivation. While some researchers have examined self-efficacy and perceived difficulty together in predicting achievement (Chapman, Prochnow, & Tunmer, 2003; Coddington & Guthrie, 2009), this study verified these results for middle school students. The undermining constructs of perceived difficulty and antisocial interactions were both significantly associated with achievement after taking into account the association of the affirming constructs of self-efficacy and prosocial interactions with achievement. This finding is particularly revealing for the discussion of Social Goals. While prosocial goals have been examined extensively in relationship to achievement, antisocial goals have not

(Wentzel et al., 2007). The results of this study indicate that antisocial interactions may provide a new direction in the exploration of social goals in the classroom.

In addition, building on the idea of multidimensional motivation, it is very interesting to think about how perceived difficulty and antisocial interactions may jointly contribute to explaining achievement. The results of this study reveal that both contribute in unique ways to our understanding of reading achievement. One speculation is that beliefs about the difficulty of the task may encourage some students to express antisocial sentiments towards classmates and friends who may be demonstrating more success at the task. It may also be the case that the opposite is true. Students with high levels of self-efficacy may be more willing to assist classmates with their reading in the classroom. Perhaps the more interesting combinations though, are those students who have high levels of self-efficacy for reading, but do not wish to help out classmates or friends with reading. In the same vein there may be students with low levels of self-efficacy but also low levels of antisocial interactions. The combination of the students' beliefs and their desires to be socially involved in reading activities inside and outside the classroom combine to explain how a student ends up performing on reading tasks. This profile perspective of approaching multiple constructs of motivation provides a new avenue and level of complexity for discussing student motivation.

Equally important in this discussion is the fact that the results show that some students hold affirming and undermining motivations for reading at the same time. While the initial reaction may be to speculate that students were inconsistent in their responses, the reliabilities for the constructs were extremely high and rule out inconsistency as an explanation. One speculation that could explain students holding both affirming and

undermining motives for reading involves the contextualizing of the items when the student reads them. If students are not specifically given a reference point (i.e., genre, subject, purpose) they may have an affirming bias. When they read the item they may think of a specific time that matches the statement and allows them to affirm it. In this way, students can respond “A Lot Like Me” to the statements “I enjoy reading books” and “I avoid reading books” without internally contradicting themselves. This speculation raises questions about the existing body of motivation research, because generally motivation researchers assume that when students respond to “general” reading motivation questions they are thinking across their experiences with reading. Further research is needed to examine whether this is in fact the case. The results of this study reveal that even by specifying the purpose of school or outside school, student motivations are related to achievement in different ways.

Finally, the findings in this study concerning the relationship between gender and achievement provide some interesting directions for future research. The majority of research discussing gender differences in reading motivation focus on mean level differences (Baker & Wigfield, 1999; Coddington & Guthrie, 2009; Meece et al., 2006; Meece & Miller, 1999). This study illustrated that when examining relationship differences, males and females did not differ in their motivations and standardized reading achievement. However, the results did reveal evidence for the finding that females tend to do better in classroom grades than males, but this finding was not mediated by any of the motivation constructs. Additional research should continue to examine whether gender is related to achievement and motivation in systematic ways. Implications if motivation is associated with gender in predicting achievement are

numerous. Motivation interventions could be tailored for males and females to address different combinations of motivations and achievement.

In sum, this study addresses and provides new insights into four main purposes. It provides theoretical insights into the multidimensional nature of motivation and the importance of investigating more than one theory of motivation in a single study. In addition, this study provides evidence for the theoretical and conceptual importance of investigating both the affirming and undermining aspects of motivation for reading. This study also presents new questions about previously held assumptions about what students reference when responding to questionnaire items and the importance of specifically stating a reference point for the reading activity. Finally, this study shows new information about the role of gender in the relationship between motivation and achievement.

APPENDIX A: Pilot Study

Literature Review

Initial studies of motivation generally included one construct of motivation, which students were judged to be either high or low on. The results could then be discussed in terms of the achievement of students with high motivation versus the performance of students with low motivation. For example, there is a general understanding that students who have high levels of intrinsic motivation will have higher achievement scores than students who have low levels of intrinsic motivation. While this perspective of motivation has been shown to have predictive capabilities, the field of motivation has begun to progress in a different direction.

Increasingly, studying motivation requires a perspective that motivation is multifaceted (Wigfield & Guthrie, 1997). This means that measuring a student's intrinsic motivation or self-efficacy alone does not fully capture a student's complete motivation. Researchers are now turning to a perspective of student motivation that is best described as a motivation profile (Guthrie et al, 2006). Creating a motivation profile allows researchers to look at different combinations of several motivation constructs, while also predicting achievement outcomes. Combining these motivation constructs optimizes the potential of predicting achievement outcomes.

Measuring multiple motivations provides a broader and more robust picture of student motivation than measuring a single construct of motivation. While motivation constructs are highly correlated, research indicates that they are associated with achievement in unique ways (Chapman et al., 2000; Guthrie et al, 2006). When measured together, often these constructs will statistically factor separately from each other,

indicating that they actually represent unique qualities of motivation. Researchers suggest that studying multiple motivation constructs simultaneously has more explanatory power than single motivation constructs alone.

The argument for viewing motivation as multifaceted is a compelling one and the field of motivation seems to be progressing in this direction. If we are to accept that student motivation is really a compilation of several different constructs of motivation, we may also wish to consider that motivation does not always move in a positive direction. Generally, motivation researchers are interested in the motivations that I will term *affirming* motivations – those that propel students closer to achieving their academic interactions. Intrinsic motivation and self-efficacy are two examples of affirming motivations. Students who are intrinsically motivated are compelled from a desire to learn and not from external rewards. Students who have high self-efficacy have a strong belief in their abilities to complete a task. While there is well-documented evidence that many students possess some level of intrinsic motivation, most teachers observe that affirming motivations do not always motivate their students.

Thus, if we are willing to accept that student motivation is multifaceted and composed of several associated, but statistically unique constructs, it may also be fruitful to consider the importance of what I will term *undermining* motivations. Undermining motivations are those that inhibit students from achieving, because students are focused on the difficulty of or avoiding the task. One way to view these students is demonstrated by the construct of amotivation from Self-Determination Theory (SDT). Amotivation is “the state of lacking the intention to act . . . [which] results from not valuing an activity, not feeling competent to do it, or not expecting it to yield a desired outcome” (Ryan &

Deci, 2000, p. 72). As an example, people who are amotivated either choose not to act or they go through the motions without any intent (Ryan & Deci, 2002).

It is possible that students may be intrinsically motivated for some achievement activities (i.e., domain specific, topic specific) but amotivated in other areas. In addition, if researchers only measure this student's intrinsic motivation, they may only see a student who is low in intrinsic motivation. I suggest that this single construct does not fully capture the complexities of the student's motivation profile. Measuring undermining motivations may provide an additional layer of complexity to the overall profile of the student's motivation.

For example, two students might self-report low intrinsic motivation for reading. However, if they were also asked to report their avoidance of reading activities, perhaps one of these students would indicate high levels of avoidance, while the other reports low levels of avoidance. Now, these two students who had previously been discussed together for having low intrinsic motivation can be differentiated into very different student profiles. The first student is not intrinsically motivated to read and also actively avoids reading tasks. This student reports actively resisting reading activities. In comparison, the second student also reports low levels of intrinsic motivation for reading, but they also report low levels of reading avoidance. Therefore, he does not seem to be intrinsically motivated to read, but that does not mean that he is actively avoiding the activity of reading. From this scenario, I suggest that measuring undermining motivations in conjunction with affirming motivations will further differentiate between students at the top and bottom of the affirming motivation continuum.

Why These Three Constructs?

Upon accepting the argument that motivation is multifaceted, the decision becomes, “Which motivational constructs should be included in an assessment of multifaceted motivation?” I suggest that drawing upon distinct theoretical frameworks, which tap three different facets of motivation provides the broadest perspective on motivation. Thus, I suggest a three-framework model, including competence, autonomy forming interest, and social aspects of motivation.

I suggest assessing the competence aspect of motivation within the framework of social cognitive theory. The construct of self-efficacy, as defined and conceptualized by Bandura allows for student reports of their perceived competencies on specific tasks (Pajares, 1996). These perceptions may or may not be accurate, but the way that the student views these tasks is an essential aspect of understanding the student’s overall motivation. Research conducted on student perceptions of competence indicate that students who have high self-efficacy perform better than those students who have low self-efficacy on academic tasks.

Intrinsic motivation is another motivational construct that contributes to our overall understanding of student motivation. According to Deci and Ryan’s Self-Determination Theory (SDT), intrinsic motivation is driven by an innate interest in the task. Students who have this desire also develop a sense of autonomy for the task. Therefore, this construct provides a different perspective of student motivation from self-efficacy in the fact that competence appraisals are not part of the intrinsic interest one has in a specific subject or topic. Thus, including both self-efficacy and intrinsic motivation student reports allows for a discussion of both the intrinsic interests of students and their perceptions about their abilities to accomplish the task.

Finally, the social aspect of motivation is one that is frequently overlooked. The research that has been conducted on social motivation has revealed the importance of this construct in the overall profile of student motivation (Wentzel et al., 2007). When students feel supported by their peers and teachers they are more motivated to succeed in academic tasks. If teachers create an environment that allows students to feel safe participating in the tasks, their students will engage more reading in the activities. In addition, when peers are accepting and provide support instead of criticism students are more likely to succeed. Therefore, the social aspect of motivation, particularly interpersonal relationships is essential in creating a thorough profile of student motivation.

Why These Pairings? What's the Inverse?

Accepting the unique contributions of self-efficacy from social cognitive theory, intrinsic motivation from self-determination theory, and interrelationships from social goal framework allows for a discussion of the undermining pairings of these affirming motivations. These undermining constructs are sometimes discussed within the theoretical frameworks. In other cases, the pairing of an affirming construct with an undermining has not been discussed in the literature. This does not mean, however that an inverse pairing does not exist for that construct, but more so that an explicit pairing has not been articulated yet.

Self-efficacy as defined by Bandura does not have an explicit inverse within social cognitive theory. However, within the literature on emergent literacy motivation, Chapman et al. (2000) have devised a motivation construct that is the inverse of self-efficacy. If self-efficacy is conceptualized as student perceptions about their ability to

complete a task, the logical inverse is *perceived difficulty*, which is conceptualized as a student's perception about their difficulty in completing a given task. Therefore, perceived difficulty as a motivational construct reflects the inverse of self-efficacy. Research indicates, however, that students can hold both perceptions of difficulty and self-efficacy beliefs about reading tasks. Thus, while the constructs are inverses, they appear to be separate and distinct constructs and not simply opposites ends of a single competence based continuum.

Intrinsic motivation within SDT, however, is discussed with a potential inverse construct called *amotivation*. As defined by Ryan and Deci (2000), however, amotivation is the lack of motivation, which appears quite distinct from intrinsic motivation. If intrinsic motivation is an innate interest in a specific topic or domain, the inverse pairing would be more innate dislike and disinterest in a specific topic or domain. This is not a lack of motivation, but an *avoidance* motivation. Within goal theory, there is a construct discussed called *work avoidance* that slightly meets this definition. In this study, avoidance is viewed as a negative disposition towards a specific task and a negative affect as well. Thus, the student is overall motivated to avoid the activity.

In social motivation, students are striving to maintain positive relationships with peers. The student is motivated when the social environment, including teachers and peers, is supportive. Given this operationalization of interpersonal relationships with both teachers and peers, the inverse of this construct would be *social rejection*. Students who are socially rejected do not trust their peers or their teacher and therefore they lack social support from peers and their teacher when completing academic tasks. In addition, outright rejection and ridicule from peers may further decrease a student's motivation for

engaging in the classroom environment and activities. Thus, social rejection serves as a motivational inverse to social acceptance and secure interpersonal relationships.

Motivation for School and Non-School Reading

Another relevant factor in reading motivation research is the fact that rarely is the reading context taken into account. Researchers on prior questionnaires have mainly focused on items which ask about general reading, without taking into account the context that students were asked the questions or the reference students made when thinking about their beliefs and motivations about “reading.” Of particular interest in this study is the distinction between reading motivation for school materials and for reading materials accessible to students outside of school.

Research by McKenna and Kear (1990) indicates that students may hold different attitudes for recreational reading than they do for academic reading. McKenna and Kear (1990) developed their measure for early elementary school students, but based on evidence from longitudinal studies of reading motivation over time we can speculate that middle school students will have similar patterns of attitudes and that they will probably make more pronounced distinctions in their attitudes about recreational and academic reading (Baker & Wigfield, 1999). The present investigation will allow for further exploration of this distinction with a middle school population. This leads to the question: To what extent are student’s motivations for reading different for school and non-school reading materials?

Distinctions Between the Pairings

Given these motivational pairings, which are for the most part theoretically supported, one research question of interest is: To what extent are affirming reading

motivations distinct from their inverse undermining reading motivations? This question can be further broken down into the pairings discussed previously, by asking:

- b. To what extent is self-efficacy for reading a distinct motivational construct from perceived difficulty for reading?
- c. To what extent is intrinsic motivation for reading a distinct motivational construct from reading avoidance?
- d. To what extent is social acceptance during literacy activities a distinct motivational construct from social rejection in during literacy activities?

Examination of this question will help to explain whether these constructs are actually unique from each other or if they really represent one single underlying continuum. I predict that the constructs in each pairing are unique from each other rather than opposites.

Interaction Question

The next question concerns a possible interaction between affirming and undermining motivations when associated with reading achievement. The research question states: To what extent is the prediction of reading achievement dependent upon both undermining and affirming motivation? More specifically: To what extent do pairs of undermining motivations and affirming motivations both contribute to predicting reading achievement? This question can be further examined by delineating questions for each pair:

- a. To what extent do self-efficacy and perceived difficulty both contribute to predicting reading achievement?

- b. To what extent do intrinsic motivation and avoidance both contribute to predicting reading achievement?
- c. To what extent do social acceptance and social rejection both contribute to predicting reading achievement?

This question is concerned with the extent that predicting reading achievement may depend upon the inclusion of both affirming and undermining motivational constructs. Including both affirming and undermining motivations could possibly differentiate the variance in achievement scores that would normally cluster at the low end of the affirming motivations. For example, often when researchers only measure intrinsic motivation they break students into two groups of high and low motivation. The interaction prediction suggests that those students clustered together in the low intrinsic motivation group actually have a very broad range of reading achievement scores. Thus, if you also include avoidance as a motivational construct in the analysis, the group of students previously identified as “low intrinsic” becomes further diversified. In addition, those students who report higher levels of avoidance will separate from those reporting low levels of avoidance and ultimately represent the group with the lowest achievement.

Unique Contribution of Undermining Motivations Beyond Affirming Alone

The next question of interest concerning the paired motivational constructs is: To what extent do undermining motivations (perceived difficulty, avoidance, and social rejection) capture a larger proportion of variance in reading achievement than affirming motivations (self-efficacy, intrinsic motivation, and social acceptance)?

- a. To what extent does perceived difficulty capture a larger proportion of variance in reading achievement than self-efficacy?

- b. To what extent does avoidance capture a larger proportion of variance in reading achievement than intrinsic motivation?
- c. To what extent does social rejection capture a larger proportion of variance in reading achievement than social acceptance?

In contrast to the interaction prediction, this prediction is concerned with differential amounts of explained variance. If the undermining scale has higher variance than the affirming scale, the undermining motivation variable represents a “stretch” in the explained variance at both ends of the continuum. For example, if intrinsic motivation has less variance than avoidance, the associations between intrinsic motivation and reading achievement will be smaller than those between avoidance and achievement. Therefore, including the avoidance scale provides a stretch in the amount of variance, resulting in stronger associations between motivation and reading achievement than using intrinsic motivation.

Method

Participants

This study was conducted in June 2008 with 16 seventh grade students (5 boys and 11 girls). The students were recruited from one, seventh grade classroom in one middle school in a mid-Atlantic public school system. The population of this county ranges widely across the socioeconomic and educational scales and is predominately Caucasian, approximately 6% of the population is African-American. Parent permission was obtained for all participants and students assented to participation in the study. One Caucasian female seventh grade teacher participated in the study.

Measures

School and non-school motivation for reading. Students were told that this questionnaire asked about their attitudes and beliefs about reading. The researcher emphasized the importance of honest answers so researchers can gain a better understanding of what middle school students think about reading. For the school and non-school reading questionnaires, a sample item was read out loud and the students were able to practice using the rating scale, which was a Likert type scale containing four response options: “A lot like me,” “Somewhat like me,” “Not like me,” and “Not at all like me.” The response format was scored from 1-4, where 4 = A lot like me. Therefore, a high score indicated high agreement with the construct. A student scoring high on the avoidance scale indicated perceptions of high levels of avoidance in reading. Similarly, high scores on the intrinsic motivations scale indicated perceptions of high levels of intrinsic motivation for reading.

The school reading motivation questionnaire consisted of 40 items, which referred to the student’s intrinsic motivation, avoidance, self-efficacy, perceived difficulty, peer acceptance and peer rejection for reading that the student does at school. Students were told these readings could include any of the following: non-fiction books, fiction books, textbooks, websites, newspapers, or magazines. A list of the items by construct can be found in Appendix E.

Intrinsic motivation. In SDT, intrinsically motivated behaviors are those that people engage in for their own sake – “for the pleasure and satisfaction derived from their performance” (Deci et al., 1991, p. 327). These behaviors are initiated out of innate curiosity, interest, and the will to learn new things, even when specific rewards are not

present (Ryan & Deci, 2000). Within the SDT framework, intrinsic motivation is “an evolved propensity,” which is either sustained or subdued, given external conditions (Ryan & Deci, p. 70). In this measure, intrinsic motivation for school reading reflects intrinsic interest in reading the books and materials provided in the classroom (i.e., “I enjoy the challenge of reading at school.”)

Avoidance. Work avoidance goals “represent a type of goal orientation where students deliberately avoid engaging in academic tasks or attempt to minimize the effort required to complete academic tasks” (Dowson & McInerney, 2001, p.36). In this measure, work avoidance for school reading reflects behaviors and strategies, which allow a student to evade reading the books and materials provided in the classroom (i.e., “I guess a lot when reading in Reading/Language Arts so I can finish quickly.”)

Self-efficacy. Self-efficacy items reflect a student’s perceptions of competence or, “beliefs regarding ability and proficiency in reading tasks” (Chapman & Tunmer, 1995, p. 154). In this measure, self-efficacy for school reading reflects a student’s perceptions and beliefs about their ability to read the material assigned in school (i.e., “I believe I am doing well in Reading/Language Arts this year.”)

Perceived difficulty. A student’s perceptions of difficulty with a reading task is defined as, “beliefs that reading activities are hard, or problematic” (Chapman & Tunmer, 1995, p. 154). In this measure, perceived difficulty for school reading reflects a student’s perceptions that the reading materials at school are hard or difficult (i.e., “The materials I read at school are too difficult.”)

Peer acceptance. In this measure, a student’s perceptions of peer acceptance in the classroom can be defined as his or her feelings of support from peers and teachers in

terms of his or her reading ability (i.e., “Other students value my opinion about what we read in class.”)

Peer rejection. In this measure, a student’s perceptions of peer rejection in the classroom can be defined as his or her feelings of isolation and hostility from peers and teachers in terms of his or her reading ability (i.e., “My classmates make me feel excluded when I read at school.”)

The non-school motivation questionnaire consisted of 40 items, which referred to reading that the students do outside of the classroom and at home, including: non-fiction books, fiction books, textbooks, websites, newspapers or magazines. Students were told to think specifically about reading that they do outside of the classroom that is not related to their school reading. A list of the non-school motivation questionnaire items can be found in Appendix F.

Intrinsic motivation. In this measure, intrinsic motivation for non-school reading reflected intrinsic interest in reading the books and materials read outside of the school context and for the student’s own purposes (i.e., “Outside of school I enjoy reading in my free time.”)

Avoidance. In this measure, work avoidance for school reflected behaviors and strategies, which allow a student to evade reading the books and materials available outside of school (i.e., “At home I read easier materials so I don’t have to work as much.”)

Self-efficacy. In this measure, self-efficacy for reading outside of school reflected a student’s perceptions and beliefs about their ability to read the materials available at home or outside of school (i.e., “At home I believe I am a good reader.”)

Perceived difficulty. In this measure, perceived difficulty for reading outside of school reflected a student's perceptions that the reading materials available at home or outside of school are hard or difficult (i.e., "It is often hard for me to understand reading materials outside of school.")

Peer acceptance. In this measure, a student's perceptions of peer acceptance outside of school can be defined as his or her feelings of support from peers in terms of his or her reading ability and reading activities (i.e., "My friends ask my opinion about what I read outside of school.")

Peer rejection. In this measure, a student's perceptions of peer rejection outside of school can be defined as his or her feelings of isolation and hostility from peers in terms of his or her reading ability and reading activities outside of school (i.e., "My friends and I have different ideas about reading outside of school.")

Reading fluency. The Woodcock-Johnson III Fluency measure is a timed 3-minute exercise where students read simple sentences and then circle whether the statement is true or false. The test consists of 98 simple sentences (e.g., "Ants are small." and "A puppy grows into a cat."). Students are directed to read as many of these sentences as they can within 3 minutes, circling Y for "yes" or N for "no" after each sentence, depending on whether it is true or false. Scores on the test equal the number of correct responses minus the number of incorrect responses.

Procedure

One seventh-grade classroom in a mid-Atlantic public middle school was recruited for participation in this study. Students took a letter and consent form home to their parents approximately two weeks prior to the day the study took place. Only

students with parental consent were given an assent form to complete on the day of the study. Student assent was obtained prior to the completion of the questionnaires. Students were informed that their participation was completely voluntary, that their grade would not be affected if they decided not to participate, that they could stop at any time and that neither their teachers nor parents would see their answers.

One researcher administered two 40 item questionnaires (80 items total) and the Woodcock Johnson III Reading Fluency Test on a whole-class basis to all students who received parental permission and assented to participate in the study. Administration took place in one session. Administering the motivation questionnaire and Woodcock-Johnson III Fluency measure took 25 minutes. At the start of the testing session, the students were read general directions and information about the survey by the researcher. The researcher told the students who were given parental permission that participation was their choice, and they could skip any questions they did not wish to answer. Students were asked to sign an assent form before completing the questionnaires or Woodcock-Johnson III Fluency Test.

Students were given the non-school questionnaire first. The students completed the 40 school questionnaire items at their own pace. They were instructed that these items refer to reading that the students do outside of the classroom and at home, including: non-fiction books, fiction books, textbooks, websites, newspapers or magazines.

Students were then given the school questionnaire. These items refer to the student's motivation for reading that the student does at school. Students were told these readings could include any of the following: non-fiction books, fiction books, textbooks, websites, newspapers, or magazines. A sample item was read out loud and the students

were able to practice using the rating scale, which ranged from “a lot like me” to “not at all like me.”

The Woodcock-Johnson III Fluency Test was administered last as an indicator of the students’ reading achievement/ability. This test measures children’s accuracy and speed in processing phrase and sentence units of text.

The teacher was present during the administration of the surveys and reading test in her classroom to help monitor students’ behavior and distribute and collect materials; however, I asked the teacher to refrain from looking at the students’ surveys and collected the completed surveys myself.

Results

Exploratory factor analysis was conducted on the two scales (school and non-school) separately. Theoretically, the school and non-school items were expected to factor separately, therefore we chose to only enter the items in the exploratory factor analysis in that manner. Additionally, on a theoretical level we expected to find a six factor structure, with the items representing each construct separating into their own factor. Therefore, exploratory factor analysis was conducted requesting a six factor solution with a Varimax rotation for school and non-school items.

Exploratory Factor Analysis – School

Exploratory factor analysis of the 40 school items revealed a six factor structure, with four theoretically meaningful factors (See Table A1). When examining the results of the six factor solution for school, we chose to exclude those items that double loaded at $r > .500$ or triple loaded at $r > .400$. In addition, we excluded items that were not theoretically relevant to the construct. Finally, we chose not to include factors composed

of items that we deemed theoretically unclear. These reductions resulted in 21 items remaining on the school questionnaire. Additional factor analyses were not conducted on the remaining items.

The first factor consisted of six peer acceptance items and one peer rejection item negatively loaded, with loadings ranging from $r = .52-.90$. The reliability of these seven items for the peer acceptance factor was conducted using Cronbach's alpha, $\alpha = .89$. The second factor consisted of four perceived difficulty items and one self-efficacy item negatively loaded, with loadings ranging from $r = .61-.89$. The reliability of these five items for the perceived difficulty factor was $\alpha = .86$. The third and fourth factors were composed of avoidance and negatively loaded intrinsic motivation items. On a theoretical level, the three avoidance items and one intrinsic motivation item ($r = .53-.92$) in the third factor reflected work avoidance. The reliability of these four items for the work avoidance factor was $\alpha = .85$. The three avoidance items and two negatively loaded intrinsic motivation items ($r = .53-.77$) in the fourth factor theoretically represented boredom of school reading. The five items in the boredom of school reading subscale had a reliability of $\alpha = .87$. The fifth and sixth factors did not reflect theoretically significant constructs and those items were not included in the analyses that follow.

Table A 1

Factor Loadings for School Motivation Constructs

	1	2	3	4
SMOT31	.90			
SMOT39	.77			
SMOT2	.77			
SMOT5	-.75			
SMOT6	.64			
SMOT7	.60			
SMOT28	.52			
SMOT23		.90		
SMOT36		.87		
SMOT12		.85		
SMOT13		.65		
SMOT38		-.62		
SMOT14			.92	
SMOT35			.85	
SMOT19			-.68	
SNIT37			.53	
SMOT22				.77
SMOT1				-.74
SMOT33				-.74
SMOT27				.72
SMOT21				.60

Exploratory Factor Analysis – Non-School Items

Exploratory factor analysis of the 40 Non-School items revealed a six-factor structure with three theoretically meaningful factors (See Table A2). A similar procedure to the school items was employed to derive theoretically meaningful factors. We chose to exclude those items that double loaded at $r > .500$ and triple loaded at $r > .400$. In addition, we excluded items that were not theoretically relevant to the construct. Finally, we chose not to include the items that loaded into factors we deemed theoretically unclear. Based on these restrictions, the non-school questionnaire was reduced to 22 items.

The first theoretically meaningful factor, Intrinsic Motivation, consisted of five intrinsic motivation and four negatively loaded avoidance items. The magnitude of the loadings for these nine items ranged from $r = .51-.87$ and the reliability was $\alpha = .90$. The second theoretically meaningful factor, Peer Acceptance, consisted of six, peer acceptance and two negatively loaded peer rejection items. The loadings for these eight items ranged from $r = .57-.88$ and the reliability was $\alpha = .92$. The third theoretically meaningful factor, Perceived Difficulty, consisted of four perceived difficulty items and one negatively loaded self-efficacy item. The loadings for these five items ranged from $r = .61-.90$ and the reliability was $\alpha = .68$. The fourth and fifth factors consisted of theoretically unmeaningful items and the sixth factor only included one item. These items and factors were therefore excluded from future analyses.

Means and standard deviations for the seven constructs of motivation revealed through factor analyses can be found in Table A3.

Table A 2

Factor Loadings for Non-School Motivation Constructs

	1	2	3
NSMOT37	-.87		
NSMOT8	.87		
NSMOT10	.81		
NSMOT39	.79		
NSMOT40	.79		
NSMOT24	.78		
NSMOT5	-.69		
NSMOT21	-.68		
NSMOT33	-.51		
NSMOT19		.88	
NSMOT7		.87	
NSMOT2		.86	
NSMOT25		.75	
NSMOT29		.72	
NSMOT18		-.59	
NSMOT14			.90
NSMOT20			.85
NSMOT26			.81
NSMOT3			-.70
NSMOT35			.61

Table A 3

Means and Standard Deviations of Motivation Constructs and Reading Fluency

Construct	Mean	SD
SPA	2.58	.63
SPD	1.24	.34
SWA	1.62	.65
SB	2.13	.60
NSIM	3.03	.64
NSPA	2.79	.74
NSPD	1.53	.68
WJ-RF	107.80	17.45

Note. SPA = School Peer Acceptance, SPD = School Perceived Difficulty, SWA = School Work Avoidance, SB = School Boredom, NSIM = Non-School Intrinsic Motivation, NSPA = Non-School Peer Acceptance, NSPD = Non-School Perceived Difficulty, WJ-III RF = Woodcock Johnson III Reading Fluency.

Intercorrelations Among Factors

School. Based on the factor analyses discussed previously, four school motivation variables were created: Peer Acceptance, Perceived Difficulty, Work Avoidance, and Boredom. There was a statistically significant negative correlation between Peer Acceptance at school and Work Avoidance at school, $r = -.62, p < .05$. Boredom at school was also statistically significantly correlated positively with school Work Avoidance, $r = .58, p < .05$ (See Table A4).

Non-School. Based on the results of the exploratory factor analyses, three Non-School factor variables were created: Intrinsic Motivation, Peer Acceptance, and Perceived Difficulty. There was a statistically significant positive correlation between Intrinsic Motivation outside of school and Peer Acceptance outside of school, $r = .55$, $p < .05$ (See Table A4).

Both. School and Non-School correlations revealed several interesting significant relationships (See Table A4). School Peer Acceptance was statistically significantly positively correlated with Intrinsic Motivation outside of school, $r = .59$, $p < .05$, and Peer Acceptance outside of school, $r = .75$, $p < .01$. Perceived Difficulty in school was statistically significantly positively correlated with Perceived Difficulty outside of school, $r = .67$, $p < .01$.

Interestingly, school Work Avoidance statistically significantly correlated negatively with Intrinsic Motivation outside of school, $r = -.93$, $p < .01$. Finally, Boredom at school statistically significantly negatively correlated with Intrinsic Motivation outside of school, $r = -.53$, $p < .05$, and Peer Acceptance outside of school, $r = -.56$, $p < .05$.

Correlation with Reading Achievement – School

In order to assess the relationship between motivation and reading achievement, correlations were obtained between each factor and the Woodcock-Johnson III Reading Fluency (WJ-III RF) measure. There were no statistically significant correlations between the motivation variables and the WJ-III RF measure. The magnitude of the correlations ranged from $r = .11$ - $.42$. It is possible that with a larger sample size, these correlations would have reached significance. However, in the present study they were not statistically significant.

Table A 4

Intercorrelations Between Motivation Subscales and Reading Fluency

Subscale	1	2	3	4	5	6	7	8
1. SPA	—							
2. SPD	-.33	—						
3. SWA	-.62*	.31	—					
4. SB	-.53	.10	.58*	—				
5. NSIM	.59*	-.40	-.93**	-.53*	—			
6. NSPA	.75**	-.15	-.45	-.56*	.55*	—		
7. NSPD	-.48	.67**	.40	.39	-.45	-.25	—	
8. WJ- RF	.42	-.11	-.30	-.22	.33	.38	-.17	—

Note. ** = $p < .01$, * = $p < .05$; $n = 15$; SPA = School Peer Acceptance, SPD = School Perceived Difficulty, SWA = School Work Avoidance, SB = School Boredom, NSIM = Non-School Intrinsic Motivation, NSPA = Non-School Peer Acceptance, NSPD = Non-School Perceived Difficulty, WJ-III RF = Woodcock Johnson III Reading Fluency.

Discussion

One question of interest in this study was whether middle school students had different perceptions of reading for school and reading outside of school. Results of this study revealed that there were two different sets of salient factors that emerged for reading for school and reading outside of school. Questions pertaining to intrinsic enjoyment of reading in school did not form a salient factor, while intrinsic enjoyment in

reading was one of the strongest factors for reading outside of school. Thus, it appears that for these middle school students, items tapping intrinsic motivation were not consistently associated with each other. In addition, the salient factors for reading in school were for the most part undermining motivations: Work Avoidance, Boredom and Perceived Difficulty. At school, middle school students do not consistently report intrinsic motivation for the things they read in class. Their responses for intrinsic motivation do not reveal reliable patterns that would help us predict students' intrinsic motivation for reading.

However, students are consistent in their responses about undermining motivation for reading. Students are consistently reporting high or low levels of undermining motivations pertaining to reading they do for school. This finding has interesting implications for educators and teachers as it suggests the reading materials provided to students in the classroom are not fostering intrinsic motivation for reading. In fact, they are fostering negative feelings about reading. These findings affirm the reports of qualitative studies, which indicate that some middle school students find reading at school boring (Smith & Willhelm, 2002). Further quantitative research is necessary to determine whether this finding is replicable and a true reflection of the perceptions of middle school students.

The main affirming motivation, which factored strongly from the reading for school items, was Peer Acceptance. This is a relatively unique finding that has not been explored before in the literature. Research on peer acceptance and peer rejection in the developmental and social realm rarely acknowledge the classroom context in which the social relationships are operating. In addition, few studies have assessed peer acceptance

and peer rejection in regards to specific classroom content, such as reading. The findings in this study open the door for researchers to the possibility of investigating the importance of a student's perceptions of peer acceptance and peer rejection in association with their reading habits. This finding also has important implications for classroom teachers and educators as it underscores the importance of fostering a classroom environment that encourages students to support their peers.

The results in this study about students reading motivation outside of school seems to support what we know from qualitative research (Smith & Willhem, 2002). Middle school students who read outside of school do so because they enjoy reading and they are intrinsically motivated to read. Students who do not enjoy reading avoid it outside of school where they are not required to read. These results are not surprising given the extensive research studies on intrinsic motivation (Guthrie & Wigfield, 2000). The unique contribution of this study, however is the contextual information. In the past, research on intrinsic motivation conducted in the classroom setting has typically referred to enjoyment of "reading" without specifying where this reading occurs. Researchers have reported student's intrinsic motivation for reading in relationship to the classroom context. The results of this study indicate that the reading context is an important factor of whether students are intrinsically motivated to read. Students who are intrinsic readers outside of school are not necessarily intrinsically motivated to read the materials provided at school. In general, these preliminary findings suggest that students are motivated in very different ways to read for school and to read outside of school. Those that read outside of school do so for intrinsic reasons, while the reading that occurs in the

classroom is shrouded in boredom, work avoidance and perceptions of difficulty. Further research is needed to determine whether these results are replicable with a larger sample.

Another question of interest was whether affirming and undermining motivations form distinct factors in a factor analysis. The results reveal that for school reading, motivations for reading are mainly undermining, with peer acceptance as the exception. Reading for intrinsic enjoyment was not a predominant feature of the profile of motivations, which drive middle school students to read for school. The results for reading motivation outside of school indicated that intrinsic motivation and avoidance motivation might not factor separately. The large intrinsic motivation factor that formed had several avoidance motivation items, which reverse loaded on the factor. Therefore, for reading outside of school, intrinsic motivation and avoidance motivation behaved as though they represent two ends of a continuum.

The association between reading motivation and achievement was of most interest in the research questions proposed for the current investigation. Due to the small sample size, however, the associations between the reading motivation constructs and the reading achievement measure did not reach statistical significance. This appears to be a power problem, as the correlations indicate a general trend that with a larger sample size may have reached statistical significance. Thus, the research questions pertaining to predicting reading achievement cannot be addressed given the present data.

Limitations and Future Directions

The results in this study have several limitations. The most significant limitation is the small sample size. Future studies should be conducted with these constructs and a larger sample size in order to determine whether these are replicable findings. In addition,

with a larger sample size additional questions could be asked which utilize more powerful statistical analyses. Future studies should consider structural equation modeling and regression analyses in order to gain additional understanding of how these particular constructs work together.

The motivation constructs used in this study limit the discussion of motivation profiles. Future research should consider additional motivational constructs beyond intrinsic motivation, self-efficacy, and peer acceptance. For example, there has been interesting research on the importance of emotions and motivation in predicting achievement (Pekrun et al., 2006). This could be an interesting addition to our understanding of the constructs of motivation explored in this study.

APPENDIX B: Student Measures for Dissertation Study

Appendix B consists of measures that were administered to students in the order that they were administered. The Gates-MacGinitie Reading Comprehension test is not included as it is a standardized measure of achievement and copyrighted material. The included measures are: Adolescent Motivation for School Reading (AMSR), Reading for Meaning (Inferencing), and Adolescent Motivation for Outside School Reading (AMOSR).

Name: _____

Date: _____

Teacher: _____

Period: _____

School Reading Questionnaire

Please read the following statements and select the response that best fits how YOU feel about reading for your Language Arts/Reading class this school year.

When answering the questions think about anything you read for Language Arts/Reading class this school year. This could include any of the following materials: fiction books, non-fiction books, textbooks, magazines, newspapers, and websites.

For each question think about how similar the statement is to YOU and how YOU feel about reading for your Language Arts/Reading class this school year. Decide whether the statement is: a lot like you, somewhat like you, not like you or not at all like you.

Sample Questions

1. I enjoy playing sports for school.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

2. I believe Language Arts/Reading class is important for my future.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

Remember to answer the questions **honestly** based on your own experiences. There are no right or wrong answers. Your teachers, parents and friends will **not** see your answers.

1. I enjoy the challenge of reading for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

2. I share my opinion about what I read for Language Arts/Reading class with my classmates.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

3. I choose to do other things besides read for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

4. I can figure out difficult words in reading materials for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

5. I make fun of my classmates' opinions about what they read for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

6. I believe I am a good reader for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

7. I enjoy finding new things to read for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

8. I respect my classmates' opinions about what they read in Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

9. I read as little as possible for Language Arts/Reading class.

- | | | | |
|-----------------------|----------------|---------------------|------------------|
| Not At All
Like Me | Not
Like Me | Somewhat
Like Me | A Lot
Like Me |
|-----------------------|----------------|---------------------|------------------|
10. I feel successful when I read for Language Arts/Reading class.
- | | | | |
|-----------------------|----------------|---------------------|------------------|
| Not At All
Like Me | Not
Like Me | Somewhat
Like Me | A Lot
Like Me |
|-----------------------|----------------|---------------------|------------------|
11. I am good at reading for Language Arts/Reading class.
- | | | | |
|-----------------------|----------------|---------------------|------------------|
| Not At All
Like Me | Not
Like Me | Somewhat
Like Me | A Lot
Like Me |
|-----------------------|----------------|---------------------|------------------|
12. I enjoy it when reading materials for Language Arts/Reading make me think.
- | | | | |
|-----------------------|----------------|---------------------|------------------|
| Not At All
Like Me | Not
Like Me | Somewhat
Like Me | A Lot
Like Me |
|-----------------------|----------------|---------------------|------------------|
13. I enjoy reading for Language Arts/Reading class.
- | | | | |
|-----------------------|----------------|---------------------|------------------|
| Not At All
Like Me | Not
Like Me | Somewhat
Like Me | A Lot
Like Me |
|-----------------------|----------------|---------------------|------------------|
14. I choose easy books to read for Language Arts/Reading class so I don't have to work hard.
- | | | | |
|-----------------------|----------------|---------------------|------------------|
| Not At All
Like Me | Not
Like Me | Somewhat
Like Me | A Lot
Like Me |
|-----------------------|----------------|---------------------|------------------|
15. Reading for Language Arts/Reading class is boring to me.
- | | | | |
|-----------------------|----------------|---------------------|------------------|
| Not At All
Like Me | Not
Like Me | Somewhat
Like Me | A Lot
Like Me |
|-----------------------|----------------|---------------------|------------------|
16. I try to convince my classmates that the reading for Language Arts/Reading class is a waste of time.
- | | | | |
|-----------------------|----------------|---------------------|------------------|
| Not At All
Like Me | Not
Like Me | Somewhat
Like Me | A Lot
Like Me |
|-----------------------|----------------|---------------------|------------------|
17. I skip words when reading for Language Arts/Reading class.
- | | | | |
|-----------------------|----------------|---------------------|------------------|
| Not At All
Like Me | Not
Like Me | Somewhat
Like Me | A Lot
Like Me |
|-----------------------|----------------|---------------------|------------------|
18. I respect other students' comments about what they read in Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

19. I have a hard time recognizing words in books for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

20. I share what I learn from reading for Language Arts/Reading class with my classmates.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

21. I show interest in what my classmates read for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

22. Reading materials for Language Arts/Reading class are difficult to read.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

23. Reading for Language Arts/Reading class is usually difficult.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

24. Reading for Language Arts/Reading class is difficult for me.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

25. It is hard for me to understand reading materials for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

26. I keep what I learn from reading for Language Arts/Reading class to myself.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

27. I enjoy reading in my free time for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

28. I think I am a good reader for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

29. I make fun of other students' comments about what they read in Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

30. I think reading for Language Arts/Reading class is hard.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

31. I offer to help my classmates with reading for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

32. Reading for Language Arts/Reading class is a waste of time.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

33. I leave my classmates alone when they have problems reading for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

34. I am good at remembering words I read for Language Arts/Reading class

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

35. I recognize words easily when I read for Language Arts/Reading class.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

36. I make lots of mistakes reading for Language Arts/Reading class.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

37. I keep my opinion about what I read for Language Arts/Reading class to myself.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

38. I am uninterested in what other students read for Language Arts/Reading class.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

39. I avoid reading for Language Arts/Reading class.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

40. I try to cheer my classmates up if they have problems with reading in Language Arts/Reading class.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

41. I like to read for Language Arts/Reading class.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

42. I think I can read the books in Language Arts/Reading class.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

Reading for Meaning

Name _____

Date _____

Teacher _____

Period _____

School: ES LT MB SR

Circle the answer that *best* fits the sentence.

Sample Passage A

What can we do to save endangered animals and plants? We must not build on

land they need. We should

- a) not worry about recycling.
- b) destroy trees in their habitat.
- c) keep the air and water clean.

Sample Passage B

Plants and animals need us to protect them. They need us to protect their

- a) cars.
- b) homes.
- c) clothes.

Then plants and animals will not be endangered.

**DO NOT TURN THE PAGE UNTIL YOU ARE TOLD TO
BEGIN.**

Hot or Cold?

In North America it is usually hot in the summer and cold in the winter. To find out why,

think about a round globe. It shows that the Earth is

- a) like a pancake.
- b) like sandpaper.
- c) like a ball.

The Sun's hot rays cannot shine on every part of Earth at the same time. Some parts of

the world get very strong rays of sunlight. Other parts of the world get

- a) weaker rays of sunlight.
- b) stronger rays of moonlight.
- c) weaker rays of moonlight.

The equator is a line around the middle of Earth.

The parts of the world near the equator are always the hottest. They get rays of intense

sunlight

- a) in the summer.
- b) every day.
- c) in the winter.

We call the months when we get strong sunlight

“summer.” Areas south of the equator have summer in December, January, and February.

For example,

- a) Canada
- b) Australia
- c) Russia

has summer when the United States has winter.

Famous Blizzards

The Blizzard of 1888 was an especially fierce nor'easter. It blasted the northeastern

United States from March 12 to 14. The temperature dropped quickly. The rain turned to

snow as the wind speed increased. Official sources say wind speeds reached

- a) 8 miles per hour.
- b) 48 miles per hour.
- c) 10 knots.

Huge amounts of snow fell. Connecticut and Massachusetts

received 50 inches of snow.

- a) Snowdrifts towered
- b) The waves reached
- c) Skiers jumped

15 to 50 feet high. Entire

buildings were buried. Snow even blocked the railways of New York City. In the storm

- a) people slipped on the ice
- b) people stayed home from work
- c) electrical wires snapped

leading many fires to break out and injuries to

occur. Damage was widespread. Altogether about 400 people died in the Blizzard of

1888 with record amounts of snow deposited in

- a) Montana.
- b) Maine.
- c) Michigan.

How Tornadoes Form

A tornado is a huge tower of warm, moist circling air that connects the earth to a storm cloud above. The word *tornado* comes from the Latin word *tornare*, which means

- a) to rotate,
- b) to jump,
- c) to destroy,

and the Spanish word *tronada*, which means thunderstorm. A tornado

is a thunderstorm that turns round and round until it starts to spin very fast.

While a tornado is turning, it can act like a

- a) dump truck, carrying things very far.
- b) crane, moving things through the air.
- c) vacuum cleaner, sucking things into it.

The strongest tornadoes may lift houses, cars, pianos, and school buses. Some tornadoes

stay in one place as they whirl around,

- a) hurricanes
- b) twisters
- c) tsunamis

while other travel as fast

as a car speeding down the highway at up to seventy miles per hour. As they move along,

tornadoes may touch down to create a path of destruction from 10 feet to a mile wide,

with an average width of about 150 feet.

Tornadoes form during violent

- a) windstorms.
- b) firestorms.
- c) thunderstorms.

Because of this, areas

that have many of these are also most likely to have tornadoes. The United States has the

most tornadoes in the world, about a thousand a year.

Inside A Fish

Many researchers are now studying fish. The typical fish has many of the body organs

found in reptiles, birds, and even mammals like ourselves. A skeleton provides fish with

an internal framework for

- a) feeding, swimming, seeing.
- b) circulation, digestion, and reproduction.
- c) locomotion, respiration, and nutrition.

The

brain receives information about the ability to reproduce from the outside world via sense

organs such as the eyes.

- a) Teams of muscles
- b) Networks of sensory neurons
- c) Following the lateral line

carry out the complex movements of swimming,

which are coordinated by the lateral line. The fish's heart pumps blood through a network

of vessels, and its digestive system processes food into nutrients for growth and repair.

Various glands make chemical hormones that control

- a) the location of food.
- b) growth and development.
- c) the accuracy of vision.

There are also sexual organs for breeding. Instead of the lungs of air breathing animals,

fishes have special structures, which do the same job –

- a) absorbing oxygen.
- b) increasing circulation.
- c) aiding swimming.

It passes from the water through the thin gill membranes into the fish's blood.

Acid Rain Still Taking a Toll on Northeast Forests

Researchers report that soils throughout the Northeast are continuing to acidify, despite a 50 percent decrease in acid rain since the peak in 1973. Acid rain in the United States is

caused primarily by emissions from coal power plants, especially sulfur dioxide. Acid

rain has decreased since the Clean Air Act in 1990. It

- a) led to reductions in fossil fuel.
- b) increased acid rain.
- c) encouraged companies to make carbon.

Over the last 17 years the levels of calcium ions in the soil have halved throughout the

region while aluminum ions have doubled. This may be contributing to the declines in

sugar maples and red spruce in the region. “The quality of water is improving and the

soils continue to get worse,” said study lead author Richard Warby.

Calcium ions are basic, and provide the soil with

- a) a way to neutralize acid.
- b) a highly toxic substance.
- c) extra nutrients for plants.

They also provide essential nutrition to trees like red spruce and sugar maple. Aluminum

ions, on the other hand, are acidic, and soil aluminum shifts from an inert form into

another form under acidic conditions. The available form is

- a) helpful to trees
- b) harmful to ozone
- c) toxic to plants

at

high concentrations. The amount of acid rain seems to have dropped enough that lakes

and streams can recover, perhaps with the help of shoreline wetlands and lake sediments.

But it is not sufficient for soils. The level of acidity is still too high to eliminate the

stripping of calcium and magnesium from soil. "You're replacing a

- a) calcium ion with potassium,"
- b) nutrient with a toxic substance,"
- c) harmful chemical with a safe one,"

said Charles Driscoll of Syracuse

University.

Name: _____ Date: _____

Teacher: _____ Period: _____

Outside of School Reading Questionnaire

Please read the following statements and select the response that best fits how YOU feel about reading you do in your free time outside of school.

When answering the questions think about anything you read in your free time outside of school this school year. This could include any of the following materials: fiction books, non-fiction books, textbooks, magazines, newspapers, and websites.

For each question think about how similar the statement is to YOU and how YOU feel about reading in your free time outside of school. Decide whether the statement is: a lot like you, somewhat like you, not like you or not at all like you.

Sample Questions

1. I enjoy playing sports in my free time outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

2. I believe reading outside of school is important for my future.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

Remember to answer the questions **honestly** based on your own experiences. There are no right or wrong answers. Your teachers, parents and friends will **not** see your answers.

1. I feel successful when I read outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

2. I offer to help my friends with reading outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

3. Reading outside of school is difficult for me.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

4. It is hard for me to understand reading materials outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

5. I am good at reading outside of school

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

6. I leave my friends alone when they have problems reading outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

7. I enjoy the challenge of reading outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

8. I respect my friends' opinions about what they read outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

9. Reading outside of school is a waste of time.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

10. I make fun of my friends' opinions about reading outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

11. I respect my friends' comments about what they read outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

12. I skip words when reading outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

13. Reading outside of school is boring to me.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

14. I share what I learn from reading outside of school with my friends.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

15. I choose to do other things instead of reading outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

16. I make fun of my friends' comments if they read outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

17. I believe I am a good reader outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

18. I can figure out difficult words in reading materials outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

19. I have a hard time recognizing words in books outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

20. I enjoy reading outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

21. I am good at remembering words I read outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

22. I think I can read books outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

23. I try to convince my friends that reading outside of school is a waste of time.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

24. I enjoy finding new things to read outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

25. I recognize words easily when I read outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

26. Reading materials outside of school are difficult to read.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

27. I avoid reading outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

28. I like to read outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

29. I think I am a good reader outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

30. I choose to read easy books at home so I don't have to work hard.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

31. I make lots of mistakes in reading outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

32. I keep what I learn from reading outside of school to myself.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

33. I keep my opinion about what I read outside of school to myself.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
-----------------------	----------------	---------------------	------------------

34. I show interest in what my friends read outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
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35. I make fun of my friends if they read outside of school.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
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36. I share my opinion about what I read outside of school with my friends.

Not At All Like Me	Not Like Me	Somewhat Like Me	A Lot Like Me
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37. Reading outside of school is usually difficult.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

38. I try to cheer my friends up if they have problems with reading outside of school.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

39. I read as little as possible outside of school.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

40. I think reading outside of school is hard.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

41. I enjoy reading in my free time outside of school.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

42. I enjoy it when reading materials outside of school make me think.

Not At All	Not	Somewhat	A Lot
Like Me	Like Me	Like Me	Like Me

APPENDIX C: Teacher Instructions for Administering Measures

Appendix C consists of all directions that were given to teachers for administering the student measures. The directions are presented in the order that the measures were administered: Gates-MacGinitie Reading Comprehension, Adolescent Motivation for School Reading (AMSR), Reading for Meaning (Inferencing), and Adolescent Motivation for Outside School Reading (AMOSR).

I. Gates-MacGinitie Reading Comprehension Test (Aqua folder)	Time (min)
<p><i>Important Administration Notes</i></p> <ul style="list-style-type: none"> • Students have been pre-assigned to test levels (4, 5, 6, or 7/9). Student name labels are on the answer sheets. Students should <u>not</u> write their names on the test booklets. • Answer sheets and test booklets for each test level are color coordinated; students must receive matching answer sheets and booklets. If students ask why they are getting different colored tests, just tell them that there are several versions of the test, and to focus on the one they received. • If you have a new student who was NOT pre-assigned to a level, select a level for him/her based on your knowledge of his/her general reading ability. If you need additional booklets or answer sheets, ask a member of the UMD team. • Students should ONLY mark their answers on the answer sheets. They should <u>not</u> make any marks in the test booklets. • It is preferable (but not absolutely necessary) that students use pencil on the answer sheets. 	
<p>1) Distribute answer sheets based on name labels. Give each student a booklet that is the same level/color as their answer sheet. Say:</p> <p>I am giving you an answer sheet and test booklet. Make sure your name is on one side of the answer sheet. Do NOT open the test booklet until I tell you to do so. The side of the answer sheet with the bubbles for the comprehension questions should be face up.</p>	2
<p>2) Once every student has their answer sheet and test booklet, say:</p> <p>Now you may open your test booklet to page 7, the Comprehension sample page.</p> <p>The passage on page 7 tells the most common idea of what a “blue moon” is. Read the passage to yourself as I read it aloud.</p> <p><i>Sometimes – not very often – we get two full moons in one month. The second full moon is called a “blue moon.” <u>No one knows</u> why. Now we say “once in a blue moon” to mean “once in a long time.”</i></p> <p>**See the next 3 pages for the rest of the test directions and general administration guidelines.**</p>	4
<p>5) Oversee students as they complete the comprehension test. (See notes for supervising and stopping the test, following the pages containing the test directions.)</p>	35
<p>6) Collect the tests and answer sheets and place them back in the aqua folder.</p>	1

Gates-MacGinitie Comprehension Test Directions, Continued...

Question C-1, below the passage, is an unfinished sentence. It says *To be a "blue moon," the moon must be. . . .* One of the words below the sentence finishes the sentence correctly.

The passage says that a second **full** moon is called a "blue moon." So to be a "blue moon," the moon must be **full**. **Full** has the letter **L** in front of it, so the answer to question C-1 is **L**.

Look at your answer sheet. Find row **C-1**, in the box for **SAMPLE QUESTIONS** in the Comprehension part of your answer sheet. We found that the answer to question C-1 is **L**. So you should fill in answer circle **L** in row **C-1**.

Make your mark strong and dark.

Check that each student has marked the right answer circle. If necessary, help any student find and mark the right circle.

Say:

Sample
question C-2

Now look at your booklet. In question C-2 there is a line under the words **no one knows**. The words **no one knows** are underlined in the passage, too. When words are underlined in a question, the same words are always underlined in the passage. You should use the underline to find what the question is asking about.

Question C-2 asks *What is it that **no one knows**?* Read the answers to yourself and decide which one is right. If you need to, go back and read again what the passage says. The underline will help you find the words **no one knows**. When you decide which answer is right, look at the letter in front of it. Then, in row **C-2** on your answer sheet, mark the circle for the same letter.

Give the students time to read the words and mark their answer sheets. Then say:

The passage says that **no one knows** why the second full moon is called a "blue moon." So no one knows where the name came from. Where the name came from is answer **O**. You should have marked circle **O**, in row **C-2** on your answer sheet.

If you marked the wrong circle, erase the mark carefully, then mark circle **O**.

Check that each student has marked the right answer circle. If necessary, help any student find and mark the right circle. Make sure that any student who has changed an answer has erased the wrong mark thoroughly.

Before beginning the test, all the students should have marked the answers for sample questions C-1 and C-2 correctly.

*Final
instructions*

Say:

Each passage in the test tells what you need to know to answer the questions about it. If you don't know which answer is right, read in the passage again. If you still are not sure which answer is right, mark the one you think is right and go on.

You will have 35 minutes to do the passages. That will be enough time for you to do all, or nearly all, of them. When you come to the stop sign at the end, go back and check your work. Do not turn back to the Vocabulary test.

If you finish checking before time is up, turn your answer sheet over. Put your closed test booklet on top of it.

If your pencil breaks, raise your hand, and I will bring you another.

When you begin, mark your answer for question 1 in row 1 in the Comprehension part of the answer sheet.

If you have any questions now before we begin, raise your hand.

Answer any questions.

*Starting the
Comprehension
test*

Say:

Now turn to page 8 and begin.

As soon as you have said "begin," write, in the box below, the time when the test started and the time when the test should end:

Comprehension test started at	_____ :
Add 35 minutes of testing time	_____ 35
Test should end at	_____ :

About 5 minutes before the testing period is over, tell the students how many more minutes they will have to work.

*Supervising the
Comprehension
test*

Walk about the room, checking to make sure that all the students have started at the right place and that they are

- ◆ Doing the questions in the right order;
- ◆ Turning the page when appropriate;
- ◆ Marking their answers in the correct rows on the answer sheet;
- ◆ Marking their answers neatly but not painstakingly;
- ◆ Making their answer marks dark;
- ◆ Marking just one answer circle for each question;
- ◆ Erasing thoroughly when changing an answer;
- ◆ Not making unnecessary marks;
- ◆ Not looking at the work of other students;
- ◆ Not stopping work before they have finished;
- ◆ Not going back to the Vocabulary test.

Do not give any hints that might give away an answer.

If any student is marking answers without reading the passages, encourage that student to try to read them.

Encourage the students to check their work after they have finished.

If any students have finished *and checked* their work before it is time to stop, they should turn their answer sheets over, put their closed test booklets on top of them, and do other quiet desk work. You may collect the answer sheets and booklets as the students finish, or wait until the test is over. If *all* the students have finished and have checked their work before the time is over, you may stop the test and collect all the materials.

*Stopping the
Comprehension
test*

Exactly 35 minutes after the test began, say:

It is time to stop. Put your pencil down, even if you have not finished. Turn your answer sheet over. Close your booklet. Leave it face up.

First collect the answer sheets. Then collect the test booklets.

Instructions for scoring and tables of norms are in the Manual for Scoring and Interpretation for Levels 7/9 and 10/12.

Date _____ Test Form _____

II. School Reading Questionnaire (Green Folder)	Time (min)
1) Distribute a questionnaire to each student and say: Write your first and last name and today's date (6-2-09) on the lines provided. Please fill in my name and the period. Then, wait until I give you further directions.	1
2) Read aloud: Please read the following statements and select the response that best fits how YOU feel about reading for your Language Arts/Reading class this school year. When answering the questions think about anything you read for Language Arts/Reading class this school year. This could include any of the following materials: fiction books, non-fiction books, textbooks, magazines, newspapers, and websites. For each question think about how similar the statement is to YOU and how YOU feel about reading for your Language Arts/Reading class this school year. Decide whether the statement is: a lot like you, somewhat like you, not like you, or not at all like you. Let's look at the sample questions. The first statement says "I enjoy playing sports for school." If you really enjoy playing sports for school, choose "a lot like you." If you enjoy playing sports for school a little bit, choose "somewhat like me." If you don't don't enjoy playing sports for school very much choose "not like me," and if you really don't enjoy playing sports for school choose "not at all true of me." (Pause so students can respond to sample question 1). The second item says "I believe Language Arts/Reading class is important for my future." Decide whether this statement is a lot like you, somewhat like you, not like you, or not at all like you and circle your answer on the page.(Pause so students can respond to sample question 2.) The rest of this survey should be taken quietly, by yourself. Remember to answer the questions <u>honestly</u> based on your own experiences. There are no right or wrong answers. First, turn back the page and then begin.	2
3) Students should work quietly and independently on the questionnaire. <i>If some students do NOT finish in the allotted time, they may finish after the next assessment (Reading for Meaning), or at another convenient time.</i>	12-14
4) Collect the questionnaires and place them back in the green folder.	1

III. Reading for Meaning (Inferencing) (Green Folder)	Time (min)
<p><i>Administration Overview</i></p> <ul style="list-style-type: none"> This test has an 11-minute time limit. You will need a stopwatch or other timer to administer this test. 	
<p>1) Distribute the Reading for Meaning tests to students, which are labeled with students' names. Say:</p> <p>Do not open the test booklet or make any marks on the booklet until I tell you to.</p>	2
<p>2) After all of the students have a test, hold up a student copy and point to the sample items on the first sheet. Say:</p> <p>I want you to read these passages along with me. In some sentences, you will have to pick the word or phrase that best fits the sentence that we are reading. Look at Sample Passage A. Read along silently as I read out loud. It says, "What can we do to save endangered animals? We must not build on land they need." I'm going to read the next sentence 3 ways. Listen carefully and decide which sentence is the <i>best</i> fit with the other sentences. "We should also not worry about recycling." Does that make sense? [Wait for student response] "We should also destroy trees in their habitat." Does that make sense? [Wait for student response] "We should also keep the air and water clean." Does that make sense? [Wait for student response] Which is the <i>best</i> sentence? [Wait for student response.] Because the <i>best</i> sentence is "We should also keep the air and water clean," you should circle the letter "c" on your paper.</p> <p>Now, read the sentences in Sample Passage B silently and circle the answer that <i>best</i> fits those sentences. [Wait for students to read and circle their response]. Say: Follow along as I read Sample Passage B out loud. "Plants and animals need us to protect them. "They need us to protect their cars." Does that make sense? [Wait for student response] "They need us to protect their homes." Does that make sense? [Wait for student response] "They need us to protect their clothes." Does that make sense? [Wait for student response] Which is the <i>best</i> sentence? [Wait for student response.] Because the <i>best</i> sentence is "They need us to protect their homes," you should have circled "b" on your paper.</p> <p>There will be five passages for you to read just like these sample passages. You have seen similar passages before, but these are different, so read them carefully. Circle the answers that <i>best</i> fit the sentences you are reading. You will have 11 minutes to read the passages and circle the <i>best</i> answers. When you are finished with all of the passages turn your test booklet over on your desk and put your pencil down.</p> <p>You may now turn the page and begin. [Begin timing]</p>	2
<p>3) Oversee students as they complete the assessment. They should work on the passages in the order they appear in the packet. If they ask for your help, just encourage them to read carefully and select the answer they think is best. When <u>11 minutes</u> have passed, tell students they must stop.</p>	11
<p>4) Collect the assessments and place them back in the green folder.</p>	1

IV. Outside of School Reading Questionnaire (Burgundy Folder)	Time (min)
1) Distribute a questionnaire to each student and say: Write your first and last name and today's date (6-2-09) on the lines provided. You do NOT need to fill in my name, the period, or school. Then, wait until I give you further directions.	1
2) Read aloud: Please read the following statements and select the response that best fits how YOU feel about reading you do in your free time <u>outside</u> of school. When answering the questions think about anything you read <u>in your free time outside of school</u> this school year. This could include any of the following materials: fiction books, non-fiction books, textbooks, magazines, newspapers, and websites. For each question think about how similar the statement is to YOU and how YOU feel about reading in your free time outside of school. Decide whether the statement is: a lot like you, somewhat like you, not like you, or not at all like you. Let's look at the sample questions. The first statement says "I enjoy playing sports in my free time outside of school." If you really enjoy playing sports outside of school, choose "a lot like you." If you enjoy playing sports outside of school a little bit, choose "somewhat like me." If you don't enjoy playing sports outside of school very much, choose "not like me," and if you really don't enjoy playing sports outside of school choose "not at all true of me." (Pause so students can respond to sample question 1). The second item says "I believe reading outside of school is important for my future." Decide whether this statement is a lot like you, somewhat like you, not like you, or not at all like you and circle your answer on the page.(Pause so students can respond to sample question 2.) The rest of this survey should be taken quietly, by yourself. Remember to answer the questions <u>honestly</u> based on your own experiences. There are no right or wrong answers. First, turn back the page and then begin.	2
3) Students should work quietly and independently on the questionnaire. <i>If some students do NOT finish in the allotted time, you may extend the time.</i>	12-14
4) Collect the questionnaires and place them back in the burgundy folder.	1

APPENDIX D: AMSR and AMOSR Correlation Matrices by Construct Pairs

Correlation Matrix for AMSR Intrinsic Motivation and Avoidance Items

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 I enjoy reading for LA/Reading class. (13)	--													
2 I enjoy it when reading materials for LA/Reading make me think. (12)	.68	--												
3 I enjoy reading in my free time for LA/Reading class. (27)	.67	.53	--											
4 I feel successful when I read for LA/Reading class. (10)	.59	.53	.43	--										
5 I like to read for LA/Reading class. (41)	.73	.62	.71	.48	--									
6 I enjoy the challenge of reading for LA/Reading class. (1)	.65	.65	.46	.52	.58	--								
7 I enjoy finding new things to read for LA/Reading class. (7)	.60	.59	.53	.50	.56	.63	--							
8 I choose to do other things besides read for LA/Reading class. (3)	-.32	-.40	-.28	-.25	-.36	-.28	-.34	--						
9 Reading for LA/Reading class is a waste of time. (32)	-.64	-.55	-.55	-.45	-.62	-.54	-.56	.42	--					
10 I avoid reading for LA/Reading class. (39)	-.57	-.49	-.47	-.49	-.55	-.45	-.49	.38	.54	--				
11 I skip words when reading for LA/Reading class. (17)	-.39	-.38	-.30	-.44	-.33	-.34	-.37	.26	.41	.42	--			
12 I read as little as possible for LA/Reading class. (9)	-.66	-.56	-.62	-.46	-.63	-.49	-.56	.45	.68	.62	.47	--		
13 I choose easy books to read for LA/Reading class so I don't have to work hard. (14)	-.51	-.54	-.44	-.43	-.50	-.46	-.52	.40	.51	.60	.50	.59	--	
14 Reading for LA/Reading class is boring to me. (15)	-.65	-.54	-.66	-.44	-.70	-.52	-.54	.35	.65	.53	.37	.65	.52	--

Correlation Matrix for AMSR Self-Efficacy and Perceived Difficulty Items

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 I am good at reading for LA/Reading class. (11)	--													
2 I am good at remembering words I read for LA/Reading class. (34)	.46	--												
3 I recognize words easily when I read for LA/Reading class. (35)	.55	.56	--											
4 I think I am a good reader for LA/Reading class. (28)	.72	.47	.57	--										
5 I believe I am a good reader for LA/Reading class. (6)	.74	.47	.54	.79	--									
6 I can figure out difficult words in reading materials for LA/Reading class. (4)	.57	.51	.66	.55	.57	--								
7 I think I can read the books in LA/Reading class. (42)	.54	.29	.42	.53	.48	.43	--							
8 Reading for LA/Reading class is difficult for me. (24)	-.51	-.45	-.50	-.53	-.53	-.58	-.40	--						
9 I make lots of mistakes reading for LA/Reading class. (36)	-.44	-.37	-.48	-.49	-.42	-.43	-.38	.54	--					
10 It is hard for me to understand reading materials for LA/Reading class. (25)	-.52	-.43	-.54	-.54	-.47	-.51	-.47	.70	.55	--				
11 Reading materials for LA/Reading class are difficult to read. (22)	-.45	-.32	-.48	-.48	-.40	-.40	-.42	.71	.48	.69	--			
12 Reading for LA/Reading class is usually difficult. (23)	-.53	-.40	-.51	-.56	-.54	-.50	-.48	.80	.56	.68	.67	--		
13 I have a hard time recognizing words in books for LA/Reading class. (19)	-.45	-.39	-.48	-.44	-.39	-.53	-.34	.54	.49	.60	.52	.57	--	
14 I think reading for LA/Reading class is hard. (30)	-.56	-.47	-.54	-.59	-.56	-.53	-.45	.73	.53	.70	.64	.72	.49	--

Correlation Matrix for AMSR Prosocial and Antisocial Interactions Items

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 I share what I learn from reading for LA/Reading class with my classmates. (20)	--													
2 I try to cheer my classmates up if they have problems with reading in LA/Reading class. (40)	.45	--												
3 I share my opinion about what I read for LA/Reading class with my classmates. (2)	.60	.33	--											
4 I respect my classmates' opinions about what they read in LA/Reading class. (8)	.36	.51	.38	--										
5 I offer to help my classmates with reading for LA/Reading class. (31)	.42	.52	.39	.36	--									
6 I show interest in what my classmates read for LA/Reading class. (21)	.54	.45	.50	.48	.45	--								
7 I respect other students' comments about what they read in LA/Reading class. (18)	.33	.50	.31	.71	.36	.42	--							
8 I keep what I learn from reading for LA/Reading class to myself. (18)	-.43	-.22	-.30	-.16	-.24	-.27	-.13	--						
9 I leave my classmates alone when they have problems reading for LA/Reading class. (33)	-.27	-.42	-.25	-.28	-.35	-.30	-.22	.24	--					
10 I keep my opinion about what I read for LA/Reading class to myself. (37)	-.36	-.24	-.26	-.08	-.30	-.22	-.06	.43	.25	--				
11 I make fun of my classmates' opinions about what they read for LA/Reading class. (5)	-.21	-.32	-.13	-.51	-.19	-.27	-.54	-.02	.18	.07	--			
12 I try to convince my classmates that the reading for LA/Reading class is a waste of time. (16)	-.26	-.39	-.29	-.33	-.25	-.23	-.36	.10	.19	.17	.37	--		
13 I am uninterested in what other students read for LA/Reading class. (38)	-.40	-.29	-.26	-.28	-.22	-.35	-.40	.37	.22	.26	.22	.28	--	
14 I make fun of other students' comments about what they read in LA/Reading class. (29)	-.11	-.31	-.07	-.49	-.13	-.20	-.50	.08	.16	.04	.70	.36	.17	--

Correlation Matrix for AMOSR Intrinsic Motivation and Avoidance Items

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 I enjoy reading outside of school. (20)	--													
2 I enjoy it when reading materials outside of school make me think. (42)	.62	--												
3 I enjoy reading in my free time outside of school. (41)	.75	.66	--											
4 I feel successful when I read outside of school. (1)	.54	.49	.53	--										
5 I like to read outside of school. (28)	.89	.63	.78	.56	--									
6 I enjoy the challenge of reading outside of school. (7)	.74	.68	.70	.58	.74	--								
7 I enjoy finding new things to read outside of school. (24)	.73	.64	.74	.55	.74	.67	--							
8 I choose to do other things instead of reading outside of school. (15)	-.62	-.54	-.55	-.36	-.61	-.59	-.57	--						
9 Reading outside of school is a waste of time. (9)	-.75	-.64	-.72	-.54	-.75	-.72	-.67	.58	--					
10 I avoid reading outside of school. (27)	-.78	-.65	-.72	-.52	-.80	-.67	-.76	.60	.75	--				
11 I skip words when reading outside of school. (12)	-.41	-.35	-.42	-.36	-.41	-.39	-.40	.26	.42	.46	--			
12 I read as little as possible outside of school. (39)	-.63	-.58	-.64	-.56	-.63	-.56	-.59	.44	.61	.66	.40	--		
13 I choose to read easy books at home so I don't have to work hard. (30)	-.50	-.52	-.52	-.40	-.50	-.56	-.54	.48	.48	.54	.44	.52	--	
14 Reading outside of school is boring to me. (13)	-.83	-.69	-.73	-.51	-.81	-.72	-.73	-.67	.80	.78	.47	.67	.55	--

Correlation Matrix for AMOSR Self-Efficacy and Perceived Difficulty Items

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 I am good at reading outside of school. (5)	--													
2 I am good at remembering words I read outside of school. (21)	.63	--												
3 I recognize words easily when I read outside of school. (25)	.50	.60	--											
4 I think I am a good reader outside of school. (29)	.78	.63	.51	--										
5 I believe I am a good reader outside of school. (17)	.75	.55	.56	.77	--									
6 I can figure out difficult words in reading materials outside of school. (18)	.64	.57	.63	.62	.68	--								
7 I think I can read books outside of school. (22)	.67	.57	.46	.67	.65	.45	--							
8 Reading outside of school is difficult for me. (3)	-.55	-.48	-.42	-.47	-.44	-.49	-.41	--						
9 I make lots of mistakes in reading outside of school. (31)	-.49	-.44	-.45	-.47	-.48	-.54	-.36	.52	--					
10 It is hard for me to understand reading materials outside of school. (4)	-.62	-.47	-.41	-.58	-.53	-.51	-.47	.63	.60	--				
11 Reading materials outside of school are difficult to read. (26)	-.51	-.46	-.47	-.48	-.47	-.50	-.44	.61	.62	.60	--			
12 Reading outside of school is usually difficult. (37)	-.60	-.55	-.52	-.61	-.61	-.55	-.46	.56	.59	.59	.69	--		
13 I have a hard time recognizing words in books outside of school. (19)	-.56	-.49	-.58	-.57	-.52	-.55	-.45	.53	.58	.58	.60	.57	--	
14 I think reading outside of school is hard. (40)	-.59	-.52	-.45	-.66	-.59	-.52	-.51	.58	.50	.62	.62	.67	.55	--

Correlation Matrix for AMOSR Prosocial and Antisocial Interactions Items

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	I share what I learn from reading outside of school with my friends. (14)	—													
2	I try to cheer my friends up if they have problems with reading outside of school. (38)	.53	—												
3	I share my opinion about what I read outside of school with my friends. (36)	.61	.54	—											
4	I respect my friends' opinions about what they read outside of school. (8)	.33	.40	.31	—										
5	I offer to help my friends with reading outside of school. (2)	.53	.50	.41	.36	—									
6	I show interest in what my friends read outside of school. (34)	.45	.52	.56	.40	.39	—								
7	I respect my friends' comments about what they read outside of school. (11)	.33	.40	.25	.75	.37	.40	—							
8	I keep what I learn from reading outside of school to myself. (32)	-.36	-.27	-.37	-.07	-.21	-.25	-.12	—						
9	I leave my friends alone when they have problems reading outside of school. (6)	-.21	-.38	-.24	-.18	-.28	-.24	-.15	.26	—					
10	I keep my opinion about what I read outside of school to myself. (33)	-.31	-.27	-.45	-.10	-.19	-.35	-.16	.62	.23	—				
11	I make fun of my friends if they read outside of school. (35)	-.22	-.18	-.18	-.45	-.11	-.26	-.39	.09	.17	.09	—			
12	I try to convince my friends that reading outside of school is a waste of time. (23)	-.31	-.25	-.32	-.39	-.21	-.40	-.42	.20	.25	.26	.47	—		
13	I make fun of my friends' opinions about reading outside of school. (10)	-.08	-.20	-.17	-.43	-.13	-.26	-.43	.15	.24	.13	.62	.50	—	
14	I make fun of my friends' comments if they read outside of school. (16)	-.14	-.17	-.09	-.48	-.11	-.28	-.42	.06	.19	.12	.64	.50	.71	—

APPENDIX E: AMSR Items by Construct (Theoretical)

Intrinsic Motivation

- I enjoy reading for Language Arts/Reading class. (13)
- I enjoy it when reading materials for Language Arts/Reading make me think. (12)
- I enjoy reading in my free time for Language Arts/Reading class. (27)
- I feel successful when I read for Language Arts/Reading class. (10)
- I like to read for Language Arts/Reading class. (41)
- I enjoy the challenge of reading for Language Arts/Reading class. (1)
- I enjoy finding new things to read for Language Arts/Reading class. (7)

Avoidance

- I choose to do other things besides read for Language Arts/Reading class. (3)
- Reading for Language Arts/Reading class is a waste of time. (32)
- I avoid reading for Language Arts/Reading class. (39)
- I skip words when reading for Language Arts/Reading class. (17)
- I read as little as possible for Language Arts/Reading class. (9)
- I choose easy books to read for Language Arts/Reading class so I don't have to work hard. (14)
- Reading for Language Arts/Reading class is boring to me. (15)

Self-Efficacy

- I am good at reading for Language Arts/Reading class. (11)
- I am good at remembering words I read for Language Arts/Reading class. (34)
- I recognize words easily when I read for Language Arts/Reading class. (35)
- I think I am a good reader for Language Arts/Reading class. (28)
- I believe I am a good reader for Language Arts/Reading class. (6)
- I can figure out difficult words in reading materials for Language Arts/Reading class. (4)
- I think I can read the books in Language Arts/Reading class. (42)

Perceived Difficulty

- Reading for Language Arts/Reading class is difficult for me. (24)
- I make lots of mistakes reading for Language Arts/Reading class. (36)
- It is hard for me to understand reading materials for Language Arts/Reading class. (25)
- Reading materials for Language Arts/Reading class are difficult to read. (22)
- Reading for Language Arts/Reading class is usually difficult. (23)
- I have a hard time recognizing words in books for Language Arts/Reading class. (19)
- I think reading for Language Arts/Reading class is hard. (30)

Prosocial Interactions

I share what I learn from reading for Language Arts/Reading class with my classmates. (20)

I try to cheer my classmates up if they have problems with reading in Language Arts/Reading class. (40)

I share my opinion about what I read for Language Arts/Reading class with my classmates. (2)

I respect my classmates' opinions about what they read in Language Arts/Reading class. (8)

I offer to help my classmates with reading for Language Arts/Reading class. (31)

I show interest in what my classmates read for Language Arts/Reading class. (21)

I respect other students' comments about what they read in Language Arts/Reading class. (18)

Antisocial Interactions

I keep what I learn from reading for Language Arts/Reading class to myself. (26)

I leave my classmates alone when they have problems reading for Language Arts/Reading class. (33)

I keep my opinion about what I read for Language Arts/Reading class to myself. (37)

I make fun of my classmates' opinions about what they read for Language Arts/Reading class. (5)

I try to convince my classmates that the reading for Language Arts/Reading class is a waste of time. (16)

I am uninterested in what other students read for Language Arts/Reading class. (38)

I make fun of other students' comments about what they read in Language Arts/Reading class. (29)

APPENDIX F: AMOSR Items by Construct (Theoretical)

Intrinsic Motivation

- I enjoy reading outside of school. (20)
- I enjoy it when reading materials outside of school make me think. (42)
- I enjoy reading in my free time outside of school. (41)
- I feel successful when I read outside of school. (1)
- I like to read outside of school. (1)
- I enjoy the challenge of reading outside of school. (28)
- I enjoy finding new things to read outside of school. (24)

Avoidance

- I choose to do other things instead of reading outside of school. (15)
- Reading outside of school is a waste of time. (9)
- I avoid reading outside of school. (27)
- I skip words when reading outside of school. (12)
- I read as little as possible outside of school. (39)
- I choose to read easy books at home so I don't have to work hard. (30)
- Reading outside of school is boring to me. (13)

Self-Efficacy

- I am good at reading outside of school. (5)
- I am good at remembering words I read outside of school. (21)
- I recognize words easily when I read outside of school. (25)
- I think I am a good reader outside of school. (29)
- I believe I am a good reader outside of school. (17)
- I can figure out difficult words in reading materials outside of school. (18)
- I think I can read books outside of school. (22)

Perceived Difficulty

- Reading outside of school is difficult for me. (3)
- I make lots of mistakes in reading outside of school. (31)
- It is hard for me to understand reading materials outside of school. (4)
- Reading materials outside of school are difficult to read. (26)
- Reading outside of school is usually difficult. (37)
- I have a hard time recognizing words in books outside of school. (19)
- I think reading outside of school is hard. (40)

Prosocial Interactions

- I share what I learn from reading outside of school with my friends. (14)
- I try to cheer my friends up if they have problems with reading outside of school. (38)
- I share my opinion about what I read outside of school with my friends. (36)
- I respect my friends' opinions about what they read outside of school. (8)
- I offer to help my friends with reading outside of school. (2)
- I show interest in what my friends read outside of school. (34)
- I respect my friends' comments about what they read outside of school. (11)

Antisocial Interactions

- I keep what I learn from reading outside of school to myself. (32)
- I leave my friends alone when they have problems reading outside of school. (6)
- I keep my opinion about what I read outside of school to myself. (33)
- I make fun of my friends if they read outside of school. (35)
- I try to convince my friends that reading outside of school is a waste of time. (23)
- I make fun of my friends' opinions about reading outside of school. (10)
- I make fun of my friends' comments if they read outside of school. (16)

APPENDIX G: AMSR Items by Construct (PAF)

Intrinsic Motivation ($\alpha = .92$, 9 items)

- I enjoy reading for Language Arts/Reading class. (13)
 I enjoy it when reading materials for Language Arts/Reading make me think. (12)
 I enjoy reading in my free time for Language Arts/Reading class. (27)
 I feel successful when I read for Language Arts/Reading class. (10)
 I like to read for Language Arts/Reading class. (41)
 I enjoy the challenge of reading for Language Arts/Reading class. (1)
 I enjoy finding new things to read for Language Arts/Reading class. (7)
 *Reading for Language Arts/Reading class is boring to me. (15)
 *Reading for Language Arts/Reading class is a waste of time. (32)

Avoidance ($\alpha = .75$, 4 items)

- I choose to do other things besides read for Language Arts/Reading class. (3)
 I avoid reading for Language Arts/Reading class. (39)
 I skip words when reading for Language Arts/Reading class. (17)
 I choose easy books to read for Language Arts/Reading class so I don't have to work hard. (14)
 †I read as little as possible for Language Arts/Reading class. (9)

Self-Efficacy ($\alpha = .89$, 7 items)

- I am good at reading for Language Arts/Reading class. (11)
 I am good at remembering words I read for Language Arts/Reading class. (34)
 I recognize words easily when I read for Language Arts/Reading class. (35)
 I think I am a good reader for Language Arts/Reading class. (28)
 I believe I am a good reader for Language Arts/Reading class. (6)
 I can figure out difficult words in reading materials for Language Arts/Reading class. (4)
 I think I can read the books in Language Arts/Reading class. (42)

Perceived Difficulty ($\alpha = .92$, 7 items)

- Reading for Language Arts/Reading class is difficult for me. (24)
 I make lots of mistakes reading for Language Arts/Reading class. (36)
 It is hard for me to understand reading materials for Language Arts/Reading class. (25)
 Reading materials for Language Arts/Reading class are difficult to read. (22)
 Reading for Language Arts/Reading class is usually difficult. (23)
 I have a hard time recognizing words in books for Language Arts/Reading class. (19)
 I think reading for Language Arts/Reading class is hard. (30)

Prosocial Interactions ($\alpha = .80$, 8 items)

I share what I learn from reading for Language Arts/Reading class with my classmates. (20)

†I try to cheer my classmates up if they have problems with reading in Language Arts/Reading class. (40)

I share my opinion about what I read for Language Arts/Reading class with my classmates. (2)

I offer to help my classmates with reading for Language Arts/Reading class. (31)

I show interest in what my classmates read for Language Arts/Reading class. (21)

*I keep what I learn from reading for Language Arts/Reading class to myself. (26)

*I leave my classmates alone when they have problems reading for Language Arts/Reading class. (33)

*I keep my opinion about what I read for Language Arts/Reading class to myself. (37)

*I am uninterested in what other students read for Language Arts/Reading class. (38)

Antisocial Interactions ($\alpha = .84$, 4 items)

I make fun of my classmates' opinions about what they read for Language Arts/Reading class. (5)

†I try to convince my classmates that the reading for Language Arts/Reading class is a waste of time. (16)

I make fun of other students' comments about what they read in Language Arts/Reading class. (29)

*I respect my classmates' opinions about what they read in Language Arts/Reading class. (8)

*I respect other students' comments about what they read in Language Arts/Reading class. (18)

Notes: * Item negatively loaded on the factor and was reverse coded when forming the construct. † Item failed to load on a single factor and was not included in forming the final construct.

APPENDIX H: AMOSR Items by Construct (PAF)

Intrinsic Motivation ($\alpha = .96$, 13 items)

- I enjoy reading outside of school. (20)
- I enjoy it when reading materials outside of school make me think. (42)
- I enjoy reading in my free time outside of school. (41)
- I feel successful when I read outside of school. (1)
- I like to read outside of school. (1)
- I enjoy the challenge of reading outside of school. (28)
- I enjoy finding new things to read outside of school. (24)
- *I choose to do other things instead of reading outside of school. (15)
- *Reading outside of school is a waste of time. (9)
- *I avoid reading outside of school. (27)
- †I skip words when reading outside of school. (12)
- *I read as little as possible outside of school. (39)
- *I choose to read easy books at home so I don't have to work hard. (30)
- *Reading outside of school is boring to me. (13)

Self-Efficacy ($\alpha = .92$, 7 items)

- I am good at reading outside of school. (5)
- I am good at remembering words I read outside of school. (21)
- I recognize words easily when I read outside of school. (25)
- I think I am a good reader outside of school. (29)
- I believe I am a good reader outside of school. (17)
- I can figure out difficult words in reading materials outside of school. (18)
- I think I can read books outside of school. (22)

Perceived Difficulty ($\alpha = .91$, 7 items)

- Reading outside of school is difficult for me. (3)
- I make lots of mistakes in reading outside of school. (31)
- It is hard for me to understand reading materials outside of school. (4)
- Reading materials outside of school are difficult to read. (26)
- Reading outside of school is usually difficult. (37)
- I have a hard time recognizing words in books outside of school. (19)
- I think reading outside of school is hard. (40)

Prosocial Interactions ($\alpha = .82$, 8 items)

- I share what I learn from reading outside of school with my friends. (14)
- I try to cheer my friends up if they have problems with reading outside of school. (38)
- I share my opinion about what I read outside of school with my friends. (36)
- I offer to help my friends with reading outside of school. (2)
- I show interest in what my friends read outside of school. (34)
- * I keep what I learn from reading outside of school to myself. (32)
- * I leave my friends alone when they have problems reading outside of school. (6)
- * I keep my opinion about what I read outside of school to myself. (33)

Antisocial Interactions ($\alpha = .86$, 6 items)

- I make fun of my friends if they read outside of school. (35)
- I try to convince my friends that reading outside of school is a waste of time. (23)
- I make fun of my friends' opinions about reading outside of school. (10)
- I make fun of my friends' comments if they read outside of school. (16)
- * I respect my friends' opinions about what they read outside of school. (8)
- * I respect my friends' comments about what they read outside of school. (11)

Notes: * Item negatively loaded on the factor and was reverse coded when forming the construct. † Item failed to load on a single factor and was not included in forming the final construct.

APPENDIX I: Affirming and Undermining Factor Analyses

Results of PAF for AMSR Affirming Constructs (3 Factor Solution with Oblimin Rotation)

	Factors		
	1	2	3
41. I liked to read for LA/Reading class. (IM)	.90		
13. I enjoy reading for LA/Reading class. (IM)	.87		
27. I enjoy reading in my free time for LA/Reading class. (IM)	.74		
1. I enjoy the challenge of reading for LA/Reading class. (IM)	.73		
12. I enjoy it when reading materials for LA/Reading make me think. (IM)	.70		
7. I enjoy finding new things to read for LA/Reading class. (IM)	.61		
21. I show interest in what my classmates read for LA/Reading class. (PG)	.43		.41
10. I feel successful when I read for LA/Reading class. (IM)	.43		
20. I share what I learn from reading for LA/Reading class with my classmates. (PG)	.38		.30
2. I share my opinion about what I read for LA/Reading class with my classmates. (PG)	.37		.25
28. I think I am a good reader for LA/Reading class. (SE)		.84	
6. I believe I am a good reader for LA/Reading class. (SE)		.78	
11. I am good at reading for LA/Reading class. (SE)		.78	
35. I recognize words easily when I read for LA/Reading class. (SE)		.77	
4. I can figure out difficult words in reading materials for LA/Reading class. (SE)		.77	
42. I think I can read the books in LA/Reading class. (SE)		.56	
34. I am good at remembering words I read for LA/Reading class. (SE)		.52	
8. I respect my classmates' opinions about what they read in LA/Reading class. (PG)			.81
18. I respect other students' comments about what they read in LA/Reading class. (PG)			.80
40. I try to cheer my classmates up if they have problems with LA/Reading class. (PG)			.66
31. I offer to help my classmates with reading for LA/Reading class. (PG)			.42

Results of PAF for AMSR Undermining Constructs (3 Factor Solution with Oblimin Rotation)

	Factors		
	1	2	3
9. I read as little as possible for LA/Reading class. (A)	.80		
15. Reading for LA/Reading class is boring to me. (A)	.77		
32. Reading for LA/Reading class is a waste of time. (A)	.73		
39. I avoid reading for LA/Reading class. (A)	.72		
14. I choose easy books to read for LA/Reading class so I don't have to work hard. (A)	.67		
38. I am uninterested in what other students read for LA/Reading class. (AG)	.51		
3. I choose to do other things besides read for LA/Reading class. (A)	.51		
26. I keep what I learn from reading for LA/Reading class to myself. (AG)	.43		
37. I keep my opinion about what I read for LA/Reading class to myself. (AG)	.40		
17. I skip words when reading for LA/Reading class. (A)	.37		
16. I try to convince my classmates that the reading for LA/Reading class is a waste of time. (AG)	.29		.29
33. I leave my classmates alone when they have problems reading for LA/Reading class. (AG)	.25		
24. Reading for LA/Reading class is difficult for me. (PD)		-.88	
23. Reading for LA/Reading class is usually difficult. (PD)		-.87	
25. It is hard for me to understand reading materials for LA/Reading class. (PD)		-.85	
30. I think reading for LA/Reading class is hard. (PD)		-.81	
22. Reading materials for LA/Reading class are difficult to read. (PD)		-.80	
19. I have a hard time recognizing words in books for LA/Reading class. (PD)		-.67	
36. I make lots of mistakes reading for LA/Reading class. (PD)		-.64	
5. I make fun of my classmates' opinions about what they read for LA/Reading class. (AG)			.81
29. I make fun of other students' comments about what they read in LA/Reading class. (AG)			.72

Results of PAF for AMOSR Affirming Constructs (3 Factor Solution with Oblimin Rotation)

	Factors		
	1	2	3
28. I like to read outside of school. (IM)	.89		
20. I enjoy reading outside of school. (IM)	.86		
41. I enjoy reading in my free time outside of school. (IM)	.86		
42. I enjoy it when reading materials outside of school make me think. (IM)	.75		
24. I enjoy finding new things to read outside of school. (IM)	.75		
7. I enjoy the challenge of reading outside of school. (IM)	.73		
36. I share my opinion about what I read outside of school with my friends. (PG)	.63		
14. I share what I learn from reading outside of school with my friends. (PG)	.56		.27
34. I show interest in what my friends read outside of school. (PG)	.41		.40
17. I believe I am a good reader outside of school. (SE)		.85	
29. I think I am a good reader outside of school. (SE)		.85	
18. I can figure out difficult words in reading materials outside of school. (SE)		.84	
5. I am good at reading outside of school. (SE)		.84	
25. I recognize words easily when I read outside of school. (SE)		.67	
21. I am good at remembering words I read outside of school. (SE)		.65	
22. I think I can read books outside of school. (SE)		.65	
1. I feel successful when I read outside of school. (SE)		.52	
11. I respect my friends' comments about what they read outside of school. (PG)			.80
8. I respect my friends' opinions about what they read outside of school. (PG)			.74
38. I try to cheer my friends up if they have problems with reading outside of school. (PG)	.35		.45
2. I offer to help my friends with reading outside of school. (PG)			.39

Results of PAF for AMOSR Undermining Constructs (3 Factor Solution with Oblimin Rotation)

	Factors		
	1	2	3
13. Reading outside of school is boring to me. (A)	.89		
27. I avoid reading outside of school. (A)	.83		
9. Reading outside of school is a waste of time. (A)	.83		
15. I choose to do other things instead of reading outside of school. (A)	.82		
39. I read as little as possible outside of school. (A)	.78		
30. I choose to read easy books at home so I don't have to work hard. (A)	.55		
32. I keep what I learn from reading outside of school to myself. (AG)	.39		
33. I keep my opinion about what I read outside of school to myself. (AG)	.37		
12. I skip words when reading outside of school. (A)	.35	-.32	
6. I leave my friends alone when they have problems reading outside of school (AG).	.22		
26. Reading materials outside of school are difficult to read. (PD)		-.86	
40. I think reading outside of school is hard. (PD)		-.85	
4. It is hard for me to understand reading materials outside of school. (PD)		-.82	
37. Reading outside of school is usually difficult. (PD)		-.76	
31. I make lots of mistakes in reading outside of school. (PD)		-.75	
19. I have a hard time recognizing words in books outside of school. (PD)		-.74	
3. Reading outside of school is difficult for me. (PD)		-.70	
16. I make fun of my friends' comments if they read outside of school. (PD)			.91
10. I make fun of my friends' opinions about reading outside of school. (PD)			.84
35. I make fun of my friends if they read outside of school. (PD)			.73
23. I try to convince my friends that reading outside of school is a waste of time. (PD)			.45

APPENDIX J: Three-Factor Solutions for Prosocial and Antisocial Interactions

Results of PAF for AMSR Prosocial and Antisocial Interactions (Three-Factor with Oblimin Rotation)

	Factors		
	1	2	3
21. I show interest in what my classmates read for LA/Reading class.	.77		
2. I share my opinion about what I read for LA/Reading class with my classmates.	.67		
8. I respect my classmates' opinions about what they read in LA/Reading class.	.65		
40. I try to cheer my classmates up if they have problems with LA/Reading class.	.62		
20. I share what I learn from reading for LA/Reading class with my classmates.	.61		
31. I offer to help my classmates with reading for LA/Reading class.	.60		
18. I respect other students' comments about what they read in LA/Reading class.	.57		
33. I leave my classmates alone when they have problems reading for LA/Reading class.	-.33		
38. I am uninterested in what other students read for LA/Reading class.	-.29		.25
29. I make fun of other students' comments about what they read in LA/Reading class.		.90	
5. I make fun of my classmates' opinions about what they read for LA/Reading class.		.78	
16. I try to convince my classmates that the reading for LA/Reading class is a waste of time.		.33	
37. I keep my opinion about what I reading for LA/Reading class to myself.			.67
26. I keep what I learn from reading for LA/Reading class to myself.			.56

Results of PAF for AMOSR Prosocial and Antisocial Interactions (Three-Factor with Oblimin Rotation)

	Factors		
	1	2	3
38. I try to cheer my friends up if they have problems with reading outside of school.	.76		
14. I share what I learn from reading outside of school with my friends.	.72		
2. I offer to help my friends with reading outside of school.	.70		
36. I share my opinion about what I read outside of school with my friends.	.64		
34. I show interest in what my friends read outside of school.	.58		
8. I respect my friends' opinions about what they read outside of school.	.55		
11. I respect my friends' comments about what they read outside of school.	.51	-.42	
6. I leave my friends alone when they have problems reading outside of school.	-.26		.20
16. I make fun of my friends' comments if they read outside of school.		.89	
10. I make fun of my friends' opinions about reading outside of school.		.86	
35. I make fun of my friends if they read outside of school.		.74	
23. I try to convince my friends that reading outside of school is a waste of time.		.52	
33. I keep my opinion about what I read outside of school to myself.			.74
32. I keep what I learn from reading outside of school to myself.			.70

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