

FOSTERING INTRINSIC MOTIVATION, LEARNING GOALS, AND FLUID  
BELIEFS OF INTELLIGENCE AMONG STRUGGLING READERS: AN  
INTERVENTION STUDY

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## **Abstract**

Beginning in elementary school, those students who struggle to acquire basic reading skills tend to demonstrate a stronger tendency towards task avoidance. As a result of their avoidant behaviors, students' reading ability progresses at a slower rate, which leads to further task evasion. The current study addressed task avoidance among struggling readers by fostering intrinsic motivation, learning goals, and malleable beliefs of intelligence. Participants consisted of twenty four students (ages 7 to 10) who attended a summer program to address their weaknesses in reading. Students were grouped by reading ability and assigned to either an intervention condition, that embedded evidence-based motivational strategies into two specialized reading curricula, the RAVE-O and Wilson Reading Programs, or a control condition that coupled the same reading curricula with incentives. In order to facilitate intrinsic motivation and learning goals, strategies were autonomy-supportive, illustrated the malleability of intelligence, emphasized the role of effort, strategy-use, and errors in the learning process, offered personally meaningful tasks, and in general, created a supportive community of learners. Outcome variables included assessments of reading ability, self-reports of motivation, measures of goal orientation, and classroom observations. Findings indicated that relative to the control participants, intervention participants decreased their frequency of disruptive classroom behaviors and task avoidance. These findings are discussed in light of related research, suggesting that reading instruction that develops autonomous learners and fosters a supportive learning community in addition to building skills

results in the greatest outcomes. Teachers' experiences implementing the intervention are also addressed.

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"One looks back with appreciation to the brilliant teachers, but with gratitude to those who touched our human feelings. The curriculum is so much necessary raw material, but warmth is the vital element for the growing plant and for the soul of the child."

--Carl Jung

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## **Introduction**

How do you unlock potential? Standing at the front of a classroom looking out on a sea of expectant faces, how does a teacher decide on the precise language that will spur her students to action? Unlocking potential requires a bit of pedagogical alchemy, deciphering the perfect mixture of engagement and inspiration to motivate developing young minds, and teachers are under significant pressure to unearth a motivational solution. Unmotivated students not only struggle to efficiently process information, but can also be disruptive to their classmates. Needless to say, the means by which students are motivated in the classroom is a critical concern to many educators. Conditions that foster versus undermine human potential have been widely researched in the fields of education and psychology. Investigations into context-specific motivation, particularly motivation in settings where students are struggling to meet educational standards are significantly more limited (Quirk & Schwanenflugel, 2004). In light of challenges in acquiring basic literacy skills, issues with motivation are central to the educational experiences of struggling readers, the central focus of this dissertation.

Beginning in elementary school, struggling readers tend to demonstrate a greater number of emotional and behavioral difficulties than their typically-reading peers (Champan & Tunmer, 1997; Edmunds & Bauserman, 2006; Polychroni, Koukoura, & Anagnostou, 2006; Sideridis, Morgan, Botsas, Padeliaadu & Fuchs, 2006). Maintaining students' engagement during remedial reading instruction can be a particularly challenging task for several reasons: the rate of remediation is typically slow (Polychroni et al., 2006); their language comprehension abilities can exceed their decoding or fluency skills (Bruck, 1990; Nation & Snowling, 1998); and they demonstrate a stronger

tendency towards task avoidance (Hagborg, 1999, Lepola, Salonen, Vauras, 2000; Lepola, Poskipart, Laakkonen & Niemi, 2005; Polychroni, Koukoura & Anagnostou, 2006; Sideridis, et al., 2006; Stone & May, 2002; Tabassam & Grainger, 2002).

The high-stakes nature of instruction delivery adds further complexity. Teachers of reading are under significant pressure at the local, state, and national level to ensure efficient remediation (No Child Left Behind, 2001; Race to the Top, 2009), and they are often working amongst significant constraints, of both time and material, to accomplish these goals. In response to these challenges, teacher often rely on coercive strategies as motivational tools (Baker & Wigfield, 1999; Fawson & Moore, 1999; Gambrell, 1994; Strickland, Ganske & Monroe, 2006).

Coercive strategies (e.g., incentives, competition between students, and time pressured evaluations) are those instructional approaches that compel students to engage in targeted behaviors, rather than fostering student-driven initiative (Ryan & Deci, 2000). Educators generally agree that learning is most productive when students are self-regulated and challenge-seeking (Clifford, 1990; Reeve, 2009). In fact two of the most prominent theories of achievement motivation, self determination theory and goal orientation theory, distinguish between action that is internally motivated and that which is externally coerced (Dweck & Leggett, 1998; Ryan & Deci, 2000). Turner and her colleagues identified four principles common to both self determination and goal orientation theory considered essential for development of adaptive forms of motivation. These principles include autonomy, belonging, competence, and meaning, and Turner et al., (2010) explored how knowledge of such principles, and their associated strategies, affected the instructional techniques employed by math teachers. The current

investigation integrated research by Dr. Turner with investigations of remedial reading instruction. It explored whether specialized reading curricula (i.e., the RAVE-O program and Wilson Reading System), which have already been proven efficacious in skill-building, might also result in improved motivational outcomes when embedded with principles of autonomy, belonging, competence, and meaning.

The dissertation study employed a quasi-randomized control intervention design. Contrasted were the reading abilities and motivational beliefs, and behaviors of those participants who received specialized reading instruction with the addition of incentives, to those participants who received instruction embedded with autonomy, belonging, competence, and meaning. This dissertation seeks to shed light on the theoretical and functional questions that surround the design of optimal learning environments for developing adaptive forms of motivation and maximizing student achievement. Along those lines, it reports on the design and testing of motivational intervention, and highlights the practical experiences of teachers as they implemented motivational strategies.

The dissertation begins with a review of relevant literature, highlighting research essential for understanding the role of motivation in a learning environment. The review begins with research on the development of motivation throughout childhood, including the impact of social and emotional development, and the influences of caregivers and learning environments. It then focuses on the motivational profiles of struggling readers, by reviewing prominent theories of achievement motivation; the impact of a classroom climate on students' beliefs and behaviors; and the challenges facing the practitioners. Finally, the four principles essential to adaptive forms of motivation and learning goals

are outlined, and pedagogical strategies that can be seamlessly integrated into reading instruction are described.

## **Review of the Literature**

In the first three years of life, children's motivation develops in concurrence with other physical, cognitive, social, and emotional milestones. Motivational behaviors emerge at approximately 10 months, as babies begin to coordinate their actions in an attempt to achieve simple exploratory goals such as opening drawers, and gain greater "mastery" over their environment. Qualitative differences in early forms of motivation suggest a biological basis, as temperament has been identified as a mediating factor between early forms of mastery motivation and environmental influences. In particular, the nature of children's reactivity, a measure of temperamental style, predicts the extent to which they seek stimulating activities and environments (Eliasz, 2001; Wachs, 1987). Young children with easy temperaments (cooperative, rhythmical and approachable) also rate higher in task persistence than those with difficult temperaments (Camp & Morrow, 1996).

As infants transform into toddlers they become more aware of external expectations and regulate their behavior accordingly. In their study of toddlers, aged 17 – 32 months old, Bullock & Lutkenhaus (1988) found a significant difference in the degree to which toddlers are focused on actions, as compared to outcomes, in the second and third years of life. By asking toddlers to perform several simple tasks, the researchers discovered that children under two concentrated more on the physical acts involved in the tasks (such as the act of using an eraser on a blackboard), whereas those children over two focused more on the overall goal of the task (getting the blackboard clean). Older toddlers were not only more outcome-focused but were noted to demonstrate positive affect when they achieved an intended goal (Bullock & Lutkenhaus, 1988).

In the third year of life, the maturation of motivation is fueled by both internal and external factors (Heckhausen, 1993). Internally, children recognize themselves as a differentiated and unique person (Bertenthal & Fischer, 1978). Self-recognition is considered a critical contributor to motivation because it is a pre-requisite for the emergence of secondary or “self-conscious” emotions such as pride, shame, and embarrassment (Lewis, Stanger & Sullivan, 1989). Children now understand that their behavior is perceived by others, and as such, express positive affect upon successful completion of a task, and tuck their heads into their shoulders when outcomes are not as intended. Once secondary emotions have emerged, children have a rudimentary ability to evaluate their own behavior in accordance with external expectations; in other words, they often “behave as though they have others in mind when they play” (Rochat, 2003 p. 718).

External factors such as the nature of caregivers’ *performance-related feedback*, the degree to which they are *controlling* of their children’s behavior, and their overall level of *acceptance* impact children’s willingness to explore their environment and attempt challenging tasks. Toddlers with autonomy-supportive mothers tended to be more persistent, competent, and engaged than those with controlling mothers (Deci & Ryan, 1992; Stipek, Milburn, Clements & Daniels, 1992; Yarrow, et al., 1982). Maternal feedback also plays a significant role in the nature of toddlers’ motivation. Negative and/or critical maternal evaluations at age two are associated with greater exhibitions of shame at age three, while positive evaluations are related to mastery motivation and persistence one year later (Kelley, Brownell & Campbell, 2000). Work in the area of attachment theory has illuminated the fundamental influence of a caregiver’s acceptance.

Children who are in relationships with sensitive and responsive caregivers are more motivated to explore their environments than children with less responsive caregivers (Ainsworth, 1979). Once children can rest assured that they are worthy of acceptance, they are released from fears of rejection and potential threats to their primary needs. As a result children can allot their energies to exploring challenging endeavors without fear of punitive consequences.

### **Motivation during School Years**

Control, acceptance, and feedback continue to influence children's motivation during the early school years. By kindergarten, children are aware of social expectations and reliably monitor and evaluate their own performance as "good" or "bad" in terms of those expectations (Heyman, Dweck & Cain, 1992). In their study, Heyman, Dweck, and Cain (1992) examined the affect, behaviors, and cognitions of five and six year-olds who received negative criticism about "products" (pieces of artwork or buildings made of blocks) they had created through pretend play. The researchers found that a significant number of children were highly susceptible to criticism. In particular, those children who engaged in negative self-evaluation after receiving a critique were likely to avoid similar tasks in the future and report feeling bad about themselves "as a whole" (Heyman, Dweck & Cain, 1992). These findings are indicative of the development of contingent self-worth, or the belief that individuals are a fixed unit and their worth is contingent upon the judgment of others (Burhans & Dweck, 1995).

Self-worth that is contingent on performance can easily develop into maladaptive behavioral responses in the face of failure. Behaviors that are undertaken in an effort to seek positive judgments, and avoid negative evaluations are often referred to as contingency, or performance goals (Ames, 1992; Nicholls, 1984). Beginning in pre-



school, the goals children pursue become reliable predictors of their responses to failure (Heyman & Dweck, 1998; Smiley & Dweck, 1994). After failing to solve a challenging puzzle, four year-olds who reported pursuing opportunities to prove their abilities, otherwise known as performance goals, were more likely to disengage from the task, report low expectations for eventual success, and make more negative self-evaluations than students who endorsed opportunities to improve their abilities (i.e. learning goals), even when puzzle solving ability was controlled (Smiley & Dweck, 1994).

Environmental feedback is certainly a significant factor in the development of contingent self-worth and the subsequent pursuit of performance goals. Students receive direct environmental feedback from parents and educators, and indirect feedback by evaluating their own behavior in comparison to their peers. Traditionally, it is around the age of eight that children begin to evaluate their abilities against that of their peers (Gurney, 1988). At this age self-referential statements shift from absolute (I am smart) to comparative (I'm smarter than other kids in my class) (Gurney, 1988), and students use these comparisons to guide achievement behaviors such as, persistence and avoidance. Recent research has pointed to the transition from elementary to middle school as a critical time for motivational intervention (Blackwell, Trzesniewski & Dweck, 2007). Yet, the years that precede the solidification of comparative thinking may be a period sensitive for the development of motivational patterns.

### **Patterns of Motivation**

The motivational profiles that characterize children as they enter kindergarten have been influenced by a variety factors, including biology (i.e. temperament), cognition (i.e., self-recognition) and social interactions (i.e., acceptance, control, and feedback from caregivers). Once children's identity is dominated by their role as students, the majority

of their achievement experiences occur within the school setting. As such, social influences in a classroom emerge as a principal force in the development of their motivational profiles. There are many ways in which a classroom environment can elicit motivation for learning. Yet, there are particular patterns of motivation that are considered adaptive in the long-term and result in the greatest academic outcomes, and measures of general well-being. Educators generally agree that learning is most productive when students are self-regulated, seek challenges, and are offered significant control over their educational experiences (Bruner, 1962; Clifford, 1990; Reeve, 2009). The section below highlights two prominent theories of achievement motivation which distinguish between action that is internally motivated and that which is externally coerced.

**Self determination theory.** Self determination theory differentiates between behavior that derives from coercion, and behavior that is internally driven. The theory posits that individuals who engage in targeted behaviors in order to achieve external rewards such as incentives, grades, or praise, without internalizing the importance of such behavior, are considered extrinsically motivated. In contrast, those individuals who do not need external incentives to regulate their own behavior, either because they have internalized standards, or because they are personally invested, or display intrinsic motivation (Deci & Ryan, 1985; Ryan & Deci, 2000). Yet in any educational setting, students will be asked to engage in activities for which they have no personal investment or control. Therefore rather than being dichotomous constructs, extrinsic and intrinsic motivational styles function along a continuum (Ryan & Deci, 2000).

The self determination continuum depicts how behavior moves in stages from being completely externally regulated and relying purely on rewards and punishments as a behavioral control, to a recognition and internalization of outside regulations (see Figure 1). The single motivational characteristic that dictates the degree to which children are externally regulated is the extent to which they *value* a particular goal. As students internalize and assimilate external standards, they begin to feel and act more autonomously (Ryan & Deci, 2000). Educators who provide students with a rationale for engaging in tasks, and make explicit connections between personal goals and learning activities, support the development of autonomous forms of extrinsic motivation such as “integrated regulation”.

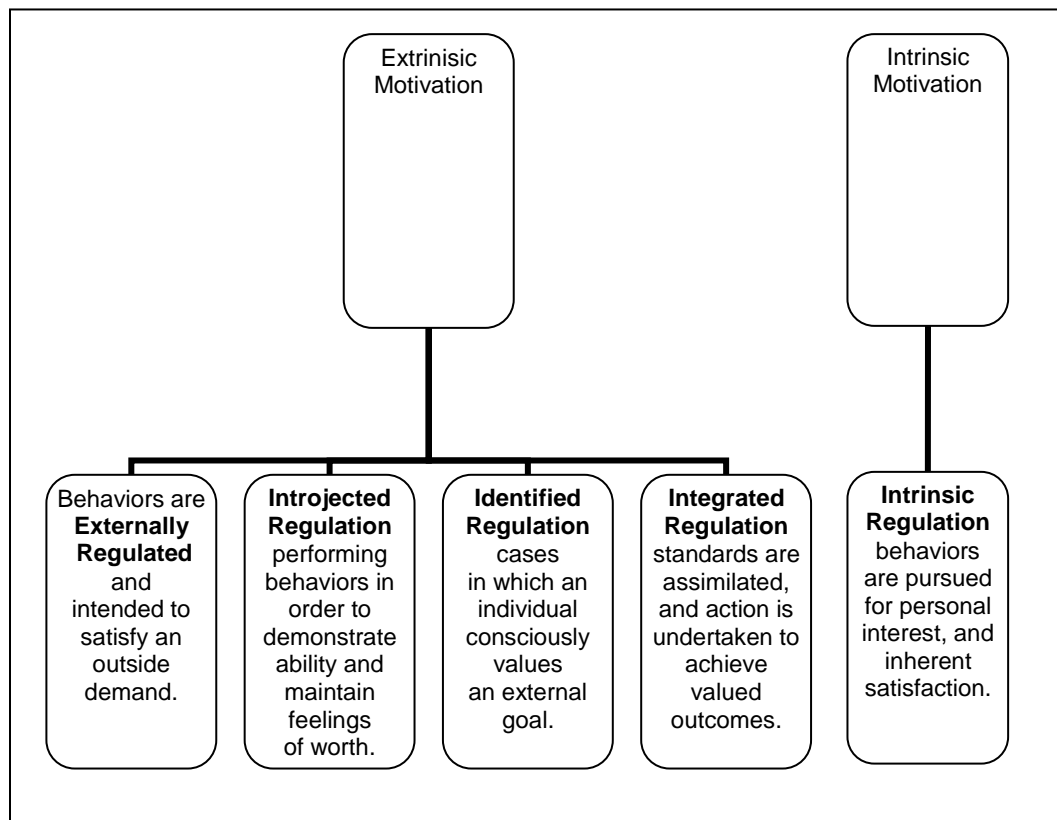


Figure 1. The self determination continuum (Ryan & Deci, 2000)

**Goal orientation theory.** Goal orientation theory is another theory of motivation that examines the rationale for behavior in achievement contexts. When their performance is being evaluated, students usually demonstrate one of two types of goal orientations, a performance or a learning orientation (Ames, 1992; Dweck & Leggett, 1998; Kaplan & Maehr, 2007; Kaplan, Middleton, Urdan & Migdley, 2002; Pintrich, 2000). Students who are performance-oriented are typically focused on proving competence and avoid challenging situations in which their weaknesses will be highlighted (Ames, 1992, Dweck, 1986). Conversely, those students who subscribe to a learning-orientation tend to pursue opportunities in which they can improve their abilities (Ames, 1992, Dweck, 1986).

Central to the theory of goal orientation are students' beliefs about their abilities. Those students who believe that their cognitive abilities are capable of change, and can recognize their own growth, possess what Dr. Carol Dweck and her colleagues refer to as an incremental view of intelligence. In contrast, those children who believe their cognitive abilities are fixed and incapable of change are referred to as having an entity view of intelligence (Cain & Dweck, 1995; Dweck, 1975; Dweck, 1999; Dweck & Bempechat, 1983; Dweck & Elliot, 1983; Dweck & Leggett, 1988). Students' views about their intelligence help them make sense of their successes and failures in academic contexts, and are highly predictive of their goal orientation and achievement behaviors in a classroom setting (Cain & Dweck, 1995; Dweck, 1999; Dweck & Bempechat, 1983; Dweck & Elliot, 1983; Dweck & Leggett, 1988). Dweck and her colleagues explain the phenomenon in this way: students who hold an entity view of intelligence, and perceive themselves as being granted with a fixed amount of ability, will seek opportunities where

they can prove their skills and avoid circumstances where their weaknesses might be revealed. In other words they pursue performance goals. In contrast, students who believe that their abilities can be developed will seek opportunities to grow their skills, and tend to pursue learning goals.

As noted above, goal orientation is influenced by relevant cognitive factors, such as beliefs about intelligence. There is also evidence to suggest that goal orientation is influenced by social interactions, in particular the nature of children's attachments to important caregivers. Secure attachments have been identified as one of the significant contributors to the development of learning goals (Rusk & Rothbaum, 2010). A child who holds secure views is more likely to engage in the pursuit of challenges than a student who holds insecure views. As mentioned earlier, a performance-goal orientation is often predicated on the belief that acceptance or self-worth is contingent on achievement. When children believe that their value is dependent on their ability to succeed, and are overly concerned with proving competence, they will avoid situations in which their weaknesses will be highlighted (Ames, 1992, Dweck, 1986). These performance-oriented students focus on managing the impression that others have of their ability, attempting to create an impression of high ability and avoid creating an impression of low ability (Dweck, 1986). In the face of a challenge, students with performance goals often react with maladaptive behavioral and affective responses typically classified as "helpless." Behaviors frequently include the reduction of effort, task avoidance, and decreased performance on subsequent tasks (see Dweck, 1999 for a review).

Conversely, several studies have shown that when children experience acceptance from a caregiver they are better able to process information (Mikulincer & Arad, 1999). Unsurprisingly, priming individuals with feelings of security results in a greater willingness to persist at challenging task than an insecure or neutral prime (Mikulincer & Shaver, 2007). Those students who subscribe to a learning goal orientation tend to pursue opportunities in which they can improve themselves (Ames, 1992, Dweck, 1986), are more likely to persist at challenging tasks (Elliot & Dweck, 1988), and demonstrate effective problem solving strategies in the face of a challenge (Bereby–Meyer & Kaplan, 2005). Researchers readily acknowledge that it is healthy for a student to pursue both performance and learning goals, and that even an individual who is willing to exert maximum effort to solve a challenging task should be coached to appropriately judge when an activity should be avoided or abandoned (Dweck & Leggett, 1988). Yet, it is the sacrifice of learning experiences in the pursuit of performance goals that is concerning.

In general, findings from research into self determination and goal orientation theories demonstrate that action undertaken to fulfill personal desires such as interest, learning, mastery, and relatedness tend to result in deeper levels of cognitive processing (Oldfather, 1993), increased effort (Deci & Ryan, 2000), persistence (Elliot & Dweck, 1988; Nicholls, 1984), and more effective problem solving strategies in the face of challenges (Bereby–Meyer & Kaplan, 2005). Whereas action that is undertaken in order to prove competency, gain rewards, or is otherwise externally coerced, results in reduction of effort, avoidance of challenging tasks (Dweck & Leggett, 1988), and negatively impacts learning (Ames 1992; Deci & Ryan, 2000; Grolnick & Ryan, 1987;

Oldfather, 1993; Utman, 1997). Those learning environments that are responsive to students' needs and facilitate feelings of acceptance are associated with a greater pursuit of learning goals, and demonstration of autonomous forms of motivation. In turn, these learners are more autonomous, efficient, and possess the meta-cognitive abilities, and motivational beliefs to understand, monitor, and direct their own learning (Boekaerts, Pintrich, & Zeidner, 2000; Wolters, 2003; Zimmerman, 2002).

### **Motivation among Struggling Readers**

Children with learning disabilities have consistently been found to differ in their motivational and behavioral profiles from their typical peers (Sideridis, Morgan, Botsas, Padeliadu, & Fuchs, 2006). Even before they receive a diagnosis of a learning disability, pre-schoolers with poor pre-reading skills engage in a greater number of maladaptive achievement behaviors. Children with lower phonemic awareness, letter knowledge, and rapid naming skills demonstrated fewer task-oriented coping strategies, such as problem-solving or persistence, and a greater number of ego-defensive or avoidance strategies than those students with high awareness (Lepola, Poskipart, Laakkonen & Niemi, 2005).

Vulnerabilities in motivation only intensify as the struggling reader progresses through school. On average, struggling readers grapple for one to two years before receiving specialized services and even after these services are implemented, remediation takes at least one year to bring a student up to grade level (Polychroni, et. al., 2006). The period during which students struggle but do not receive remediation may be a significant contributor to the frequency of task avoidant behaviors among this population.

Beginning in the first grade, students with reading disabilities avoid significantly more reading tasks than their typical peers (Aunola, Nurmi, Niemi, Lerkkanen & Rasku–

Puttonen, 2002; Chapman & Tunmer, 2003; Humphrey, 2002, Onatsu-Arviolommi, & Nurmi, 2000).

As students mature, the desire to avoid reading-related tasks can develop into maladaptive behavioral patterns that negatively impact skill development and subsequent motivation. A longitudinal study with first, second, and third graders found the greatest levels of task avoidance in the third grade (Leopla, Salonen, & Vauras, 2000). Even when controlling for reading ability, task avoidance has been identified as a critical barrier to the acquisition of fundamental reading skills. For example, first graders who display low levels of task orientation are three times more likely to be poor readers in third grade than their first grade peers with typical levels of task orientation, even when ability is held constant (Morgan, Farkas, Tufis & Sperling, 2006). Another study found that motivated readers have been found to read three times as much material as unmotivated readers (Wigfield & Guthrie, 1997). In summary, young children who engage in a task-avoidant rather than a task-focused achievement strategy at school tended to perform more poorly in reading (Aunola, Nurmi, Niemi, Lerkkanen & Rasku–Puttonen, 2002; Onatsu-Arviolommi & Nurmi, 2000), reduce effort in the face of a challenging reading task, and demonstrate greater apathy in learning situations than their typically reading peers (Humphrey, 2002). Partially, as a result of their avoidant behaviors, students' reading ability progresses at a slower rate, which leads to further task evasion (Onatsu-Arviolommi & Nurmi, 2000; Groteluschen, Borkowski & Hale, 1990).

In light of the important association between reading frequency in reading achievement, there is significant concern about the degree to which students can initiate and sustain on-task behaviors in a classroom. To this end, several studies have explored



the relationship between struggles in reading and goal orientation. Sideridis and colleagues examined the role of students' goal orientations in their overall learning profile when they measured the reading abilities, goal orientations, intrinsic motivation, and avoidance behaviors of typical and reading-disabled elementary-and middle-school students in Greece (Sideridis et al., 2006). Significant negative correlations emerged between performance-goal orientations (as measured by teacher-reports of task avoidance in elementary school and self-reports of task avoidance in middle school) and reading ability. That is, students with low abilities in reading were more likely to demonstrate (and report) reading-related avoidance behaviors that are associated with performance goals. Furthermore, beginning in the first grade, goal-orientations were found to be over 90% accurate in predicting classification as reading-disabled.

A study that I conducted, examining the task preferences of typical and struggling elementary-school students, corroborated these findings (Orkin, 2011a). The study utilized a behavioral measure that asked students to select reading-related tasks (i.e. texts and word scramble puzzles) considered easy, such as reading a simple story, or engage in a challenging task which may cause them to make mistakes, such as reading a longer version of the same story. The same procedure was repeated with a puzzle-task (i.e. Tower of Hanoi) that engaged general problem-solving skills but did not require reading. Reading-related task choice, a predictor of goal orientation, was significantly negatively correlated with reading ability, in that students with low ability were more likely to select easy tasks. However there were no significant associations between reading ability and task choice with puzzles. Overall, these findings suggest that students' goal orientation is an important component of their learning profile and is context-specific, offering further

evidence for the importance of integrating strategies designed to foster learning goals into specialized reading instruction.

### **Interaction between Reading Ability and Motivation**

Theorists have adopted slightly different perspectives on the nature of the relationship between developmental weaknesses in reading and students' motivational beliefs and behaviors. The Matthew Effect proposes a bi-directional interaction between the two constructs (Stanovich, 1986) and asserts that students who struggle to acquire early reading skills feel bad about their abilities and subsequently avoid reading-related tasks. Without the appropriate intervention these students fail to gain skills necessary to improve their reading, which leads to further task evasion. This maladaptive task avoidance cycle quickly develops into a negative feedback loop, as “slow reading acquisition has cognitive, behavioral, and motivational consequences that slow the development of other cognitive skills, and inhibit performance on many academic tasks” (Adams, 1990, p. 59 – 60). Evidence suggests that a bi-directional relationship between reading ability and motivation is established midway through elementary school, as students' reading performance and their avoidance of reading-related tasks has been found to co-vary sometime between second and third grade (Chapman & Tunmer, 1997; Lepola, Vauras & Maki, 2000; Morgan & Fuchs, 2007; Quirk, Schwanenflugel & Webb, 2009). In their review of 15 studies that examined the reading skills, efficacy beliefs, and goal orientations of elementary school students, Morgan & Fuchs (2007) found that ten of the studies provided significant evidence for a bi-directional relationship.

There is alternative research which suggests that reading ability predicts reading self-concept and related achievement behaviors. In their review of the development of reading-related self perceptions, Chapman & Tunmer (2003) found that early and chronic

challenges in reading are particularly damaging to students' beliefs about their abilities. Reading ability in first grade has been found to be predictive of reading self-concept in the second grade (Chapman, Tunmer, Prochow, 2000). Additionally, children with lower phonemic awareness in preschool, a skill essential for successful reading, demonstrated greater task avoidance when facing reading challenges in second grade, even when pre-school motivational style was controlled (Lepola, Salonen & Varus, 2000). Although the nature of the interaction between reading ability and motivational style remains elusive, it is clear that struggles with acquiring basic literacy skills are associated with perceptions of inadequacy and reduced reading frequency. These findings have important implications for students' reading achievement, as reading frequency has been identified as an important predictor of reading performance (Becker, McElvany & Kortenbruck, 2010). Therefore, it is imperative to explore the means by which learning environments can positively influence the motivational beliefs and behaviors of struggling readers.

### **Improving Motivation among Struggling Readers**

By and large, remedial reading instruction seeks to foster motivation by building skills, but few programs take into consideration the psychosocial processes that shape achievement beliefs and behaviors. A survey of 50 evidence-based reading intervention programs listed on the *What Works Clearinghouse*, a prominent website run by the U.S. Department of Education's Institute of Education Sciences, revealed that only three programs (*Success for All*, *Corrective Reading*, *Interactive Shared Books*) list engagement and/or motivation for reading as one of the program goals. (It should be noted that RAVE-O was not listed on the What Works Clearinghouse but does assert engagement as one of the primary goals of the curriculum).

Much of the work on improving motivation among struggling readers has focused on enhancing the beliefs that contribute to overall achievement, such as academic self-concept and self-efficacy (Bandura, 1977; Harter, Whitesell & Junkin, 1998). Several studies have employed supplemental therapeutic approaches in an effort to enhance self-esteem, such as counseling support groups that focused on the expression of emotions and interpersonal support (Leichtentritt & Shechtman, 2009; Shechtman, 2007; Shechtman, Gilat, Fos, & Flasher 1996). The 13 weekly counseling sessions included components of support, cohesion, catharsis, altruism, interpersonal learning, and self-disclosure. Students who attended these sessions as a supplement to their reading instruction demonstrated increases in self-esteem, self-control, and academic achievement (Shechtman et al., 1996), and decreases in withdrawn behaviors (Leichtentritt & Shechtman, 2009) compared to students who only received academic support.

Daki & Savage (2010) used five solution-focused therapy sessions over the course of one month with reading disabled students between 7 – 14 years-old. During the intervention, emphasis is placed on visualizing optimal solutions to academic challenges and developing problem-solving strategies to accomplish goals. This includes using art as a means to visually represent helpful reading strategies. Therapy was offered in sessions separate from the students' remedial reading instruction, and was considered to be more effective in developing reading fluency and self-efficacy than reading remediation alone, as measured by an established statistical benchmark for improving literacy skills (Daki & Savage, 2010; Torgesen, 2005; Savage, Abrami, Hipps & Deault, 2009).

The aforementioned studies examined the effects of supplemental therapeutic programs on academic achievement among struggling readers. There has been a more limited investigation into programs that integrate motivational strategies with reading instruction in order to directly impact students' task avoidance. Since 2000, fewer than 30 studies have investigated motivation among elementary-aged struggling readers, and only a minimal number of the practices developed through research (i.e. fostering autonomy, making meaningful connections between content, and student goals) are utilized in the classroom (Urdan & Turner, 2005). There are several reasons for this "disconnect"; opportunities for collaboration between educators and researchers are limited (Maehr & Midgley, 1996), and the complex nature of classroom environments often poses implementation challenges (Kaplan, Katz, Flum, 2012). As a result, only a small number of findings from motivational research are transformed into strategies that can be integrated into existing curricula (Turner, Warzon & Christensen, 2010).

These limitations have resulted in a "mixed bag" and non-systematic set of approaches used by educators. There are general recommendations from studies that explored the characteristics of schools with strong readers. Schools that conveyed a school-wide commitment to language development and reading (Mosenthal et al., 2004); maintained high expectations for students (Goddard et al., 2004; Taylor et al., 2000); ensured frequent teacher-parent communication (Taylor et al., 2000; Thomas & Collier, 2002); and allocated sufficient time for independent reading (Mosenthal et al., 2004; Taylor et al., 2000) resulted in higher reading scores among students.

Several studies have also made specific recommendations for improving student motivation for reading within individual classrooms. Some of the more prominent strategies include: offering students choice in book selection; using texts as a platform for

social interaction (Edmunds & Bauserman, 2006; Gambrell, 1996; Guthrie, et al., 2004; Meece & Miller, 1999); creating “book-rich” classroom environments in which teachers act as explicit reading models (Gambrell, 1996); and providing hands-on activities (Wigfield, et al, 2004). A recent series of focus groups that I conducted with reading specialists found that most educators report using rewards as a primary means for increasing motivation (Orkin, 2011b). This finding is consistent with previous research that notes the wide use of incentives in special education (Baker & Wigfield, 1999; Fawson & Moore, 1999; Gambrell, 1994; Strickland, Ganske & Monroe, 2006).

There are several reasons for practitioners’ reliance on incentives in special education. Incentives have been described by practitioners as effective at assuaging many of emotional and behavioral sequelae associated reading disabilities, namely the demonstration of avoidance behaviors, and negative attitudes towards reading activities (Hagborg, 1999, Harter, Whitesell & Junkin, 1998; Polychroni, Koukoura & Anagnostou, 2006; Stone & May, 2002; Tabassam & Grainger, 2002; see Chapman & Tunmer, 1997 and Zeleke, 2004 for meta-analysis). Teachers report facing several challenges for which material rewards appear to be a readily available solution; notable among them are the task of changing reading associations from negative to positive experiences, and the pressure to focus on concept development rather than spending time ameliorating behavioral issues (Orkin, 2011b).

Over the course of the last decade, teachers have been progressively more accountable for their students’ learning on both standardized measures (No Child Left Behind, 2001; Race to the Top, 2009) and progress towards goals, and objectives outlined on a learning disabled student’s Individualized Education Program (IEP). These policies

have created an educational environment in which academic experiences are highly prescribed, and delivery must be efficient enough to meet national standards. Literacy Specialists are limited to brief instructional sessions, which typically range from 20 – 45 minutes, and incentives are likely employed to make effective use of their time together. Specialists report feeling that incentives are particularly effective at assuaging avoidance behaviors, and negative attitudes towards reading activities (Hagborg, 1999, Harter, Whitesell & Junkin, 1998; Polychroni, Koukoura & Anagnostou, 2006; Stone & May, 2002; Tabassam & Grainger, 2002; see Chapman & Tunmer, 1997 and Zeleke, 2004 for Meta-Analysis).

Incentives as a means for increasing motivation to read have also been endorsed by researchers. In 1996, Linda Gambrell, a noted researcher, published an article titled “Creating Classroom Cultures that Foster Reading Motivation” in the practitioner journal *The Reading Teacher*. The article identified six classroom characteristics that are necessary for supporting elementary-school students’ motivation to read, including teachers who model reading, book- rich environments, and offering autonomy. The sixth recommendation detailed offering reading-related incentives (i.e., books and book marks) (Gambrell, 1996). Dr. Gambrell points to several sources of evidence to substantiate her recommendation, including reports from first graders who identified their prizes of books as the most enjoyable part of participating in the Running Start literacy program (Gambrell, 1996), and cites a meta-analysis (Cameron & Pierce, 1994) that analyzed multiple investigations on the impact of incentives and concluded that “extrinsic rewards do not have a detrimental effect on intrinsic motivation” (Cameron & Pierce, 1994, p. 394). At the time, the meta-analysis was considered a valid portrayal of the impact of

incentives, but in subsequent years the authors' findings have been questioned in light of sampling issues, use of disparate research designs, and a failure to acknowledge the potential mediating variables (Deci, Koestner & Ryan, 1999; Lepper, Henderlong & Gringas, 1999). In the classroom, instructional approaches that employ coercive tactics, like incentives, to regulate students' behavior result in dampened engagement and task avoidance, even when they are successful at building skills (Ryan & Deci, 2000). There is one important caveat to mention when discussing the presence of rewards in instruction. Tangible rewards that are not contingent upon task engagement or completion have not been found to affect intrinsic interest (Deci, 1971; Lepper, 1973).

In her article, Dr. Gambrell tells the story of a teacher who dedicated hundreds of hours to collecting used-books in order to provide each of her students with a book for their birthday (Gambrell, 1996). This story highlights the compassion and extraordinary efforts of many teachers who are dedicated to improving reading outcomes among their students and rely on all means possible to increase motivation and ability. As teachers work to enhance their students' motivation for reading, they should be informed of the unequivocal links between autonomous forms of motivation and positive achievement behaviors. Students who demonstrate high levels of intrinsic motivation also engage in several adaptive behaviors including increased effort and persistence in the face of a challenge (Ryan & Deci, 2000). In their study of fourth graders, Toboada and colleagues found that students' intrinsic motivation, based on teachers' reports, make a unique and significant contribution to their reading comprehension abilities (Toboada, Tonks, Wigfield & Guthrie, 2009). More recent findings have further clarified the motivational picture and demonstrate that motivation is context-specific and related to skill



proficiency. Michael Becker and his colleagues found that reading ability in third grade predicts intrinsic motivation in fourth grade and is mediated by reading frequency (Becker, McElvany & Kortenbruck, 2010). In other words, good readers read a lot, which fosters their desire to engage in reading tasks and consequently improves their reading ability. Overall, findings from the research suggest that students who are intrinsically motivated read more often, engage in a greater number of active processing strategies, and as a result, experience a fuller understanding of texts (Baker, Dreher & Guthrie, 2000; Becker, McElvany & Kortenbruck, 2010).

### **Classroom Climate and Motivation**

There are multiple streams of research that have investigated how instructional practices, goal structure and teacher's language can foster adaptive forms of motivation. These findings will be discussed in the section below.

**High-quality classrooms.** Generally speaking, learning environments that facilitate greater self-regulation and improved academic outcomes are referred to as “high-quality” (Damber, Samuelsson & Taube, 2012). Features of a high quality classroom include facilitating a sense of belonging or acceptance (i.e. increased levels of warmth), creating personally meaningful learning (i.e., child-centered curriculum), supporting student autonomy (i.e. multiple modalities in which to practice concepts), and working to increase competence (i.e., constructive feedback & guided questions to expand knowledge) (Downer, Rimm-Kaufman, Pianta, 2007; Pianta et al., 2002). Students characterized “at-risk” for academic failure, either due to behavioral issues or poor skills, are particularly well-served by high-quality classrooms. Settings that delivered instruction in a small-group format and focused on developing analytical and

inferential thinking demonstrated greater academic improvements among at-risk students (Downer, Rimm-Kaufman, Pianta, 2007).

**Classroom environments and motivational profiles.** Classroom environments have also been associated with qualitative differences in students' motivation. Learning environments that are associated with intrinsic motivation support student autonomy, provide optimal levels of challenges, and offer explanatory rationales for task engagement. Autonomy, competence and meaning are highlighted in self determination theory as innate needs which require fulfillment in order to foster autonomous forms of motivation (Deci & Ryan, 1985). Teachers who communicate the value of a particular lesson, situate individual concepts as important for a larger understanding, offer students autonomy, and use students' mistakes within instruction to increase understanding are associated with students who demonstrate greater levels of intrinsic motivation (Guthrie, Wigfield, & VonSecker, 2000; Stipek et al., 1998; Turner et al., 1998). A study conducted by Helen Patrick and her colleagues (2003) distinguished between three types of classrooms: those that were consistently positive and supportive, those that were consistently negative and unsupportive, and those that were characterized as ambiguous, sometimes supportive and sometimes non-supportive. Findings suggest that only classrooms that provided *consistently positive support* improved internal forms of motivation, and reduced disruption, misconduct, and avoidance behaviors (Patrick, Turner, Meyer, & Midgley 2003).

The implicit and explicit messages endorsed by teachers about learning and achievement are perceived and frequently internalized by students as goal structures, (Ames 1992, Maehr & Midgley, 1991; Urdan & Schoenfelder, 2007). Classrooms that

emphasized learning and understanding are associated with students who pursued learning goals, demonstrated greater positive affect (Anderman & Anderman, 1999; Kaplan & Midgley, 1999), and coping skills (Kaplan & Midgley, 1999), whereas an emphasis on social comparison and competition was correlated with students' performance goals (Anderman & Midgley, 1997; Wolters, 2003). Observations of the social and affective aspects of classrooms revealed that those environments with high levels of teacher support, and emphasis on peer support were associated with a mastery (learning) goal structure, whereas settings in which individual work was emphasized were associated with performance goal structures (Patrick et al., 2003; Turner et al., 2002).

One of the pioneers in the field of goal orientation, Carol Ames (1992) has identified three ways in which teachers can emphasize learning goals: (1) ensuring that tasks are appropriately challenging; (2) emphasizing individual progress over evaluative comparisons; and (3) autonomy-support. Indeed, classrooms that emphasize learning goals do so in part by offering students' autonomy. By employing survey and observational data to study differences in 10 elementary science classrooms, Meece (1991) found that teachers who supported autonomy through task choice had a greater number of students who reported learning-goal orientations. In contrast, classrooms associated with performance-goal orientations were those in which student autonomy was more limited. Overall, investigations into the climates of classrooms characterized as "high-quality" and able to elicit intrinsic motivation and/or learning goals have established the importance of four instructional elements: autonomy, belonging, competence and meaning for facilitating optimal achievement. (See Table 1).

Table 1

Classrooms Elements that Support Autonomous Forms of Motivation, Learning Goals, or High Quality Instruction

Construct	High Quality Instruction	Intrinsic Motivation	Goal Orientation
Autonomy-supportive	Multiple modalities for practicing concepts; independently construct knowledge	Teachers support students' autonomy through task choice and share decision making power	A range of task choices are offered; teacher shares authority for all rules and decisions
Sense of Belonging	High levels of warmth	Environments are consistently positive and supportive	Teachers provide support, particularly around independent thinking; peers are encouraged to learn together
Development of Competence	Use of guided questions; emphasis on inferential and analytical thinking	Use student mistakes to increase understanding	Ensure tasks are appropriately challenging; emphasis on learning and understanding; assessments measure individual progress
Personally Meaningful	Child-centered curricula	Communicate value of a particular lesson; situate the importance of concepts	Tasks are designed to be meaningful

### **Integrating Motivational Strategies with Reading Instruction**

Quirk and Schwanenflugel (2004) conducted a review of five diverse research-based supplemental, literacy programs for struggling readers (DISTAR, PHAST, Early Steps, Reading Recovery, and the Reading Apprenticeship program) to measure their impact on constructs important to reading motivation specifically, reading efficacy,

outcome attributions, and task value. They found that although the programs work to build skills and emphasize flexible use of strategies, none adequately address the majority of issues regarding reading motivation (Quirk & Schwanenflugel, 2004). The authors recommend integrating instructional components that aid students in setting their own reading-related goals and connecting those goals to larger hopes and dreams.

**Concept-Oriented Reading Instruction (CORI).** Guthrie and his colleagues designed Concept-Oriented Reading Instructional program (CORI) in order to integrate instructional approaches for enhancing intrinsic motivation into reading instruction. CORI strategies include: (1) using content goals for reading instruction in which words and readings are based on a particular content area (i.e., ecology); (2) affording choices and control to students; (3) providing hands-on activities; (4) using interesting texts for instruction; and (5) organizing collaboration for learning from text (Guthrie et al., 2004). These instructional strategies are based on principles central to self determination theory and learning goals and are applied to a set of reading comprehension lessons in a science classroom.

Students who participated in the CORI program were rated significantly more intrinsically motivated and scored higher on standardized measures of reading comprehension for science texts than their peers who participated in a direct strategy instruction program (Guthrie et al., 2004). The CORI program has demonstrated success with older students where the instructional emphasis was on comprehension and content knowledge, and in a recent investigation, the program worked to improve the reading fluency of low-achieving students by supplementing explicit instruction in reading comprehension with guided and paired readings. Yet, there was not a significant

instructional effect between the fluency scores for low-achieving students who participated in the CORI program, as compared to low-achieving students who received traditional comprehension instruction. This may be due to the fact that the CORI curriculum does not address the foundational skills (i.e. decoding and fluency) necessary for low-achieving students to make adequate progress in their reading ability. Therefore, further investigations into the means by which similar motivational strategies can be integrated into foundational instruction, in decoding and fluency, are warranted.

**Responsive Classroom.** One of the very few curricula to consider the role classrooms play in motivation and social development is the Responsive Classroom approach (Charney, 2002). Responsive Classroom is an approach to teaching and learning which integrates social and academic instruction throughout the school day (Rimm-Kaufman, Fan, Chiu & You, 2007). The approach is founded on principles that guide teachers' thinking and action including: (1) focusing on *how* children learn as well as *what* they learn; and (2) understanding that social interaction facilitates cognitive development (Charney, 2002). Responsive Classroom is sponsored by the New England Foundation for Children in Turner Falls, MA, and the organization cites the training of over 100,000 educators since the creation of the curriculum in 1983. Research conducted on the efficacy of the approach has found a significant association between Responsive Classroom and the reduction of problem behaviors (Rim-Kauffman & Chiu, 2007). The full Responsive Classroom curriculum suggests the integration of ten strategies that address classroom management and the development of student autonomy (Charney, 2002). For the purposes of this study, the author has selected a few of the strategies that

are particularly relevant to the theoretical concepts of autonomous forms of motivation and learning goals, and can be seamlessly integrated into remedial reading instruction.

### **Strategies to be Integrated into the RAVE-O and Wilson Programs**

In order to address the emotional and behavioral challenges facing elementary-age struggling readers, the current study integrated four elements (i.e. *autonomy*, *belonging*, *competence* and *meaning*) that foster autonomous motivation, and learning goals into specialized reading instruction. The research rationale for each element is described in the section below, and the specific strategies that were embedded in the Wilson and RAVE-O programs are described in the section titled Methods.

**Developing autonomy.** As noted earlier, autonomy is considered fundamental to the development of autonomous forms of motivation. Incentives have a deleterious effect on intrinsic motivation because they result in a perceived internal loss of control, as students feel that their academic behaviors are being externally coerced by rewards (Deci, Koestner & Ryan, 2001). These findings are contrasted with learning environments that are characterized as autonomy-supportive, where students are offered choice, validated for their opinions, and supported in their personal goals. In these settings, students develop a sense of ownership and personal investment in their work (Ciani, Middleton, Summers & Sheldon, 2010), and display a greater number of achievement behaviors and increased learning as compared with the students of controlling teachers (Assor, Kaplan & Roth, 2002; Deci & Ryan, 1985; Reeve & Jang, 2006; Ryan & Deci, 2000).

Classrooms that are autonomy-supportive have also been found to support the learning of low-achieving students. Observations of literacy instruction in 2<sup>nd</sup> and 3<sup>rd</sup> grade classrooms demonstrated that teachers who offered their students choices of literacy activities, and involved them in evaluations of their own and others' work,

resulted in improved attitudes towards learning (Perry, 1998). Even low-achieving students reported high levels of efficacy for learning and did not shy away from challenging tasks. These findings were contrasted with students' motivational beliefs in classrooms where work was characterized as procedural, discrete, and rigid. Low-achieving students in these classrooms were observed avoiding challenging tasks, and communicating perceptions of low ability, and low efficacy for learning (Perry, 1998).

Despite the positive effects of autonomy-supportive environments on student motivation, practitioners report limited use of strategies to promote autonomy in reading instruction (Orkin, 2011b). There is a common assumption among educators that offering students' freedom in task choice will result in a lack of productivity (Turner & Patrick, 2008). Many teachers adopt a controlling approach out of fear that "sharing control" will lead to off task behaviors (Boggiano, Flink, Shields, Seelbach & Barrett, 1993). However, several examinations of teachers' efforts in the classroom have demonstrated that practitioners can adopt strategies considered autonomy-supportive (Reeve, Jang, Carrell, Jeon, & Barch, 2004), and when they do so, students demonstrate greater engagement, intellectual curiosity, and a willingness to attempt challenges (Deci, Nezlek & Sheinman, 1981; Reeve et. al., 2004). It is important to note that the promotion of autonomy-supportive instruction is not to the exclusion of setting limits. Rather, an autonomy-supportive environment supports student choice, welcomes student perspectives (even negative affect), provides explanatory rationales for assignments (Reeve, 2009), while minimizing the need to perform in a prescribed manner (Deci & Ryan, 1985).



**Developing belonging.** Some of the earliest forms of motivational behavior are carried out because they are prompted, modeled, or valued by significant others to whom children feel attached (Ryan & Deci, 2000). Not surprisingly, many practitioners acknowledge the role that a strong interpersonal relationship plays in eliciting effort and engagement, and students who feel more connected to, and cared for by their teachers, demonstrate better self-regulation in academic settings (Ryan, Stiller & Lynch, 1994). In a series of focus groups conducted with reading specialists, more than half of the practitioners identified the idea of emotional “safety” as a central theme in the instructional environment (Orkin, 2011b). The practitioners described students who were afraid of being mocked, as a result of insecurities in their mainstream classrooms, and felt that it was a reflection of the culture of special education in many public schools, which may be complicit in fostering feelings of shame among those students struggling to achieve.

The nature of attachment relationships between educators and their students has been confirmed in recent studies of elementary school students as a unique and separate attachment from the parent child relationship (Pianta, Belsky, Vandergrift, Houts, & Morrison, 2008; Hughes, Luo, Kwok, Lloyd, 2008). The sensitive nature of the work accomplished by Reading Specialists serves as a platform for the development of an attachment. In remedial reading instruction, the primary work revolves around exposing weaknesses in order to provide diagnostic instruction. Several studies have shown that when children experience a secure attachment they are better able to process information (Mikulincer & Arad, 1999), and priming individuals with feelings of security results in a greater willingness to persist at a challenging task than an insecure or neutral prime

(Mikulincer & Shaver, 2007). By providing a “safe base,” teachers of reading will ensure that students feel comfortable embarking on cognitive explorations of linguistic concepts.

In special education, there is a common belief among parents that one-on-one tutoring is the gold standard of instructional delivery because it facilitates an individualized approach to education. However, group affiliation has been found to have a strong and positive impact on students’ motivation and learning outcomes. Allison Master and Gregory Walton (2012) recently explored the effect of group affiliation on persistence among pre-school students by randomly assigning the children to a group or individual condition. Children in the group condition were told they were part of the Blue Puzzle-Solving Group, wore a blue t-shirt, and sat in a blue chair and solved puzzles with blue dots; however, they never interacted with another member of their group. Children in the individual condition were given numbers and told they were “the #3 puzzle-solver”. The children in the group condition demonstrated greater persistence than their peers in the individual condition, and in a follow-up study, students who believed they were part of a group, without ever meeting their group members, demonstrated greater retention of information than those who believed they were working individually.

When instruction is offered in a small group, a community of learners can develop, and perceptions of a group identity, complete with shared goals, can have a positive impact on the achievement outcomes of its members (Walter & Cohen, 2012). One recent efficacy study of specialized reading curricula, including the RAVE-O program, highlighted the impact of an instructional group as a significant factor in predicting outcomes both during instruction and one year later (Morris, et al., 2010).

Rather than simply attributing the result to the role of the teacher, because each teacher taught multiple groups within the design, the researchers suggested that the dynamic within the entire class resulted in differences in learning (Morris, et al., 2010).

Intrinsic forms of motivation are frequently associated with positive relationships between students and their teacher (Midgley, Feldlaufer, & Eccles, 1989; Patrick, Hicks, Ryan, 1997), and teacher practices that promote support between peers (Ryan & Patrick, 2001). Qualitative observations of classrooms that promote learning goals have revealed that teachers support cognitive development and interpersonal growth through humor, personal attention, and a context of peer support (Turner et al, 2002).

**Developing competence.** The importance of competency in motivation cannot be overstated. Building skills is often the primary focus of reading remediation, and although it is not the solitary precursor to autonomous motivation, it makes a significant contribution. Students' development of competency is considered an ongoing process that involves the acquisition and consolidation of skills essential for capable performance (Elliot & Dweck, 2004). Perceptions of competency are probably the most widely researched topic in the field of motivation. In particular, the theory of self-efficacy gained prominence for its ability to explain how an individual's judgments of his/her competency lead to activity selection, effort and persistence (Bandura, 1977). In general, perceptions of competence, as measured by self-efficacy, are positively correlated with achievement (see Zimmerman & Bandura 1994 for a review), and self-efficacy has been found to make an independent contribution to academic outcomes (Bandura 1997; Pajares & Schunk, 2001).

The notion of competency is also central to the distinction between performance and learning goals. The pursuit of learning goals is considered to be in the service of *developing competency*, whereas a performance goal orientation is for the purpose of *demonstrating competency* (Kaplan & Maehr, 2007). Performance-orientated students focus on managing the impression that others have of their ability and will often avoid challenging tasks in order to preserve the impression of high ability (Dweck, 1986). Studies that examined students' goal orientation contrast conditions that highlight the value of looking competent ("although you will not learn anything new, it will show me what kids like you can do") with conditions that presented opportunities to increase competence ("you'll probably make a bunch of mistakes, but eventually you'll learn some useful things") (Elliott & Dweck, 1988, p.7). Turner and her colleagues (2002) conducted a qualitative investigation of the avoidance behaviors displayed in math classes, and their findings suggest that students who demonstrate behaviors associated with a learning-goal orientation were in classrooms characterized by opportunities for students to demonstrate new knowledge.

**Developing meaning.** The degree to which a student values a given task is considered the fundamental determinant of extrinsic versus intrinsic motivation (Ryan & Deci, 2000). Tasks are considered meaningful when they are interesting and/or relevant to students' objectives. However, since many academic assignments are not directly related to individual interests, teachers are charged with making class work personally applicable.

Investigations into the various components of autonomy-supportive classrooms (fostering relevance, allowing criticism, and providing choice) found that fostering

relevance was particularly impactful on students' attitudes toward learning and their cognitive engagement (Assor, Kaplan & Roth, 2002). The authors of the study suggest that meaning is a more significant contributor to achievement behaviors than choice because educators often provide choices that are unrelated to students' goals; however, by making connections to students' authentic interests, hopes, and dreams teachers provide an explicit rationale for engagement. As Hidi and Harackiewicz (2000) acknowledge in their recommendations for motivating the academically unmotivated, "all children have interests, motivation to explore, to engage, but not all children have academic interests and motivation to learn to the best of their abilities in school" (p. 168).

### **Creating an Intervention**

In light of the positive academic and behavioral outcomes associated with principles of autonomous motivation and learning goals, the current study seeks to integrate specific strategies for the development of competence, autonomy, meaning and relatedness into two pre-existing remedial reading curricula (See Appendix A for a complete list or "menu" of motivational strategies). The first program, RAVE-O, was designed to improve students' fluent comprehension in part by increasing students' engagement. Along these lines, RAVE-O already employs several activities designed to foster autonomy, meaning and relatedness (for example, Word Detectives, Many Interesting Connections). Therefore the emphasis was placed on removing instructional components that may be interpreted by students as being coercive (i.e., timed evaluations), and embedding motivational strategies designed to develop autonomy, belonging, competence and meaning. The Wilson Reading Program offers direct, explicit, systematic, multi-sensory phonics instruction, and in its original form does not address the motivational needs of students outside of the goal of building skills. The revised

versions of the Wilson lessons are anticipated to be substantially different from the original versions. (See Appendices E & F for Sample RAVE-O and Wilson lessons in their original forms and embedded with motivational strategies.)

### **Research Questions**

The motivational intervention was embedded in both both curricula during a five-week intensive summer reading program in order to answer the following quantitative and qualitative research questions:

1. Is participation in the motivational intervention associated with:
  - a. An increase in participants' reading ability as compared to controls?
  - b. An increase in participants' intrinsic motivation as compared to controls?
  - c. An increase in participants' learning goal orientation as compared to controls?
  - d. An increase in participants' classroom achievement behaviors as compared to controls?
  - e. A decrease in participants' task avoidance and disruptive classroom behaviors as compared to controls?
2. What are teachers' experiences as they implement the motivational intervention?

## **Methods**

A quasi-experimental design was employed to investigate how the addition of motivational strategies to remedial reading instruction impacts students' academic, behavioral and affective outcomes.

### **Participants**

Participants consisted of 24 students (14 females) between 7–10 years old ( $M = 8.16$ ,  $SD = .81$ ), from the following racial backgrounds: White or Caucasian (not Hispanic), 84%; African American or Black, 8%; and Hispanic or Latino, 8%. All of the students were considered by their parents to be reading below grade level. Several students carried clinical diagnoses including: Anxiety Disorder, 4%; Attention Deficit Hyperactivity Disorder (ADHD), 16%; Communication Disorder, 8%; Dyslexia/Reading Disorder, 33%; Non-Verbal Learning Disability (NVLD), 4%; Language-Based Learning Disability, 8%; Pervasive Developmental Disorder (PDD), 8%; and Specific Learning Disability, 8%.

Participants were recruited during their application process to the Tufts Summer Reading Program, for which the investigator serves as director. Program enrollment is by application, on a first come, first served basis. Tuition ranged from \$1400 - \$1650, based on financial need, and was paid by parents. Upon application to the program, parents were informed of the intended research (the Center for Reading and Language Research acknowledges on all promotional material that research is regularly conducted and parents of applicants typically consent to participation), and were told that children placed in the intervention condition would receive instructional strategies designed to enhance internal forms of motivation, whereas children in the control group would receive the curricula in their traditional forms.

Parents expressed several concerns during the recruitment process. Some were worried that the children in the control group would receive subpar instruction, while others were concerned that the motivational strategies would detract from intensive skill-building. Parents were told that participants in the control group would receive evidence-based instruction that has proven effective at developing reading skills in previous years, and the current research study was an attempt to further improve outcomes. They were also told that if their child was placed in the control condition, but displayed a profile that would have benefitted from the intervention, specific motivational strategies would be including in the recommendation section of the child's final program report. All parents were told that participation was not contingent on acceptance and were given at least one week to consider their decision. All of the families agreed to participate in the research.

**Participants' reading ability.** The Tufts Summer Reading program attracts students with highly varied reading abilities. The extent to which students' experiences differ based on their incoming abilities, particularly if they have foundational weaknesses in phonological processing and/or naming speed, is unknown. Detection of underlying deficits (i.e. phonological processing deficit, naming speed deficit, or a "double deficit" in both areas) has important implications for the rate and nature of remediation. Readers with a phonological deficit are characterized by difficulty decoding words, and struggle to identify and manipulate the individual phonemes in words (O'Brien et al., 2011). Readers with a naming speed deficit are slow to retrieve the label or name for a symbol, letter, number or object (O'Brien et al., 2011). Each of these skill sets is considered, by many, to make an individual contribution to fluent reading and comprehension (Blachman, 1984; Boada & Pennington, 2006; Hammill, Mather, Allen, & Roberts, 2002;



Wolf et al., 2002; Wolf & Bowers, 2000), and requires specialized instruction (Levy, Bourassa & Horn, 1999; Wolf, Miller, Adams, 2000). Thus students with a double deficit often struggle with a notably slower rate of remediation (Levy, et al., 1999).

Students were categorized into reading subtypes by their performance on standardized measures considered to be diagnostic of phonological and naming speed deficits (O'Brien et al., 2011). Performance on measures of reading ability prior to the start of the intervention classified students as possessing a double deficit in phonological processing *and* naming speed ( $n = 5$ ), single deficit in either phonological processing *or* naming speed ( $n = 7$ ), or a general weakness ( $n = 12$ ), which is typically characterized as poor-reading ability that cannot be attributed to below-average performance in phonological processing or naming speed (Morris et al., 2012).

**Teachers.** Teacher participants ( $n = 6$ ) consisted of staff returning to the summer program, a graduate student associated with the Center for Reading and Language Research, and educators from surrounding communities. Recruitment occurred primarily through email announcements targeted towards individuals with training in either RAVE-O or the Wilson Reading program, the two reading curricula utilized in the program. Candidates for instructor positions were informed that employment was contingent upon participation in the current research study and as part of their participation they would be compensated \$150 in addition to their salary. All teachers possessed a master's degree in education or a related field, had at least three years of experience delivering specialized reading instruction to struggling readers, and had received specialized training in their respective curriculum (RAVE-O or Wilson). One half of the teachers had received

training in the Responsive Classroom curriculum, a behavioral management program to which several of motivational strategies are attributed (see Table 2).

Table 2

*Teacher Information*

Teacher Name	Specialized Curriculum	Experience with Curriculum	Responsive Classroom Trained	Typical Teaching Environment
Laura <sup>1</sup>	Wilson Reading program	5 years	No	Special Education
Kathy	RAVE-O program	5 years	Yes	Classroom
Mary	Wilson Reading program	3 years	No	Special Education
Sandy	RAVE-O program	4 years	Yes	Classroom
Eloise	Wilson Reading program	6 years	Yes	Special Education
Karla	RAVE-O program	5 years	No	Tutoring

## Measures

Data was collected at four time periods over the course of the program: two weeks before the program began, during the first week of the program, during the final week of the program, and after the program ended. The pre-and post-assessments measured students' reading ability, self-reports of reading-related motivation, and their goal orientation on reading-related tasks. The assessments conducted during the program consisted of observations of students' classroom behaviors.

**Reading ability.** Several important aspects of participants' reading ability including: phonological processing ability, rapid naming speed, semantic knowledge,

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<sup>1</sup> Pseudonyms were used for the names of all the teacher and students involved in the study.

single-word reading and decoding ability, connected-text fluency, and reading comprehension were assessed through ten standardized measures. These measures are described below.

***Phonological processing ability.*** The Comprehensive Test of Phonological Processing, Elision subtest (CTOPP; Wagner, Torgesen & Rashotte, 1999) was administered to assess the students' ability to recognize and manipulate the sounds in words without the presence of symbols. The measure requires students to listen to a given word, delete one sound, and repeat the remaining word. The task begins by asking students to delete syllables (e.g. "Say popcorn, now say popcorn without saying pop") and gets progressively more challenging (e.g. "Say slip, now say slip without saying "l"). The Elision subtest of the CTOPP is considered to be a diagnostic measure, and students who score one standard deviation below the mean ( $\leq 85$ ) are characterized as possessing a phonological processing deficit (Morris et al., 2012).

***Naming speed.*** The Rapid Automatized Naming - Rapid Alternating Stimulus, Rapid Letter Naming subtest (RAN-RAS; Wolf & Denkla, 2005) was administered to measure the speed and efficiency with which students can name a randomly arranged pattern of letters. The time it takes a student to complete the subtest determines his/her raw score. The Letters subtest of the RAN-RAS is considered to be a diagnostic measure, and students who score one standard deviation below the mean ( $\leq 85$ ) are characterized as possessing a naming-speed deficit (Morris, et al., 2012).

***Semantic knowledge.*** The Flexible Word Use subtest of the Word Test 2 (Bowers et al., 2004) was administered to measure students' ability to express two or more different meanings for individual words (e.g., "This word has more than one

meaning. Tell me what ‘watch’ means”). Students’ knowledge of the multiple meanings of words facilitates more efficient word recognition and supports comprehension (Beck, Perfetti, & McKeown, 1982; Nation & Snowling, 1998).

***Single-word reading and decoding ability.*** The Woodcock Reading Mastery-Revised, Word Identification and Word Attack subtests (WRMT; Woodcock, 1973) were administered to assess the students’ ability to recognize individual sight words and decode phonetically regular non-words (e.g., gat, pog, shab, and bufty). Non-words are used in decoding assessments because they simultaneously simulate encounters with unknown words, and provide an accurate assessment of phonics knowledge, as compared to simply measuring a student’s word recognition skills.

The Test of Word Reading Efficiency, Sight Word Efficiency and Phonemic Decoding subtests (TOWRE; Torgenson, Wagner, Rashotte, 1999) were administered to assess students’ single word reading efficiency. During the Sight Word Efficiency subtest, students are asked to read as many words as possible in 45 seconds. The process is repeated for the Phonemic Decoding subtest, in which students are asked to decode as many phonetically regular non-words as possible in 45 seconds.

***Connected-text reading ability and comprehension.*** The Silent Reading Inventory-2 (SRI ;Wiederholt & Bryant, 2001) was used to measure students’ reading accuracy and comprehension with connected-text passages. The test consists of grade-level passages and accompanying comprehension questions. Students are asked to read each passage twice, first orally (while the examiner notes errors in word recognition) and then silently. After the silent reading, each student answers a series of open-ended factual, inferential, and lexical comprehension questions. Standard scores are calculated

separately for students' word reading accuracy, and their comprehension abilities. This assessment also provides an estimated Independent, Instructional, and Frustrational level of reading for each student. The Independent Level is the level at which a student can read and answer comprehension questions with 100% accuracy, the Instructional Level is the level at which a student can read and answer comprehension questions with 30 – 85% accuracy, and the Frustration Level is the level at which a student is completely unable to read the material with adequate word identification or comprehension.

The Dynamic Indicators of Basic Early Literacy Skills, Oral Reading Fluency subtest (DIBELS; Kaminski & Good, 1988) was used to assess the rate and accuracy with which students could read grade-level passages. A student taking this assessment is asked to read three grade-level passages out loud for one minute each. The examiner then calculates the number of words read correctly for each passage. The median of these three scores is the student's Oral Reading Fluency score (ORF), and it represents the number of words-per-minute with which a student reads grade-level texts.

**Motivational beliefs and behaviors.** In order to capture the multi-dimensional nature of motivation (Fulmer & Frijters, 2009; Patrick, Kaplan & Ryan, 2011; Reeve & Cole, 1987), behavioral, self-report, and observational measures were utilized.

***Self-report of motivation.*** In order to assess students' motivational beliefs and behaviors, statements from the Reading Motivation Questionnaire (RMQ; Wigfield & Guthrie, 1995, 1997), developed to assess various aspects of reading motivation including distinguishing between intrinsically and extrinsically generated behavior, and academic goal orientations, were integrated with a paradigm from the Puppet Interview Scales of Competence in and Enjoyment of Science (PISCES, Mantzicopoulos, et al., 2007), a

developmentally appropriate method of measuring motivational beliefs among young children (Patrick, et al, 2008). The resulting questionnaire consisted of 23 items which assessed beliefs along six subscales of motivation: *avoidance*, *challenge*, *performance avoidance*, *efficacy*, *recognition* and *mastery*. The language was simplified from the original Reading Motivation Questionnaire to ensure it was appropriate for students younger than the initial norming population (4<sup>th</sup> & 5<sup>th</sup> graders).

At the beginning of each assessment, the evaluator asked the student to choose the pair of puppets (that are identical in appearance) that best represents him/her from a selection of ethnically diverse puppets. Students name the puppets, and these puppets alternatively represent positive and negative statements about reading. For example, the puppet named Jimmy says, “I like reading challenging books,” and the puppet named Chris says, “I don’t like reading challenging books.” For each set of statements, the student selects the puppet that “is most like them”. The measure contains three items per subscale, two practice items and three dummy questions. Items are scored 0 (negative) or 1 (positive). (see Appendix C for a copy of the Intrinsic Motivation Self-Report).

***Goal orientation.*** In order to assess students’ goal orientation for reading-related tasks, I utilized a measure I had designed and established as valid in a similar investigation (Orkin, 2011a). The measure is a modification of a popular paradigm (Elliot & Dweck, 1988; Dweck & Leggett, 1988; Smiley & Dweck, 1994) and ascertains goal orientation by asking students to select between an easy and challenging version of the same text. There were three texts for each reading/grade level, and participants’ reading levels were equivalent to their Instructional reading level on the Word Recognition subtest of the SRI. In order to ensure that texts were unfamiliar to

participants they were selected from the *Flyleaf* books (Appleton-Smith, 1998), a decodable series that provides stories “controlled” for previously learned phonological concepts and sight word vocabulary, and were modified to ensure significant difference between the easy and challenging versions of the same texts.

This format has been used to measure goal orientations among pre-school and elementary school students (Elliot & Dweck, 1988; Dweck & Leggett, 1988; Smiley & Dweck, 1994). Researchers begin by presenting each participant with two versions of the same text and say:

Now we’re going to do an activity that lets you choose a story. Here are two versions of the same story, and I want to know which you prefer so we can read it at the very end. Both of these stories are called (Name of Story). (*Point to the easy version.*) This one is the easy version. It is shorter and has simple words so you’ll be able to read it quickly. (*Point to the challenge version.*) This is the challenge version of the story. It is longer, so you’ll learn more, but it has challenging words so you might make some mistakes. Which one would you like to read?

This process is repeated with three different stories, and participants are scored 0 (easy) or 1 (challenge) for each story. Based on the sum of their scores, students were categorized as being either performance–goal oriented (0 – 1), or learning-goal oriented (2 – 3).

***Observations of participants.*** Observations were conducted by trained research assistants who recorded the frequency of students’ adaptive and maladaptive achievement behaviors (including language) in the classroom. Classroom observations are considered essential for capturing students’ behavior because of the inconsistencies that can occur in young children’s self reports, particularly those self-reports that explore understanding of

traits or rely on language expression (Elliott, 2004; Karabenick et al., 2007; Keith and Bracken, 1996; Fulmer & Frijters, 2009).

Investigations that have utilized observation as a means of assessing participants' motivation typically include measures of task engagement, persistence and help-seeking behaviors (Henderlong & Paris, 1996; Justice et al., 2003; Patrick et al., 1997; Pierson, 1999). The Observing Patterns of Adaptive Learning Survey (OPAL; Patrick et al., 1997), employs a goal orientation framework for understanding motivation, but employs a running record method that is particularly labor intensive. Students' on-task and off-task behavior has also been assessed through an observation schedule that records behavior in one minute intervals (Bragg, 2012). This approach ensures objectivity and neutrality but does not capture the nuance or complexity of behavior that is involved in motivation.

A thorough review of observational measures of motivation resulted in no published observational checklists of achievement behavior. Checklists are an efficient way to capture both the frequency, and the multitude of language and behaviors considered to be representative of a student's motivation in the classroom. An observational checklist, based on constructs essential to OPAL and self determination theory, was created for the purpose of this investigation. The current checklist divided students' behavior and language into four subscales: *Engagement*, *Meaning*, *Competence* and *Motivation*, and within each scale, behaviors considered adaptive were categorized as Activating Learning while behaviors considered maladaptive were categorized as Barriers to Learning. For example, in the Engagement subscale, initiating, persisting, or completing a task independently are all behaviors considered to Activate Learning while,



focusing on off task topics, engaging in tangential questioning, or giving up easily are grouped as Barriers to Learning behaviors. Points were awarded for the frequency with which students engaged in each behavior in a single lesson: no use of language or behavior = 0, one instance = 1, two instances = 2, three or more instances = 3, and specific examples of subscale behaviors (i.e. avoidance, meaning, competence and engagement) were also recorded. Separate subscales scores were calculated for behaviors considered to Activate Learning and serve as Barriers to Learning, and then totaled for an overall score in each category. (See Appendix D for a copy of the Classroom Observation - Achievement Behaviors Checklist).

***Observations of teachers.*** I observed each teacher four times over the course of the intervention in order to ensure fidelity, document strategy use and provide feedback. During the initial week of the summer program each teacher was observed during both their intervention and control group instruction, and observations were repeated during the final two weeks of the program.

***Interviews with teachers.*** A semi-structured format was employed to capture the important elements of teachers' experiences integrating motivational strategies, and the effect of their pedagogy on student outcomes. Previous research has found that teacher beliefs and teacher practice can sometimes be incongruous because of logistical restraints (Turner, Warzon & Christensen, 2010). Therefore questions were purposefully structured to emphasize behavioral change and teachers were frequently probed to provide specific examples for their responses. Teachers were asked to (1) describe their experiences integrating the strategies; (2) identify any noticeable differences in motivation between the intervention and control groups; (3) distinguish those strategies that seemed

particularly powerful at fostering motivation; and (4) address any instructional challenges they may have faced over the course of the program. All six teachers were interviewed during the final week of the program, and those teachers who instructed the same groups as a Wilson/RAVE-O team were interviewed together. Interviews were scheduled for one hour each, and in order to make the best use of their time, teachers were sent the primary interview questions in advance. Interviews were also audio-taped for transcribing purposes.

### **Setting**

The Tufts Summer Reading Program provides five weeks of daily, small group, specialized reading instruction at the Center for Reading and Language Research (CRLR) on the Tufts University Medford Campus in Medford, MA. The CRLR was established by Dr. Maryanne Wolf in 1994 as an epicenter of research, practice and knowledge dissemination on all aspects of the reading brain. The CRLR takes a multi-componential approach to understanding the various cognitive, linguistic, developmental and affective components of the reading process. The Center has a long history of curriculum development, teacher training programs, and summer reading instruction. The RAVE-O program was developed by Dr. Wolf and her colleagues at the CRLR (Wolf et al., 2000; Wolf et al., 2009) and the center current provides ongoing training to teachers interested in becoming certified in RAVE-O instruction.

Summer reading instruction has also been a cornerstone of the CRLR services. The Center began providing small group RAVE-O instruction during the Tufts Summer Literacy Program, which took place within the Malden public schools in Malden, MA. The center has been offering the Tufts Summer Reading Program, in the current format for five years.

## Procedure

Approximately two weeks before the start of the program, all participants underwent a pre-program reading assessment, which also included motivational measures. Assessments took place at the Center for Reading and Language Research in a one-on-one setting with minimal distractions, and were administered and scored by trained research assistants. One half of the measures were randomly double-scored to ensure reliability. Participants' scores on the assessments of reading ability were used to formulate instructional groups of similar ability levels. Groups were randomly assigned to the intervention condition, and in order to account for any instructional confounds (Morris et al, 2012) each teacher taught one control group and one intervention group.

Each group received one hour of daily instruction in both the RAVE-O and Wilson Reading programs' curricula proven to improve fluency and phonics skills respectively (Morris et al., 2012; O'Brien et al, 2011; Stebbins, Stormont, Lembke, Wilson, & Clippard, 2012; Wilson & O'Conner, 1995; Wolf et al., 2009; Yampolsky & Waters, 2002; Zielinski, 2010).

**Wilson Reading System.** The Wilson Reading System (Wilson, 1996) is a commercially available program that focuses on oral reading. The program utilizes step-by-step instruction that is explicit, systematic, and multi-sensory to train students in grapheme-phoneme (symbol-sound) correspondences, blending, and phonological awareness. Based on the approach of Orton-Gillingham, each 50-minute, scripted, Wilson lesson is comprised of several activities that lead the student through practice with individual sounds, syllables, words, and finally connected text (see Appendix E for a Sample Wilson Lesson). The Wilson Language System has proved efficacious in improving word-and text-level reading ability in classroom instruction, small group, and

individual remedial settings (Wilson & O’Conner, 1995; Stebbins, Stormont, Lembke, Wilson, & Clippard, 2012; Yampolsky & Waters, 2002; Zielinski, 2010).

**RAVE-O program.** RAVE-O is a multi-component reading program designed to address the linguistic and cognitive processes involved in fluent reading, and comprehension. These processes include Reading Automaticity through Vocabulary, Engagement, and Orthography (i.e., RAVE-O) (Wolf, 2011). RAVE-O is based on a connectivist, multi-componential view of the reading process which asserts that multiple linguistic aspects of words, specifically, phonology, orthography, semantics, syntax and morphology, otherwise referred to as POSSM, contribute to rapid recognition and comprehension during reading (Adams, 1990; Wolf, Miller, Donnelly, 2000).

Students participating in the RAVE-O program are taught a weekly group of core words that exemplify the aforementioned principles. Lesson structures vary, but always include strategies designed to improve the rapid retrieval of words including: the exploration of common orthographic patterns, and their corresponding sounds; discussion of the multiple meanings of words; review of syntax, and reading; and discussing connected text (see Appendix F for a Sample RAVE-O Lesson). The RAVE-O program has identified engagement as one of its primary goals and places students in the role of Word Detectives in RAVE-O Town where they are tasked with exploring the city for clues about words. Through their explorations, students encounter various characters who personify linguistic strategies. One example is Ms. MIM, a spider weaving a word web who reminds children of the Many Interesting Meanings of words, and encourages them to add their own meanings to her web. A longitudinal study examining the effects of RAVE-O when paired with an explicit phonological and word identification program

(PHAST, Lovett, Steinbach & Frijters, 2000), found that students who received both programs, as compared to a phonological program alone, improved in all processes that contribute to fluent comprehension including, decoding, word recognition, connected text reading, and comprehension (Morris et al., 2012).

**Motivational strategies.** The motivational strategies that were embedded into reading instruction with the intervention group were based on four principles found to be essential for developing autonomous forms of motivation and learning goals (i.e. autonomy, belonging, competence, and meaning). These strategies are discussed below.

**Autonomy strategies.** Several sets of researchers over the span of more than two decades have employed experimental designs, self-reports, and observational measures and identified behaviors that differentiated autonomy supportive-teachers from those with a controlling style. By and large, findings indicate that autonomy-supportive instruction falls into three major categories, maximizing students' "voice", offering opportunities for "choice", and facilitating independent work through constructive feedback (Deci, Nezlek, & Sheinman, 1981; Deci, Spiegel, Rayn, Koestner, & Kauffman, 1982; Flink, Boggiano & Barrett, 1990; Reeve, Bolt, Cai, 1999).

***Students' voice in the classroom.*** In a typical American classroom, students often take a passive role. Rules of conduct, decisions about instruction, and even appropriate responses are usually decided by the school administration and faculty. Certainly these are important decisions, and it is necessary to have informed individuals governing educational environments; however, it is important to consider the impact that restrictive learning environments may have on student engagement and achievement. Maximizing the students' "voice" not only entails validating their feelings, but perhaps more

importantly, facilitates opportunities for individuals to construct their own knowledge. Explicit instruction is considered an essential principle of effective reading remediation (National Reading Panel, 2000; Snow, Burns & Griffin, 1998; Torgeson, 2004) and has been identified as a key component in the instruction of the alphabetic code relating spelling to pronunciations for most children (Shankweiler & Fowler, 2004). Furthermore, explicit instruction in alphabetic coding skills is thought to be “helpful for all children, harmful to none and crucial to some” (Snow & Juel, 2008). Students who struggle to acquire basic reading skills require a certain degree of explicit instruction in order to be efficient readers. Yet, continuous, explicit direction also has the potential to stifle learners and reduce their feelings of agency and autonomy.

Typical communications between teacher and student follow a particular pattern of discourse: Initiate, Respond, Evaluate (IRE) (Mehan, 1979). In 50 – 70% of classrooms, a topic of inquiry is initiated by the teacher, responded to by the students and followed up with feedback from the teacher (Edwards & Mercer, 1987). This pattern is beneficial because it allows the teacher to gauge students’ understanding, but it is restrictive because the teacher acts as the primary source of knowledge and power. Contrasted with the IRE approach are settings in which students are offered an opportunity to generate knowledge through observation, pattern recognition, and constructive feedback.

*Noticing and Naming.* By beginning each lesson with a set of questions, teachers can activate students’ ability to construct their knowledge. This pedagogical technique simply means shifting from *telling* students about words to *activating* their perceptions. Questions that draw students’ attention to the salient features of words or letter patterns

such as, “What do you notice about this rime pattern?”, “Tell me about the vowel”, “Have we seen this letter before?” are particularly helpful in encouraging students to take active role in the learning process. In their work with students and educators, Paula Denton and Peter Johnston, authors of two well-regarded books on instructional language, recommend the employment of instruction that allows students to construct their knowledge by “Noticing and Naming” patterns (Denton, 2007; Johnston, 2004). In a Noticing and Naming scenario, a teacher presents students with several “vce” rime patterns (e.g., ave, ate, ane) and asks them what they notice about the rimes. The teacher compliments students’ responses by *explicitly naming* the pattern (e.g., long vowel), as Noticing and Naming is not intended as a substitute for explicit instruction, but rather to prime the students’ attention towards salient features of language and text. The beauty of noticing is that once we start noticing certain things it is difficult not to notice them again; the knowledge actually heightens our perceptual systems (Harre & Gillet, 1994). In this way, students’ observations can act as launching point for autonomous self-regulation in that their attention is already engaged.

*Word Detectives.* The RAVE-O program, one of the specialized reading programs utilized in the study, employs a strategy that is very synonymous to noticing and naming. When children begin the program they are told that their job is to act as *Word Detectives*: keeping their eyes, ears and minds open in order to learn more about words (Wolf, 2011). Over the course of the program, students are regularly asked to identify the linguistic features of words including rime patterns, meanings, and phonemic clues. By drawing their attention to the various components of words, the curriculum has

been able to improve the students' rate of word retrieval and overall comprehension (Morris, et al., 2010).

***Providing students with choice.*** By allowing students to express their *voice* in constructing knowledge, and offering *choice* in their learning, teachers provide a platform for autonomous self-regulation and ownership of knowledge.

***Academic Choice.*** Academic Choice is a strategy employed in the Responsive Classroom approach in which teachers decide on the goal of the lesson or activity and provide students options for demonstrating their knowledge (Denton, 2002). For example, if the goal of a Wilson lesson is to demonstrate knowledge about closed syllable words (i.e., where the vowel sound is short and “closed off” by a consonant), students might be offered a variety of activities at “learning centers” that accomplish this goal. Magnetic letter tiles, letter beads, and letter stamps are all possibilities for learning centers and offer multiple modalities for demonstrating knowledge.

In Responsive Classroom each Academic Choice exercise follows a sequence that emphasizes autonomous behavior. Before beginning the activity, the teacher reviews the goal of the lesson (i.e., demonstrate your knowledge about closed syllables), introduces the students to each learning center, asks them to identify where they would like to work, and creates a plan for completion. The students and the teacher collectively decide how much time they would like to allot to the task, and upon completion, students reflect on their learning. Reflection might include sharing the products of their learning with the group, or a private self-evaluation. Whatever the form, the emphasis is on helping children make sense of their concrete experiences, and teachers can use guiding questions to help develop their meta-cognitive thinking. Teachers might ask, “What went well?”,



“What helps you learn?” and “Why?” The cycle of planning, working and reflecting is designed to foster feelings of competence and autonomy that are essential to autonomous motivation and learning goals.

***Offering process-based feedback.*** Perceptions of competence and autonomous action are considered to be synonymous. When students feel more competent they are more likely to act autonomously, and feedback from teachers is considered an important contributor to fostering both competence and autonomy. When their feedback emphasizes students’ strategy use or application of effort, teachers increase students’ ability to act independently in the future.

The nature of teacher feedback often falls into two categories, *person-or process-based* (Kamins & Dweck, 1999; Mueller & Dweck, 1998). Person-based feedback conveys an evaluation of the whole student (“What a good girl”) or individual traits (“You’re so smart”) whereas process-based feedback acknowledges the process undertaken to reach a goal (“I noticed how hard you are working to sound out that word”). Children who receive person-based feedback are significantly more likely to display helpless behaviors in the face of a challenge, than children who receive process-based praise (Kamins & Dweck, 1999). In fact, the feedback delivered by teachers is so influential that it not only affects immediate actions, but also impacts long-term performance. Person-based praise is associated with less persistence or problem-solving on future tasks compared with students who received process-based feedback, even when problem-solving ability was controlled (Kamins & Dweck, 1999; Mueller & Dweck, 1998).

*Noticing and Naming.* By offering feedback that Notices and Names positive behavior, teachers draw attention to strategies or skills that were correctly employed. The late Marie Clay, developer of the Reading Recovery program, offers a specific example of noticing and naming in the case of a student who reads “short” as “shot”. Clay suggests first telling the student that he is “partially correct” by acknowledging the correct pronunciation of “sh”, and then appropriately scaffolding a correction of the vowel sound. She feels that by first and foremost confirming what was successful, the noticing and naming method builds competency and encourages persistence on future challenging tasks (Clay, 1993). One teacher in the Tufts Summer Reading Program shared that she often begins her feedback by saying "Can I give you a compliment?" and always follows it up with, "Now can I teach you something?" In this way, noticing and naming begins to build a student’s internal control and provides a platform for extending the learning systems, in essence developing autonomous motivation.

**Belonging strategies.** Evidence from attachment and self-determination theory indicates that the social climate of a learning environment is an integral part of the learning process. The more supportive the environment, the more likely students will try out new strategies, attempt challenging tasks, and stretch themselves intellectually. Teachers who are particularly good at building learning communities in which individuals feel valued, supported, and where productive learning takes place, do so by emphasizing the sharing of ideas and pursuit of a common goal (Johnston, 2004; Lewis and Tschuida, 1997). By integrating community-building activities, and emphasizing the needs and feelings of peers, the motivational intervention aids in the development of safe and collaborative learning environments.

***Creating class rules.*** The Responsive Classroom approach teaches children that rules are necessary because they help make school a safe place where everyone can learn (Charney, 1994). The rules aid in the formation of a learning community because they are derived from the students' hopes and dreams. In this way, rather than being restrictive, and imposed from an authority, classroom rules are intended to foster greater autonomy, learning, and motivation because they aid the students in achieving their personal objectives.

By reminding students of their shared goals, and modeling the strategies necessary to achieve their goals, the teacher succeeds in achieving two objectives: (1) connecting discrete tasks, which may seem unnecessary or uninteresting, to students' overall development as learners; and (2) offering tangible examples of behaviors that may seem abstract or are not well-understood, such as the notions of challenging oneself or working hard.

***Any compliments?*** In typical classrooms, the IRE instructional format (the teacher inquires, students respond and the teacher evaluates) sets up a situation in which the teacher is the sole source of praise and criticism. But when students interact on a regular basis and pursue shared goals in the form of class rules, they are also able to appropriately respond to each others' academic and emotional needs. Encouraging students to deliver compliments to each other, rather than simply relying on the teacher for feedback and praise, has the potential to further strengthen the perception of a learning community. For example, a teacher might occasionally stop her class during transitional points in the day and invite them to say positive things about each other by asking "any compliments?" Because the teacher does not specify to whom the

compliments should be given, or what behaviors they should be addressing, it also has the effect of encouraging students to notice positive things about each others' behavior, and pick up on who could use a kind word (Johnston, 2004).

**Competence strategies.** Developing students' competency is the primary goal of every reading intervention. The motivational strategies use in this intervention were created to compliment the RAVE-O and Wilson curricula, the evidence-based reading programs that are used in the Tufts Summer Reading Program, the setting for the current research. The new strategies extend existing techniques by offering a platform for engaging in challenges and coping with failure. Students' reactions to failure are a critical determinant of their goal-orientation and subsequent achievement behaviors (Dweck, 1975; Dweck & Leggett, 1988; Dweck & Reppucci, 1973). Performance-oriented students typically respond to failure with a helpless pattern of behavior; they perceive failure as indicative of a lack of ability, withdraw effort, and are unlikely to independently attempt future challenges (Dweck & Leggett, 1988). However, learning-oriented students appear to carry a different perception of unsolvable problems. Rather than perceiving them as a failure, they seem to understand them as a challenge which requires greater effort and strategy use to resolve (Dweck, 1975; Dweck & Leggett, 1988).

The successful transformation of classroom environments into settings that emphasize learning goals is partially a result of offering tasks that varied in levels of difficulty (Ames, 1990; Fuchs et al, 1997). Fuchs and colleagues found that by ensuring tasks were appropriately challenging, encouraging students to establish their own short-term goals, and providing feedback that emphasized intra-individual improvement,

teachers fostered an increased willingness to engage in challenging tasks, increased effort and improved learning as compared to traditional classrooms (Fuchs, et al., 1997).

***Introducing challenges.*** The notion of engaging in challenges just beyond a student's level of independent functioning is the foundation of Vygotsky's Zone of Proximal Development (1978) and is what educator Peter Johnston refers to as the "leading edge" of learning. Leading edge learning is considered the launching pad of knowledge in which the child reaches beyond himself to acquire new skills and concepts (Johnston, 2004). In order for students to first understand the importance of leading edge learning experiences, it will be important to provide them with opportunities to engage in, and concrete representations of, challenging but invigorating learning opportunities.

Turner and Meyer (1999) note that appropriately scaffolding instruction does not simply imply teaching a student how to perform a skill, but entails the incremental transfer of responsibility for learning, and encourages risk-taking, and the pursuit of challenges. There is a very delicate balance in creating the ideal "challenges." If the students are not actively involved in developing their own competence, then the teacher's support may become a hindrance, preventing students from independently processing knowledge. However if the task is too difficult and students' feel it exceeds their abilities they might withdraw effort (Turner & Meyer, 1999; Zimmerman et al., 1996).

***Supersets.*** I designed Supersets in order to offer students a concrete metaphor with which to understand the role of challenges in developing reading skills. Recent longitudinal neurological findings posit that the brain is "strengthened" when an individual is exposed to challenging material (Ramsden, et al., 2011). A comparable illustration is the growth that occurs in muscles through weight-lifting. In order to

develop, muscles must be challenged with weight. As muscles are strengthened, the muscle fibers break apart and are repaired by scar tissue which enlarges the size of the muscle. It is the act of engaging in a challenge that enlarges the muscle. Although it may not be possible for a novice to hold a 30lb weight over their head, just lifting it off the floor strengthens arm muscles, and repeated practice will result in stronger muscles.

In the summer reading program, Supersets served as brief exercises that engaged students in tasks slightly above their instructional level of reading ability. These exercises involved single-word, connected-text reading, and/or dictation. Teachers employed Superset activities not only to illustrate the importance of challenges in building reading muscles, but also to help students think meta-cognitively about their learning experiences.

***Think-alouds.*** In order to develop perceptions of competence as readers, students must acquire the skills necessary to be successful. Two of the more prominent forms of skill acquisition involve direct experience or modeling. One popular modeling technique used in reading instruction is the think-aloud procedure (Collins & Smith, 1982; Kucan & Beck, 1997). When teachers think-aloud, they verbalize the analytic and emotional processes involved in learning. Think-alouds have been used to teach analytic skills important for comprehension (Long, Oppy & Seely, 1994), and are particularly effective at helping students understand the reasons for particular outcomes as they require the speaker to explain their responses (Laing & Kamhi, 2002).

In the summer reading program, think-alouds were not only be used to increase students' comprehension, but also to improve their ability to cope with challenges and failures. Think-alouds provided teachers with a platform to articulate the sequence of

thoughts that often accompany challenging reading tasks. First, the teacher *acknowledged* the trepidation students may experience when they are initially presented with the challenge (e.g. “This looks pretty tough, there are some words in here that I’ve never seen before). Next, teachers *identified the strategies* they would employ to tackle the challenge (e.g. “Hmmm, I notice this word has an ‘ender-bender’ ‘er’, let me hide it, and read the base word. I recognize the first sound ‘r’ and the rime pattern ‘ock’. Let me put it all together with the ender-bender... ‘rocker’.”). Finally, teachers *reflected on their experience* and highlighted how their strategies helped or hindered their progress (e.g. “Well, that was a little hard, it took me longer to read than usual, but I don’t have much practice reading ‘ender-bender’ words and I think hiding the ending while I read the base word helps.”).

**Meaning Strategies.** Reading instruction that may seem prescribed and unrelated to students’ interests can be made meaningful when, (1) students are encouraged to make meaningful connections between their learning experiences; (2) basic skills are taught in the service of reading meaningful content and; (3) foundational abilities aid students in achieving their larger hopes and dreams.

**Meaning-making.** By offering students an opportunity to situate the reading instruction they receive within their larger life and learning experiences, teachers aid them in deriving meaning from even the most discrete skill-building exercises. There are several examples from the field of linguistic and neuroscience that support the notion that associations or networks of knowledge are salient for retention and retrieval. Linguists have explored how the depth of a semantic neighborhood, the number of words associated with a target word (i.e. cat), affects performance, and found that those words

with larger semantic neighborhoods are processed more quickly and efficiently (Locker, Simpson, Yates, 2003). Similarly brain imaging studies, which have examined the neural activity during reading, found that fluent readers have high-quality connections *within* and *between* their networks (Lavric, Clapp & Rastle, 2007; Norton, Kovelman & Pettito, 2007; Shankweiler et al., 2008).

*Meaning-making in RAVE-O.* There are several strategies within the RAVE-O program which facilitate individual meaning-making. First, there is the Many Interesting Connections strategy, which guides students in identifying their personal associations with the program's core words, words which illustrate foundational linguistic, orthographic, semantic, and phonological strategies. Students are told that words are connected to each other through a "web," and when they are introduced to the core word, such as "jam," they create an actual word web that identifies all of their personal associations with jam (Wolf, 2011). Second, there is the Think Thrice comprehension strategy which instructs students how to analyze a text in three different ways, (1) thinking back to find evidence, (2) thinking forward to predict future actions based on the evidence, and (3) thinking for oneself (Wolf, 2011). The think for yourself strategy encourages students to make personal associations and meaning out of the texts they have read. These conversations not only validate students' experiences as important, but also make real-time connections between language and action.

*Meaningful texts.* Utilizing non-fiction and fiction texts that engage students is often challenging for educators who employ explicit phonics programs. These programs typically include strictly decodable texts that only include sound, syllables, or sight words that have been explicitly taught. While decodable texts are an appropriate platform for



practicing recently acquired decoding and fluency skills, the authors' ability to write enriching content is often significantly restricted.

*Flyleaf series.* During the motivational intervention, teachers incorporated books from the *Flyleaf* series (Appleton-Smith, 1998) in addition to the texts from the RAVE-O and Wilson curricula. The *Flyleaf* series consists of leveled stories “controlled” for previously learned phonological concepts and sight word vocabulary, but also include subject matter that is typically more age-appropriate than the texts that accompany instructional programs.

*Guided reading.* Teachers also employed several books that depicted main characters pursuing individual hopes and dreams and often times overcoming challenges or extreme hardship. These stories were utilized as an additional model of flexible. A list of these stories can be found in Appendix B. This list was adaptive from a list titled Read Alouds to Inspire Hopes and Dreams made available on the *Responsive Classroom* website (<http://www.responsiveclassroom.org/blog/read-alouds-inspire-hopes-and-dreams>, retrieved on March 8, 2012).

*Research projects.* Content-Oriented Reading Instruction program (CORI), a multi-component motivational approach developed by Guthrie and colleagues, has found that delivering comprehension strategies in the service of content-specific instruction (in addition to offering autonomy in academic choice and chances for collaboration) affords students a better opportunity to understand their texts and increases their motivation for reading (Guthrie, et al, 2009). Low-achieving students who received explicit reading comprehension instruction through different texts based on ecology (i.e., environmental science, poetry, novels, and legends) demonstrated greater gains in reading

comprehension, content knowledge, and motivation than those who received comprehension strategy instruction alone (Guthrie, et al., 2009).

Groups of students entering the 4<sup>th</sup> grade and above will engage in similar project-based instruction, which closely resembles the academic demands of upper elementary school curricula. These students will apply their foundational skills to research projects that require them to read for meaning. Students will be offered a menu of topics from which to choose, and be given specific guidelines or selected readings for their research, but they will be encouraged to demonstrate their knowledge in a way that is personally meaningful. It is hoped that a project-based approach, combined with the foundational skill-building offered by the RAVE-O and Wilson program, will result in meaningful learning among older struggling readers who often possess average intellectual capacity and are looking to read stimulating content, but are challenged by the mechanics of decoding or fluency.

***Hopes and Dreams.*** The final component of the intervention designed to fostering meaningful learning is the development of students' Hopes and Dreams. In the Responsive Classroom approach, teachers lead students through a "Hopes and Dreams" exercise during the first week of the program. In this exercise, the teacher begins by stating her own goals for the school year, including the goals she has for the class (for example, "My hope is that the summer reading program is a place you want to be and that you will be able to do important work"; "My hope is that each of you will be willing to read big words even if you make lots of mistakes") (Charney, 2004). Teachers then lead students in identifying their own hopes through a brainstorming exercise, or by encouraging them to choose from a list of possible hopes. In order to provide clarity and

focus, students are then asked to extend their thoughts and explain the reasons for their hopes. Understanding how school work contributes to long term objectives is another way to foster autonomous motivation in the learning process. Students in the intervention will not only identify their Hopes and Dreams during the first week, but will revisit and revise those dreams as necessary throughout the remainder of the program.

Over the course of the five-week program, students received a total of 40 hours of instruction, delivered by head teachers who were supported by undergraduate assistant teachers. In between their two hours of group instruction, students participated in one hour of extra-curricular activity that was designed to offer an opportunity to explore academic and non-academic interests. This year's activities included science experiments, art projects, and guided reading. Students' classroom observations were conducted by a pair trained research assistants during the first and final weeks of the program. Following each observation, research assistants conferred about their findings in order to reach a consensus about recording the frequency of achievement behaviors. Students' final assessments were conducted during the last day of the program, and during the week that followed the program's conclusion.

**Teacher trainings.** Head teachers were trained in the intervention strategies prior to the start of the program, and participated in three weekly training/feedback meetings while the program was in session. Teachers completed daily lesson checklists to track the frequency with which they employed each motivational strategy, and I observed each teacher two times over the course of five weeks. Teachers' beliefs about methods of motivating students were also recorded prior to the start of the program and at the conclusion of the program.

***Initial training.*** All teachers were required to participate in one initial three hour training. One teacher was unable to attend the initial group training and I met individually with her instead. There were four components to the initial training: (1) a review of the research rationale, and a discussion about practitioners' current motivational approaches; (2) explicit instruction on each experimental strategy, including videos of strategy implementation in a typical classroom; (3) a brainstorming session on integrating the strategies into remedial reading instruction, including completing an Intervention Lesson Plan and; (4) trouble-shooting potential challenges.

To begin the training, I asked the teachers to discuss the strategies they currently employ to motivate their students. Three of the practitioners (Kathy, Sandy, and Eloise) were previously trained in the Responsive Classroom approach, and reported using strategies from the curriculum to address motivational issues. These strategies included offering students autonomy, acknowledging their competence, and emphasizing the importance of being an active member of a learning community. One of the practitioners, Karla, was familiar with the theoretical work in the field of achievement motivation and acknowledged trying to apply the work in her instruction. She felt it was important to highlight individual progress, and ensure that feedback was process-based rather than performance-oriented. The remaining two teachers, Laura and Mary were unaware of the Responsive Classroom approach or research from the field of achievement motivation. These teachers reported employing several different strategies to motivate students including: timed assessments, incentives such as prizes and stickers, acknowledging student progress, and offering students an opportunity to select books or assignments that are meaningful. Some of their responses are below:

I can't agree with you more that learning should be more self-regulated. However, I do use rewards when a student has completed a Wilson Book. The student gets a small plastic gold trophy and I make a big deal about the post-test and how proud I am that they are ready to move-on. The kids really love it. I also like to send notes home to parents when a student has a great day or just had one of those “ah ha” moments. – Laura, Wilson teacher

With some of my younger students I have made a “menu” of what we need to accomplish in a lesson. They check off each part as we go along so they feel successful in the end. Also, we always WADE (Wilson assessment) the kids in June. So this year I sat down with each Wilson kid and showed them the results as compared to a year ago. It was great, they really felt proud of themselves. – Mary, Wilson teacher

Once all of the teachers had shared their practices, I provided them with a brief presentation on theoretical rationale of achievement motivation. The purpose of this presentation was to explain how typical motivational strategies such as rewards, competition, time-pressured evaluations, process-based feedback, and offering autonomy, impact students' long-term motivation and beliefs about learning. For example, I explained how the strategies that Mary shared, offering a menu of tasks to students, and reviewing their individual progress satisfies two important components of intrinsic motivation and aids in facilitating learning goals. The activity menu provides students a limited sense of autonomy by providing them with a roadmap of the instructional session, offers opportunities for control over their learning, and likely results in feelings of accomplishment or competence. An individual review of their performance over time gives students a tangible way to evaluate their progress and emphasizes personal growth rather than comparative evaluation.

I also shared the fundamental assertion of self determination theory which posits that “coercive” motivational tactics such as the use of extrinsic rewards (i.e. sticker

charts, prizes), time-pressured evaluations and/or competitions dampen long-term autonomous motivation and learning goals even if they achieve short-term gains. Many of the teachers, even those trained in the Responsive Classroom approach, acknowledged using some incentives in the classroom. These teachers are not alone as use of incentives is widely reported as a motivational technique during reading instruction (Fawson & Moore, 1999; Hidi & Harackiewicz, 2000; Marinak & Gambrell, 2008; Orkin, 2012b). I emphasized that no matter how small a sticker or prize may be, once incentives are introduced they have been shown to dampen students' internal willingness to work hard (Grolnick & Ryan, 1987; Utman, 1997), and decrease the frequency with which students read outside of school (Becker, McElvany & Kortenbruck, 2010; Gottfried, Fleming, & Gottfried, 2001). Therefore in the current study these practices would not be used at all with the intervention group.

After a review of the research rationale, teachers were provided with a menu of motivational strategies for use in their instruction (see Appendix A for Motivational Strategies Menu). Strategies were organized by motivational principles (i.e. autonomy, belonging, competence, and meaning) and each was described in detail. When possible, videos were shown to illustrate the application of the strategies in a typical classroom. Videos were created by the Responsive Classroom approach and were available on their website ([www.responsiveclassroom.org](http://www.responsiveclassroom.org)). In order to determine how to integrate strategies into reading instruction, teachers were divided into two groups based on their respective areas of expertise (Wilson or RAVE-O). In their small groups, teachers brainstormed ways to ensure each strategy would enhance rather than detract from the essential concepts in each curriculum. For example, the RAVE-O teachers discussed

how to integrate *academic choice*, a strategy which offers students autonomy, into a lesson about the rime pattern “ish”. The teachers agreed to set up activity stations that would offer students a variety of ways to practice combining the “ish” pattern with initial consonant sounds such as “w”, “f”, “d”, or suffixes such as, “ed” and “ing”.

There was significant conversation about the ways in which the needs of younger students (entering 2<sup>nd</sup> grade) would differ from the needs of older students who still had not mastered basic skills (entering 4<sup>th</sup> and 5<sup>th</sup> grade). The teachers decided that younger students would enjoy experimenting with different materials such as letter stamps, beads or whiteboards, whereas older students would probably be more engaged if there was a technology center (either typing or using an iPad) and were provided with the opportunity to create a larger context or story around the “ish” words they had created.

***Potential challenges.*** For the final part of the training, the entire group came back together to discuss concerns or challenges the teachers envisioned with strategy implementation. The discussion centered on three themes which are discussed below.

1. Reduction in skill building. Some teachers expressed concerns that time dedicated to motivational strategies would detract from the time typically spent on skill development. The teachers who had been trained in Responsive Classroom acknowledged that during the first two weeks of school, it feels as though significant instructional time is allocated to behavior management, but they unanimously reported feeling that the investment “paid off” when students internalized classroom expectations and it was no longer necessary to address the majority of behavioral challenges. I noted that the teachers would be meeting weekly during the first three weeks of the program, and any instructional concerns or challenges could be also revisited then.

2. Feeling overwhelmed. Several of the teachers, who were unfamiliar with the Responsive Classroom approach, and were being introduced to all the strategies at once, reported feeling overwhelmed, and anxious about implementation. In an effort to alleviate their anxiety, the teachers and I agreed that each teacher would focus on one strategy for the first week of the program. The RAVE-O teachers would work with the students to generate class rules, and introduce students to the concept of Hopes and Dreams, including developing individual Hopes and Dreams related to the summer reading program. The Wilson teachers would introduce the concept of Supersets, and both teachers would integrate at least two Supersets into the classroom activities. This way all students would learn two new motivational strategies during the first week but each teacher would only be responsible for incorporating one strategy into her lessons.

3. The control group. The goal with the control group was to provide a realistic reading instruction experience; however, there was significant discussion among the teachers about the extent to which they could deviate from the scripted curriculum. Several of the Wilson teachers were concerned that students would find the material “too dry” without games and outside activities integrated into the lessons. As such, teachers and I agreed upon complete fidelity to the programs as scripted 85% of the time, and to integrating creative games and instructional techniques the remaining 15% of the time as it replicated the pedagogical approach they use during the school year. Some examples of these activities included: playing *Go Fish* with word cards, using *Readers’ Theater* scripts to act out decodable texts, writing poems, and participating in a word-based scavenger hunt.



**Weekly teacher trainings.** Once the intervention began, teachers and I met on a weekly basis to reflect on their experience with strategy implementation and discuss challenges. During these meetings teachers raised questions, offered solutions, and when necessary generated alternative strategies to illustrate the four principles of autonomous motivation and learning goals.

***First Weekly Meeting.*** At the initial training meeting the group agreed to limit the first week's strategies to Supersets, Hopes and Dreams, and the creation of class rules. Therefore the initial weekly meeting focused on further integration of additional strategies. The teachers and I agreed that integrating autonomy-supportive instruction would be the focus for the second week and teachers would work to integrate Academic Choice, and emphasizing students' Voice.

The first strategy is called "students as teachers" and refers to opportunities in the lessons when students can take over the instructor role. It was suggested by Eloise, one of the Wilson teachers, as a practice she often uses during the "warm-up" quick drill portion of Wilson lessons. Eloise noted that each Wilson lesson begins by quickly drilling previously learned sound symbol relationships, typically with letter flashcards or magnet tiles. Eloise commented that although it is important to review the sounds with students, the activity can become routine and tedious. During her school year instruction, she gives students the chance to lead the activity and lets them decide the order and format of the exercise. Some of the RAVE-O teachers thought the core word review that occurs at the beginning of many of the RAVE-O lessons was another good opportunity for students to act as teachers. During the core word review, teachers proposed that students could lead their peers through reading previously learned core words they (now

displayed on the “word wall”), or identifying the multiple meanings of these words, or identifying the rhyme patterns and starting consonant sounds in the words. The teachers agreed that this activity would not only provide the students with a sense of control over their learning, and offer autonomy in the structure of the lesson, but also empower them as active participants in the learning community.

***Second Weekly Meeting.*** The format for the second weekly meeting was similar to the first. I began the meeting by encouraging the teachers to share their strategy implementation experiences. Together the group brainstormed solutions to challenges that had emerged during instruction. For example, three teachers reported that behavior problems were beginning to arise among both the control and the intervention groups. I suggested addressing the behavior problem in the intervention group with an approach in line with the instructional practices (this solution is discussed with greater detail as part of the qualitative description of Group 1 in the Results section). In order to address behavior issues in the control group, the teachers decided to use incentive-based strategies that were effective for teachers during the school year. These strategies included a behavioral sticker chart and prizes for recorded reading time.

After we finished discussing the teachers’ challenges, I introduced the new strategies for upcoming week. These strategies emphasized building a sense of community among students, and providing activities that are meaningful. Reports of community building efforts thus far were elicited from the teachers, and I shared approaches that I thought would further enhance their effort. These approaches are discussed below.

1. Catch a Partner. In this exercise, teachers designate a partner for each student (either a purposeful or random pairing) and provide examples of behavior that would be classified as "something good" such as stretching reading muscles, giving a good try, raising their hand, being a respectful partner, and reading a new book. Students are then told to secretly observe the partner during the lesson so they can report on "good" behaviors at the end of class.

2. Opportunities for sharing. Teachers were encouraged to offer students opportunities throughout the lesson to share their work and personal information. Topics appropriate for sharing included personal life experiences, efforts in class (for example, an illustration they drew, a sentence they wrote) or general interests. The key component of the activity is encouraging other students in the group to engage with the topic. For example, if a student shares a piece of work, his/her peers should be encouraged to ask questions, make positive comments, and identify connections to other concepts. I emphasized the important role of the teacher in facilitating these interactions, specifically the means by which they could model positive comments, and thoughtful questions that emphasize process over product through think-alouds (for example, "I can tell you spend a lot of time on that picture because there are so many details", "Would you recommend the book to a friend?", "Were you surprised by the ending?").

3. Meaningful engagement. I asked the teachers to share how they were incorporating reading tasks that were personally meaningful to the students, since this issue had not been explicitly explored during instruction since the first week of the program when the students created personal Hopes and Dreams. The teachers who were trained in Responsive Classroom shared that they had adopted a modified "morning

meeting” format, in which the students were provided with a few minutes during the beginning of class to share individual anecdotes. Teachers encouraged the students to discuss any new adventures that were reading-related, such as recognizing a new word on the box of cereal or picking up a new book.

Although the teachers acknowledged that not every student had something to share each day, they felt overall the morning meeting served three important purposes: (1) it increased the meaning of in-class activities because students discovered the connection to their real-world experiences; (2) it enhanced a feeling of community among students; and (3) for some it provided a means of sharing their progress. Beyond the morning meetings however, some teachers found it difficult to increase meaning in basic skill-building tasks. This was particularly true of teachers who worked with older students who required intensive remedial instruction and therefore were reading simplistic, decodable texts. Together the teachers and I brainstormed two ways in which to integrate meaningful activities into the curriculum.

1. Revisiting Hopes and Dreams: All of the practitioners agreed that it was a good time to revisit the Hopes and Dreams students created at the beginning of the program. Teachers were encouraged to help the students expand or revise their original goal and to bring in outside texts that would aid them in conveying the importance of meaningful goals.

2. Meaningful texts: Some teachers thought it would be good idea to encourage students to bring in books from home, but others feared that it was unlikely most students would have books at the appropriate level. Therefore it was determined the program

would purchase several series of decodable and developmentally appropriate high interest, low ability texts from the *High Noon* series.

***Third Weekly Meeting.*** For the first two weekly meetings, the researcher served as the primary facilitator, creating an agenda, sharing observations, stimulating discussion and offering support. During the third week, the researcher shared observations but used teacher input to formulate an agenda. The teachers opted to discuss ways in which to continue to make activities meaningful. Eloise and Karla, who were instructing the strongest readers in the program shared the experiences they were having with them in the classroom.

The previous week, Eloise, a Wilson teacher, initiated a group project by offering the students a menu of books from which to choose as the basis for their activity. She described previewing each of the books for the students and then offering them a day to look through them and write down their first and second choices. Ultimately the students agreed upon *Pioneer Girl: The Story of Laura Ingalls Wilder* (Anderson, 2009) and were told they would be reading selections from the 50 page book for the purpose of learning about the realities of life as a pioneer in America in the 1800's. Once they had finished the book, Eloise was planning to offer the students a menu of options for means to share their new-found pioneer knowledge with their peers in the program (e.g., a collage, poster, play, newspaper, or mini-book).

Karla, a RAVE-O teacher, reported that she had begun engaging her students in a personally meaningful research project, similar to the CORI curriculum, in which they could select the subject matter, sources of information and the means of presentation. Three students had already selected "glogs", or online graphic blog project and one

choose a poster. According to Karla, the goal of the project was to offer her students an opportunity to read for a purpose, and present research from multiple sources in a clear, organized, informative document. Karla noted that she knew the task of taking notes and organizing information into a cohesive output would be challenging for the students but she didn't anticipate the challenges involved in learning the glog technology, and was particularly impressed with how the students supported each other as they mastered the program.

The other teachers liked the idea of group projects that offered the students autonomy and an opportunity to pursue personal interests, but were concerned that their lack of skills would be a barrier from reading content-rich texts. Teachers and I began to discuss the various modifications that could be made to make the opportunity accessible to all students. We agreed to offer the group of students who were older but significantly impaired in their reading ability a selection of decodable chapter books from the *High Noon* series, and give them choices for ways in which they could review the books for their peers (e.g. written review, artistic rendition, powerpoint, or a play).

**Intervention fidelity.** There were several ways in which fidelity was ensured throughout the intervention. First, teachers completed daily lesson plans for both intervention and control group instruction. The lesson plans were formatted to record daily goals, activities and students' reactions, and a checklist at the top of the sheet was used to track the frequency with which teachers employed each of the motivational strategies. I reviewed these lesson plans on a daily basis to ensure that teachers embedded at least one strategy from each motivational principle on a regular basis (teachers were instructed during the initial training to embedded at least one strategy

from each principle every other day). I also conducted two observations of each teacher as they instructed their intervention and control groups. In observing the control group, I wanted to ensure that teachers did not include any of the motivational strategies in their instruction.

## **Results**

This section presents the quantitative analyses for the outcome variables as well as a summary of the qualitative results collected from interviews with teachers. The main hypotheses are tested by comparing the differences between pre-and post-test scores for the intervention and control groups.

### **Preliminary Analyses**

The means and standard deviations for pre-test and post-test scores for the control and intervention groups are displayed in Table 3. These variables were all normally distributed. Missing data occurred due to a small number of skipped items, with no item skipped more than once. Missing data analyses, using IBM® SPSS® Statistics software Version 16, indicated that these data were missing at random.

Independent t-tests were conducted to examine whether the intervention and control groups differed significantly on demographic factors or outcome measures at pre-test. These and other tests were conducted as two-tailed with an interpretation of significance at  $p < .05$ . The two groups differed significantly at the pre-test on one measure of reading ability, word identification (WRMT Word Identification subtest)  $t(22) = 2.81, p = .01$ , (control,  $M = 102.08$ ,  $SD = 9.74$ ; intervention,  $M = 91.33$ ,  $SD = 10.68$ ), but did not differ significantly on gender (control 50% female, intervention 66% female) or age (control,  $M = 7.83$ ,  $SD = .83$ ; intervention,  $M = 8.50$ ,  $SD = .80$ ). The word identification measure was removed from analysis of variance between the groups. Also notable were the higher, although not significantly, reading score means among the control group at pre-test.



Table 3

*Descriptive Statistics at Pre-test and Post-test*

Variable	Grouping	Pre-Test		Post-Test	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Reading Ability Measures					
Flexible Word Use (Word test)	Control	102.67	17.27	108.66	15.80
	Intervention	96.00	15.89	99.42	15.88
Sight Word Efficiency (TOWRE)	Control	95.83	9.19	94.75	9.11
	Intervention	88.75	13.48	86.92	11.40
Phonemic Decoding Efficiency (TOWRE)	Control	94.58	7.96	92.58	9.75
	Intervention	85.08	14.15	84.50	13.20
Word Attack (WRMT)	Control	95.00	27.67	105.42	10.26
	Intervention	85.67	27.40	100.75	11.15
Word Identification (WRMT)*	Control	102.10	9.74	101.83	8.87
	Intervention	90.75	10.04	91.33	12.15
Passage Comprehension (SRI)	Control	8.25	2.41	8.50	2.28
	Intervention	7.75	2.41	7.75	2.56
Word Recognition (SRI)	Control	8.00	1.41	7.92	2.31
	Intervention	6.17	3.01	6.42	2.90
Oral Reading Fluency (DIBELS)	Control	49.50	24.94	50.42	23.52
	Intervention	56.00	30.78	57.83	29.40

Variable	Grouping	Pre-Test		Post-Test	
		<i>M</i>	SD	<i>M</i>	SD
Self-Report Motivation Measures					
Motivation Self-Report	Control	6.50	2.02	7.17	2.33
	Intervention	5.58	2.84	6.50	2.31
Avoidance Self-Report	Control	1.75	1.06	1.33	1.23
	Intervention	1.64	1.12	1.17	1.26
Performance Avoid. Self-Report	Control	1.25	.62	.67	.88
	Intervention	1.50	1.00	.83	.84
Goal Orientation					
Behavioral Measure of Goal Orientation <sup>1</sup>	Control	1.08	1.16	1.50	1.24
	Intervention	1.58	.99	1.17	1.26
Classroom Observations					
Observation of Barriers to Learning Behaviors	Control	5.83	4.67	7.33	5.14
	Intervention	6.58	6.20	5.50	5.96
Observations of Learning Activation Behaviors	Control	4.25	4.22	8.75	7.17
	Intervention	4.42	2.81	11.41	7.80

\*Significant at the  $p < .05$

<sup>1</sup> Goal orientation scores range from 0 - 3, with a higher score being more learning goal-oriented.

### Description of Analyses to Assess Pre- to Post-Test Change

To test the main hypotheses, a mixed between-within subjects analysis of variance (ANOVA) was conducted to compare group scores on all continuous variables at pre-test and post-test. This is the most common analysis used when comparing two independent variables: one being a between-subjects variable (control vs. intervention group), the

other being a within-subjects variable (pre-test and post-test) (Tabachnick & Fidell, 2001).

### **Effects of the Intervention on Reading Ability**

Multiple aspects of students' reading ability were assessed prior to the start of the program and again after its completion. The results of mixed between-within ANOVAs found a statistically significant main effect for improvements in two areas of reading ability. First, there were statistically significant improvements in all students' semantic ability, specifically flexible word use (Word Test, Flexible Word Use subtest)  $F(1,23) = 10.28$ ,  $p < .01$ ,  $d = .32$ . Clinically, this can be interpreted as a small effect size (Cohen, 1988); however these results surpass those reported by Torgesen (2005) whose average effect size indicator was .23 for improvements following a reading intervention. There were also significant improvements in all students' phonemic decoding ability in an untimed condition (WRMT Word Attack subtest),  $F(1,23) = 4.80$ ,  $p < .05$ ,  $d = .18$ , which is interpreted as a small effect size (Cohen, 1988).

The changes in scores between groups, or interaction effect, did not reach statistical significance for any measure of reading ability. However, as shown in Table 4, the intervention group showed greater improvements from pre- to post-test on five of the eight reading measures including: phonemic decoding efficiency, word attack, word identification, connected-text word recognition, and oral reading fluency.

Table 4

*Percentage Change in Scaled/Standardized Reading Scores from Pre-to Post-test*

Variable	Grouping	Percentage Change
Flexible Word Use (Word Test)	Control	6 %
	Intervention	4 %
Word Recognition Efficiency (TOWRE)	Control	- 1 %
	Intervention	- 2 %
Phonemic Decoding Efficiency (TOWRE)	Control	- 2 %
	Intervention	-.6 %
Word Attack (WRMT)	Control	11 %
	Intervention	18 %
Word Identification (WRMT)	Control	- .2 %
	Intervention	.6 %
Passage Comprehension (SRI)	Control	3 %
	Intervention	0
Word Recognition (SRI)	Control	- .1 %
	Intervention	4 %
Oral Reading Fluency (DIBELS)	Control	2 %
	Intervention	3 %

### **Effects of the Intervention on Motivation Outcomes**

To test whether the intervention was successful in improving students' self-reports of motivation, a mixed between-within ANOVA was conducted on their composite scores of perceived efficacy, willingness to attempt challenges, and pursuit of mastery opportunities. A statistically significant main effect was found  $F(1,23) = 4.50$ ,  $p < .05$ ,  $d = .17$ . This can be interpreted as a small main effect (Cohen, 1988). No interaction effects were found.

To test whether the intervention was successful in decreasing students' self-report of avoidance behaviors, a mixed between-within ANOVA was conducted on measures of avoidance and performance avoidance. A statistically significant main effect was found,  $F(1,23) = 22.52$ ,  $p < .001$ ,  $d = .50$  for decreases in all students' self-reports of performance avoidance, which can be interpreted as a medium effect (Cohen, 1988). No main effects were found for students' self reports of avoidance and no interaction effects were found for either variable.

To test whether the intervention was successful in increasing behaviors which are considered to "Activate Learning" (e.g. making meaning out of tasks, commenting on one's own improvement, persisting at challenging tasks, and volunteering engaging with tasks), and decreasing behaviors considered "Barriers to Learning" (e.g. engaging in tangential questioning to avoid a task, giving up easily, making derogatory comments about class work, pre-occupied with proving ability, and working only for incentives), a mixed between-within subjects ANOVA was conducted on students' self-reports of motivation and classroom observations. A statistically significant main effect in observed Learning Activation behaviors,  $F(1,23) = 22.48$ ,  $p < .001$ ,  $d = .51$ , which can be interpreted as a medium effect (Cohen, 1988). As predicted, students in the intervention

group decreased significantly in their observed Barriers to Learning behaviors,  $F(1,23) = 9.38$ ,  $p < .05$ ,  $d = .30$ , whereas students in the control group increased in the frequency of these behaviors (see Figure 2). This is interpreted as a small effect size (Cohen, 1988). To test whether the intervention was successful in fostering learning goals and decreasing performance goals, a mixed between-within ANOVA was conducted on students' goal orientation. No significant main or interaction effects were found.

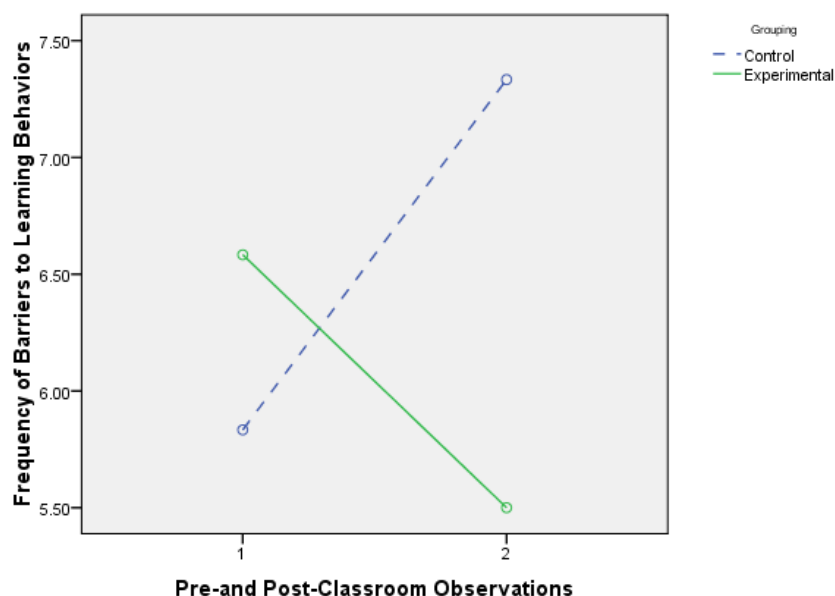


Figure 2: Group Differences in Barriers to Learning Behaviors from Pre-to Post-test.

**Descriptive analysis of trends.** In order to understand why the intervention group experienced a significant decrease in their Barriers to Learning behaviors, while the control group increased in their behaviors, scores were more closely examined. Descriptive analysis revealed significant variation in the students' average scores on each of the Barriers to Learning subscales. As shown in Figure 3, students in the control condition demonstrated a greater frequency of challenge avoidant behaviors on the

Engagement subscale, disruptive behaviors on the Meaning subscale, and incentive-driven behaviors on the Motivation subscale. An independent samples t-test revealed that students in the control group ( $M = 1.08$ ,  $SD = 1.08$ ) were *significantly* more incentive-driven than students in the intervention group ( $M = .00$ ,  $SD = .00$ ) who made no mention of rewards. Conversely, these students demonstrated a greater frequency of learning activation behaviors in regards to meaning-making.

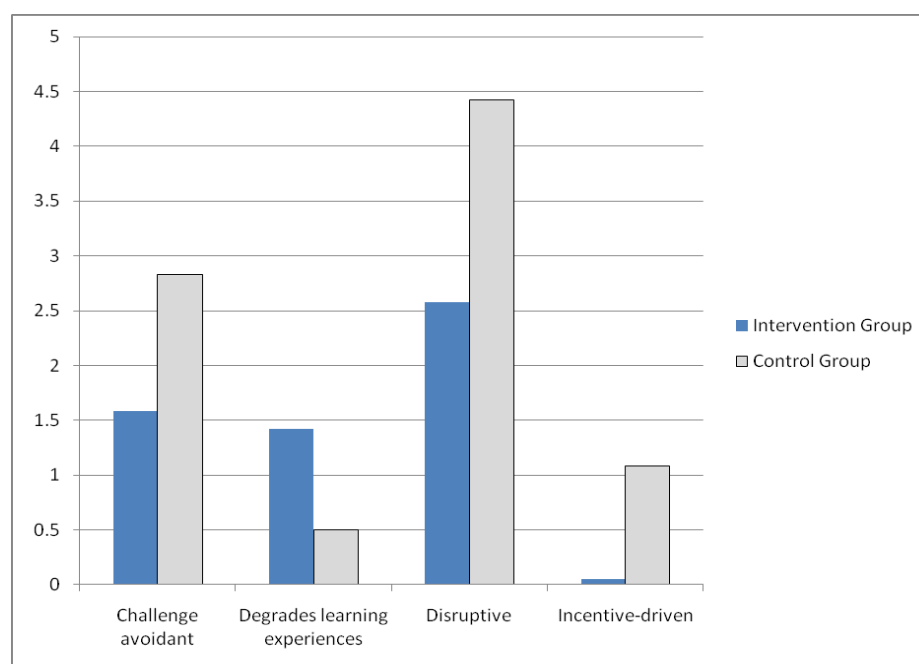


Figure 3: Mean Group Differences on Barriers to Learning subscales at Post-test

Descriptive analyses of motivational outcomes also suggest a trend of greater improvement in motivation (via self-report), Learning Activation behaviors (see Figure 4), and a greater decrease in self-reports of avoidance among students in the intervention group (see Table 5). One unexpected finding was the trend towards a performance goal-orientation among intervention students compared to their peers in the control condition.

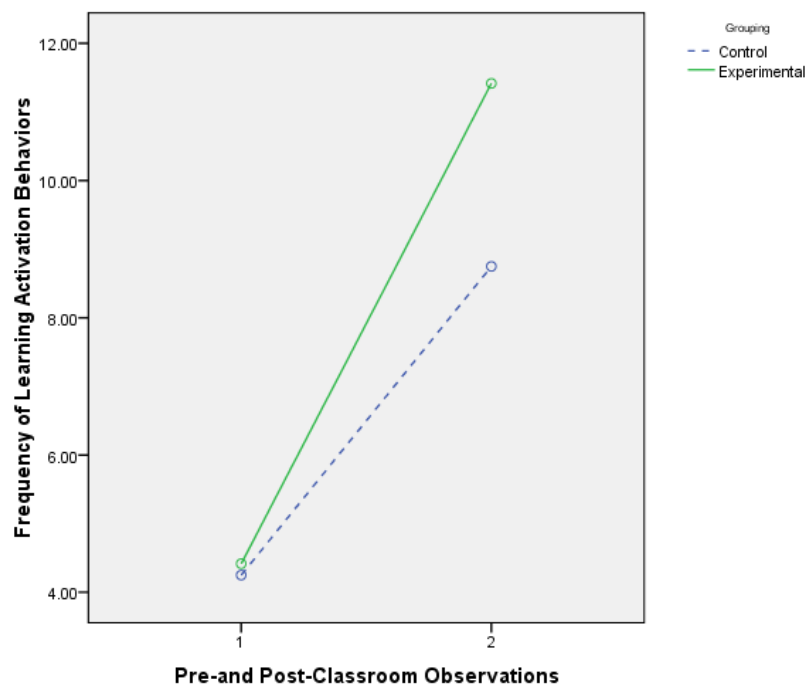


Figure 4: Group Differences in Learning Activation Behaviors from Pre-to Post-test



Table 5

*Percentage Change in Raw Scores on Motivational Measures from Pre-to Post-test*

Variable	Grouping	Percentage Change
<b>Reading Ability</b>		
Motivation self-report	Control	10 %
	Intervention	16 %
Avoidance self-report	Control	- 24 %
	Intervention	- 27 %
Performance avoidance self-report	Control	- 46 %
	Intervention	- 45 %
Behavioral measure of goal orientation	Control	39 %
	Intervention	- 26 %
Observation of Barriers to Learning Behaviors	Control	26 %
	Intervention	- 16 %
Observation of Learning Activation Behaviors	Control	105 %
	Intervention	158 %

### **Influence of Reading Ability on Motivation Outcomes**

Students were categorized into reading subtypes by their performance on standardized measures considered to be diagnostic of phonological and naming speed deficits (O'Brien et al., 2011). Students who achieved a scaled/standard score in the below-average range (one standard deviation below the mean) on a measure of phonological processing (Comprehensive Test of Phonological Processing - Elision subtest) *and* naming speed (Rapid Automatized Naming/Rapid Alternating Stimulus -

Letters subtest) were labeled as having a double deficit ( $n = 5$ ). Those with below average scores in *either* area were labeled as single deficit ( $n = 7$ ). The remaining students were classified as having a general weakness ( $n = 12$ ).

A two-way between-groups ANOVA was conducted to explore the effect of a single, or double, or no reading deficit, and the intervention on motivational outcomes (i.e., students' self-reports of motivation, avoidance, and performance avoidance, observed Barriers to Learning behaviors, observed Learning Activation behaviors, and goal orientation). There were no statistically significant main effects, or interaction effects between the reading subtypes and the instructional condition (i.e. intervention vs. control). It is important to note that when the groups were initially created, four of the students with double deficits were grouped together because of their age and ability level. The fifth student with a double deficit was placed in an intervention group by chance.

An examination of the descriptive statistics in Table 6 indicate a trend towards a learning-goal orientation among students with general weakness who received the intervention ( $M = 1.75$ ) as compared to those with a single ( $M = .67$ ) or double deficit ( $M = 1.00$ ). Those students classified as single deficit, particularly those who received the intervention, demonstrated the greatest number of Barriers to Learning behaviors ( $M=8.33$ ) in the classroom, and a strong tendency towards a performance-goal orientation on reading-related tasks ( $M = .67$ ). The students classified as double deficit, all of whom received the intervention, demonstrated the greatest number of Learning Activation behaviors in the classroom ( $M = 15.40$ ), twice the number of the intervention students with a general weakness ( $M = 7.25$ ).

Table 6

*Post-test Motivation Outcomes by Reading Subtype*

Subtype	Motivation Self- Report <sup>1</sup>	Avoidance Self- Report <sup>2</sup>	Perform. Avoid. Self- Report <sup>2</sup>	Barriers Behaviors <sup>3</sup>	Activation Behaviors <sup>3</sup>	Goal Orientation <sup>4</sup>
<b>General Weakness</b>						
Control (n = 8)	7.50	1.38	.37	7.00	7.75	1.63
Intervention (n = 4)	6.50	1.00	.50	5.00	7.25	1.75
<b>Single Deficit</b>						
Control (n = 4)	6.50	1.25	1.25	8.00	10.75	1.25
Intervention (n = 3)	6.66	1.33	1.00	8.33	10.33	.67
<b>Double Deficit</b>						
Intervention (n = 5)	7.17	1.20	1.00	4.20	15.40	1.00
Control (n = 0)						

<sup>1</sup>Motivation self-report is a raw score out of 9 points. This score is a composite of three subtests and a higher score indicates greater of *efficacy*, interest in *challenges* and pursuit of *mastery* opportunities.

<sup>2</sup>Avoidance and Performance Avoidance are each raw scores out of 3 points. A higher score indicates increased behavior in each particular area.

<sup>3</sup> Barriers to Learning and Learning Activation Behaviors are each raw scores out of 27 points. A higher score indicates increased behavior in each particular area.

<sup>4</sup>Goal orientation scores range from 0 - 3 with a higher score being more Learning goal-oriented.

## Correlations

Correlational analyses were conducted to measure the relationships between measures of motivation, goal orientation, and reading ability at the conclusion of the program. See Appendix G for a full listing of correlations.

**Positive correlations.** At the end of the program, there was a significant positive relationship between students' goal orientations on reading-related tasks, phonemic awareness (via CTOPP-Elision subtest)  $r(24) = .60$ ,  $p < .01$ , and self-reports of motivation,  $r(24) = .43$ ,  $p < .05$ . In other words, those students who demonstrated a learning goal orientation, scored higher on a measure of phonological processing, and were more likely to report high levels of motivation. Multiple significant positive correlations were also found between measures of reading ability.

**Negative correlations.** At the conclusion of the program, students who engaged in a greater number of Learning Activation Behaviors scored lower on almost all measures of reading ability including: foundational skills such as phonemic awareness,  $r(24) = -.41$ ,  $p < .05$ , and rapid letter naming,  $r(24) = -.44$ ,  $p < .05$ ; single-word reading measures such as, phonemic decoding efficiency,  $r(24) = -.63$ ,  $p < .01$ , sight word efficiency,  $r(24) = -.54$ ,  $p < .01$ , word attack,  $r(24) = -.49$ ,  $p < .05$ , and word identification,  $r(24) = -.52$ ,  $p < .05$ ; and connected-text measures such as, word-reading accuracy,  $r(24) = -.45$ ,  $p < .05$ , and oral reading fluency,  $r(24) = -.59$ ,  $p < .01$ . It is important to note that students in the intervention group demonstrated weaker reading performance in most of the aforementioned measures upon completion of the program than their peers in the control group (see Table 3). There were no significant negative correlations found

between Learning Activation Behaviors and measures of semantic ability or passage comprehension. No other significant negative correlations were found.

### **Results of Final Teacher Interviews**

All six teachers from the summer reading program were interviewed during the final week of the program. Teachers who instructed the same groups as a Wilson/RAVE-O team were interviewed together. As described in the Methods section of this document, interviews were scheduled for one hour each and in order to make the best use of their time, teachers were sent the primary interview questions in advance. Interviews were audiotaped for transcribing purposes. An open coding process was initiated in order to identify themes and patterns of teacher's responses (Berg, 1989). Data was transcribed from audio recordings and entered into Dedoose ([www.dedoose.com](http://www.dedoose.com)) an online qualitative research data management and analytic program. Themes from the comments were extracted and data were hand coded. Codes that emerged from this initial process were collapsed, recoded and merged through multiple processes of analysis. The final data reduction process resulted in 11 "child" codes that fell under three "parent" categories. See Table 7 for a list of codes and definitions.

**Group differences.** Teachers were asked to identify any differences in the achievement language and behaviors among students in the intervention and control groups. In general, the teachers described the intervention group as being more community-oriented, learning goal-oriented, and intrinsically motivated, whereas the control group was depicted as being more extrinsically motivated, and performance goal-oriented.

Table 7

*Definitions of Qualitative Codes used to Analyze Final Teacher Interviews*

<b>Code</b>	<b>Definition</b>
Community-oriented	Putting effort into relationships with peers, attending to the needs of others, commenting on a peer's progress or success, and in general building a learning community.
Learning-Goal Oriented	Attending to the learning process, acknowledging personal progress, and a willingness to attempt challenges.
Intrinsically motivated	Engaging in tasks because they are personally-meaningful, interesting, or related to greater purpose, such as Hopes and Dreams.
Performance-Goal Oriented	A focus on outcomes, evaluating one's performance against that of his/her peers, protective of weaknesses, and reluctant to admit when tasks are challenging.
Extrinsically motivated	Pre-occupation with incentives or achieving a particular standard or outcome, and a lack of motivation when incentives are not present.
<b>Effective Strategies</b>	
Supersets	A metaphor to help children understand how challenges build reading muscles. Superset activities are short tasks that are slightly beyond the student's current ability level.
Compliments from peers	Compliments that highlight processes of learning over products of knowledge are emphasized.
Integrating outside texts	Children's literature selected for its depiction of a fictional or non-fictional character setting goals and overcoming challenges.
Think-alouds	An explicit instructional practice by which teachers model target beliefs and behavior by verbalizing their thoughts for students to replicate.
<b>Challenges</b>	
Timing	Refers to the brevity of the program, daily instruction, or students' age.
Breaking from the curriculum	Refers to deviations from the scripted curriculum.

Teachers also commented on the efficacy of individual strategies, and almost all the practitioners reported that the control group progressed through a greater amount of curricula and spent more time reading connected-text during class than their intervention peers.

***Intervention group.*** All of the teachers (6) reported that students in the intervention group were community-oriented and put effort into developing their relationships with their peers. They commented that the students were “very supportive”, “appear to be working together”, “formed connections with each other instead of always looking to the teacher for a relationship”, and “even when they had the option to work independently (during academic choice), choose to work collaboratively”.

All of the teachers also described the intervention students as possessing characteristics that are associated with a learning goal orientation. Many of the teachers (3) made mention of the students’ attention to the process of learning and ability to self-regulate, particularly as they identified the strategies required in order to be successful. Several teachers (3) noted that students “regularly referred to the RAVE-O Town tips and tricks when they struggled to read a word.” Two teachers made mention of students’ ability to “offer compliments to each other that were process-based such as, I noticed you were thinking for yourself” By the end of the program, three teachers reported that students were able to articulate a specific Hope and Dream that emphasized *behavior* instead of an *outcome*.

Hopes and Dreams were difficult for students, even during the last week of the program. We spent time processing our successes and challenges first. Some kids really struggled, and one student said “I want to read more fluently.” I knew fluently was a catch phrase she

had heard a lot and I wasn't sure she knew what it meant. When I probed her, she could say "more smooth". One student said, "I want to read louder and more confidently," and she even admitted that, "sometimes when she thinks she's going to make a mistake she tend to read more quietly." *Eloise, Wilson, Group 3*

Teachers also commented that students in the intervention group were more willing to attempt challenges (5). Sandy, RAVE-O teacher, noted that the students' preferences for challenging tasks were often contagious, citing one example of when one student "reached beyond his ability, everyone else seemed inspired."

**Control group.** Teachers described the students in the control group as more extrinsically motivated, and appeared to be working for rewards such as games, stickers and rewards. Several teachers (3) acknowledged that the incentives they used in the program, such as small prizes for reading a book, were effective at increasing reading frequency during class, but felt that the students became "obsessed" with the prizes. "I have been noticing that the control group spends more time reading independently because they want the stickers," noted Karla, RAVE-O teacher, "the experimental group still struggles a bit with reading independently, although when they do read they tend to reflect more on the content, but for the control group the prize is just the incentive they need to read more." Another teacher commented that it often took only one pre-occupied student to impact the attitudes of the other members of the group. Eloise, a Wilson teacher, said, "We had one student who was clearly motivated by the rewards, and would ask about them every day. 'When are we getting our prizes, how many do I get if I finish the book?' His attitude really affected the group and



it wasn't long before another student who was initially pretty motivated only wanted to read for prizes."

Most of the teachers (5) also reported that students in the control group appeared more performance goal-oriented. In particular, they were competitive with their peers, focused on teacher's evaluations of their work, and concerned with masking their weaknesses. Karla, RAVE-O teacher, commented that many of her students would "cover their work out of fear that someone else will copy them." Laura, Wilson teacher, said that her students were overly concerned with their reading ability as compared to their classmates and "preferred to work one on one with an assistant teacher, so no one would see their mistakes." Eloise, Wilson teacher, shared that her students in the control group "would often look up at me after reading each sentence such as 'Did I get it right?' I don't see that in most of the kids in the experimental group."

Teachers (5) also noted that students in the control group were very reluctant to admit that anything was difficult and would impulsively say a task was "easy or boring" even though the teachers "were certain their abilities were being challenged." As Sandy, RAVE-O teacher, noted, "The control group would say 'this is easy' no matter what the task is, before they even started anything. I don't know if that was a defense mechanism or something they 'should' say, and I'm referring to tasks that were actually challenging for them. They would almost always say, 'this is easy' or 'I don't know'." Another RAVE-O teacher, Kathy, mentioned that one student in her intervention group, Gus, initially made many

derogatory comments about how easy the assignments were, but once he allowed himself to become more vulnerable within the group the comments disappeared.

In the beginning we saw a lot of “this is easy”, “that is easy”, “everything is easy”, “I don't even know why I'm here.” The vulnerability to be able to admit when something is challenging or hard and name it like, “this is what is confusing me”, was something that developed over time in Gus. Now he focuses much more on the strategies he is using than on whether something is easy or hard. *Kathy, RAVE-O, Group 1*

**Effective motivational strategies.** Teachers were also asked to identify which motivational strategies, if any, they found particularly effective in fostering Learning Activation behaviors. All of the teachers (6) felt the Supersets were useful tools for both conceptual and practical purposes. Kathy, RAVE-O teacher, said that the weight lifting metaphor offered valuable tangible language for “making the invisible, what is happening in your brain, visible to students.” Other teachers commented that a formal activity dedicated to challenges, making mistakes, and reflection on the learning process was useful.

I think the Supersets were a really powerful way to challenge students in a formal, conscious way. I think it helped scaffold the discussion about making mistakes. I have often had discussions about making mistakes without the activity and I don't think it has the same impact. I really felt like the kids changed in the way that they perceived mistakes. The explicit discussion about having a challenge, and that is something we all do and being aware of the process, and thinking about what its going to feel like to be challenged ahead of time helps prepare them. *Karla, RAVE-O, Group 3*

Sandy, RAVE-O teacher, noted that explicit experience with failure in a controlled environment offers students an opportunity for problem-solving that will benefit them in the future. “Whether or not it’s myself or somebody else,

(making mistakes) is something that the kids need explicit instruction on, such as ‘this is what you do when you're stuck’ and ‘this is what you do when you fail’, because you are going to fail sometimes, everybody does.”

Several teachers (3) mentioned that compliments from peers served as the foundation for building a community and transforming behavior. The teachers noted that the students were “just beginning to get more process-based in their compliments”, and “rather than saying good job or I like your shirt”, they were focusing on other students’ efforts. Sandy, RAVE-O teacher, felt that the support from peers was a particularly powerful tool in not only building community but also encouraging risk-taking. She noted that the compliments,

Can be a little embarrassing...but they are taking it in, and saying, ‘this is hard for me to do, but there are some things I'm doing really well, and other people are noticing, and I'm going to notice it too.’ I think that builds a sense of trust, and competence, and once they feel safe in an environment, they are more willing to try new things.

Integrating texts that depicted fictional and historical characters pursuing goals and persisting with challenges was also regarded as an effective strategy (3). According to the teachers, the books “helped students by hearing about achieving goals in other contexts”, “offer real-life examples of overcoming challenges” and can provided mantras for the students to recite when they encounter difficulties. Over the course of the program, teachers began independently identifying books they thought would be relatable. Laura, Wilson teacher, selected the book *Salt in His Shoes: Michael Jordan in Pursuit of a Dream* (Jordan & Jordan, 2003), which “described how Michael Jordan struggled as a boy because he was too short to

play basketball on the school team.” Karla, RAVE-O teacher, identified the book *Snowflake Bentley* (Briggs Martin, 1998), a historical picture book about a photographer who undergoes significant trials to capture the first snowflake on film, as a platform for discussing the role of errors in achieving goals.

*Snowflake Bentley* was a great jumping off point for explicit discussions about mistakes. That wasn't an explicit part of the experimental strategies, maybe implicit, but we talked a lot about mistakes. The characters in the books made mistakes, I shared my mistakes openly, and although the students didn't draw specific attention to their errors, they seemed less concern with being vulnerable. Mistake by mistake, snowflake by snowflake (a line in the book *Snowflake Bentley*) became our mantra. *Karla, RAVE-O Teacher, Group 3*

Finally, several teachers (3) noted that the use of Think-alouds helped students who struggled with expressive and receptive language weaknesses internalize many of the conceptual motivational strategies. Laura, a Wilson teacher, worked closely with Jonah, a second grader who carries a diagnosis of an Autism Spectrum Disorder. Jonah struggled with some of the metaphors and meta-cognitive reflection that was inherent to the motivational strategies. Laura reported modeling several different techniques to help him reflect on his learning process. “There was one time when I was working with Justin on a Superset and I said, ‘You know what makes it hard for me to learn, when I see lots of other things going on. I get really distracted.’ Jonah didn’t say anything, he just sort of nodded, but a few days later when we were doing Academic Choice, Jonah shouts out, ‘Hey guys, I need some quiet so I can think’. Of course I

would rather him not shout out but I had never seen him advocate for himself before. I think he was really taking it in.”

**Challenges with instruction.** Teachers were asked to identify any challenges they experienced integrating motivational strategies into reading instruction. All the teachers of Group 1 and Group 2 (4) felt that the time allotted for instruction, and the program in general (i.e., five weeks), was insufficient to fully develop students’ motivation. The teachers commented that over the first three weeks of the program they laid the framework for the motivational strategies with lots of explicit instruction, and only in the fourth and fifth week did the students begin to “develop a sense of community” and “reflect on their own learning process, particularly with Supersets.” Mary, Wilson teacher, also noted that she felt a little “overwhelmed” by the brevity of the program, the diverse nature of students’ needs in her group, and the task of integrating motivational strategies. Several teachers (3) felt the older students responded more “quickly” and “thoughtfully” to the strategies, whereas the younger students, particularly in Group 1, required a greater frequency of explicit strategy instruction.

Two of the Wilson teachers and one RAVE-O teacher reported that breaking from a scripted curriculum to integrate motivational strategies made them uncomfortable. Laura, Wilson teacher, noted that “Wilson is a very structured program, and at first I had to adjust to a lack of structure.” Mary, Wilson teacher, was concerned because she felt “that the intervention group was not going to learn as many skills as the control group” and noted that she did “get further in the Wilson program with the control group.” Sandy, RAVE-O teacher,

commented that embedding the strategies in the RAVE-O curriculum was challenging because she was accustomed to dedicating a portion of her classroom time to the RAVE-O activities only, and felt the motivational strategies “lent themselves more naturally to guided-reading exercises, rather than discrete skill-building.” She added, “I had to give myself permission to change what was scripted in the RAVE-O program.”

**Future instruction.** Although the teachers were not explicitly asked if they would integrate motivational strategies into their instruction during the school year, in the interview, the subject was independently raised by several of the teachers. Four teachers, including the three teachers who mentioned specific challenges with the integration process, intended to carry these strategies into their school year instruction. Sandy, RAVE-O teacher, noted that every year she attempted to provide wraparound instruction, teaching motivational strategies across content-areas in order to emphasize their importance and offer the students a multitude of practice, but she was never certain how to accomplish it. She commented, “Now I see what it takes to make the classroom truly wraparound, and I am beginning to think differently about the meaning of skill-building.” Laura, Wilson teacher, acknowledged being concerned about how she would balance the motivation strategies when she already felt pressured to ensure students met their IEP goals. Yet, she also noted that the behavioral changes she witnessed in the summer program were “inspiring”, and intended to use strategies such as developing students’ Hopes and Dreams and bringing in outside texts to “emphasize how students can overcome challenges.” Finally, Mary, a special

educator trained in the Wilson program, and a Wilson teacher in the summer program shared that integrating strategies was a very different pedagogical experience than her school year instruction. She identified several positive aspects of the motivational strategies, but was conflicted as to whether they were practical to integrate into her school year approach.

I think I learned a lot and grew a lot as an educator. I have been trained in more discrete trial programs. Wilson is very structured and this is what you do every day, its very drill based. This was very different and it was difficult at first to balance that, especially because the time on the actual skills and drills was less because we had to work on the strategies and on the community building. The question is what is more important?

I usually use something similar to these strategies with the students after I've known them for awhile, like we talk about setting goals in January. But this has taught me that even in such a short period of time you can really make a difference and have these conversations with students.

Maybe at the beginning of the school year I do this and front load these discussions. I do like the idea of using the Supersets, the term and weight lifting association. I do like the idea of goal setting, even if their goals aren't concrete, being able to revisit goals later in the year. I like the idea of both of those and I hope I am able to use them in my instruction. *Mary, Wilson teacher, Group 2*

### **Qualitative Findings by Group**

Interviews conducted with teachers also revealed many insights about the practical implications of embedding motivational strategies within specialized reading instruction, and the variety of students' responses to the curriculum. Two of the intervention groups' experiences are discussed in detail below.

**Group 1.** The first intervention group was taught by Kathy (RAVE-O) and Laura (Wilson) and consisted of four students (3 male, 1 female) entering the 2<sup>nd</sup> and 3<sup>rd</sup> grade. Upon entry to the program the students performed in the below-

average on measures of connected text (SRI Word Recognition Accuracy,  $m = 6$ , range 3 – 9) and passage comprehension (SRI Passage Comprehension,  $m = 7.25$ , range 3 – 10). See Table 8 for students' pre-test standard/scaled scores on measures of reading ability. Only one student, Jonah, a 3<sup>rd</sup> grader met the criteria for a double deficit. Jonah also carried a diagnosis of a Mixed Expressive/Receptive Language disorder and PDD. Jonah was considered the weakest reader in the group, measuring at approximately a K.9 level at the end of 2<sup>nd</sup> grade. The two other 3<sup>rd</sup> graders, Gus, with a single deficit in phonological processing and Lilah, with a general weakness in reading, scored in the average range on reading efficiency measures of single-word and non-word decoding, but below-average on measures of connected-text accuracy.

The final student, Harry, a 2<sup>nd</sup> grader, scored in the average range on all measures of reading ability. On his application, his mother reported that Harry was not “keeping up” with the reading assignments in school. Harry did not carry any diagnoses when he entered the program but struggled to sustain attention for longer than several minutes and required regular movement breaks. At the parent/teacher conference during the third week of the program, Harry’s teachers recommended an assessment for ADHD and during the last week of the program he was placed on a low dose of a stimulant medication.

In regards to the students' initial achievement beliefs and behaviors, the two students with the weakest reading skills, Jonah and Gus, exhibited the greatest tendency towards a performance-goal orientation on reading-related tasks; when given an option between two version of the same text they selected



the easy version three out of three times. Gus also reported the lowest level of motivation (a composite score of efficacy beliefs, willingness to attempt challenges and pursuit of mastery opportunities) (raw score = 2, 22%), and the greatest tendency towards performance avoidance (raw score = 2, 67%) (see Table 9).

Table 8

*Pre and Post-test Reading Scores for Group 1*

Measures	Jonah	Gus	Lilah	Harry
Phonological Processing (Elision Subtest)				
<i>Pre-test</i>	6	7	10	8
<i>Post-test</i>	---	---	---	---
Rapid Naming (RAN Letters)				
<i>Pre-test</i>	77	95	102	106
<i>Post-test</i>	---	---	---	---
Sight Word Efficiency (TOWRE)				
<i>Pre-test</i>	65	88	87	99
<i>Post-test</i>	67	81	88	94
Phonemic Decoding Efficiency (TOWRE)				
<i>Pre-test</i>	66	89	87	99
<i>Post-test</i>	78	82	82	93
Word Identification (WRMT)				
<i>Pre-test</i>	76	98	94	102
<i>Post-test</i>	76	98	92	99
Word Attack (WRMT)				
<i>Pre-test</i>	86	95	89	102
<i>Post-test</i>	86	95	89	106
Word Recognition – Passages (SRI)				
<i>Pre-test</i>	3	5	7	9
<i>Post-test</i>	1	7	6	8
Reading Comprehension (SRI)				
<i>Pre-test</i>	3	8	8	10
<i>Post-test</i>	4	9	8	10

Table 9

*Pre-and Post-test Motivation Outcomes for Group 1*

Measures	Jonah	Gus	Lilah	Harry
Goal Orientation <sup>1</sup>				
<i>Pre-test</i>	0	0	2	3
<i>Post-test</i>	0	0	1	3
Motivation Self-Report <sup>2</sup>				
<i>Pre-test</i>	7	2	8	6
<i>Post-test</i>	5	6	8	9
Avoidance Self-Report <sup>3</sup>				
<i>Pre-test</i>	2	2	3	0
<i>Post-test</i>	2	2	2	2
Performance Avoidance Self-Report <sup>4</sup>				
<i>Pre-test</i>	2	1	3	3
<i>Post-test</i>	2	1	3	3
Learning Activation Behaviors <sup>5</sup>				
<i>Pre-test</i>	3	1	4	0
<i>Post-test</i>	8	13	10	11
Barriers to Learning Behaviors <sup>6</sup>				
<i>Pre-test</i>	3	20	7	13
<i>Post-test</i>	2	16	3	16

<sup>1</sup>Goal orientation scores were categorized as:  $1 \leq$  *Performance oriented*,  $2 \geq$  *Learning oriented*

<sup>2</sup>Motivation self-report is a raw score out of 9 points. This score is a composite of three subtests and a higher score indicates greater of *efficacy*, interest in *challenges* and pursuit of *mastery* opportunities.

<sup>3</sup>Avoidance and Performance Avoidance are each raw scores out of 3 points. A higher score indicates increased behavior in each particular area.

<sup>4</sup> Learning Activation and Barriers to Learning Behaviors are each raw scores out of 27 points. A higher score indicates increased behavior in each particular area

When research assistants observed the group during the first week of the program, Gus exhibited the greatest number of Barriers to Learning behaviors (raw score = 20, 74%) which included "purposefully interrupting the teacher to seemingly avoid a task", "distracting other students with jokes and silly sounds", being "overly concerned about the possibility of rewards during a word game", and making derogatory comments about his own ability, the process of making mistakes in learning, and the summer program. Kathy and Laura described Gus as having a "big bravado", "poor attitude", "rushing through work", "commenting that all the tasks were too easy", and "constantly attempt to distract other students."

I think Gus came in here with a lot of baggage, and we gave him a lot of attention and now he is starting to feel good about himself. In the beginning, any opportunity to connect a concept to something silly and he would try to take over the lesson with an announcement or a story. He complained about every ailment, stomachache, headache. Anything to avoid reading an actual book.  
*Kathy, RAVE-O Teacher, Group 1*

In the middle of the second week the teachers and I agreed that Gus' attitude and behavior was detrimental to the group and decided to hold a meeting with Gus and his mother. During our meeting, we wanted to emphasize the four principles (autonomy, belonging, competence and meaning) that form the pillars of the intervention. We also wanted to use a relatable metaphor to explain to Gus how certain behaviors will help him achieve his Hopes and Dreams while others will detract from his achievement.

The conference began by acknowledging its purpose, that we weren't seeing the best side of Gus in class. I presented Gus with a picture of the United States Olympic Basketball Team, which included all of the teammates and their coaches. We asked Gus to identify the coaches, and describe their job, which he was easily able to do. Then we used the concept of an Olympic team and their coaches as a metaphor for the Gus' relationship with his classmates and teachers in the summer program. We noted that just such as an elite basketball team, where each member is selected for the skills they bring to the table, Gus was selected to be in this particular group because of the skills he has already mastered and those he has yet to learn. Just like Olympic coaches help the players reach their goals by guiding them towards behaviors that are "on target" and support their skill development such as running drills, conducting practice games, eating healthy, weight training, and away from behaviors that are "off target" and diminish their skills such as, not sleeping or goofing off during practice, Gus' teachers guide him towards behaviors that will help him achieve his Hopes and Dreams (e.g., reading comic books), and away from behaviors that detract from his goal. Gus' teachers reiterated that in order to improve in basketball, or be able to read comic books, we need to challenge ourselves.

Gus you will know when you are challenging yourself because the reading gets a little hard. Do you know what I mean, sometimes you're reading along and everything seems pretty easy, but then all of a sudden you'll come to a word or a sentence and it's hard. Well that is the perfect place for you to call on your coach. That is my job as your teacher; to step in and help you remember all skills that can help you read that sentence. *Kathy, RAVE-O, Group 1.*

Gus was an active participant throughout the conversation and seemed energized by the team metaphor, in fact he asked to keep the picture of the basketball team in his binder as a reminder. Kathy and Laura agreed to find several comic books and graphic novels to afford Gus an opportunity to challenge himself and achieve his goal. We ended the meeting by presenting Gus with a reflection sheet, which was structured to allow Gus to focus on two “on target” behaviors each day. All behaviors were worded in positive terms and included items such as, “waiting your turn to speak”, “generating meaningful ‘learning links’ between new content and previous material”, “complimenting classmates”, “listening actively while others are reading”, and “attempting superset tasks”. At the end of the day, Gus would meet briefly with a teacher to reflect on his progress towards his two “on target” behaviors, on his overall learning experience, and to identify which behaviors he would like to focus on the following day. Gus’ teacher would send home a message summarizing his progress to his mother. Kathy and Laura felt that the meeting was a turning point for Gus’ behavior. They felt that identifying specific “on target” behaviors, and showering him with lots of positive adult attention was transformative for Gus.

I started using the language on target/off target very consistently and now he is catching himself and saying, “Oh that’s off target.” Last week Harry told a tangential story and Gus said “That’s off target, we need to get back on the task at hand.” Of course it’s easier for him to point it out in other people than himself, but I think the reflection sheet has gone a long way in reminding him which behaviors we want to see. Tomorrow morning, before class starts I will give him the opportunity to choose which behavior he wants to focus on, and then when he slips I’ll remind him, “You said you needed to work on waiting your turn.” Rather than fighting about it he usually says “Oh yeah”. It’s like “I did say that” and I committed to it. That’s giving him the power, and he

loves to be in charge of our timer that tracks the time remaining for the lesson. He refers to the timer in a helpful way to get kids back on track like "Guys, we got 20 minutes still." *Kathy, RAVE-O, Group 1*

Gus also demonstrated a strong response to explicit discussions about mistakes, particularly normalizing the role of mistakes in the learning process.

In the beginning, I think a lot of Gus' need to call out was coming from a place of, "I need to shout it out so I can show you that I know this." Gus viewed mistakes as a deficit or a failure. He was on the edge of his seat discussing mistakes at the beginning, "No, they are bad, no one should make mistakes." We had a lot of conversations about mistakes, read picture books about characters making mistakes, and thought about how we learn from our mistakes. If you make a mistake stop and think about what is going on here, maybe it's because two words look similar. Give yourself a little tip so you can get over that hurdle. I don't think he likes it but he can talk about it. He's more relaxed now and sometimes still wants to shout out but with a reminder can regulate his impulsivity. *Kathy, RAVE-O, Group 1*

In addition to addressing Gus' initial avoidance behaviors, Kathy and Laura reported other challenges with the group, most notably they had concerns about Jonah's ability to comprehend the intervention strategies. Laura was particularly concerned that the abstract concepts, complex language, and meta-cognitive thinking required in the intervention would surpass Jonah's receptive language abilities.

In the beginning I thought, this is going to be way over Jonah's head. He can't articulate his goals. He definitely can't reflect on his progress, or come up with compliments for other students, and I just couldn't read how much he was taking in. But I realized I needed to slow down, break down the language, model a response, and give him some space to form his answer. *Laura, Wilson Teacher, Group 1*

Laura and Kathy met regularly with each other and with me to discuss how to differentiate the reading instruction and the motivational strategies for Jonah.

Laura reported applying several approaches that are considered “best practices” for working with children who struggle with language-based disabilities. These practices included simplifying language, modeling Think-alouds, employing concrete examples to explain conceptual ideas, relying on visual cues, and providing the scaffolding necessary to help extend Jonah’s expressive language.

For example, yesterday I asked Jonah to catch Lilah doing something good. I checked in with him a lot to see if he was noticing her behavior. He mentioned several behaviors and together we had to determine whether they were related to reading. Like he said she was really happy and shared her snack but he also said she that she chose the extra dictation. When it came to giving the compliment he couldn’t do it independently but I was able to cue him by reminding him of the 2<sup>nd</sup> dictation and he delivered the compliment to Lilah and made eye contact. *Laura, Wilson Teacher, Group 1*

Both teachers acknowledged that even though the pace of change was significantly slower for Jonah, they still noticed improvements in his ability to reflect on his own behavior and thinking, and be more aware of other students’ behavior.

It takes him a few turns to get the hang of what we are doing and he certainly is not as meta as the other children, and he can be a bit withdrawn but I have seen gains. He is able to advocate for his needs. Just the other day the class was getting a bit boisterous and Jonah said, "C'mon everyone I need it quiet to be able to think." Of course I am always asking him if he needs a quiet thinking moment, but I think he said it because he was comfortable with the group and he knew what he needed to be successful. *Kathy, RAVE-O Teachers, Group 1*

Kathy also reported that Jonah experienced success with academic choice activities. During one of my observations, Kathy’s offered the class four different stations to practice building words with short vowel “a” and “i” rhyme patterns.



Each station was supplied with different tactile materials such as letter beads, letter stamps, whiteboards and letter tiles. Kathy began the lesson by sharing the goal of the exercise with the students (to practice building words with short “a” and “i” rhyme patterns). Then she previewed each center, asked the students to identify where they would like to work, and had them plan how they would achieve the lesson’s goal. Jonah was immediately able to identify the stamp center as his preference, but struggled to plan how he was going to build the words. Kathy used guided questioning to help him decide which way to turn the paper, the direction to list the words, and what color ink pad he wanted to use. Jonah was very productive during this activity. He worked diligently and created close to a dozen words, which according to Kathy was twice the number he was able to create with pencil and paper.

Jonah really came out alive during the choice activity. I could see that stamps facilitated a much easier transfer of knowledge than a pencil. I don’t think Jonah would have been able to articulate his preference if the choices hadn’t been put before him. He worked so consistently and diligently during this task and wasn’t bothered by any of the background noise that usually is so distracting to him.

*Kathy, RAVE-O teacher, Group 1*

Although Harry did not struggle with basic reading skills to the degree of some of the other students in the group, it was very challenging to keep him engaged and focused. Laura commented that she worked to create superset activities in which students would not only be challenged cognitively but also physically, like running word relays or embarking on word scavenger hunts across the Tufts campus, specifically for Harry's benefit. She felt these tasks were a good combination of providing physical stimulation, building reading skills, and

offering exposure to small doses of challenges. Kathy employed what she referred to as, “traditional” behavioral modifications, like having Harry sit on a ball, and providing regular movement breaks. Interestingly, the teachers reported that Harry was very drawn to the weights that were kept in the classroom to illustrate the muscle-building component of the Supersets. Harry would carry and lift the weights while he was reading, and commented that they “helped him focus”, and that he “was building his reading muscles and his arm muscles at the same time.”

During the final week of the program, the students were observed by the research assistants for a second time. Nearly all of the students reduced their frequency of Barriers to Learning behaviors, and all of the students increased the frequency of Learning Activation behaviors. Most notably Gus (raw score = 13, 48%) was observed to make multiple connections between his knowledge, his goals and current tasks, and Harry (raw score = 11, 41%) voluntarily gave other students compliments, and persisted with assignments independently. Gus also reported an increase in his motivation (raw score = 6, 66%), and although his goal orientation and self-report of avoidance and performance-avoidance remained unchanged, he was the only member of the group to improve his performance on measures of connected-text word reading accuracy (ss = 7) and passage comprehension (ss = 9).

**Group 2.** The second intervention group consisted of four students (3 females, 1 male) entering 4<sup>th</sup> and 5<sup>th</sup> grade. All of the students qualified as having double deficits. On average, their single sight-word and phonemic decoding

efficiency skills (according to the TOWRE subtests) were in the below-average ( $M = 80.75$ , range 92 - 67), and the poor range ( $M = 70.5$ , range 66-76) respectively, while their connected text abilities (according to the SRI subtests) were in the poor range for word recognition accuracy ( $M = 3.75$ , range 1 - 6) and the below-average range for passage comprehension ( $M = 6.75$ , range 3 - 10). Overall, these students were reading between one and one half to three years below grade level. (See Table 10 for a detailed description of their pre-and post-test reading scores.)

In regards to their achievement beliefs and behaviors, the group's teachers, Mary (Wilson) and Sandy (RAVE-O) reported that the students were virtually split in terms of their engagement and motivation. Leo, 5<sup>th</sup> grade and Felice, 4<sup>th</sup> grade, who had relatively weaker skills compared to the other students in the group, were initially more "open", "involved" and "enthusiastic" members of the classroom. Both students demonstrated a learning goal-orientation (raw scores = 2) , tending to select challenging versions of reading texts two out of three times in an experimental setting. When interviewed about their motivational beliefs and behaviors, Leo (raw score = 9, 100%) reported the highest levels of efficacy, willingness to attempt challenges, and pursuit of mastery opportunities, but also reported elevated levels of avoidance (raw score = 2, 67%) and performance-avoidance behaviors (raw score = 3, 100%). When observed during the first week of the program, Leo demonstrated the fewest Barriers to Learning behaviors (raw score = 2, 7%), and was noted to engage in several behaviors considered to activate learning (raw score = 9, 33%) such as "reading books without

prompting”, “relating his learning to his hopes and dreams” and “eager to explore the meaning of his texts”.

The other two students, Marjorie and Nancy, both 5<sup>th</sup> graders, were very familiar with the Wilson program, having received several years of pull-out reading instruction in school, and Marjorie had previously attended the Tufts summer program (Leo also was a previous attendee of the Tufts summer program). At the beginning of the program, their teachers described Marjorie and Nancy as “resentful” and “resistant”.

Marjorie and Nancy were both familiar with the Wilson program, although they had not mastered the concepts, and I think seeing the materials was hard for them. In school, they were pulled out of the classroom for this program and I think felt a little discouraged that they were experiencing it again. Basically they walked in with chips on their shoulders. *Mary, Wilson Teacher, Group 2*

During their pre-program assessments, Marjorie and Nancy demonstrated tendencies towards performance-goal orientations, selecting the easy version of a text two out of three times. The girls also reported identical levels of motivational beliefs and behaviors (raw score = 6, 66%) and avoidance (raw score = 1, 33%), although Nancy noted elevated levels of performance-avoidance (raw score = 3, 100%), whereas Marjorie reported none. During their initial observations, Nancy engaged in nearly twice the number of Barriers to Learning behaviors (raw score = 11, 41%) compared to learning activation behaviors (raw score = 5, 18%). She was noted to be “overly concerned about her performance compared to her peers”, and “focus heavily on her peer’s activities”, often “watching them for several minutes” or “looking over her shoulder to see what her classmate was writing”, to the point that it was a “diversion in completing her own work”. Marjorie

demonstrated nearly equivalent amounts of barriers (raw score = 8, 30%) and activation (raw score = 9, 33%) behavior. She was noted to “persist with and complete challenging tasks that seemed important or meaningful to her” but was “resistant to work as a teammate, especially with Marjorie”. The teachers noted that there was significant tension between the two students and it corroded the attitude of the group.

In the first two weeks of the program, Mary reported working to build a sense of belonging by dedicating several minutes to a “morning meeting” in which the students were asked to share outside experiences. Mary noted that “at the end of the second week, they brought something in from home to share, and that really opened them up. They saw that other students were taking an interest in their lives, and I could see friendships beginning to form.” Sandy felt that the combination of creating goals, via students’ Hopes and Dreams, and having explicit discussions about the role of risk-taking in the pursuit of goals also contributed to the creation of a productive and safe environment.

The first round of Hopes and Dreams (during the first week) were a little weak, the students weren’t really sure what to say and some were copying each other, but once we started bringing in books featuring characters who set impressive goals, like The Dinosaurs of Waterhouse Hawkins and Snowflake Bentley, everyone began to get on the same page. The goals during the third week were much more personal, we referred to them pretty often. There was a sense that everyone was working towards something meaningful. Having goals also made it easier for me to hold the line with the kids. I could say “This is what we are working towards and in order to work towards this, this is what we are going to do.” It eliminated the power struggle or avoidance issues that sometimes arise. “I’m going to support you, your classmates are going to support you, let’s give it a try.” *Sandy, RAVE-O, Group 2*

Sandy noted that it was Leo and Felice's enthusiasm for Supersets, particularly when "they selected challenging texts to read aloud to the other students," that inspired Marjorie and Nancy to take risks. Sandy commented, "These are students who likely shy away from risks in the classroom because they are so far behind, but to see their peers getting up and taking risks inspired the other kids and added to the sense of community."

Creating a supportive classroom that encouraged risk-taking, offered autonomy, and provided meaningful learning opportunities, was in Sandy's opinion the optimal learning environment for Marjorie.

Marjorie needed to feel the investment from the teachers and the classmates. She needed to know that we were providing her with strategies to manage her weaknesses and help her grow as a learner and the combination of reading skills with the different motivational strategies seemed to be the perfect combination for her. She wanted to be able to voice her opinion and pursue her interests and be held to high expectations and we were able to do that for her. For example, Marjorie hates to write, but during an academic choice activity she could chose writing with a white board, or typing and it turns out she loves writing on a white board and we could scan in her work. Same thing with dictation, with a regular pencil her writing was really sloppy, but if she was able to choose her writing implement (pen, colored pencil, etc) it improved significantly, so the autonomy piece was really powerful for her. *Sandy, RAVE-O, Group 2*

Mary acknowledges that although she has witnessed substantial behavioral changes in Marjorie, she still required support and direction. "Marjorie still really needs coaxing, and she needs expectations that are very clear. We offer her autonomy, but some things are not a choice, like answering a question. I let her know that she has some time to think about it, and I'm going to come back to you and if you need help that's fine, just make an attempt."

Table 10

*Pre and Post-test Reading Scores for Group 2*

Measures	Marjorie	Nancy	Leo	Felice
Phonological Processing (Elision Subtest)				
<i>Pre-test</i>	5	5	3	5
<i>Post-test</i>	---	---	---	---
Rapid Naming (RAN Letters)				
<i>Pre-test</i>	77	84	85	85
<i>Post-test</i>	---	---	---	---
Sight Word Efficiency (TOWRE)				
<i>Pre-test</i>	92	87	67	77
<i>Post-test</i>	93	88	71	75
Phonemic Decoding Efficiency (TOWRE)				
<i>Pre-test</i>	70	76	73	<66
<i>Post-test</i>	68	80	68	72
Word Identification (WRMT)				
<i>Pre-test</i>	86	84	72	84
<i>Post-test</i>	85	86	71	84
Word Attack (WRMT)				
<i>Pre-test</i>	84	94	84	75
<i>Post-test</i>	89	99	93	84
Word Recognition – Passages (SRI)				
<i>Pre-test</i>	2	6	1	6
<i>Post-test</i>	8	7	2	5
Reading Comprehension (SRI)				
<i>Pre-test</i>	7	8	4	7
<i>Post-test</i>	10	8	3	6

Table 11

*Pre-and Post-test Motivation Outcomes for Group 2*

Measures	Marjorie	Nancy	Leo	Felice
Goal Orientation <sup>1</sup>				
<i>Pre-test</i>	1	1	2	2
<i>Post-test</i>	0	0	1	0
Motivation Self-Report <sup>2</sup>				
<i>Pre-test</i>	6	6	9	0
<i>Post-test</i>	6	7	9	4
Avoidance Self-Report <sup>3</sup>				
<i>Pre-test</i>	1	1	2	0
<i>Post-test</i>	1	1	3	0
Performance Avoidance Self-Report <sup>4</sup>				
<i>Pre-test</i>	0	3	3	1
<i>Post-test</i>	2	3	3	2
Learning Activation Behaviors <sup>5</sup>				
<i>Pre-test</i>	9	5	9	4
<i>Post-test</i>	23	14	26	18
Barriers to Learning Behaviors <sup>6</sup>				
<i>Pre-test</i>	8	11	2	11
<i>Post-test</i>	9	9	1	8

<sup>1</sup>Goal orientation scores were categorized as:  $1 \leq$  *Performance oriented*,  $2 \geq$  *Learning oriented*

<sup>2</sup>Motivation self-report is a raw score out of 9 points. This score is a composite of three subtests and a higher score indicates greater of *efficacy*, interest in *challenges* and pursuit of *mastery* opportunities.

<sup>3</sup>Avoidance and Performance Avoidance are each raw scores out of 3 points. A higher score indicates increased behavior in each particular area.

<sup>4</sup> Learning Activation and Barriers to Learning Behaviors are each raw scores out of 27 points. A higher score indicates increased behavior in each particular area.



Mary and Sandy felt as though Nancy's motivational challenges stemmed from difficulties navigating peer interactions, and an inability to reflect on her own learning process. Mary noted, "Nancy does not have an easy time socially and is trying to figure out where she belongs, she also struggles to be meta-cognitive and reflect on her own thinking process so she struggled to identify goals, and connect with other students." Although Nancy did not carry a diagnosis of receptive or expressive language disorder, her teachers used many of the language-based practices that aid students in understanding complex or abstract language and articulating their emotions. Sandy also commented that the metaphorical nature of superset activities, likening challenges to weight lifting, provided a tangible platform from which to discuss de-contextualized concepts such as risk-taking and feeling competent.

Nancy really benefited from the modeling and scaffolding. I used Think Alouds as a model for framing complements for other students and I think it gave her an internal script to complement herself. One time after Nancy completed a fairly challenging writing task I asked her what she thought went well, and she became very flustered and wouldn't respond. So I asked her if she thought it felt like a superset and that she could respond to. She thought it was challenging and together we talked about the ways it stretched her muscles, but I could also notice and name for her the strategies that she was applying correctly. The next time we met to discuss her work she was able to notice and name two strategies that went well right away. They were the same strategies I had named the previous day but that's okay, she didn't shut down at the thought of a meta-cognitive discussion. *Sandy, RAVE-O, Group 2*

When Group 2 was observed by research assistants during the final week of the program, all of the students had increased the frequency of behaviors considered to activate learning. Most notably, Marjorie (raw score = 23, 85%) and Leo (raw

score = 26, 96%) had increased their activation behaviors almost threefold. At the end of the program, Nancy (raw score = 7, 78%), and Felice (raw score = 4, 44%) reported increased feelings of efficacy, willingness to attempt challenges and pursuit of mastery opportunities. Small increases were also noted in Leo, Marjorie, and Felice's avoidance and performance-avoidance tendencies. The greatest gains in reading abilities were made by Marjorie and Nancy, who each increased their performance on four out of six standardized measures of reading ability.

## Discussion

This dissertation study employed a quasi-randomized control design to test an intervention designed to foster autonomous motivation, learning goals, and positive achievement behaviors among struggling readers. Participants were recruited from a university-based literacy program that delivered specialized instruction in the RAVE-O and Wilson curricula to struggling readers between seven and ten years old. Participants in the intervention received their reading instruction embedded with evidence-based motivational strategies, while participants in the control condition received reading instruction coupled with more conventional tangible incentives. Motivational strategies were selected to address students' needs for autonomy, belonging, competence, and meaning, areas essential to the development of learning goals and autonomous motivation. Results indicate that all participants of the literacy program made gains in two areas essential to reading achievement, skill-building and motivation; however, those students who received the intervention benefited in additional ways.

Gains among intervention participants were captured through classroom observations, measures of reading ability, and by teacher reports. Reading instruction that embedded motivational strategies was associated with fewer disruptive classroom behaviors, and greater percentage increases in students' reading skills, than the same instruction coupled with incentives. Teachers reported that intervention participants demonstrated greater willingness towards challenges and were more community-oriented than their control peers. Furthermore, the strategies employed in the motivational intervention appear to have attenuated the

significant impairments of participants with double deficits, whom as a group demonstrated the greatest frequency of positive achievement behaviors of all students in the program. Conversely, students in the control group were observed to increase their frequency of disruptive classroom behaviors, and were reported by their teachers as being pre-occupied with incentives, and overly concerned about their weaknesses. Intervention implementation was also associated with positive experiences among the teachers, who reported increased feelings of autonomy and competence. These findings are discussed below in the context of achievement motivation and implications for reading instruction. Limitations of the research are also addressed and directions for future investigations are highlighted.

### **Results from the Intervention Group**

Participation in the motivational intervention resulted in several positive outcomes. Intervention participants reduced their frequency of disruptive classroom behaviors, referred to as Barriers to Learning Behaviors, because in addition to disrupting instruction, these behaviors create impediments to learning. Also notable were the improvements in reading ability among intervention participants.

Although there were no significant group differences in post-program reading ability, the intervention group made greater progress in almost every componential skill (see Table 4 in the Results section). These are notable findings for two reasons: (1) teachers reported that students in the intervention group spent less time reading connected-text; and (2) on average, students in the intervention group demonstrated weaker reading skills entering the program. There are two hypotheses for the disparity in participants' achievement. First, it may be that the instructional climates created by the motivational intervention facilitated a greater internalization

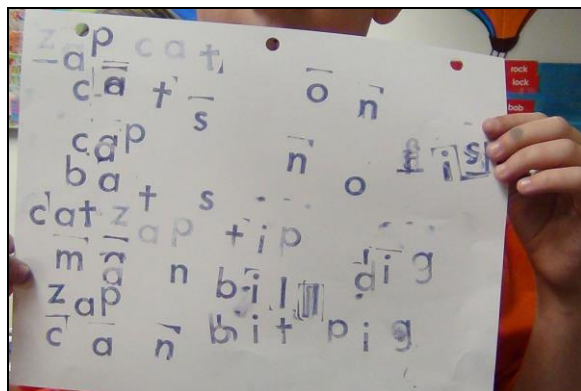
of reading skills, and as a result, these students were better able to independently apply reading strategies during their assessments. Second, as a result of their internalization of reading strategies, students in the intervention group may have spent more time reading outside of the program than their control peers. Reading frequency has been identified as an important predictor of reading ability (Anderson, Wilson, Fielding, 1988; Becker, McElvany & Kortenbruck, 2010; Cipielewski & Stanovich, 1992; Donahue et al, 2005; Guthrie et al., 1999). More specifically it was conceptualized as a mediating variable in the relations between motivation and reading achievement (Becker, McElvany & Kortenbruck, 2010). The motivational strategies utilized during the intervention were purposefully selected to facilitate autonomous motivation in reading contexts. They emphasized development in several important socio-emotional areas, and those strategies that facilitated perceptions of autonomy, belonging, and competence among participants were particularly powerful instructional tools.

**Autonomy.** As noted earlier, autonomy-supportive classrooms, which offer students choice, validate their opinions, support their personal goals, and provide explanatory rationales for assignments, are associated with a greater number of achievement behaviors, and increased learning, as compared with the students of controlling teachers (Assor, Kaplan & Roth, 2002; Deci & Ryan, 1985; Reeve, 2009; Reeve & Jang, 2006; Ryan & Deci, 2000). During the summer program, students in the intervention were offered numerous opportunities for autonomy in a variety of forms. There were behavioral opportunities for autonomy such as Academic Choice, Students as Teachers, and variety in reading texts. There were cognitive strategies that

*modeled* autonomy, such as think-alouds; *guided* autonomy, such as process-based feedback and meta-cognitive questioning; and *reinforced* autonomy, such as Noticing and Naming, and the development of Hopes and Dreams. The purpose of these activities was not only to afford students freedom, but also to provide the framework necessary for autonomous learning to occur.

Indeed, teachers reported that students demonstrated greater productivity and retention during autonomy-supportive activities. This was particularly true for students like Jonah, a 2<sup>nd</sup> grader diagnosed with a Pervasive Developmental Disorder (PDD), who struggled to comprehend the complex language associated with both the Wilson Reading Program and the motivational strategies. Academic choice provided Jonah an opportunity to engage with linguistic concepts in a way that was personally meaningful. According to his teachers, he demonstrated greater productivity and retention following these activities. During one Academic Choice activity, Jonah decided to use letter stamps to demonstrate his knowledge of short vowel sounds. He initiated the task independently, worked tirelessly during the time allotted, and proudly shared his knowledge with his teacher, classmates and observers (See Figure 5). Although his words were not perfectly formed, or well-organized in the paper, Jonah read all of his words with greater automaticity than he had exhibited thus far in the program. These findings support previous evidence that suggests that autonomy-supportive approaches are effective at increasing self-regulation and communication, and reducing problem behaviors among individuals with learning and developmental disabilities, specifically Autism Spectrum Disorders like PDD (Dunlap et al., 1994; Dyer, Dunlap, & Winterling, 1990; Peterson, Caniglia, & Royster, 2001). Within this

context, it is all the more discouraging that Academic Choice remains an anomaly among the specialized and highly structured remedial approaches that dominate instruction for the learning-disabled population.



*Figure 5.* Jonah shares his short vowel words during an Academic Choice activity in RAVE-O

Autonomy was also a powerful tool for Marjorie, a 4<sup>th</sup> grader with a double-deficit in phonology and naming speed. Marjorie had received at least three years of specialized instruction, attended the Tufts summer reading program once before, and was making progress at a labored pace. Upon entry to the program she was described by her teachers as resentful and responded to every question with “significant amounts of eye-rolling.” Marjorie blossomed when offered choices both in her tasks and her texts, and put forth considerably more effort during autonomy-supportive tasks than autonomy-restrictive tasks. At the conclusion of the program, Marjorie made more significant gains in her connected-text reading ability than any other student in the program; increasing her scaled score in Word Recognition from the first percentile to the 16<sup>th</sup> percentile. These results support similar findings in which students demonstrated greater engagement, willingness to attempt challenges, and retention in autonomy-supportive environments (Deci, Nezlek & Sheinman, 1981;

Reeve et. al., 2004). During the last class Marjorie appeared moved by her experience in the summer program and presented the staff with a paper sculpture that depicted a blooming flower, and captioned the piece with the phrase, "We are like the flower we grow and learn to read!" (See Figure 6).



*Figure 6.* Marjorie's sculpture "We are like the flowers we grow and learn to read!"

Marjorie's growth in her reading abilities is likely due to a combination of factors, two of which may have been the improved self-regulation she experienced as a result of her autonomy-supportive learning environment, and the frequency with which she engaged in reading outside of the program. Each participant in the intervention, including Marjorie, was offered an individualized library from which to choose their class texts. Each library was a carefully chosen collection of books that contained developmentally appropriate content, and loosely "controlled" vocabulary



based on familiar sound/symbol relationships. Many of these texts were from the *High Noon* book series, which promotes itself as providing content that appeals to a struggling reader's age and maturity level, but which is written at a reading level lower than typical grade level content. According to the teachers, students were energized by their libraries and often chose to borrow materials, taking them home for several days at a time.

All of the students in the program, both intervention and control groups, were required to complete homework (e.g., reading connected text passages) over the weekend. However, only the students with the freedom to select their texts opted to bring books home during the rest of the week. It is highly likely that students in the intervention group were reading at home with greater frequency than students in the control group. Offering choice in book selection is a well-established practice for increasing literacy among children (Edmunds & Bauserman, 2006; Gambrell, 1996; Guthrie, et al., 2004; Meece & Miller, 1999). The multi-componential approach that coupled book selection with additional autonomy supportive strategies may have functioned as the catalyst necessary for the students in the intervention to independently pursue reading practices at home.

At the administrative level, the intervention afforded teachers a significant amount of autonomy to practice their pedagogy. They were provided with a framework that detailed the goals of weekly instruction in which they selected specific activities from a menu of possible choices (See Appendix A). Teachers were also encouraged to generate strategies independently, and brought in ideas ranging from books that illustrated characters' personal pursuits of Hopes and

Dreams, to pictures of themselves completing real life Supersets. During the weekly teacher meetings, practitioners often shared their experiences integrating strategies into the classroom, and I stopped by their classrooms on a daily basis to offer support. When asked to reflect on their experiences, many of the teachers made mention of the autonomy they were afforded, and some referred to it as both a challenge and an asset to their pedagogy. One Wilson teacher noted:

I felt as though I had more freedom in teaching, and I was able to connect all these little skills we are developing to larger goals for learning which is so important for the kids. Wilson is usually pretty structured, so in the beginning I was a little nervous about neglecting certain skills, but then I got used to it, and I really like being able to bring in connected text and find texts that were meaningful.

Associations have been established between the frequency of teachers' autonomy-supportive strategies and their feelings of efficacy (Leroy, et al., 2007). Teachers in the summer reading program did not directly comment on their feelings of efficacy, yet several practitioners noted that they felt the experience stretched their abilities, forcing them to deviate from scripted curricula. Teachers also noted that they felt safe to integrate new pedagogy, because they felt as though they were surrounded by a supportive community of practitioners. One teacher commented, "I really liked being a part of a group this summer. During our meetings someone would say, 'Oh, I see that too,' and it validates your feelings and makes you think you are heading in the right direction."

***Belonging.*** One primary distinction between the intervention and control groups, as reported by teachers, was the extent to which students prioritized the

development of a learning community. As part of their training for the intervention, teachers were instructed in several strategies designed to develop a community of learners with shared goals and mutual respect. Teachers noted that intervention participants invested significant energy in developing their peer relationships and frequently opted to collaborate, even when they were given the option to work independently. These findings are not surprising, given that classroom environments that foster positive relationships are associated with many beneficial outcomes, including intrinsic motivation (Patrick, Hicks, Ryan, 1997; Ryan & Patrick, 2001), engagement (Lynch & Cicchetti, 1997), and learning (Mikulincer & Shaver, 2007). Given their propensity towards evaluative comparisons with their peers (Gurney, 1988), elementary-aged struggling readers, who are working to manage weaknesses that impair every aspect of their academic experience, may be particularly sensitive to the social features of a learning environment. Those classrooms that provide consistent support, facilitate shared goals, and develop mutual respect among classmates provide the optimal setting for attempting challenges and revealing weaknesses.

In every classroom setting, there are two important relationships, the relationship between teachers and their students, and the relationship among peers. In essence the teachers' language and actions lay the foundation for both. As noted in the previous section, teachers created a climate of respect and demonstrated their concern for students' well-being and achievement by acknowledging their personal interests, addressing their Hopes and Dreams, providing them with process-based feedback, and offering Academic Choice.

Gus, a 2<sup>nd</sup> grader, was particularly transformed by his relationship with his teachers. Although he initially exhibited many behaviors associated with a performance goal-orientation, namely task avoidance and masking his weaknesses, once his teachers activated Gus's interest in forming social bonds, he became more engaged and self-regulated during instruction. Gus was a great fan of basketball, and his teachers utilized a "team" metaphor, likening their role to that of coaches, in order to guide Gus towards behaviors that were "on target" and that would help him achieve his Hope and Dream of reading comic books. Gus appeared able to transfer the benefits of his productive relationship with his teachers to the relationships he maintained with his peers. Gus was the oldest member of his reading group, and he quickly discovered that he could also function as a "coach" for his younger classmates who needed more intensive skill-building.

Although the significant role of a positive student teacher relationship in achievement has been established (Hughes, Luo, Kwok, & Lloyd, 2008; Lynch & Cicchetti, 1997; Pianta et al., 2008; Orkin, 2011b; Ryan, Stiller, & Lynch, 1994), the motivational benefits of affiliating with a group are less well-known. There is a common belief that remedial reading instruction is most effective when it is individualized and delivered one on one. Yet, when instruction is offered in a small group, a community of learners can develop, and perceptions of a group identity can have a positive impact on the reading achievement of its members (Morris et al., 2011). During the summer program intervention, teachers utilized several strategies to facilitate a community of learners. By creating individual Hopes and Dreams, students publicly identified their own goals and were made aware of the pursuits of

their peers. According to the teachers, the goals provided students with insights into the lives of their classmates, and similarities that would have likely emerged slowly became uncovered quickly.

Another example is the creation of Class Rules which were generated by the students, under the guidance of their teacher, as a tool to help them become more autonomous in their goal pursuits. The Class Rules also created a sense of cohesion because the students were working under a unified set of principles. For example, during the program, one Wilson teacher noticed that many of the children skipped over difficult words on their dictation exercises. Rather than just saying “I want you to work hard on dictation,” she responded by reminding students that one classroom rule was to challenge themselves to go beyond what they had been doing, “We said that in our class we would challenge ourselves, even if it means making mistakes. One way to challenge yourself is to try and sound out big words even if you aren’t sure that you are right. How do we practice spelling big words?” Together, the development of Hopes and Dreams and Class Rules can facilitate a community identity that supports individual pursuits and acknowledges shared goals.

Teachers also facilitated a community of learners by transferring the praise and feedback that is typically their own responsibility into the hands of the students. In Catch a Partner, students were asked to secretly observe another classmate. The students were told to pay special attention to their partner’s behavior during lessons so that they might compliment them later. Although some may interpret this strategy as being intrusive, and similar to spying on a peer, the teachers reported that students enjoyed the “secretive” aspect of the task, and likened it to the popular

“Secret Santa” game in which participants surreptitiously leave presents for a pre-selected recipient. The teachers reported that the students were better able to deliver compliments when they were assigned to a specific peer, as opposed to randomly asking them to deliver compliments throughout the day (i.e., the Any Compliments? strategy). The teachers regularly modeled process-based feedback, and noted that several students, who were accustomed to complimenting superficial characteristics like clothing, benefited from the modeling. By modeling praise, and providing students with the opportunity to provide support to each other, teachers further facilitated a community of learners that was characterized by positive support, and emphasis on the learning process.

***Competence.*** Developing students’ feelings of competency was central to the intervention. Teachers worked not only to increase students’ abilities, but also to transform students’ perceptions of their abilities as readers and learners. Transforming students’ perceptions of their abilities is central to goal orientation theory (Ames, 1992; Anderman & Maehr, 1994; Dweck & Leggett, 1998; Kaplan & Maehr, 2007; Kaplan, Middleton, Urdan & Migdley, 2002; Pintrich, 2000). Students who believe their intelligence is fixed commonly pursue performance goals, or opportunities to demonstrate their abilities. Whereas students who hold fluid notions of intelligence seek learning experiences that will help them develop their cognitive abilities, and are learning goal-oriented. During the intervention teachers employed several of the previously mentioned strategies to support the development of a learning goal-orientation, including the use of Hopes and Dreams, process-based feedback, and Noticing and Naming to aid students in constructing

their knowledge and to identify appropriate use of reading strategies. However, the most prominent strategy was the Superset activities.

Supersets were designed as a tool for explaining how challenges and effort contribute to learning. Supersets illustrate the important role of effort in achievement by using a weightlifting metaphor, and Superset activities provided students with the challenges necessary to strengthen their reading “muscles” (see Figure 7).

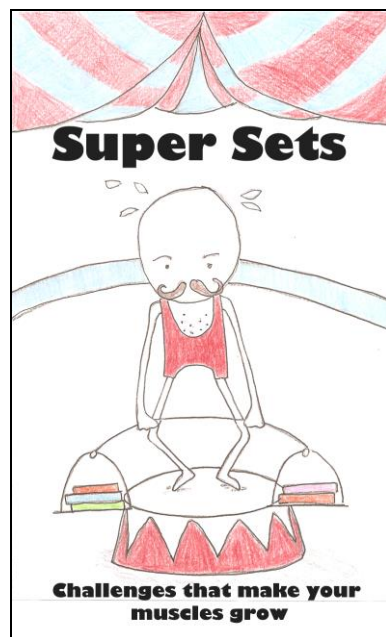


Figure 7. Classroom poster for Supersets

Following each Superset activity students were lead through a debriefing exercise and were encouraged to acknowledge difficulties, and share strategies that helped them persevere. Teachers were asked to embed Superset activities into their lessons twice a week, but a review of their lesson plans revealed that many teachers incorporated these activities on a daily basis. Perhaps as a result of their regular

exposure to Supersets, teachers reported that intervention students were more willing to attempt challenging reading tasks than their peers in the control condition.

The teachers unanimously agreed that Supersets provided students with a conceptual and practical understanding of the role of challenges in the learning process. They felt the weight-lifting metaphor offered tangible language for making invisible learning processes visible, and by providing a dedicated time to challenging tasks, preparing the students ahead of time, and helping them reflect on their experience, Supersets facilitated exposure to challenging material that is uncommon in remedial instruction. Many specialized reading programs build students' feelings of confidence by exposing them to material where success assured, like decodable texts. This approach is intended to diminish any negative associations with reading by incrementally developing skills; however, it neglects to prepare children for the challenges that await them as they encounter typical texts. By providing students with regular exposure to challenging material, and helping them process their emotional experiences in real time, teachers normalized errors in the reading process. Several teachers reported using Supersets as a platform for explicit discussions about the role of mistakes in the learning process, and one commented, "Whether or not it's myself or somebody else, (making mistakes) is something that the kids need explicit instruction on, such as 'this is what you do when you're stuck' and 'this is what you do when you fail', because you are going to fail sometimes, everybody does."

These findings can be directly contrasted to the observations of students in the control group, who were reported by their teachers to be secretive about their



errors, often covering their papers, or requesting to work separately from the group.

One RAVE-O teacher decided to address the students because she thought it was impeding their ability to develop skills.

I actually addressed the fact that they (the control group) seemed very unwilling to talk to each other. I said, "I noticed a number of you were covering up your work," and they said they don't want anyone to copy, and at their own school they never work with other kids. So we discussed why someone would copy and why it is considered bad. I had to get from them that copying is bad if you are not learning something or pretending, but if you are learning from a peer that's okay. Their idea was to work completely independently, to hide what they do, and maybe look at other people's papers to see if they were doing the "right thing" but not collaborate.

This anecdote sheds light on the realities of teaching students who appear to be performance goal-oriented, and so pre-occupied with protecting their weaknesses that they forgo learning opportunities in the process. Although control group instruction was not intended to enable the development or persistence of performance goals, in the absence of supportive, learning-oriented strategies, anecdotal evidence suggests that maladaptive achievement behaviors were allowed to fester. Furthermore, although evidence-based reading instruction may be successful at building academic skills, it appears that when the pedagogical approach does equally emphasize strategies essential to autonomous motivation there is a chance students will sacrifice learning opportunities to avoid failure.

### **Influence of Reading Ability on Motivational Outcomes**

Although the intention of this intervention was to improve reading ability and achievement behaviors among participants, at the conclusion of the program, participants with weaker reading ability demonstrated significantly more achievement behaviors. These findings were confirmed with a descriptive analysis

of students' motivational outcomes by reading subtype (i.e., single deficit, double deficit, or general weakness). Those participants who had double-deficits in phonological processing and naming speed, and are considered to be most impaired in their ability to acquire foundational reading skills, demonstrated the greatest number of classroom achievement behaviors. Although these findings may seem counterintuitive, they actually demonstrate the benefits of the motivational intervention, since as a group the intervention participants were weaker readers, performing more poorly on several measures of reading ability at the beginning and conclusion of the program, than their control peers. In addition, all participants with double-deficits happened to be assigned to the intervention condition.

The negative association discovered between reading ability and achievement behaviors at the end of the program can only be explained in terms of the effect of the motivational intervention. Despite significant weaknesses in their abilities, students who participated in the motivational intervention received the instruction necessary to foster risk-taking, an appreciation of the learning process, and engagement. These findings contradict previously established positive correlations between reading ability, achievement behaviors (Aunola, Nurmi, Niemi, Lerkkanen & Rasku-Puttonen, 2002; Chapman & Tunmer, 2003; Humphrey, 2002, Morgan, Farkas, Tufis & Sperling, 2006; Onatsu-Arvilommi, & Nurmi, 2000; Orkin, 2011a), and intrinsic motivation (Becker, McElvany & Kortenbruck, 2010). It is hypothesized that even when students struggle with significant reading impairments, adaptive achievement behaviors can be fostered in learning environments that are autonomy-supportive, provide appropriate

challenges, encourage mistakes, offer personally meaningful tasks, and in general, create a community of learners. These pedagogical elements send implicit messages to the student about their self-worth. When a teacher provides a student with autonomy, and gives him the opportunity to pursue tasks that are personally meaningful she is, in essence, validating his interests, learning style, and opinions as worthy. By employing strategies that foster a community of learners (i.e., Hopes and Dreams, Class Rules, Catch a Partner), the teacher simultaneously sends a signal to all students that, regardless of their reading level, everyone is a valuable person and important contributor to the classroom.

As noted in the literature review, those children who perceive a secure attachment in an educational setting are better able to process information, and priming individuals with feelings of security results in a greater willingness to persist at a challenging task than an insecure or neutral prime. Providing students with incentives for their achievement essentially functions as a neutral and possibly even negative prime because the teacher sends the message to the student that their worth is contingent upon performing in a prescribed manner. The development of a contingent self-worth is often the precursor to performance goals, and rather than leading to further investment in reading tasks, the presence of incentives may result in a negative association with literacy activities.

### **Barriers to Learning Behaviors among Control Group**

Decreasing behaviors that hinder students' acquisition of reading skills was one primary purpose of the intervention. In this study they are referred to as Barriers to Learning behaviors and include: preoccupation with rewards, purposeful task avoidance, prematurely giving up on assignments, making derogatory

comments about one's abilities, and/or demonstrating a fixation with the performance of one's peers. Barriers to Learning behaviors not only disrupt the productivity of a classroom environment, but also affect individual achievement (Aunola, et al., 2002; Dweck, 2000; Humphrey, 2002; Onatsu-Arvilommi & Nurmi, 2000; Smiley & Dweck, 1994).

**Role of incentives.** At the end of the Tufts Summer Reading Program, the intervention and control groups demonstrated significant differences in their behavioral profiles. The intervention group decreased in their frequency of Barriers to Learning behaviors over the course of the program, while the control group demonstrated an increase. Specific Barriers to Learning Behaviors observed among the controls included: task avoidance, derogatory comments about reading assignments, and comparisons to peers. The most significant difference between the two groups was the controls' preoccupation with incentives. At the end of the program, students in the control group mentioned incentives regularly, whereas the intervention group made no reference to the need for a reward.

Incentives were introduced into the control group's instruction approximately two weeks into the summer reading program, because several of the teachers voiced concerns about maintaining student engagement. As a group, the teachers and I agreed that weekly instruction for the control group would consist of 85% adherence, 15% deviation from the curricula to include activities that teachers identified as building reading skills (i.e., use of word games, writing activities, etc.). The use of incentives, such as stickers and small prizes, were also permitted with the control group. We felt that this formula closely replicated a typical instructional

experience. Incentives were not a part of the motivational strategies in the intervention group, because they are considered coercive and reduce students' autonomy (Deci & Ryan, 1971; Deci, Ryan, & Koestner, 1999; Green & Lepper, 1974; Lepper, Greene & Nesbitt, 1973). Observations by research assistants and comments by teachers both suggest that students in the control group were pre-occupied with the incentives: working for stickers (e.g., "I'll read it if you give me a sticker"), continually bargaining for prizes (e.g., "How many more pages before I get a prize?"), and "focused on the rewards they were going to receive rather than the content of the book."

Research suggests that incentives can be effective at increasing reading frequency in the short term (McQuillan, 1996), which is likely the reason they are widely used in special education (Deci, 1992; Orkin, 2011b). During the summer program, all teachers reported that incentives were effective at getting students to read, and some felt that the control group engaged in greater reading frequency than their intervention peers. However, the frequency with which students read in the presence of rewards is not predictive of their reading behaviors once incentives are removed. More often than not, behaviors that were initially reinforced through coercive tactics are often poorly maintained once the reward is eliminated (Vansteenkiste, Lens & Deci, 2006). The dynamic interaction between incentives and behavior is thought to be partially mediated by students' perceptions of autonomy. In other words, students who perceive a loss of control over their behavior, because their actions have been coerced by the presence of incentives, are unlikely to maintain their behavior once the coercive features are removed.

As noted earlier, ensuring high-levels of reading frequency is imperative for developing reading ability, and many of the associations between weaknesses in reading and avoidance behaviors are likely the result of a reduction in reading frequency (Aunola et al., 2002; Chapman & Tunmer, 2003; Humphrey, 2002, Onatsu-Arvilommi, & Nurmi, 2000). Learning environments that have replaced coercive elements, such as incentives, with autonomy-supportive elements, such as task choice, produce more self-regulated learners (Assor, Kaplan & Roth, 2002; Deci & Ryan, 1985; Reeve, 2009; Reeve & Jang, 2006; Ryan & Deci, 2000). However, there is often reluctance among teachers to both act autonomously (i.e., deviating from scripted curriculum) and offer autonomy-supportive opportunities for their students. The resistance is indicative of larger challenges in the educational system, namely the growing national movement to hold teachers accountable for students' performance on standardized tests (No Child Left Behind, 2001; Race to the Top, 2009), scores which provide one measure of ability but fail to account for “non-cognitive skills” such as self-regulation, which also contribute to achievement (Duckworth & Seligmann, 2005). Teachers of reading are under significant external pressure to ensure skill improvement (Deci et al., 1982; Leroy et al., 2007; Pelletier, Seguin-Levesque, & Legault, 2002), yet in order to develop the self-regulation skills necessary for long-term achievement, autonomy-supportive learning is essential.

**Lack of autonomy in remedial reading instruction.** Educators often assume that providing students with autonomy, especially task choice, will result in a reduction in skill-building (Boggiano, Flink, Shields, Seelbach & Barrett, 1993; Turner & Patrick, 2008). It is not surprising then, that autonomy-supportive

specialized reading curricula is rare (Orkin, 2011b). There are a few programs, like RAVE-O, that emphasize students' and teachers' co-construction of knowledge by encouraging autonomous thinking. In RAVE-O, students engage with linguistic concepts as Word Detectives, and use magnifying glasses to actively construct knowledge about linguistic strategies (Wolf, 2011). Several characters in RAVE-O also model autonomous thinking. For example, RAVE-O town mayor, Mr. MIC (Many Interesting Connections), and the RAVE-O mascot, a spider weaving a word web, Ms. MIM (Many Interesting Meanings) ask students to make meaningful, personal, connections between and to words. Think Thrice, a three-headed alien, teaches comprehension strategies by reminding students to be thoughtful readers by thinking back in the text, thinking ahead, and most importantly, interpreting texts for themselves (Wolf, 2011).

These strategies are designed to serve a dual purpose, build linguistic skills critical for fluent comprehension during reading and empower children “who are often linguistically disenfranchised and give them a sense of the fluidity of their growing knowledge” (Wolf et al., 2009, p.89). The program also provides a “suggested” sequence of activities, but empowers teachers to utilize their knowledge and experience to independently implement the curriculum (Wolf, 2011). Among specialized reading programs; however, RAVE-O is an anomaly, the majority of programs are prescribed and limit autonomous action among both students and teachers.

One example of a highly prescribed program is the Wilson Reading Program. In Wilson, each lesson follows the same ten-part format to incrementally

build students' abilities and feelings of confidence (Wilson, 1996). Deviation from the scope and sequence is not advised, and students cannot advance in conceptual knowledge without demonstrating mastery at each level. Students engage with concepts in a highly prescribed manner that typically involves worksheets and dictations. The Wilson program; however, has demonstrated efficacy in skill building by strictly adhering to the scripted curricula (Wilson & O'Conner, 1995; Yampolsky & Waters, 2002). Herein lies the dilemma for every educator: is there value in deviating from a scripted curriculum to offer autonomy-supportive opportunities and risk the development of skills?

Within each classroom, autonomous support can happen at multiple levels. There is the administrative level, in which freedom is afforded to a teacher to teach autonomously. There is a behavioral level, in which students are offered choices in their learning. Finally there is the cognitive level, in which students are encouraged to think for themselves, and their voices are an integral part of the classroom. All of the summer program teachers reported that they encouraged independent thinking and students' opinions in their school year practice. However, half the teachers acknowledged some discomfort both acting autonomously themselves (i.e. deviating from scripted curriculum) and offering students a choice in tasks. By breaking from the structured curriculum, teachers felt they were at-risk for inefficient skill-building, and by offering students choice, they felt they were at-risk for losing control of the classroom. The current study attempted to provide pedagogical and social support for teachers as they acted autonomously. Most importantly, the purpose of the initial training was to situate the strategies that comprised the



intervention in terms of their importance to self-regulation. Teachers seemed to understand that instruction that attends to the development of self-regulation in addition to building cognitive skills not only provides a more comprehensive education but also may facilitate improved learning; but they still struggled when asked to transform their practices. These findings may warrant a closer examination of the training procedures for specialized reading curricula, particularly among those programs that demand strict adherence to the pre-determined scope and sequence and do not account for individual differences in learning.

To summarize the findings thus far, classroom environments that were autonomy-supportive, emphasized the learning-process, offered appropriate challenges, and created a community of learners resulted in attenuating significant weaknesses in reading ability and reducing disruptive classroom behaviors that often present a barrier to the learning process. Those students who received instruction that did not include regular exposure to challenges, or strategies that fostered autonomy and belonging, and instead employed coercive tactics as motivational tools, increased in their disruptive classroom behaviors, and according to their teachers, were competitive and overly concerned about their performance. Although the intervention appears to have benefitted most students, teachers did acknowledge a few challenges as they implemented the strategies. Some were uncomfortable diverging from scripted text that have already proven efficacious in developing reading skills. Others identified the meta-cognitive demands of the intervention, which asked students to reflect on their academic experiences as

developmentally inappropriate for younger students. This finding is discussed in the section below.

### **Influence of Development on Achievement Motivation**

During their concluding interviews, several teachers felt that a lack of maturity may have impeded the development of autonomous motivation among several students. Specifically, teachers noted that some of the students in second grade struggled to engage in meta-cognitive reflection about their own learning, provide process-based compliments to their peers, and also grappled with identifying the challenging components of tasks, particularly Supersets. In contrast, students entering fourth and fifth grade were more responsive to the curriculum, and appeared better able to internalize the strategies and employ them independently.

Students' responses to the motivational strategies appear to be partially attributed to their stage of cognitive development. Children between the ages of two and seven are considered to be in the pre-operational stage of development, which is characterized by dichotomous (i.e. black or white) thinking, and a reliance on salient, and often superficial features, rather than use of logical reasoning to solve problems (Piaget & Inhelder, 1973). When children understand the world in terms of dichotomous categories, and struggle to reason logically, they tend to focus on the products of learning and evaluate their performance in terms of rigid standards (i.e. good or bad). It is not surprising, therefore, to learn that second graders might struggle with tasks that required qualitative reflection on the learning process.

Around the age of seven or eight, children enter the Concrete Operational stage of cognitive development. At this stage they are able to reverse a sequence of events from outcome to initiation in order to understand the processes by which a

particular result was achieved. They can also engage in inductive reasoning, generalizing between individual acts, (e.g., using decoding strategies) and larger outcomes (e.g., the ability to read more difficult books). Although students entering 2<sup>nd</sup> grade may not be able to fully reflect on their learning process, teachers who model meta-cognitive thinking and offer process-based feedback may be assisting in the emergence of these skills. Additionally, emphasizing the learning-process as equivalent to products of knowledge appears to be particularly relevant for second graders at risk for a reading disability.

Traditionally, it is around the age of eight that children begin to evaluate their abilities against that of their peers (Gurney, 1988). At this age, self-referential statements shift from absolute (I am smart) to comparative (I'm smarter than other kids in my class) (Gurney, 1988), and students use these comparisons to guide achievement behaviors such as persistence and avoidance. However, the years that precede the solidification of comparative thinking may be a sensitive period for the development of motivational patterns. The sensitivity of this period is likely heightened for struggling readers whose differences in ability are often more pronounced. Therefore, although struggling readers in the second grade may not be able to demonstrate the reflection skills of their older counterparts, modeling meta-cognitive thinking through think-alouds, and Noticing and Naming may lay the foundation for adaptive motivational beliefs and behaviors in the future.

### **Limitations**

The study had several limitations. Primary among them was the small sample size, only 12 students in each condition, which restricted the statistical power to detect effects. Although this limitation makes the findings even more

impressive, a replication of the study with a larger sample could also help eliminate potential alternative explanations of findings among the intervention group, such as that it resulted from sampling error or regression to the mean (Hsu, 1989).

The current investigation took place within a summer school context, which limited data collection to two time points, reducing the ability to examine change over time in both the students and the teachers. Future studies could be conducted in a full-year school context in order to assess participants' motivation and reading ability at multiple time points and test the mechanisms of change (Nock, Janis, & Wedig, 2008).

The current sample of teachers derived from a self-selected population of educators, and the sample of students came from families who were able to afford a \$1650 program fee. The study would need to be replicated with other populations to increase the applicability of the findings with other groups. In addition, the intervention would need to be replicated to further assess feasibility of implementation with other facilitators and in other settings.

The study findings are partly based on measures that were created for the purpose of this investigation. As noted in the Results section, there were some unexpected findings with the measures of goal orientation. Most notably, the control group demonstrated a greater trend toward a learning goal-orientation, while the intervention group demonstrated a trend toward a performance goal-orientation. Although the goal orientation measure was purposefully created to avoid complications with validity (i.e., use of a behavioral measure, based on a popular paradigm and previous reliability testing), questions remain about whether the story

choices were at an appropriate reading level for the students. Ascertaining an appropriate level of challenge is a documented difficulty in creating valid and reliable behavioral measures of motivation (Fulmer & Frijters, 2009). In addition, social desirability may also affect behavioral results in the same way as self-report measures (Bong, 1996). There was only one set of stories for each reading level, which opened the door to the possibility of a learning effect. If that were the case; however, a propensity toward the challenging version of the text would be expected across both the intervention and the control groups. Creating easy and challenging versions of leveled books from an alternative curriculum, like the Leveled Literacy Intervention (Fountas & Pinnell, 2011,) is another option; however, it is challenging to find a unique leveled curriculum in order to ensure the books are unfamiliar to the children.

### **Future Directions**

This study took a first step in exploring how motivational strategies can be embedded in two distinct specialized reading programs, an area of research that has never been previously investigated. Findings from the research lay the groundwork for several potential future investigations including: (1) a systematic inquiry into the impact of incentives; (2) how classroom discussions about mistakes influence students' achievement beliefs, behaviors, and skill development; and (3) an examination of alternative self-regulatory behaviors including self-talk.

**Impact of incentives.** One primary finding from the current intervention was the association between the use of incentives in reading instruction and an increase in disruptive classroom behaviors among students. Associations among incentives, maladaptive achievement behaviors, and decreases in skill development

have been previously established (Deci & Ryan, 1971; Deci, Ryan, & Koestner, 1999; Green & Lepper, 1974; Lepper, Greene & Nesbitt, 1973); however, in light of the ongoing prevalence of rewards in reading instruction (Baker & Wigfield, 1999; Edmunds & Tanock, 2003; Fawson & Moore, 1999 Gambrell, 1994; Strickland, Ganske & Monroe, 2001; Marinak & Gambrell, 2008), a more systematic investigation of their influence is warranted.

There have been several explorations into the effects of incentives on student motivation for reading and reading ability. A meta-analysis of ten studies found that incentives were only effective in improving ability half of the time (McQuillan, 1996). However, several methodological issues with the studies involved make generalizing the results problematic. A more systematic examination of incentives in reading instruction was conducted by Edmunds and Tanock (2003), who measured the long-term effects of three incentive conditions (literacy-related reward, non-literacy reward, and no reward) on the reading frequency of typical elementary-school students. No differences in reading frequency, via teacher's report, parent's report or students' logs of reading behaviors were found between the groups (Edmunds & Tanock, 2003), but detrimental effects were also not found. The research design utilized by Edmunds and Tanock provides greater insight into how different types of incentives might affect reading behavior, but it does not contrast coercive motivational strategies, such as the use of rewards, with non-coercive strategies, like those used in the summer program intervention. In the current study, incentives were associated with detrimental behavior. A systematic investigation that compares the impact of various types of incentives (i.e., literacy-

related, and non literacy-related) with a non-coercive, research-based, motivational approach would further illuminate the impact of rewards on student learning and self-regulation.

**Discussions about errors.** Teachers in the summer program reported that discussions about mistakes emerged organically over the course of the intervention. In particular, there were several discussions incorporated into the Superset reflection exercises. The teachers felt these discussions offered students insights into their own learning processes; however, the teachers were not provided with a unitary approach for discussing mistakes and measures of students' beliefs about errors were not conducted in the assessment battery. To date, there is very little research that explores how discussions about students' errors can promote learning, and until recently mistakes were simply utilized as a diagnostic tool (Schleppenbach, Flevares, Sims & Perry, 2007). Cross-cultural research has offered several insights into the ways in which errors are perceived in different cultures and has highlighted the inadequacies of the American approach.

Teachers in China and Japan are particularly remarkable for their response to errors, which prompt discussions about mathematical concepts and “serve as an index of what still needs to be learned” (Stevenson & Stigler, 1992, p.192). In China, when students make errors, teachers have explicit discussions about the purpose for the mistake, and Chinese students are notable for their lack of embarrassment about mistakes (Wang & Murphy, 2004). Researchers agree that the Chinese have been successful in conveying the notion that “failure is the mother of success” (Wang & Murphy, 2004, p. 120). For Americans; however, mistakes

represent “a failure in learning the lesson” (Stevenson & Stigler, 1992, p. 192). A qualitative comparison of the use of errors in American and Chinese mathematical instruction found that Chinese teachers often craft a lesson to elicit common errors from students in order to use them as a platform for discussion (Schleppenbach et al., 2007). Chinese teachers were also noted to respond to students’ errors with questions, whereas American teachers would respond with statements, often cutting short any possibility of discussion about why the error was made (Schleppenbach et al., 2007).

In the United States, an investigation into the role of errors in learning has primarily been limited to mathematics instruction. Mathematics is particularly well-suited to these investigations because of the multi-step process involved in most calculations. The mechanics of decoding and word recognition are often considered to be a more dichotomous practice (e.g., the word is read correctly or incorrectly). However, as the multi-componential principles of RAVE-O suggest (i.e., phonology, orthography, semantics, syntax, and morphology), the act of reading involves a neuronal circuit which integrates several processes in order to achieve the desired outcome (Wolf et al., 2009). A breakdown at any point in the reading circuit, whether it be recognizing letter patterns or understanding word meaning, can result in an error. Therefore, in order to foster autonomous forms of motivation among students, teachers should not only utilize errors for formulating instruction that is prescriptive for the students’ needs, but also as a tool for increasing meta-cognition and an appreciation of the learning process.



Many of the techniques that have been identified as best practices in attending to and utilizing students' mistakes in math instruction overlap with the motivational strategies employed during the reading program intervention. Teachers who facilitate productive discussions about errors have created environments in which students feel comfortable working through ideas rather than providing the correct answer (Lampert 1992; Rittenhouse, 1998), peers are supportive, and small groups offer an opportunity for students to engage in discussions about learning (Webb & Mastergeorge, 2003). In light of the overlap between the two approaches, a more systematic investigation into the use of student errors in learning would only involve slight modifications to the current methodology. A replication of the current study would include unified strategy discussions about mistakes and include measures to capture any change in students' beliefs about errors. These additions would hopefully demonstrate how ideas about learning might be transformed as a result of the aforementioned strategies.

**Self-talk as a regulatory strategy.** As students work to regulate their achievement motivation, they typically engage in several behaviors. The current study attempted to capture the behavioral outcomes of self-regulation, including task persistence, meta-cognitive reflection, and discussions about the meaning of an assignment. Yet the mechanism by which self-regulation occurs is one area that was not examined. Self-talk can be described as akin to the inner dialogue or inner speech, often vocalized, used for self-regulation, problem-solving, and planning. Self-talk is essentially what students tell themselves in order to sustain focus, figure out a solution, or reassure themselves in the face of a challenge. In a classroom,

inner speech is thought to emerge from dialogues between the students and the teacher, among peers, and by observing individuals who can model more advanced practices. Self-talk is a salient feature of meta-cognition, as it provides insights into learning processes and understanding. It can also serve as a window into students' affective state when used to manage socio-emotional challenges or as self-reward or self-punishment (Lee, 2011). There is an increasing call for educators to support children's use of task-relevant self-talk strategies to regulate their learning and task performance (Harris, 1990; Stanulis & Manning, 2002; Winsler, Manfra, & Diaz, 2007).

Self-talk strategies have been explored in children as young as seven, and qualitative explorations, like individual interviews that ask children to describe a time when they have talked to themselves, have resulted in a greater understanding of the multiple roles of inner speech and factors that contribute to the "scripts" used by students (Lee, 2011). Given the important role of verbally mediated strategies in the development of young children's self-regulation in multiple contexts, a further exploration of ways in which positive, reinforcing self-talk can be used in the classroom is warranted (Bronson, 2000).

Many of the pedagogical techniques endorsed as enhancing adaptive forms of self-talk overlap with motivational strategies used during the motivational intervention. These approaches include guided questioning, visual prompts, and think-alouds. By modifying the current set of motivational strategies to encourage students' use of self-talk, for example, asking students to talk through the decoding process of a multi-syllabic word, or deciphering the meaning of a polysemous word

in connected text, teachers can enhance students' self-regulation and better prepare them for generalizing their reading skills upon conclusion of the program.

## **Conclusion**

This dissertation began by posing an overarching question: how do teachers unlock student potential? More specifically, is there an alchemy to motivating those students who are vulnerable to task avoidance because they struggle to acquire basic literacy skills? This study was conducted in an effort to shed light on these critical questions. It began with a review of relevant literature to understand typical motivational development from infancy to school-age, and discern how qualitative motivational differences arise in struggling readers. By synthesizing research from the field of achievement motivation, principles essential for adaptive motivation were identified, and elements of high quality classrooms that foster autonomous forms of motivation and learning goals were extracted. These findings formed the basis of a motivational intervention that was embedded in two specialized reading programs (i.e., RAVE-O and Wilson) in order create curricula that, in addition to building skills, was autonomy-supportive, provided regular exposure to challenges, offered meaningful learning, and developed a community of learners.

Behavioral, observational, and qualitative findings from the study suggest that in a relatively short period of time (i.e., 40 hours of instruction over the course of five weeks) those students who received the intervention demonstrated fewer disruptive classroom behaviors, and greater percentage increases in their reading skills, than their peers who received the same reading programs coupled with incentives. Furthermore, the strategies employed in the motivational intervention appear to have attenuated the significant impairments of participants with double deficits, whom as a group demonstrated the greatest frequency of positive

achievement behaviors of all students in the program. Conversely, students in the control group were observed to increase their frequency of disruptive classroom behaviors, and were reported by their teachers as being pre-occupied with incentives, and overly concerned about their weaknesses.

There are several implications for this research. First, the current findings lend support to a growing body of research that illustrates the importance of situating motivation theory in content area instruction (Guthrie et al., 2004; Turner & Meyer, 2009; Turner, Warzon, Christensen, 2010). Specialized reading instruction is particularly well-suited for investigations in motivation because, (1) struggling readers demonstrate a tendency towards task avoidance; (2) specialized reading curricula are typically highly prescribed and limit both students' and teachers' autonomous action; and, (3) the current climate of high-stakes testing has placed significant pressure on teachers to ensure efficient academic progress among their students, and as a result teachers often rely on coercive tactics to achieve their goals. Investigations into the pedagogical principles that foster self-regulation motivation while building foundational literacy skills have been extremely limited and further research is warranted in this area.

Results from the current research lend support to the existing body of evidence that has established the negative impact of incentives on achievement beliefs and behaviors. The current study extends existing research with anecdotal evidence of students who were required to perform in a prescribed manner in order to gain rewards, and who not only became pre-occupied with their rewards, but sacrificed learning opportunities in order to protect their weaknesses and maintain

positive impressions of their abilities. These observations are contrasted with students who entered the program with significant deficits in foundation reading skills, and as a result of their participation in the intervention made impressive changes in their achievement behaviors, and showed positive trends in the development of their reading skills. Students in the intervention received instruction that in addition to building skills, addressed their personal interests, and fulfilled their innate needs to feel competent, autonomous in their action, and part of a larger community. These pedagogical elements send positive implicit messages to students about their self-worth, as contrasted with coercive elements such as incentives which indicate that students' worth is contingent upon their performance.

In the field of special education, teachers rely heavily on incentives as motivational tools. The first step in transforming teachers' practices involves imparting the knowledge that incentives are detrimental to long-term motivation, and offering the rationale and means for alternative approaches. Yet, as has been demonstrated by Turner and her colleagues, understanding motivational theory may not be sufficient to transform pedagogical practice (Turner et al., 2010). The current investigation attempted to make use of the pedagogical tenets employed to motivate students (i.e., autonomy, belonging, competence and meaning) to also motivate teachers. For example, teachers were offered *autonomy* in identifying those tactics from a menu of strategies that were most appropriate for their instruction. Their experience and *competence* were regularly recognized and they were encouraged to draw on their expertise to independently generate additional motivational strategies. Along these same lines, most teachers identified the *value* of the participating in the

research as an opportunity to *develop their own skills*, and as relevant to the behavioral challenges they face in their school year instruction. Perhaps most importantly, the teachers worked *collaboratively*, both in their RAVE-O/Wilson pairs, and as a group during our weekly meetings to troubleshoot, share best practices and making-meaning out of their experiences. These findings have clear implications about the important role a supportive administration plays as teachers work to change their motivational practices.

Motivation develops in infancy as a behavioral response to children's natural curiosity about their environment; however, the cognitive and social factors that shape motivation during childhood and into adulthood are heavily influenced by academic settings. These settings have the power to foster adaptive forms in motivation, and ongoing work is necessary in order to ensure that all children are given the cognitive and non-cognitive tools necessary to meet their potential.

## Appendix A

### Menu of Motivational Strategies

Principle	Strategy	Brief Description	Origin
<b>Autonomy</b>	Noticing and Naming	Shifting instruction from telling students about words to activating their perceptions by beginning each lesson with guided questions that highlight salient linguistic features.	Denton, 2007; Johnston, 2004.
	Word Detectives	A role for students as they are encouraged to independently discover linguistic features of words.	RAVE-O
	Academic Choice	Teachers decide on goal for lesson and offer students options for demonstrating their knowledge.	Responsive Classroom
	Process-based feedback	Teachers' feedback that emphasizes behavioral components of learning process including effort, strategy-use, and problem-solving.	Kamins & Dweck, 1999; Mueller & Dweck, 1998
	Students as teachers	Students are placed in the role of the instructor and are offered freedom to choose important concepts to review with their peers	Summer Program Intervention
<b>Belonging</b>	Creation of class rules	A collaborative process in which students and teachers work together to create rules that will provide the foundation for a learning community.	Responsive Classroom
	Any compliments?	Teachers encourage students to notice the efforts and accomplishments of their peers by prompting them with requests for compliments.	Johnston, 2004
	Catch a partner	Teachers designate a partner for each student and ask them to secretly observe them during class in order to acknowledge positive classroom behaviors.	Summer Program Intervention



### Menu of Motivational Strategies (continued)

Principle	Strategies	Description	Origin
<b>Competence</b>	Supersets	Use of weightlifting as a metaphor to illustrate the importance of challenges in the learning process. Superset activities are those tasks slightly above a child's instructional reading level.	Summer Program Intervention
	Think-alouds	Teachers model metacognitive and analytic thinking by verbalizing their thought processes aloud.	Collins & Smith, 1982; Davey, 1983; Kucan & Beck, 1997
<b>Meaning</b>	Meaning-making	Situating conceptual learning in the classroom within the larger context of life experiences and knowledge acquisition.	RAVE-O
	Meaningful texts	Utilizing non-fiction and fiction texts that engage students' interests and/or illustrate characters pursuing personal Hopes and Dreams.	CORI; Summer Program Intervention; Responsive Classroom
	Hopes and Dreams	A collaborative exercise between students and teachers in which students identify their personal learning goals.	Responsive Classroom

## Appendix B

### Stories that Inspire Hopes & Dreams, Persistence and Risk-Taking

Title	Author	Description
Snowflake Bentley	Jacqueline Briggs Martin	The true story of a Vermont Boy, who was mesmerized by snowflakes and spent his life taking countless photographs attempting to capture their unique beauty. "Mistake by mistake, snowflake by snowflake," Bentley achieves his goal.
Big Al	Andrews Clements	Big Al is the largest, scariest fish in the sea, but he just wants to make friends. Then one frightening day, when a fishing net captures the other fish, Big Al gets the chance to prove what a wonderful friend he can be!
Me...Jane	Patrick McDonnell	A picture book biography of Jane Goodall that illustrates her life-long goal to study apes.
Thank You Mr. Falker	Patrica Polacco	When Trisha starts school, she can't wait to learn how to read, but the letters just get jumbled up. She hates being different, but in fifth grade, Mr. Falker changes everything. When he discovers that she can't read, he helps her prove to herself that she can.
The Dinosaurs of Waterhouse Hawkins	Barbara Kerley	The real life story of Waterhouse Hawkins from his early fossil studies to his first model in his tireless quest to build a life-size model of a dinosaur.
More Than Anything Else	Marie Bradby	A fictionalized story of a young Booker T Washington who ignores the difficult circumstances that surround him in order to pursue his dream of learning to read.
Superdog the Heart of Hero	Caralyn Buehner	Dex is a dog who is so small that the neighborhood cat bullies him. Dex wants to get big and strong so he reads comic books and does strength-training to build his muscles. When the neighborhood is in trouble, Dex finally has a chance to prove his might.
Beautiful Oops!	Barney Saltzberg	A one-of-a-kind interactive book that shows young readers how every mistake is an opportunity to make something beautiful.
The Girl Who Never Made Mistakes	Gary Rubinstein	Beatrice Bottomwell is a nine-year-old who has never made a mistake. Life for Beatrice is sailing along pretty smoothly until she does the unthinkable—she makes her first mistake. And in a very public way!
Salt In His Shoes: Michael Jordan in Pursuit of a	Deloris Jordan, Roslyn Jordan, Kadir	As a child Michael Jordan almost gave up on his hoop dreams, all because he feared he'd never grow tall enough to play the game that would one day make him famous. That's when his mother and father stepped in

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Dream	Nelson	and shared the invaluable lesson of what really goes into the making of a champion -- patience, determination, and hard work.
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## Appendix C

### Intrinsic Motivation Self-Report

Participant Initials:

Researcher

Initials:

Assessment Date:

*I would like you to choose a puppet. These puppets are going to talk about different things that happen in school. Can you choose the puppet that is most like you? What name would you like to give this puppet (name on tag). (Choose identical puppet). Here is another child just like you and (name of Puppet 1). S/he is a friend of (name puppet 1). Let's give him/her a name. (Puppet 1) and (Puppet 2) go to the same school and they have the same teacher. Their teacher is just like your (elicit teacher name).*

*Each puppet is going to tell you their opinion when it comes to reading and I want you to tell me which one is more like you.*

	X Option 1 _____ says	X Option 2 _____ says	Code
	<i>Which one is more like you?</i>		
1	I like pizza	I don't like pizza	p
2	I don't like recess in school	I like recess in school	p
3	I like reading challenging books.	I do not like reading challenging books.	c
4	I don't like reading hard words.	I like reading hard words.	a
5	(Teacher name)'s compliments are not the reason I practice reading.	I practice reading so that (teacher name) will give me compliments.	r
6	I practice reading because I want to get better at it.	I practice reading because (teacher name) tells me to.	m
7	I like going to the beach.	I don't like going to the beach.	p
8	If a book is interesting, I don't care how hard it is to read.	Even if it is interesting, I don't like reading hard books.	m
9	I like to pick out short stories.	I like to pick out long stories.	a
10	I avoid hard words because I don't like to make mistakes.	I read hard words even if I make mistakes.	pa
12	Reading has always been hard for me.	Reading is getting easier for me.	e
13	When I grow up, I don't want a dog.	When I grow up, I want a dog.	p
14	I like it when I have to sound out a hard word.	I do not like it when I have to sound out a hard word.	c
15	I don't like to learn from books where I make lots of mistakes.	I like books that I will learn from even if I make lots of mistakes.	m
16	I don't care if my reading isn't as good as other students.	Its upsetting if my reading isn't as good as other students.	pa
17	I know I'm getting better at reading.	I'm just not a good reader.	e

18	I practice reading because I want to do well.	I practice reading because I like to learn new things.	m
19	Its important to me for (teacher name) to say that I read well.	Its not important to me if (teacher name) says I read well.	r
20	I like it when there are a lot of big words in a story.	I don't like it when there are a lot of big words in a story.	a
21	Chocolate cake is not my favorite type of cake	Chocolate cake is my favorite type of cake.	p
22	I like books that are a little bit hard	I don't like books that are a little bit hard.	c
23	I can read more words than I used to.	It seems to me like I read the same as ever.	e
24	I like reading aloud in class, even if I make mistakes.	I don't like to read in class because I will probably make mistakes.	pa
25	I practice reading for my teachers and parents	I practice reading to learn more.	r

Total for Avoidance (A) \_\_\_\_\_/3

Total for Challenge (C) \_\_\_\_\_/3

Total for Performance Avoidance (PA) \_\_\_\_\_/3

Total for Efficacy (E) \_\_\_\_\_/3

Total for Recognition (R) \_\_\_\_\_/3

Total for Mastery (M) \_\_\_\_\_/3

Total \_\_\_\_\_/18

Dummy items (P)

## Appendix D

### Classroom Observation Achievement Behavior Checklist

	Once	Twice	More than 2x
	1	2	3
<b>ENGAGEMENT</b>			
Does something other than focusing on the task at hand.			
Engages in <b>tangential</b> questioning or discussion in an attempt to avoid a task.			
Behavior indicates that s/he seems to <b>give up easily on a task</b> .			
<i>Initiates</i> a task independently.			
<i>Persists</i> at a task independently.			
<i>Completes</i> a task independently.			
Comments:			
<b>MEANING</b>			
Questions the purpose of the task.			
Makes derogatory comments about a lesson/task/book (i.e., this is stupid).			
Works to achieve their own goals.			
Connects a task or concept to a previous lesson task/book or greater purpose/meaning <i>without prompting</i> .			
Expresses desire/importance of "learning".			
Comments:			
<b>COMPETENCE</b>			
Makes comments that <b>reflect feelings of incompetence</b> (i.e. I can't do it).			
<b>Avoids challenging tasks.</b>			
Seems <b>overly concerned with proving ability</b> (comparing to others, getting things right, not making mistakes).			
Shows <b>willingness to "try" challenging tasks</b> (accuracy is not important).			
Makes <b>comments that reflect feelings of improvement and/or competence</b> .			
Comments:			
<b>MOTIVATION</b>			
Seems to <b>only "work" for incentives</b> (stickers, free time, reward of some sort).			
Seems to <b>work because s/he is personally interested in word/book/task</b> .			
Seems to <b>work because s/he is a part of community</b> (i.e. shared goals).			

## Appendix E

## Sample Lesson Plan from the Wilson Reading System (Unit 13, Step 2)

	Original Wilson Lesson	Wilson Lesson with Motivational Strategies
<b>Welcome</b>	Each Wilson session begins with a phonograms review. The teacher works through a stack of index cards that display individual letters and letter patterns (vowel teams, consonant blend & digraphs) that have already been explicitly taught. Student repeats the letter name, key word, and corresponding sounds (I, igloo, /i/).	The teacher selects a student to “be an assistant teacher” during the phonogram review, the student is not only responsible for showing the index cards to the other students, but also monitoring their responses. The actual teacher remains involved and supportive throughout the exercise providing assistance in clarifying concepts or sounds.
<b>Concept Review</b>	The teacher reviews the concept of syllables, specifically eliciting the meaning of the term (a word or part of a word with one vowel sound).	The teacher reviews the concept of syllables, specifically eliciting the meaning of the term (a word or part of a word with one vowel sound). The teacher has previously asked to create their own visual representation of the definition of a syllable. She refers to these pictures, which are displayed, and asks the students who would like to present their definition.
<b>New Concept Intro</b>	Introducing the notion of a closed syllable. Practice reading closed syllable words. (tin, cub, trot, men, mug, flag, strut).	<p>The teacher provides the students with a list of words (tin, cub, trot, men, am). Uses guided questioning to draw their attention to salient features of the words, <i>What type of sound is the vowel making? What type of letters do the words end with?</i> Tells the students this type of syllable is a closed syllable, asks them to generate a definition of a closed syllable.</p> <p>The teacher then provides several types of materials and asks the students to create a visual representation of the closed syllable definition. Once students have completed the activity, interested students share their creations.</p>

	Original Wilson Lesson	Wilson Lesson with Motivational Strategies
<b>Read Word Cards</b>	The teacher shows the students eight index cards that contain single, closed syllable words (sent, flag, swab, blast, trot, on, dog, flop). Students alternate between reading the cards.	
<b>Read Word Lists</b>	Each student reads the full list of words (sent, flag, swab, blast, trot, on, dog, flop, fish, twist, ring, fresh, plug, brush).	Each student reads the full list of words (sent, flag, swab, blast, trot, on, dog, flop, fish, twist, ring, fresh, plug, brush).  The teacher then announces five minutes of Supersets and each student takes out their personal “brain-building” box with words and sentences that provide appropriate challenges. For example, in this lesson, students’ Supersets will likely include multi-syllable, closed words (contact, dentist, fabric, insect, pilgrim, submit, sudden, velvet, rabbit, kitten).
<b>What Says?</b>	The teacher provides the students with a set of magnetic letter tiles and boards (in which each letter and letter pattern is on an individual magnetic tile, and the tiles are arranged on a magnetic board).  The teacher provides a sound, and asks the student to point or lift the letter tile that makes that sound ( <i>what says /a/ ?</i> ).	Not included
<b>Spelling Words</b>	Using the magnetic letter tiles, students spell out the words provided by the teacher (cast, job, went, sting, put).	
<b>Dictation</b>	The old cat has a pink string. I like to twist my ring. The fish did a flop from the tank.	Not included
<b>Reading for Meaning</b>	The teacher hands out copies of the text “The Fish with the Sting” and students take turns reading lines of the text. The teacher then divides the students into two groups of two and asks each student to read the text again while the Head or Assistant teacher supports the use of appropriate decoding strategies.	



## Appendix F

### Sample Lesson Plan from the RAVE-O Program (Unit 14, Lesson 1)

	Original RAVE-O Lesson	RAVE-O Lesson with Motivational Strategies
<b>Warm-up</b>	<p>Students begin the lesson by practice reading their own set of “harder starter” cards (consonant blends such as, tr, cr, fl, pl, st, ch, sk, sl, etc).</p> <p>Then students are asked complete a worksheet of 10 items. Each item has a word where only the rime patterns (ap, an, ip, at, ab, ip) is filled in. Students are asked to use the accompanying illustrations, and their harder starter cards to complete the words (trap, plan, chip, skip, etc).</p>	<p>Teacher welcomes students and starts the session by engaging them in a weekly Hopes and Dreams activity. Teacher and students review hopes and dreams from the previous week and if desired, students set new hopes and dreams which reflect emerging feelings of competence and autonomy.</p>
<b>Introduce a New Core Word</b> (unchanged)	<p>A student removes the core word “grub” from the treasure chest, and reads the word.</p> <p>Teacher reminds students of the MIM trick (words have many interesting meanings) and asks them if <i>grub</i> is a MIM word.</p> <p>Teacher pulls out image card for each of the different meanings (food, to eat, bug) to elicit a discussion of the multiple meanings, including reinforcing students’ personal experiences with the word. Places images in pocket chart on wall along with core word.</p>	
<b>Review Sound-Symbol Correspondence</b> (unchanged)	<p>Teacher holds up core word and elicits the harder starter sounds from students “gr”. Review the known rime pattern “ub”. Practice the “jam slam” hand motion, in which one hand is the starter sound and the other is the rime sound and the two hands are “slammed” together to make the word.</p> <p>Students are then given index cards with the two consonant in the harder starter sound “g” and “r”, and the rime pattern “ub” to make the actual word.</p> <p>Students are told they are going to create a new word and are given the rime pattern “ill” to pair with the “gr” starter and make “grill”.</p>	
<b>Writing and dictation</b>	<p>The students practice writing grub and grill in a worksheet titled “Create grub”.</p> <p>The teacher dictates three sentences:</p> <ol style="list-style-type: none"> <li>1. Tap the grubs</li> <li>2. Grill the fish</li> <li>3. The grub is in the bag</li> </ol> <p>The students think of other words that start with “gr” and the teacher writes them on the board.</p>	<p>The students practice writing grub and grill in a worksheet titled “Create grub”.</p> <p>The teacher dictates three sentences:</p> <ol style="list-style-type: none"> <li>1. Tap the grubs</li> <li>2. Grill the fish</li> </ol> <p>Then students work together in pairs to generate their own sentences with the word “grub” or another RAVE-O core word from the “word wall”. The students share their sentences with the teacher who writes them on the board.</p>

<b>Introduce a New Core Word</b> (unchanged)	<p>A student removes the core word “brush” from the treasure chest, and reads the word.</p> <p>Teacher and asks them if <i>brush</i> is a MIM word.</p> <p>Teacher pulls out image card for each of the different meanings (verb, noun, various types, paint, tooth, hair, etc) to elicit a discussion of the multiple meanings. Places in pocket chart on wall along with core word.</p>	
<b>Review Sound-Symbol Correspondence</b> (unchanged)	<p>Teacher holds up core word and elicits the harder starter sounds from students “br”. Introduce the rime pattern “u” makes the short sound and the “sh” sound.</p> <p>Practice the “jam slam” hand motion, in which one hand is the starter sound and the other is the rime sound and the two hands are “slammed” together to make the word.</p> <p>Students are then given index cards with the two consonant in the harder starter sound “b” and “r”, and the rime pattern “ush” to make the actual word.</p> <p>Since it is a new harder starter and rime pattern, students are first asked to trace the letters three times with their fingers.</p> <p>Teacher elicits words that rhyme with brush, inquires whether it rhymes with any of the other core words on the wall (it does not). Asks students to generate rhyming words.</p> <p>Students are told they are going to create a new word and are given the rime pattern “ush” to pair with the “br” starter and make “brush”.</p> <p>Teacher repeats the steps to make the words crush and brand.</p>	
<b>Writing and Dictation</b>	<p>The students practice writing brush, on the worksheet titled “Create brush”.</p> <p>The teacher dictates three sentences:</p> <ol style="list-style-type: none"> <li>1. The brand is on the brush.</li> <li>2. Crush the rocks to bits.</li> <li>3. Brush the pet with a big brush.</li> </ol> <p>The students think of other words that start with “gr” and the teacher writes them on the board.</p>	<p>The students practice writing brush, on the worksheet titled “Create brush”. The students are offered the opportunity to choose the level of difficulty for their dictation sentences. Students divide into two teams (two students per team) and select sentences out of one of two boxes either “regular sentences” or “Superset sentences”. Superset sentences are longer, and compound, as compared to the regular sentences. Each student will select two sentences. Once a student pulls out a sentence, s/he reads the sentence and the teacher chooses three of the sentences to use for dictation.</p>
<b>Word Web</b>	<p>The teacher reminds the students of the MIM words they have already found for brush (as illustrated by the image cards in the pocket chart). Students are asked to create a word web for brush by placing a photocopy of the brush image in the middle of a drawing of a “web” on a piece of legal size paper and connecting of all of their associations with the word.</p>	<p>Not included</p>

## Appendix G

### Correlations of Outcome Measures

Variable	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Learning Activation Behaviors	.28	-.07	.20	-.09	-.30	.05	-.63**	-.54**	-.49*	-.52**	-.45*	-.29	-.59**	-.44*	-.41*
2. Barrier Behaviors		.04	-.80	.15	-.26	.17	-.15	-.15	-.33	-.05	-.02	-.06	-.27	-.04	.11
3. Goal Orientation			.60*	-.31	-.37	.08	.21	.19	.10	.14	.07	-.15	-.09	.20	.43*
4. Self Report Motivation				-.67**	-.47*	.10	.10	.18	.18	.15	-.03	-.02	-.25	.19	.19
5. Self-Report Avoidance					.31	.21	-.14	-.06	-.20	-.17	.09	.06	.17	-.22	-.08
6. Self-Report Performance Avoidance						-.03	-.13	-.10	-.26	-.06	-.08	-.05	.21	-.28	-.27
7. Polysemous Word Knowledge (Word Test)							.09	.27	.07	.30	.40	.53*	.14	.07	.29
8. Phonemic Decoding Efficiency (TOWRE)								.80**	.85*	.91**	.66*	.43*	.31	.61*	.74*

Significant at the \*  $p < .05$ , \*\* $p < .01$

Variable	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
9. Sight Word Efficiency (TOWRE)									.68*	.83**	.84*	.64*	.58**	.63*	.57*
10. Word Attack (WRMT-R)															
11. Word Identification (WRMT-R)															
12. Word Reading Accuracy (SRI)															
13. Passage Comprehension (SRI)															
14. Oral Reading Fluency (DIBELS)															
15. Rapid Letter Naming (RAN/RAS)															
16. Phonemic Awareness (CTOPP-Elision)															

Significant at the \*  $p < .05$ , \*\* $p < .01$

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