

A Pilot Study of Students' Self-Perceptions
of Efficacy and Engagement in the Writing Process

Leigh Anna Hutchison

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Approved by:

Rune Simeonsson, Ph.D.

Mary Ruth Coleman, Ph.D.

Harriet Boone, Ph.D.

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ABSTRACT

LEIGH ANNA HUTCHISON: A Pilot Study of Students' Self-Perceptions of Efficacy and Engagement, in the Writing Process.
(Under the direction of Mary Ruth Coleman)

This pilot study used a descriptive case-study method, with multiple cases, to examine changes in students' self-perceptions and performance in writing. The study focused on the effects of an intervention, intended to impact components of motivational engagement (interest and writing apprehension) as well as self-efficacy beliefs, for students with cognitive strengths and learning deficits, in order to determine how this relates to levels of effort and persistence on writing tasks. The participants were two adolescent students, who exhibited cognitive strengths, coupled with learning disabilities in writing. The study design used Entry Phase and Exit Phase measures to collect data on the students' levels of self-efficacy, apprehension, and interest in writing, before and after the intervention. Additional measures of effort, persistence, and performance were also taken at Entry and Exit Phases. Findings indicated improvements for both students on levels of effort, persistence, and performance following the intervention.

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DEDICATION

In loving memory of my father, Robert M. Hutchison,
who devoted his life to helping others.

This work is dedicated to the many individuals I have encountered throughout my life
and my work, who have struggled against the odds, to actualize their potential.

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CHAPTER ONE

BACKGROUND AND RATIONALE

Students who have learning disabilities often suffer from heightened levels of anxiety in the learning environment, due to repeated experiences of failure on academic tasks (Lumsden, 1994). Current research has demonstrated that frequent experiences of failure have a negative impact on students' perceptions of self-efficacy in performing academic tasks (Klassen, 2001). Self-efficacy beliefs are defined by Linnenbrink and Pintrich (2003) as an individual's judgements of their capabilities to organize and execute courses of action, required to attain a specific type of performance (Linnenbrink & Pintrich, 2003). Many studies have reinforced findings which demonstrate that academic performance is strongly influenced by the beliefs which students hold about their levels of ability (Linnenbrink & Pintrich, 2003; Pajares & Johnson, 1993). Therefore, students who have lowered self-efficacy beliefs often feel increasingly anxious when they are faced with academic tasks which they perceive to be unattainable, and as a result, they fail to exert the amount of effort necessary to succeed. The resulting lowered self-efficacy beliefs, and lack of effort and persistence, create a negative achievement cycle which is difficult to change (Seeratan, 2001).

Students with learning disabilities, who experience the negative cycle of academic failure, are not necessarily easy to identify (Nielsen & Higgins, 2005). Some of these students may be at risk due to deficits in self-regulation, while others may have marked

deficits in language processing, and still others may have exceptional talents or strengths in combination with specific learning disabilities, and are therefore recognized as meeting the criteria for “twice-exceptional” learners. Students who fit the profile of “twice-exceptional” learners (both gifted and learning disabled), have remarkable strengths in some areas, and disabling weaknesses in others (Baum, 1990; Nielsen & Higgins, 2005). This uneven development of skills results in educational needs that are different from those of more typical students with learning disabilities. An uneven development of skills can also create unique learning profiles, which often result in experiences of emotional turmoil for these students (Baum, 2004). Studies have shown that feelings of emotional turmoil can also have a negative effect on students’ academic performance (Nielsen & Higgins, 2005). The cycle of failure resulting from these types of negative experiences can also lower students’ perceptions of self-efficacy, because self-efficacy beliefs can be strongly affected by the emotional and physiological reactions which an individual feels toward an academic task (Pajares & Valiante, 2006; Klassen, 2001).

Therefore, the threat of a failure cycle is particularly relevant for students who fit the profile of twice-exceptional learners. Such students, who have large discrepancies between their areas of strength and weakness, are at a heightened risk for negative emotional reactions, because they often experience failure more frequently than they expect (Baum, 1994). Repeated experiences of failure cause fear of failure for future academic work, by creating general “feelings of anxiety toward academic tasks as these students become aware of the discrepancy between their potential ability and their performance” (King, 2005, pg. 17).

Often, such students exhibit weaknesses in information processing which create deficits in core academic skills (Nielsen & Higgins, 2005). For instance, research by Nielsen & Higgins (2005) indicates that although measures of intellectual ability (expectancy IQ, verbal IQ, performance IQ, and full scale IQ) of students who meet the criteria for twice-exceptional learners, were similar to such measures in the gifted population, the reading and written language performance of these students was significantly lower than that of their gifted peers. Therefore, students who meet the criteria for twice-exceptional learners, and who experience difficulties in these academic areas, may experience heightened levels of anxiety when facing performance on these tasks (King, 2005).

Heightened levels of anxiety can have a negative impact on students' perceptions of self-efficacy, since self-efficacy beliefs are partially formed by an individual's emotional and physiological reactions to a task (Pajares & Valiante, 2006; Klassen, 2001). This relationship between anxiety and self-efficacy is also reciprocal, because self-efficacy beliefs have been found to influence thought patterns and emotional reactions (Pajares & Valiante, 2006). For instance, specific studies have shown that low self-efficacy beliefs result in negative physiological reactions, such as anxiety and writing apprehension (Wachholz & Etheridge, 1996; Pajares & Johnson, 1993).

Recent research in the area of writing apprehension indicates that "anxiety for writing tasks is common, and the physiological reactions of stress to writing, interferes with confidence in completing tasks" (Klassen, 2001, p. 8). Anxiety for writing is therefore considered to be a "subject and situation specific anxiety", which has also been termed 'writing apprehension' by Daly & Miller (1975) (Hassan, 2001). These

researchers defined writing apprehension as ‘a general avoidance of writing, and of situations perceived by the individuals to potentially require some amount of writing, accompanied by the potential for evaluation of that writing’ (Hassan, 2001, pg. 4).

Daly and Miller found that individuals who experienced high levels of writing apprehension found writing to be an unpleasant experience, which they would avoid if possible. These individuals experienced heightened levels of anxiety on writing tasks, which was reflected in their attitudes and behaviors about writing, as well as in their written products (Hassan, 2001). For instance, students who experienced high levels of writing apprehension also reported more instances of negative experiences, and failure with writing (Wachholz & Etheridge, 1996). Evidence suggests, therefore, that low levels of writing self-confidence, in combination with previous negative experiences, does interfere with learning, and has a negative impact on students’ self-efficacy beliefs (Wachholz & Etheridge, 1996). In fact, previous experience of success or failure in writing was one of the most frequently cited sources of students’ self-efficacy beliefs (Wachholz & Etheridge, 1996).

This situation is especially relevant to the population of students who meet the criteria for twice-exceptional learners, and who struggle with learning disabilities in specific skill areas, such as writing. These students’ self-perceived strengths are very important in underscoring their belief in their own potential, because such students are often very sensitive as well as bright, and are therefore acutely aware of their deficits (Baum, 1994). They often have confusion about the imbalance between their abilities and deficits, which can result in intense feelings of frustration and hopelessness (Howard, 1994; Fall & Nolan, 1993).

Feelings of anxiety and frustration with academic tasks can have a significant negative impact on the self-efficacy beliefs of these students, as demonstrated in recent studies. For instance, one particular study demonstrated that the single major factor which distinguished students, who fit the profile of twice-exceptional learners, from either gifted, or learning disabled students, was a marked sense of low self-efficacy; they demonstrated a lack of belief in their ability to perform successfully (Howard, 1994). Although such students often have interesting and important ideas to share, they are frequently reluctant to demonstrate their limited spelling or writing abilities, for example, when they exhibit learning disabilities in writing in these subject areas. Therefore, the quality of their work is inhibited, and they are left feeling frustrated, as the cycle of failure is reinforced (Baum, et al. 2001). This cycle of persistent failure can cause students with learning disabilities to lose confidence in their ability to succeed, resulting in lowered self-efficacy beliefs that become further diminished over time (Baum, et al., 2001).

The concept of self-efficacy which will be used for this study is based on Bandura's definition of self-efficacy, as 'people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances' (Pajares & Johnson, 1993, p. 2) Many studies have shown that the negative beliefs which students hold about their personal efficacy strongly affect their academic performance (Pajares & Johnson, 1993). However, studies by Bandura have also shown that a positive sense of self-efficacy results from successful performance of tasks which the "individual respects, and perceives as a challenge" (Baum, 2004, p. 3). Such achievements are measured by the individual by how well their performance meets

their personal “internal” standards (Baum, 2004, p. 3). This is particularly relevant for students who fit the profile of twice-exceptional learners, because such students are often motivated intrinsically, and have a heightened need to set personally meaningful standards for their academic work (Reiss, 2004; Baum, 2004).

An interactive concept of self-efficacy relevant to the current study, was built on Bandura’s model, and formulated by Linnenbrink and Pintrich (2003). This model demonstrates that self-efficacy is integrated with behavioral, cognitive, and motivational engagement, as interactive components that impact learning and achievement. In their model, the concept of self-efficacy can be broken down into three component parts, which include *behavioral engagement* (effort, persistence, and instrumental help-seeking), *cognitive engagement* (strategy use and metacognition) and *motivational engagement* (interest, value and affect) (Linnenbrink & Pintrich, 2003).

Behavioral engagement can be measured in terms of three factors; the level of *effort* which a student exerts in order to complete a task, the student’s level of *persistence* in working through challenges, and a student’s ability to use *instrumental help-seeking*, to find effective resources. Behavioral engagement has also been shown to be related positively to measures of self-efficacy. In a variety of studies, students with strong self-efficacy beliefs showed higher levels of effort and persistence in the face of difficulties, than did students with low measures of self-efficacy (Linnenbrink & Pintrich, 2003).

Cognitive engagement is apparent when students are thinking deeply about the content of the subject matter. Students who are cognitively engaged in learning actively use strategies to increase their understanding of the material to be learned. They are able to distinguish aspects which they do understand from those with which they have

difficulty, and they are also able to think critically and creatively about the subject matter (Linnenbrink & Pintrich, 2003). These abilities also tap skills in metacognition (the ability to reflect on one's own thinking, while self-monitoring for comprehension), which are a strong indicator of cognitive engagement (Linnenbrink & Pintrich, 2003). High self-efficacy beliefs have been shown to be consistently related to an increased use of metacognitive strategies, and deep processing strategies. Self-efficacy beliefs also interact with cognitive engagement in a reciprocal way, because an increased use of metacognitive strategies can help a struggling student to learn more effectively, and thus develop heightened levels of self-efficacy in learning processes (Singer & Bashir, 1999).

Motivational engagement, the third component of engagement in learning, can be further broken down into the components of interest, value, and affect. Each of these components influences the others, and they interact in reciprocal ways. "Interest" is apparent when students engage in tasks which are personally relevant to them, or which inspire motivation at an intrinsic level. Research has shown that students who are motivated intrinsically use cognitive strategies that require more effort, and that result in the processing of information at deeper levels (Lumsden, 1994). For instance, when students are motivated to learn for intrinsic goals, they have been found to show greater levels of persistence on tasks, they process information more deeply, and they also perform better on tests, than comparable students who are motivated primarily by extrinsic goals (Vansteenkiste, et al., 2004). These findings also reinforce work by Baum and Owen (1988), who found unique characteristics in students who met the criteria for twice-exceptional learners, regarding levels of persistence when motivated by individual interests (Reis, et al. 2004).

The second component, “value” refers to either utility value, which relates to the personal usefulness of the information or the task to the student, or value beliefs, which relate to more global life goals of the student (Linnenbrink & Pintrich, 2003). The final component of emotional response, or “affect”, is positively related to learning because positive emotions, like pride and joy in one’s task, contribute to motivational engagement. Alternatively, negative emotions relate negatively to engagement in learning, and interfere with levels of interest, and metacognitive engagement (Linnenbrink & Pintrich, 2003).

In summary, the interactive model of self-efficacy, formulated by Linnenbrink & Pintrich (2003), demonstrates that self-efficacy is integrated with behavioral, cognitive, and motivational engagement, as interactive components that impact learning achievement. The components of *behavioral engagement* can be measured as levels of *effort* and *persistence*. *Cognitive engagement* is indicated by a student’s use of *metacognition* and deep processing strategies. *Motivational engagement* is broken down into the components of *interest*, *value*, and *affect*. *Self-efficacy* is demonstrated to be integrated in reciprocal interrelations, with these varied components of engagement. Therefore, this model is very useful in examining the interrelations among the cognitive and emotional aspects of learning, which impact the performance of students who may suffer from high levels of anxiety, or apprehension, and will serve as the framework for this study.

Difficulty in evaluating their progress is another characteristic of students with learning disabilities, which can also result in low self-efficacy beliefs (Schunk, 2003). Therefore, strategies that promote self-regulation are particularly important for these

students. Results of a research study by Schunk & Pajares (2002), reinforce this perspective, through findings which indicate that self-regulation, cognitive strategy use, and self-efficacy are positively inter-correlated, and are useful in predicting outcomes of achievement. In particular, self-evaluation (a subprocess of self-regulation), has been found to be important in enhancing self-efficacy beliefs (Schunk & Pajares, 2002).

The process of self-evaluation is particularly important for students who meet the criteria for twice-exceptional learners, because these students often view themselves as primarily disabled, as a result of attention focused on their disabilities (Nielsen, 2005; Baum, 1990). Such students are often extremely emotionally vulnerable, and need to be supported in self-discovery activities that help them to identify their areas of strength, their talents, affinities, learning styles, and emotional needs (Nielsen & Higgins, 2005; Baum, 1990). Therefore, metacognitive strategies that promote self-regulation are especially important for such students, who have cognitive strengths coupled with learning disabilities. In particular, the process of self-evaluation, or self-assessment, is critical for students who have difficulty evaluating their performance accurately (Miller, 1991).

There is evidence that self-assessment is often a deficit skill in students with learning disabilities, which can be improved, and can result in marked improvement in academic performance (Miller, 1991). Many students with learning disabilities have difficulty assessing their performance in the area of their deficit, though they are often able to effectively gauge their performance in other areas. Thus, in order for the self-regulation aspect of metacognition to be effective, students may first need to have “sufficient knowledge about themselves as learners and self-assessment of the learning

task” (Miller, 1991, p. 180). They will then be able to more effectively self-monitor their performance, which is critical to effective academic achievement (Reis, et al. 2004).

Students who meet the criteria for twice-exceptional learners, and who view themselves as primarily disabled, can benefit greatly from intervention strategies that help them to identify their areas of strength and weakness, their learning styles, affinities, and emotional needs (Howard, 1994). Research has shown that remediation strategies for basic skills, such as reading and writing, requiring primarily repetition to ensure mastery, have proven to be ineffective for students who have both high ability and learning disabilities (Baum, 2004). In contrast, case studies of students who had high cognitive abilities coupled with learning disabilities were able to “analyze and understand their deficits from the metacognitive, self-assessment perspective” and, as a result, make significant progress in improving both reading and writing skills (Miller, 1991, p. 185). These types of strategies also incorporate the factors of personal relevance and interest in learning, by engaging students’ interest in their personal learning process, which can result in enhanced intrinsic motivation and task commitment (Baum, 2004).

This pilot study, designed as a qualitative, descriptive case study analysis, will utilize an intervention designed to inform students, who meet the criteria for twice-exceptional learners, of their strengths and weaknesses in learning. The intervention process will enable these students to use the knowledge of their personal learning style to enhance their self-assessment skills, in order to select appropriate writing strategies which they will use to improve their ability to perform a writing task. Measurement instruments will be incorporated into this qualitative study, in order to gauge levels of

writing apprehension, interest, and self-efficacy beliefs for each of the student participants, before and after the intervention.

Significance of the Study

It is critical to develop effective intervention strategies which can stop the negative cycle of failure, and empower students to try to succeed at tasks which challenge them. A study by Pajares (1999), with typical students in the area of self-efficacy, offers evidence that interventions may be effective. Studies by Pajares (1999) have found that high self-efficacy beliefs offset the negative effects of writing apprehension. Current research (Pajares, 2003; Klassen, 2001) has also shown that self-efficacy beliefs and writing performance are related, in that confidence engenders increased effort and resiliency when facing challenges. Various studies by Pajares and colleagues, with typical students at elementary and middle school levels, have established interactions between self-efficacy beliefs and motivational variables (Pajares, et al. 2001, Pajares & Valiante, 2001). Pajares (2003) has advocated the need to examine the complexity of the interactions between the emotional processes and the cognitive processes involved in writing, for typical students as well as for students at risk. He has also reinforced the importance of examining the impact of affect on self-efficacy beliefs. This is particularly relevant to writing, and has led Pajares to emphasize that all phases of the writing process are influenced by affective components (Pajares, 2003).

These research findings are particularly relevant to the population of students who meet the criteria for twice-exceptional learners, because these students are often highly emotionally vulnerable (Nielsen & Higgins, 2005; Baum, et al. 2001). The wide discrepancy between their cognitive abilities, and their actual performance on academic

tasks, often results in heightened levels of anxiety in areas such as writing composition. These students are therefore at risk of becoming trapped in a failure cycle, because a number of studies have shown that writing anxiety (or apprehension) is “negatively associated with the quality of the message encoded, and with the individual’s actual writing behavior, their writing performance, and their willingness to write or take advanced writing courses” (Cheng, et al. 1999).

However, these students also have an increased need to find value and personal meaning in academic learning (Siegle & McCoach, 2005). It is therefore critical to design interventions which meet the needs of these students’ complex, individual learning styles, by utilizing their strengths in metacognition to help them develop effective self-assessment and self-regulation strategies (Fall & Nolan, 1993; Zimmerman & Martinez-Ponz, 1990). As students learn effective strategies for self-assessment, and for self-regulation of their unique learning style, they can be empowered to exert more effort to effectively self-monitor their performance, and thus improve their levels of achievement in academic skills, such as writing (Reis, et al. 2004, Miller, 1991). Increases in writing skills and improved self-efficacy beliefs, have been found to result in heightened levels of confidence, which lead to increased levels of effort and resiliency when facing challenges (Pajares, 2003; Klassen, 2001). Heightened levels of self-efficacy beliefs can offset the negative effects of writing apprehension, as demonstrated by Pajares with typical students (1999), and therefore have a positive impact on the failure cycle.

To date, few researchers have examined the effect of self-efficacy beliefs on writing performance, but those who have, recognize that there is a relationship (Wachholz & Ethridge, 1996; Pajares & Johnson, 1993). In fact, some researchers have

demonstrated that both writing anxiety and self-efficacy are related to writing performance (Wachholz & Ethridge, 1996; Pajares & Johnson, 1993). Results of research in this area are varied however, with some researchers reporting a significant relationship between writing self-efficacy beliefs and related writing performance, but a lack of a significant relationship between writing apprehension and writing performance (Pajares & Johnson, 1993).). Separate studies, examining writing apprehension and self-esteem, found results which indicated that heightened levels of writing apprehension negatively impacted the quality of students' composition writing (Hassan, 2001; Cheng, et al. 1999). Writing apprehension has, however, been demonstrated to be negatively related to self-efficacy beliefs (Pajares & Johnson, 1993). Therefore, if low self-efficacy beliefs contribute to negative physiological reactions, such as anxiety or writing apprehension, interventions designed to decrease anxiety and foster self-regulation, may be useful in increasing student's confidence in their writing ability, and thus in increasing their self-efficacy beliefs (Pajares & Valiante, 2006).

This situation is intensified for students who meet the criteria for twice-exceptional learners, because such students often have a heightened sensitivity to failure. They are aware of their heightened cognitive abilities, and they can become deeply emotionally troubled by the huge discrepancy between their abilities and their deficits (Fall & Nolan, 1993; Morrison, 2001). When these students lose confidence in their ability to succeed on academic tasks, their sense of self-efficacy is compromised, and they may fall into a cycle of under achievement or failure (Baum, et al., 2001). Therefore, it is critical to develop effective intervention strategies which can stop this negative cycle of failure, and empower students to try to succeed at tasks which challenge

them. In order to be effective, interventions must meet the needs of these students' complex, individual learning styles, by utilizing their strengths in metacognition to help them develop effective self-assessment and self-regulation strategies (Fall & Nolan, 1993; Zimmerman & Martinez-Ponz, 1990). Interventions must also be designed to engage students' interest in their unique learning process, and increase positive emotional responses to academic tasks (Nielsen & Higgins, 2005). Research is needed, therefore, to examine the interrelation of certain components of motivational engagement (interest, and writing apprehension) to self-efficacy beliefs, and levels of effort and persistence on writing tasks, in the population of students who meet the criteria for twice-exceptional learners.

Research Questions

The purpose of this study is to examine the effects of an intervention, intended to impact components of motivational engagement (interest and writing apprehension) and self-efficacy beliefs, for students who meet the criteria for twice-exceptional learners, in order to determine how this relates to their levels of effort and persistence on writing tasks. The current study will utilize an intervention designed to inform students (who meet the criteria of twice-exceptional learners), of their strengths and weaknesses in learning. The intervention will then enable these students to use the knowledge of their personal learning style, in order to select appropriate writing strategies to enhance their ability to perform a writing task. It is hoped that the use of an intervention designed to help students understand their strengths and weaknesses as learners, will result in reductions in writing apprehension, and increases in measures of interest, positive self-

efficacy beliefs, and levels of effort and persistence in a writing task; therefore resulting in improved performance.

Specific questions which will be addressed through this research study are listed as follows:

1. How does the student's personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student's levels of writing apprehension?

2. How does the student's personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student's self-efficacy beliefs in writing, and his/her interest in the writing task?

3. How does the student's personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) affect the student's levels of effort, persistence and performance on the writing task?

Limitations of the Study

This study is limited in the scope of its findings, due to the pilot nature of the study, which is an exploratory, qualitative study. The study uses a descriptive case-study method, in a multiple case design, in order to provide a rich, descriptive analysis of the individual cases, as well as a discussion of cross-case trends. Only two cases are examined, due to the limitations in resources of the researcher, which required the participants to be drawn from a sample of convenience.

In order to establish construct validity, the study uses multiple sources of evidence in its data collection technique. It also uses replication logic in the Entry Phase

and Exit Phase design of the study, which helps to establish external validity. However, the unique design of the intervention itself does not allow for an exact replication in every aspect of the study. Case study protocols are used at each phase of the study however, in order to increase levels of reliability. Although the study incorporates quantitative measures into its methods of data collection, the measures are interpreted primarily on the basis of a description of trends, identified both at the individual case level, and then across cases.

CHAPTER TWO

REVIEW OF LITERATURE

Repeated experiences of failure in the academic environment can have a negative impact on students' perceptions of self-efficacy in performing academic tasks. Students who experience lowered self-efficacy beliefs may also experience increased levels of anxiety when facing academic tasks which they perceive to be unattainable. Increases in anxiety, accompanied by lowered self-efficacy beliefs, may result in a student's failure to exert the amount of effort and persistence needed in order to succeed at academic tasks. Therefore, students with learning disabilities frequently experience a negative cycle of academic failure, which can be difficult to change.

Students with learning disabilities may also be difficult to identify. Students who are at risk of experiencing a negative achievement cycle may have a wide range of deficits, which may include specific deficits in self-regulation, language processing, or working memory, for example. Some students may have deficits in broad areas, which affect their level of academic functioning in general, while others may have exceptional talents or strengths in combination with specific learning disabilities. Students who have remarkable strengths in some areas and disabling weaknesses in others are recognized as meeting the criteria for "twice-exceptional" learners, or are classified as both gifted and learning disabled. These students are at a heightened risk for negative emotional reactions to failure, and to lowered self-efficacy beliefs.

An interactive model of self-efficacy, formulated by Linnenbrink and Pintrich, effectively demonstrates that self-efficacy is integrated with behavioral, cognitive, and motivational engagement. In this model, the components of self-efficacy can be broken down further to include behavioral engagement (effort, persistence and instrumental help-seeking), cognitive engagement (strategy use and metacognition), and motivational engagement (interest, value and affect). These three separate components of self-efficacy have been demonstrated to be interactive, and therefore important in impacting learning and achievement.

Research into the nature of self-efficacy beliefs has resulted in the development of strategies designed to positively impact students' perceptions of self-efficacy in performing academic tasks. Strategies include the implementation of mastery goals, and autonomy in the learning environment. Interventions which utilize metacognitive strategies, and self-regulatory strategies, have also been demonstrated to be effective with students who display learning disabilities in language processing. Such strategies may include techniques for developing skills in self-monitoring, self-evaluation, and behavioral adjustment.

Interventions which focus specifically on the interactions among the components of motivational engagement may be particularly effective, because studies have shown that emotions impact motivational engagement and self-efficacy beliefs. For instance, in the writing process, it is important to examine the connection between interest and self-efficacy beliefs, because all aspects of the writing process are affected by affective components. Strategies which are designed to utilize metacognitive processes have also been demonstrated to be effective in enhancing both self-efficacy beliefs and

motivational engagement, because the active use of metacognitive skills is a strong indicator of cognitive engagement in learning. Studies indicate that metacognition has been found to be integrated with the executive functions in the abilities of planning, organizing, and developing strategies in order to achieve a specific goal. Therefore, metacognitive strategies which integrate language functions, metacognitive skills (such as self-monitoring, and self-evaluation), and self-regulation have been found to be very effective for students with language based learning disabilities.

Chapter two includes a review of research in the areas of self-efficacy beliefs in academic learning, metacognition and motivational engagement, language development and self-regulation, and an overview of the educational and emotional needs of students who exhibit cognitive strengths coupled with learning disabilities. The chapter is divided into six sections. Subheadings are used to divide each section, and to introduce the overriding concept being addressed. Each section is concluded with a summary of key points. The final section of chapter two includes a description of the process of *Demystification*, which is an important aspect of the intervention design of the study.

Self-Efficacy Beliefs in Academic Learning

Students with learning disabilities frequently face anxiety, frustration, and failure as they attempt tasks which are too challenging for their level of skill. As they become discouraged, these students often fail to continue to exert the effort required to develop effective skills (Seeratan, 2001). Unfortunately, many academic programs have been unsuccessful in stimulating students to learn in ways which they find relevant and intrinsically rewarding. Remediation programs in particular, have not been effective in engaging students with learning disabilities in ways which integrate positive emotions

with academic tasks (Lumsden, 1994; Knowles, 1983). As a result, many of these students face repeated experiences of failure, which have a negative impact on their perceptions of self-efficacy in performing academic tasks (Klassen, 2001). Research in the area of education has recognized that the concept of self-efficacy beliefs is critical to academic learning, because a student's self-efficacy beliefs have an impact on their ability to perform a task successfully. A student's self-efficacy beliefs also affect their choices within their academic careers, and their ability to persist in the face of difficulties (Schunk, 2003; Linnenbrink & Pintrich, 2003; Pajares & Valiante, 2002).

The theoretical concept of self-efficacy was originally developed by Albert Bandura. Bandura formulated the concept as a critical aspect of his Social cognitive theory, which recognized that people do not simply react to their environment, as behaviorists had previously postulated. Instead, Bandura believed that a reciprocal interaction existed among personal factors which were unique to the individual, such as cognition, emotion, and behavioral response, as well as environmental factors (Pajares, 2002). Bandura's theory regarded individuals as being able to act upon their environment (as producers), as well as being products of their environment. The concept of self-efficacy beliefs, as defined by Bandura, is critical for its ability to enable control over an individual's feelings, thoughts, and actions (Pajares, 2002; Pajares & Valiante, 2006). Self-efficacy beliefs are theorized therefore, as a key concept in motivation and performance, and are defined as an individual's judgements of their capabilities to both organize and execute the courses of action required to attain a specifically designated type of performance (Linnenbrink & Pintrich, 2003; Pajares & Valiante, 2006).

This concept of self-efficacy is currently recognized as being very important in influencing human behavior. Research studies in areas as diverse as athletics, psychology, business, and education have demonstrated that self-efficacy beliefs are very important to an individual's ability to self-regulate behavior, and impact levels of motivation and persistence in the face of challenges (Klassen, 2001). Although the concept of self-efficacy is similar in some ways to the concept of personal competence and self-concept, an important difference is the fact that self-efficacy beliefs are task specific; they focus on an individual's ability to perform a task in a specific situation, and they are not global in scope (Linnenbrink & Pintrich, 2003). Therefore, due to the task specific nature of self-efficacy beliefs, they have predictive power over the outcome of a task (Linnenbrink & Pintrich, 2003).

Recent research in the area of education has recognized that the concept of self-efficacy is critical to academic learning because of its power to predict outcomes on task performance. Current research by Linnenbrink & Pintrich (2003), offers a conceptual framework to show the interactions between self-efficacy beliefs, engagement, and learning in the academic environment. This conceptual framework shows a reciprocally interactive relationship between self-efficacy, and components of behavioral, cognitive, and motivational engagement in learning (Linnenbrink & Pintrich, 2003).

This interactive model of self-efficacy, formulated by Linnenbrink and Pintrich (2003), demonstrates that self-efficacy is integrated with behavioral, cognitive, and motivational engagement, as interactive components that impact learning and achievement. The interactive concept of self-efficacy can be broken down into three component parts, which include *behavioral engagement* (effort, persistence, and

instrumental help-seeking), *cognitive engagement* (strategy use and metacognition) and *motivational engagement* (interest, value and affect) (Linnenbrink & Pintrich, 2003).

Each of the components of engagement illustrated can be examined and measured both separately, and in interaction with self-efficacy beliefs.

Behavioral Engagement: Behavioral engagement can be measured in terms of three factors; effort, persistence and instrumental help-seeking. The two which will be incorporated in this study, include the level of *effort* exerted by a student in order to complete a task, as well as the student's ability to *persist* in the face of difficulties. Behavioral engagement has also been shown to be related positively to measures of self-efficacy, as both typical junior high students, and college students, with strong self-efficacy beliefs showed higher levels of effort and persistence in the face of difficulties, than did students with low measures of self-efficacy (Linnenbrink & Pintrich, 2003). Studies have determined that a positive correlation between self-efficacy and behavioral engagement seems to be a stable factor which is generalizable across different ages and genders, for students from elementary grade levels throughout schooling (Linnenbrink & Pintrich, 2003).

Cognitive Engagement: Cognitive engagement is evident when students are thinking "deeply about the content to be learned", when they are distinguishing between the things that they know and do not know, and when they are actively using "different strategies for learning that increase their understanding of the material", and their ability to "think critically and creatively about the material to be learned" (Linnenbrink & Pintrich, 2003, p.124). Metacognition (the ability to reflect on one's own thinking, while self-monitoring for comprehension) is also a strong indicator of cognitive engagement

(Linnenbrink & Pintrich, 2003). Self-efficacy beliefs also interact with cognitive engagement, because high self-efficacy beliefs have been shown to be consistently related to an increased use of metacognitive strategies, and deep processing strategies. These findings were stable across age groupings of students from elementary schools to college classrooms, as well as across gender and ethnic groups (Linnenbrink & Pintrich, 2003). Alternatively, an increased use of metacognitive strategies can help a struggling student to learn more effectively, and thus develop heightened levels of self-efficacy in learning processes (Singer & Bashir, 1999).

Motivational Engagement: Motivational engagement is the third component of engagement, which can be further broken down into the components of interest, value, and affect, all of which interact in a reciprocal way. The causal link between these components and self-efficacy has been continuously debated however it is evident that they do influence each other (Linnenbrink & Pintrich, 2003). For example, the component of “interest” can be further distinguished as intrinsic, or being personally relevant to a student. Research has shown that students who are motivated intrinsically use cognitive strategies that require more effort, and result in the processing of information at deeper levels (Lumsden, 1994). Work by Vansteenkiste, et al. (2004, p. 248) found evidence for the hypothesis “that when individuals learn concepts or activities for intrinsic goals, there will be deeper processing, better test performance, and greater persistence than when they learn for extrinsic goals”. These findings also reinforce work by Baum and Owen (1988), who found unique characteristics in students who met the criteria for twice-exceptional learners, regarding levels of persistence and individual interests (Reis, et al. 2004).

The second component, “value” can be broken down into the concepts of utility value and more general value beliefs about the task, content, or goals. The concept of utility value relates to the personal usefulness of the information or the task to the student, while value beliefs often relate to the more global life goals of the student (Linnenbrink & Pintrich, 2003). The final component, “affect” (or emotional response), is positively related to learning because positive emotions, like pride and joy in one’s task, contribute to motivational engagement, while negative emotions relate negatively to engagement in learning (Linnenbrink & Pintrich, 2003).

Each of these components interact in reciprocal ways with self-efficacy beliefs. For instance, studies have determined that high levels of interest result in the use of cognitive strategies that require more effort, and allow for deeper levels of cognitive processing, which in turn should increase positive self-efficacy beliefs (Hidi et al, 2002). Affect has also been found to have a reciprocal relationship with self-efficacy beliefs in that positive emotions result in higher levels of motivational engagement which increase self-efficacy beliefs. Negative emotions however, result in decreased levels of interest and enjoyment, which decrease levels of effort and persistence, and result in lowered self-efficacy beliefs (Pajares, 2003). If this type of negative emotional cycle persists, it can cause fear of failure on future academic tasks, as well as the output of less effort, which can result in a negative achievement cycle (Seeratan, 2001; Schunk, 2003).

Many researchers in the field of education have advocated the development of instructional strategies designed to positively impact the self-efficacy beliefs of students, in order to enhance academic performance. Research by Schunk (2002) links self-efficacy beliefs and judgments to specific types of learning goals, to enhance the

effectiveness of the learning process. For example, Schunk (2002) has determined that self-efficacy beliefs and motivational engagement can be linked to two types of goal orientation; either mastery goals or performance goals. Mastery goals support autonomy, absorption, and self-determination in learning and result in the use of cognitive strategies that require more effort and persistence (Miller & Meece, 1997). A focus on mastery goals can also result in positive increases in self-efficacy beliefs (Schunk & Pajares, 2002).

A focus on performance goals however, often has the opposite effect. When a student is focused on performance goals, they are concerned with demonstrating competence on a task relative to others. Therefore, their motivation has an extrinsic, rather than intrinsic focus, which frequently results in worries and doubts which are focused on the self, rather than on the specific task. This type of focus has been found to result in decreases in levels of intrinsic motivation, persistence, and lowered self-efficacy beliefs (Rawsthorne & Elliot, 1999).

Extensive research has demonstrated the ways in which goal orientation impacts student motivation in learning, and affects an individual's perceptions of self-efficacy (Schunk & Pajares, 2002; Bandura & Schunk, 1981; Vansteenkiste, et al., 2004; Miller & Meece, 1997). For example, in a meta-analysis of the literature, Rawsthorne and Elliot (1999), state that theorists have effectively determined that the two important goal orientations (mastery goals as opposed to performance goals), result in different impacts upon intrinsic motivation. Mastery goals require an individual to focus on the development of personal competence, or mastery of a task. They support attitudes of autonomy, self-determination, and task absorption (which facilitate intrinsic motivation

and enjoyment) (Rawsthorne & Elliot, 1999). Research by Miller & Meece (1997, p. 287) also demonstrated that task mastery goals produced the most positive patterns of interactions between “motivational goals, achievement affect, and the use of different cognitive strategies”. Students who pursued mastery goals effectively used “effort-based cognitive strategies”, persisted on difficult tasks, and generally held high perceptions of their abilities to perform positively on learning tasks (Miller & Meece, 1997, p. 287).

In contrast, performance goals (which require a demonstrated level of competence in relation to others) were shown to result in anxiety from evaluative pressures, and to actually undermine intrinsic motivation (Rawsthorne & Elliot, 1999). These researchers also found evidence that “the pursuit of performance goals has an undermining effect on intrinsic motivation, relative to the pursuit of mastery goals”, and the pursuit of performance goals was also found to result in “less free-choice persistence, and self-report interest and enjoyment” than was associated with mastery goals (Rawsthorne & Elliot, 1999, p. 337). Goals such as performance goals, which elicit anxiety, result in lower achievement because the resulting worries and self doubts cause a student’s attention to shift away from the learning task at hand, and to focus instead on the self (Snow, 1986).

The impact of different types of goals on students’ self-efficacy beliefs have been demonstrated in current studies. For instance, research by Schunk and Pajares (2002) demonstrated that students’ perceptions of self-efficacy can be enhanced by types of learning goals which are specific, short-term, and somewhat challenging. Whereas, goals which were perceived as long-term and unattainable, had a negative impact on students’ sense of self-efficacy (Schunk & Pajares, 2002). Bandura and Schunk (1981, p. 586) also

determined that “self-percepts of efficacy and intrinsic interest” could be enhanced by using activities which encouraged “self-motivation through proximal goal setting”.

The term “proximal” implies short-term goals, which have a superior impact over long term goals. Students are able to utilize proximal goal setting to make rapid progress toward the mastery of skills in situations of self-directed learning. Research demonstrates three major psychological effects of proximal goals on behavior. This includes motivation effects, because self-motivation is best achieved by setting attainable sub-goals, which lead to an ultimate goal. This achievement of sub-goals also enhances percepts of self-efficacy, because it enables development of mastery skills, which can lead to the development of intrinsic interest through sustained satisfaction in achievement (Bandura & Schunk, 1981). Results of this research also demonstrated that proximal self-motivators effectively produced more rapid mastery of the subject matter (Bandura & Schunk, 1981).

The importance of self-motivation as a critical component in learning is reinforced by the work of Vansteenkiste, et al. (2004), who studied the synergistic effect between intrinsic goals and autonomy support. His findings showed that when these factors were provided together, subjects “produced more free-choice persistence” on tasks, and increased the positive effects on “self-reports of superficial versus deep processing” (Vansteenkiste, et al. 2004, p. 21 of 25). He also hypothesized that the pursuit and attainment of intrinsic goals (over extrinsic goals) would allow for the satisfaction of basic psychological needs for “autonomy, competence and relatedness”, which would result in feelings of well being, and positive behaviors (Vansteenkiste, 2004, p. 21 of 25). This work supports the research by Linnenbrink and Pintrich (2003),

which illustrates the reciprocal effects of positive emotions, interest, and cognitive engagement on motivational engagement in academic learning.

Key Points: Self-Efficacy Beliefs

The concept of self-efficacy beliefs is critical to academic learning because self-efficacy beliefs affect a student's ability to successfully perform an academic task, and to persist in the face of difficulties. The concept of self-efficacy was originally developed by Albert Bandura (1986) as a key concept in motivation and performance. The concept of self-efficacy is defined as an individual's judgements of their capabilities to both organize and execute actions required to attain specific types of performances. This concept is important in the area of education because of its power to predict outcomes on task performance.

Linnenbrink and Pintrich (2003) developed an interactive model of self-efficacy beliefs, based on Bandura's definition, which shows a reciprocally interactive relationship between self-efficacy and components of behavioral, cognitive, and motivational engagement in learning. This model includes three components of engagement which interact with self-efficacy beliefs to impact learning and achievement. The three components include behavioral engagement (effort, persistence and instrumental help-seeking), cognitive engagement (strategy use and metacognition), and motivational engagement (interest, value, and affect). Each of these components can be measured individually, or in reciprocal interaction with self-efficacy beliefs, as well as with the other components.

A number of studies have determined that self-efficacy beliefs and motivational engagement can be linked to two types of learning goals; either mastery goals or

performance goals. Master goals support autonomy, intrinsic motivation, engagement, and self-determination in the learning process, and can result in increases in self-efficacy. A focus on mastery goals also results in the use of cognitive strategies, with increased levels of effort and persistence. In contrast, when a student is focused on performance goals, they are primarily concerned with demonstrating competence on a task relative to others, and their motivation has an extrinsic focus. This type of goal orientation results in worries and doubts which are focused on the self, rather than on the specific task, and therefore results in lowered levels of persistence as well as lowered self-efficacy beliefs.

Educational Strategies that Enhance Self-Efficacy Beliefs

Research has shown that students' own perceptions of self-efficacy and achievement can be enhanced by their sense of autonomy in their learning environment (Schunk & Pajares, 2002). Learners have been found to be able to gauge their self-efficacy independently, through observing their actual performance on tasks, the feedback they receive from others, and their emotional responses to their achievements. Their self-efficacy beliefs in turn have been shown to affect their choice of task, and the effort and persistence with which they engage in the task, as well as their final achievement (Schunk & Pajares, 2002). Therefore, strategies and environments which foster feelings of autonomy, and perceptions of self-efficacy in students, often result in optimal learning situations.

A number of specific strategies have been developed and demonstrated by researchers to enhance perceptions of self-efficacy, and to develop intrinsic motivation in students. For instance, the implementation of mastery goals has been shown to have a positive impact on intrinsic motivation, because it is an orientation which requires a

student to focus on the development of personal competence (or mastery), and it therefore supports attitudes of self-determination, autonomy and task absorption. This orientation results in personal enjoyment of the learning process (Rawsthorne & Elliot, 1999).

Research by Vansteenkiste supports these findings. Vansteenkiste states that autonomy is critical to effective learning, because “people are more able to fully attend to and grasp the importance of an intrinsic goal for their learning when they feel free to decide for themselves to learn, rather than feeling forced to do so” (Vansteenkiste, et al., 2004, p. 21 of 25). Therefore, he postulates that the condition that provides the optimal environment for learning integrates intrinsic motivation with autonomy, because the resulting synergistic interaction has an extremely positive effect on the learning process (Vansteenkiste, et al., 2004).

Research by Ames (1992) also offers some guidelines for integrating strategies in learning environments to enhance intrinsic motivation, and promote mastery orientation. Her work indicates that students should be engaged in meaningful learning activities which allow personal autonomy and control over the learning process. She also states that tasks should be structured in specific ways which utilize short term goals and metacognitive organizational, and monitoring strategies. Her work indicates that evaluations should also focus on self-improvement, rather than social comparison standards. Research by Meece and Holt (1993) reinforces this perspective through findings which indicate that mastery orientation is most effective when there are no competing goals or motives.

Research by Snow (1986) has proposed three kinds of paths designed to promote optimal education for all populations. He also advocates autonomy in learning, and he

believes that education should primarily offer individualized paths for the pursuit of individual goals in a way that allows the learner control over choices. However, he also recognizes that alternative paths toward common goals are necessary, as are paths designed to remediate inaptitudes directly.

Each student has a unique set of social, emotional, and academic needs, which interact within the learning environment in multiple ways (Coleman, 2003). Therefore, factors other than ability can also influence a student's academic development. Each day, a student's achievement is influenced by his choice of goals, and the level of effort and persistence that he brings to each task. Also, the way that the learning environment is structured, the beliefs of the teacher, the type of feedback to which the student is exposed, and the student's beliefs about his/her own ability to learn, can all have a profound influence on the efficacy of the learning process (Dweck, 1986; Schunk & Pajares, 2002).

The challenge of providing an optimal learning environment across the spectrum, to meet the challenging needs of students who have been diagnosed as learning disabled, as well as the needs of those who have been identified as gifted, can only be met through an individualized educational approach (Snow, 1986). Current research in motivation offers guidelines for structuring optimal learning environments, which can be effective for students across the educational spectrum. Learning environments which support students as individuals, and which encourage intrinsic motivation through the pursuit of mastery goals, can enhance self-efficacy beliefs and foster optimal learning for students at all levels of ability.

As an advocate of individualized education, Snow (1986) states that "achievement-related motives stand out as a category particularly relevant to individual

differences in education, because all students learn best when they are intrinsically motivated” (Snow, 1986, p. 1032). In this context, students are undertaking an activity “for its own sake, for the enjoyment it provides, the learning it permits, or the feelings of accomplishment it evokes” (Lumsden, 1994, p. 1 of 5). This type of learning results in high self-efficacy beliefs, which influence task choice, effort, persistence, resilience, and achievement, because such students exert more effort, persist longer through difficulties, and achieve at higher levels (Schunk & Pajares, 2002).

Strategies have been developed which have been proven to effectively break the cycle of failure that tends to trap many students with learning disabilities, as well as students who are considered to be of average ability, or those classified as gifted, who suffer from low self-efficacy beliefs. Lumsden (1994, p. 1 of 5), has isolated strategies to help discouraged students recover the love of learning “for its own sake”. The strategies outlined include portraying effort “as investment rather than risk”, focusing on the development of skills using domain-specific sub-goals, as well as promoting a focus on mastery learning (Lumsden, 1994, p. 4 of 5). Strategic approaches which support motivation to learn through a concerted focus on individualized learning, effort, and task mastery, rather than performance and competition, is strongly emphasized.

Accurate feedback from teachers is also stressed as an important and persuasive source of self-efficacy information (Schunk & Pajares, 2002; Narciss, 2004). Schunk and Pajaraes (2002) recognize that feedback can be used to strengthen self-efficacy beliefs, sustain motivation, and inform students of their progress toward goals. Helping students to set and achieve proximal goals can also enhance a student’s self-efficacy and intrinsic

motivation. Accurate feedback during this process helps students to accurately gauge their developing skills, self-correct, and monitor their progress (Schunk & Pajares, 2002).

Research by Singer and Bashir (1999) effectively illustrates the importance of using metacognitive strategies and self-regulatory strategies in interventions with children who display learning disabilities in language processing. These researchers designed an intervention to address issues of self-efficacy and motivation directly, by using metacognitive strategies to help students understand their problem areas, learn to alleviate them, and finally learn to control their own performance on learning tasks. In this research, the importance of using problem-solving strategies in developing new habits of thinking and communicating, in order to help students develop active problem-solving strategies through the process of self-reflection is stressed (Singer & Bashir, 1999). Interventions which utilize strategies of self-monitoring, self-evaluation, and behavioral adjustment, can promote autonomy and intrinsic motivation in the learning process (Singer, 1999; Levine, 2002).

Key Points: Educational Strategies to Enhance Self-Efficacy Beliefs

Many specific strategies have been demonstrated by researchers to enhance students' perceptions of self-efficacy and to develop intrinsic motivation in learning. One important strategy is the implementation of mastery goals, which require a student to focus on the development of personal competence (or mastery). This type of goal orientation supports attitudes of self-determination, autonomy, and task absorption, because a student's focus is centered on his or her own learning process. Mastery goal orientation has a positive impact on intrinsic motivation, and results in enhanced enjoyment of the learning process.

Other types of strategies stress the importance of utilizing short-term goals with metacognitive organizational and monitoring strategies. Short-term or proximal goals, allow effective self-monitoring to occur, and represent challenges which are attainable. It is also important to allow students to engage in learning activities that are meaningful, and which allow personal autonomy and control over the learning process. Students should also be allowed to focus on self-improvement whenever possible, rather than on extrinsic standards for social comparison. Academic learning that fosters intrinsic motivation and achievement related motives, results in heightened levels of self-efficacy beliefs.

It is also critical to design educational strategies which allow for individualized learning that provides accurate feedback on performance of specific academic tasks. Strategies which help students learn to set and achieve short-term goals can also enhance self-efficacy beliefs, as well as intrinsic motivation, by providing attainable challenges with timely feedback. Incorporating these strategies with accurate feedback during the learning process can help students learn to accurately gauge their skills, as well as self-correct, and monitor their progress on academic tasks. Strategies which develop accurate self-assessment skills foster attitudes of autonomy and intrinsic interest in the learning process.

Metacognition and Motivational Engagement

Finding multiple pathways to facilitate motivational engagement is critical to practitioners who are concerned with enhancing performance for students at risk (Linnenbrink & Pintrich, 2003). For instance, studies by Hidi et al. (2002) indicate the need to examine the components of motivational engagement in the writing process

specifically. These researchers show that both previous empirical findings, as well as theoretical positions, indicate a need for further investigation of the connection between interest and self-efficacy, as it relates to writing tasks. Examination of the general component of affect, which impacts motivational engagement as well as self-efficacy, is equally important (Pajares, 2003). A study of the relationship of affect to metacognition is particularly significant for students with learning disabilities, who experience heightened levels of anxiety in the learning environment (Seeratan, 2001). More specifically however, this relationship has been recognized as a critical factor pertaining to interventions for students who meet the criteria for twice exceptional learners (Baum, 2004).

Metacognition is a particularly important aspect of the learning process, which monitors understanding and self-regulates learning. A person who is skilled in metacognitive strategies can understand their thinking processes. They know their areas of strength and weakness in learning, and they are able to monitor and regulate their learning process by using strategies and skills effectively (Hannah & Shore, 1995). Therefore, the active use of metacognitive skills is a strong indicator of cognitive engagement in learning. Research by Linnenbrink & Pintrich (2003) reinforces the interaction between metacognitive strategies (specifically the use of organizational techniques and elaboration strategies) and active cognition in learning, and shows that it results in deeper levels of information processing.

A specific study by Seeratan (2001), reinforces the importance of using metacognitive strategies to help students who display learning disabilities. This study indicates that students often develop metacognitive and motivational problems as a result

of repeated experiences of failure. They come to attribute failure to their use of effort, as well as their ability level, which results in both dysfunctional metacognitive patterns, and self-systems (Seeratan, 2001). This type of dysfunction results in an increased likelihood of future failure for these students. However, the use of strategies which can raise a student's self-efficacy beliefs, increase motivation, and develop skills to monitor and affect the student's own learning process, can help to break the cycle of failure (Schunk & Pajares, 2002).

Other studies have shown that interventions which develop a student's ability to think about their thinking processes, and to engage in self-reflection, questioning, and self-monitoring, are critical for achievement at the postsecondary level (Reis, et al., 2004). Research by Denckla, et al. (1989), shows that the use of metacognition and executive function are, in general, important in the improvement of learning ability (Reis, et al., 2004). School related behaviors identified by Denckla within the domain of executive function include the abilities to plan, organize (initiate, shift, inhibit, and sustain), as well as to develop and utilize rules or strategies (Reis, et al., 2004). Therefore, aspects of executive functions and metacognition overlap, and each are integrated in the process of effective learning.

Executive functions are used as individuals make decisions and develop plans at the outset of a task, or when they are faced with unfamiliar situations (Singer & Bashir, 1999). Research by Singer and Bashir (1999, p. 268) demonstrates the interconnection between language functions, executive functions, and self-regulation, and stresses that metacognitive strategies are in effect, "routines that are mediated with language". These researchers claim that students must be able to "talk to themselves about what they are

doing and how they are doing it”, in order to be able to use metacognitive strategies effectively (Singer & Bashir, 1999, p. 268). As a result, they advocate the use of intervention techniques which are designed to integrate metacognitive and linguistic strategies for students who have language-based learning disabilities (Singer & Bashir, 1999).

In their research, Singer and Bashir (1999) used a case study of a sixteen year old boy, who displayed significant problems with written and oral language. The student had difficulty expressing his ideas effectively through oral or written language, as well as problems with effective grammatical and phonological encoding. The student’s own perception of his difficulty stated that “with writing and talking, too much information floods my mind at once. I don’t know how to present it in a clear way... I often half bake an argument... My teachers tell me that I make leaps, without providing enough details” (Singer & Bashir, 1999, p. 270).

The researchers designed intervention strategies for their subject that integrated metacognitive strategies with speech-language strategies for instruction. They taught the student to use metacognitive self-talk to help him plan, organize, analyze, and regulate his oral and written language production. They also designed strategies which fostered self-reflection, and promoted the use of executive and regulatory behaviors by utilizing the sub-processes of self-observation, self-judgment, and self-reaction (Singer & Bashir, 1999). The intervention was highly successful, because the subject proved to be quite capable of using the strategies in a self-reflective way, and was able to apply self-regulatory behaviors to his process of language production. His oral language skills improved markedly, and he proved his ability to use written language effectively by

making the highest score possible on the essay requirement for an advanced placement test in history (Singer & Bashir, 1999).

Key Points: Metacognition and Motivational Engagement

It is important for researchers to examine ways to enhance motivational engagement in academic tasks for students with learning disabilities. Studies have demonstrated that research which focuses specifically on the interactions among the components of motivational engagement, may be critical in the development of effective interventions. For instance, it is necessary to examine the effects of affect on the writing process, and the ways in which emotions impact motivational engagement and self-efficacy beliefs. It is also important to investigate the connection between interest and self-efficacy as it relates specifically to writing, because each of these components has an impact on successful performance of writing tasks.

Strategies which are designed to utilize metacognitive processes have also been demonstrated to be effective in enhancing motivational engagement as well as self-efficacy beliefs. The active use of metacognitive skills is a strong indicator of cognitive engagement in learning, because it requires the use of strategies which self-monitor the learning process, and allow a student to self-regulate behavior and performance. Metacognition has been found to be integrated with the executive functions in the abilities of planning, organizing, and developing rules or strategies toward a specific goal.

Successful interventions developed by Singer and Bashir (1999) emphasize the integration of language functions, executive functions, and self-regulation in metacognitive strategies for students with language based learning disabilities. For example, the use of skills in self-assessment and self-regulation such as self-observation,

self-judgement, and self-reaction, were demonstrated to result in highly successful interventions when they were incorporated into strategies which used metacognitive self-talk to aid in planning, organizing, analyzing, and regulating language production.

Cognitive Strengths coupled with Learning Disabilities

Research by Singer and Bashir (1999) effectively illustrates the importance of using metacognitive strategies, and self-regulatory strategies, in interventions for students who display cognitive strengths coupled with learning disabilities in language processing. Their study demonstrated the effectiveness of an intervention which used metacognition to address issues of self-efficacy and motivation directly, by implementing the use of metacognitive self-talk to improve a students' ability to plan, organize, and regulate his production of oral and written language. The success of their intervention emphasizes the importance of using metacognitive strategies to remediate skills for students who have learning disabilities in conjunction with strengths in cognition.

Research studies which focus on the needs of students who have cognitive strengths in conjunction with learning disabilities (in particular those who meet the criteria for both giftedness and learning disabilities) emphasize the importance of using remediation strategies which tap the metacognitive strengths of these students (Hannah & Shore, 1995). Findings from a study by Hannah & Shore (1995) for instance, indicate that the thinking processes of students who meet the criteria for "twice-exceptional" learners (both gifted and learning disabled) are similar to the processing styles of students who are classified as gifted. In this study, both groups of students performed similarly on tasks which tapped skills in metacognition, knowledge, and comprehension. The study explored the theory that metacognition is a component of giftedness, and is important to

the thinking processes of students who are classified as gifted, even when their abilities are compromised by learning disabilities (Hannah & Shore, 1995). The study demonstrated that the metacognitive performance, as well as comprehension, of the students who met the criteria for twice-exceptional learners, was more similar to that of the group classified as gifted, than the group with learning disabilities; a finding which was “supported on all dependent measures at both grade levels” (Hannah & Shore, 1995, p. 104).

In a separate study, students who demonstrated characteristics of giftedness as well as learning disabilities, were found to use more complex strategies for problem solving, and were more persistent than those who were characterized as having average intellectual ability, with learning differences (Coleman, 1992). These students who fit the profile of twice-exceptional learners, were also able to identify specific strategies which they could use to overcome their challenges, as opposed to more typical students with learning disabilities, who were unable to recognize specific steps necessary in utilizing strategies (Coleman, 1992).

Students who fit the classification of twice-exceptional learners are difficult to identify, because they often exhibit unique learning profiles, with distinct intellectual, emotional, and educational needs (Nielsen & Higgins, 2005). Many of these students meet the criteria for classification as both gifted and learning disabled. Therefore, they exhibit characteristics of dual exceptionalities as indicated by the term “twice-exceptional”, which was originally coined by J. J. Gallagher, to describe students who demonstrated both unusual areas of talent and giftedness, as well as learning disabilities

(Coleman, et al., 2005). Accurate diagnosis is frequently problematic for these students, due to their unusual characteristics, and the unique learning profiles which they exhibit (King, 2005).

Current research recognizes the importance of using more than one set of diagnostic criteria to evaluate and diagnose students with dual exceptionalities. However, diagnostic data frequently show a marked discrepancy between scores of intellectual ability, and achievement in specific academic areas, for these students (Nielsen & Higgins, 2005). For instance, students who fit the profile of twice-exceptional learners often achieve scores on intelligence tests in the areas of verbal I.Q., expectancy I.Q., performance I.Q., and even full scale I.Q., that are similar to the scores of students in the gifted population. However, their scores on measures of achievement are often much lower, and more similar to the scores of students diagnosed with learning disabilities. Many of these students meet state criteria for both giftedness and specific learning disability. Others perform in the average range on achievement tests, but have large differences between their I.Q. scores and levels of academic achievement (Nielsen & Higgins, 2005).

Research work by Hannah & Shore (1995) for instance, found that the thinking processes of students who meet the criteria for twice-exceptional learners are similar to the processing styles of students who are classified as gifted. Both groups of students were found to exhibit strengths in cognitive skills, metacognitive ability, and general knowledge (Hannah & Shore, 1995). However, although these students exhibit cognitive strengths, they often simultaneously exhibit weaknesses in specific skills, or processing ability (Nielsen & Higgins, 2005; King, 2005).

For example, recent research by Nielsen & Higgins (2005) and King (2005), illustrates specific characteristics of students who meet the criteria for twice-exceptional learners, and the ways in which their areas of strength interact with their weaknesses. These students frequently have strengths in creative or critical thinking, but they may also show evidence of deficits in social cognition or self-regulation. They may also have specific learning disabilities which impact their reading or writing abilities, and which create frustration with academic tasks. Some students demonstrate very high levels of problem solving or reasoning abilities, which may be undermined however, by slower levels of thinking, or work output. Others may exhibit a striking ability to integrate complex concepts, but may have difficulty with short term memory or in retrieving factual information accurately (Nielsen & Higgins, 2005).

The unique and varied combinations of strengths and weaknesses which such students present, make it difficult to identify them accurately. Frequently their strengths mask their deficits, so that their learning disability may go unnoticed. However, the student's weakness may also mask his/her abilities, in which case the student may come to view him or herself as primarily disabled (Baum, 2004). It may be possible to identify the different characteristics of a student with dual exceptionalities, but the interaction between their strengths and weaknesses often results in a unique learning profile, as well as unique emotional challenges (Nielsen & Higgins, 2005).

King (2005) identified three different categories for classification of students who meet the criteria for twice-exceptional learners, based on their profile of strengths to weaknesses. She found that the students who were able to perform most effectively in academic settings were those who had often been identified as gifted, with only subtle

learning disabilities. These students often had excellent verbal ability, but frequently had poor writing or spelling skills, for example. Despite their weaknesses however, they were able to perform at grade level academically (King, 2005).

The second category of student is often very hard to identify, because their strengths and weaknesses frequently mask each other. These students often demonstrate superior intellectual ability, though they are not identified as gifted, and thus do not gain the benefits of more challenging programs. The cognitive strengths of these students often mask their learning deficits, allowing them to perform at grade level. However, they frequently suffer from mild depression and function below their full potential (King, 2005).

The third category of student with dual exceptionalities fits the student who is identified as both gifted and learning disabled. These students often face extreme challenges in educational settings because their strengths frequently go unnoticed, and focus is primarily given to remediating their disability. These students generally receive little support in their areas of strength, and are often unchallenged intellectually. As a result, many of these students fail in academic settings (King, 2005). Many of these students may also struggle with low self-efficacy beliefs, due to their tendency to view themselves as primarily disabled, as illustrated in a study by Baum (2004).

Students who meet the criteria for twice-exceptional learners also display emotional challenges for a variety of reasons. They frequently face frustration in school settings, as well as increased anxiety when required to perform in their area of weakness. These students are also at a heightened risk for negative emotional reactions due to frequent experiences of unexpected failure (Baum, 1994). Such students often become

confused and frustrated by the discrepancy between their levels of ability and weakness, and may not understand why they are not able to perform effectively. Parents, as well as teachers of these children, may misunderstand the student's inability to perform according to expectations. They may recognize the child's potential, but be unaware of the challenges with which the child struggles. The result may be mixed messages, which serve to further confuse the child, and increase levels of frustration (King, 2005).

Students with dual exceptionalities also face frustration because they frequently set very high goals for themselves, while they are simultaneously highly self-critical. Sometimes they feel that they must constantly prove that they are smart, and they may tend to rush through assignments or avoid academic tasks in their area of weakness. The emotional needs of these students are often extreme and complex, as they struggle with confusion about their abilities, anxiety, heightened levels of anger and frustration, and all too frequently, issues resulting from low self-concept (King, 2005).

It is often difficult for professionals in the fields of education or psychology to accurately diagnose the special needs of children who meet the criteria of twice-exceptional learners. However, it is important to identify the unique characteristics of these students, and to place them in academic settings where they may excel. Learning environments and teaching strategies must be developed that are able to simultaneously challenge these students intellectually, while nurturing their emotional needs (Nielsen & Higgins, 2005). It is also critical to allow these students to develop the ability to help themselves. Current research has recognized the importance of helping such students to understand their areas of strengths and weakness, so that they may develop autonomy in

their learning environments, and learn to become effective self-advocates (Coleman, 2005).

Many intervention strategies have also been developed to create learning environments which meet the needs of these students more effectively. Findings from a study by Baum (2004) indicate that many students with dual exceptionalities struggle with self-efficacy beliefs that are lower than those of typical students with learning disabilities. This has been reinforced in work by King (2005), who suggests that it is critical to develop learning environments for these students which do not focus on remediation primarily. Such a focus results in a variety of negative reactions, including low self-esteem, depression, and loss of motivation (King, 2005). Educational environments must instead design programs which will challenge and engage these students in areas of intellectual strength (Nielsen & Higgins, 2005).

It is important to encourage these students to use metacognitive strategies which help them to focus on their thinking processes and to learn to effectively monitor their progress on academic tasks (Nielsen & Higgins, 2005). It is also important to engage their personal knowledge within a subject area, and build factual knowledge from a conceptual framework (Coleman, 2005). Students with cognitive strengths and learning disabilities thrive when they are intrinsically motivated, and engaged in academic work which is personally meaningful (Siegle & McCoach, 2005).

The study by Singer and Bashir (1999) demonstrated the effective use of metacognitive strategies to help a student who demonstrated cognitive strengths, in conjunction with disabilities in both oral and written communication. Their successful intervention enabled this student to understand his problem areas, learn to alleviate them,

and finally learn to control his own performance on learning tasks. This goal of helping students develop active problem-solving strategies through the process of self-reflection (using strategies of self-monitoring, self-evaluation, and behavioral adjustment) is effective because it has also been found to promote autonomy and intrinsic motivation in the learning process (Singer & Bashir, 1999; Levine, 2002).

Research by Siegle & McCoach (2005), states that intrinsic motivation can also be promoted by incorporating the factors of personal relevance and interest in the learning process. This is particularly important for students who fit the profile of twice-exceptional learners, because they often show stronger commitment to learning tasks which are personally meaningful (King, 2005). Research by Hidi et al. (2002) cites studies which demonstrate findings of increased persistence, effort, and the experience of positive emotions, when students are engaged in tasks which interest them; “with such engagements, one would expect improved performance and a corresponding increase in their self-efficacy” (Hidi et al., 2002, p. 433).

The above findings indicate that metacognitive strategies that promote self-regulation are especially important for students who have cognitive strengths coupled with learning disabilities. In particular, the process of self-evaluation, or self-assessment, is critical for students who have difficulty evaluating their performance accurately (Miller, 1991). Students who meet the criteria of twice-exceptional learners, and who view themselves as primarily disabled, can benefit greatly from intervention strategies that help them to identify their areas of strength and weakness, their learning styles, affinities, and emotional needs (Howard, 1994). These types of strategies also incorporate the factors of personal relevance and interest in learning, by engaging

students' interest in their personal learning process, which can result in enhanced intrinsic motivation and task commitment (Vansteenkist, et al., 2004; Reis, et al., 2004).

Key Points: Cognitive Strengths/Learning Disabilities

Students who have cognitive strengths coupled with learning disabilities need specially designed intervention strategies which can tap their strengths in metacognition. Findings from studies which have examined the thinking processes of students who meet the criteria for both gifted and learning disabled learners, (or “twice-exceptional” learners), indicate that these students have processing styles which are similar to those of students classified as “gifted”. The metacognitive performance, as well as comprehension, of students who fit the profile of twice-exceptional learners was found to be more similar to that of gifted students, than to more typical students with learning disabilities.

Students who meet the criteria of twice-exceptional learners also have unique learning profiles, and special intellectual and emotional needs, which may be difficult to diagnose. These students often achieve high scores on intelligence tests, which are similar to those of students who are classified as gifted, however they frequently demonstrate low scores on achievement tests, which indicate specific learning disabilities. The large discrepancy between the potential ability (as measured by I.Q. tests), and the actual achievement of these students, can result in feelings of frustration and emotional turmoil. For instance, these students often exhibit heightened levels of anxiety, confusion, and frustration about their abilities, as well as low self-concept.

Students who meet the criteria of twice-exceptional learners are often highly self-critical, as well as vulnerable to the negative emotional reactions which can result from

frequent experiences of failure. As a result, many of these students exhibit self-efficacy beliefs which are lower than those of more typical students with learning disabilities. Therefore, it is critical to develop intervention strategies for these students which challenge and engage them in their areas of intellectual strength. Effective strategies must utilize the metacognitive strengths of these students to help them focus on their thinking processes, and learn to effectively monitor their progress on academic tasks. Strategies must be designed to help these students identify their areas of strength and weakness, their learning styles, affinities, and emotional needs. These types of strategies will necessarily incorporate the factors of interest and personal relevance in the learning process, which can result in enhanced levels of intrinsic motivation. Strategies designed to help students develop active problem solving skills through the processes of self-monitoring, self-evaluation, and behavioral adjustment have been found to effectively enable students to understand their areas of weakness, learn to alleviate them, and actually control their performance on academic tasks.

Self-Regulation and Language Development

The use of the language system in the learning environment is constant and multifaceted. The language system can be divided into the components of receptive language (which governs reading) and expressive language (which governs writing) (Levine, 2002). Language is used as a means of oral and written communication to enable individuals to interact with their world, and it can also be used in a very personal way, as the vehicle for individual thinking processes (Elias & Berk, 2002). Language is incorporated into the study of all academic subjects, and it is also effective in the process of memory, because it is used in translating facts and ideas into concepts which can be organized for later retrieval. The language system can also be used effectively to enable

an individual to control their own behavior, and to mediate conflict with others. Facility with communicative language and academic language is critical for a student's success in school, as well as his/her success in adult life (Levine, 2002).

The language system is an integral component of the thinking process, which is intimately interwoven with the psychological processes that govern learning. The learning process is a complex psychological process, which involves at least nine interconnected areas of brain function. Attention, memory, language, visual-spatial organization, temporal-sequential organization, higher order thinking, graphomotor skills, emotions, and metacognition all work in an integrated way to facilitate academic learning (Levine, 2002; Thomas, 2004). All of these functions are also involved in the development of literacy skills, because reading and writing are complex processes which increase in complexity as a child progresses through school (Levine, 2002; Thomas, 2004).

Metacognition is a particularly important aspect of the learning process, which monitors understanding and self-regulates learning. A person who is skilled in metacognitive strategies can understand their thinking processes. They know their areas of strength and weakness in learning, and they are able to monitor and regulate their learning process by using strategies and skills effectively. Metacognitive awareness of the role which language plays in the learning process can enable students to gain higher levels of understanding in general (Linnenbrink & Pintrich, 2003). They can use their metacognitive skills to monitor their own levels of comprehension as they engage in reading tasks, take in new information through discourse, or work to elaborate on ideas through the use of expressive writing (Levine, 2002). Metacognitive language strategies

can be used to develop skills in self-regulation in order to moderate behavior, for instance by using “self-talk” strategies in order to improve performance, or alleviate anxiety (Singer & Bashir, 1999).

Language is critical to the process of self-regulation. The concept of self-regulation is broad and complex, and may be understood in terms of active self-regulation, which involves deliberate control over the cognitive processes, or biofunctional (internal) self-regulation, which is primarily brain regulated and develops gradually as an infant matures (Schapiro, 2000; Kawai, et al., 2000). The language processes are integral to active self-regulation, because it requires the conscious control of cognition (Copple, 2003). Active self-regulation is directly mind regulated, and can be understood in terms of its three sub-processes, which were originally defined by Bandura (1986). The sub-processes involve the processes of self-observation (self-monitoring), self-judgement (self-evaluation), and self-reaction (behavioral adjustment) (Zimmerman & Martinez-Pons, 1990). The active form of self-regulation is adaptive to change, and as Kopp has determined, therefore requires the conscious use of introspection, reflection, and metacognition (Kopp, 1982).

The process of self-regulation is important to academic learning, and is also critical to the developmental process of a child. Initially, during the stage of infancy, the process of self-regulation is internal only. It is primarily brain regulated, and only gradually comes under the control of the conscious mind (Kopp, 1982). As the child continues to develop however, the preschool ages (3-6 yrs) mark a very important stage in the development of self-regulation, as the child moves into the pre-operational stage of functioning (Copple, 2003). This is the stage at which the development of symbolic

thought allows the child to form mental images of people, objects, or events which are not immediately present. This is a very important stage of language development, and is critical to the effective development of self-regulatory ability (Copple, 2003). As the child continues to learn to communicate through language, he gradually learns how to modify his behavior based on external prompts, and develops the ability to execute actions deliberately. This gradual development of symbolic thought and representational ability through the use of language is critical to the development of the processes of active self-regulation, which include planning, problem solving, and higher order cognition (Copple, 2003).

Vygotsky, whose work has had a major impact on educational theory, recognized that language plays a critical role in the process of self-regulation (Elias & Berk, 2002). Vygotsky pointed out that as children develop, they gradually become able to internalize language, and use it to guide their behavior, and structure their thinking. This process is important to the development of self-regulation, because internalized language (conceived by Vygotsky as “private speech”) enables a child to integrate demands, prompts, or even strategies from adults into their own internal dialogue, in order to guide their behavior (Elias & Berk, 2002). Vygotsky saw this process as the beginning of the development of active self-regulation in children. Work by Elias and Berk (2002) reinforces the importance of private speech in the development of self-regulation, because as it becomes internalized as verbal thought, it serves the function of controlling the processes of attention, memory, planning, self-reflection, and self-adjustment.

However, the role of private speech changes as a child matures. In young children, self-directed (or private speech) is used as a means for transferring regulation

from others to the self, by helping a child guide and control their actions (Elias & Berk, 2002). Over the course of development however, as a child matures, private speech becomes gradually more internalized, and less audible, as the child develops motor control and the ability to focus on academic tasks. This process can be traced through the development of a child from approximately ages 4 through 10 years, until private speech becomes fully internalized, and the child's actions are brought under the full control of verbal thought (Berk, 1986).

Private speech has also been shown to be important to academic learning. For instance, research by Berk & Landau (1993) has shown that private speech predicts the type of self-controlled behavior which is critical to academic success. For example, in most children by about age 8, private speech has become internalized as verbal thought which controls the processes of cognition. These processes of planning, memory, attention, and self-reflection, are all integral to self-regulated behavior. Therefore, for the process of active self-regulation to develop fully, it must be well integrated with the development of the language processes in a reciprocal relationship (Berk, 1986; Berk & Landau, 1993). The integration between the language processes and self-regulation are evident in many stages of child development, and are also important to academic achievement.

The ability to self-regulate behavior is critical to academic success, because deficits in self-regulation result in problems in effective social, cognitive, behavioral, and academic functioning (Elias & Berk, 2002; Berk & Landau, 1993). Specific deficits in self-regulatory abilities have been found in a number of disorders, including autism, ADHD, and developmental dyslexia. Research in the area of autistic disorders has

determined that the disorder of autism is marked by failure of the executive function processes of the brain to use language effectively in self-regulating behavior (Russell, et al., 1997).

The executive functions of the brain have been determined to be critical to the process of self-regulation. A model of the executive functions by Barkley (2001), shows that the executive functions are integrated with the processes of self-regulation. Barkley's model shows that the executive functions of the brain are responsible for the inhibition of responses, which allow for self-regulatory behaviors. Barkley has defined the executive functions as the major classes of behavior toward oneself, which are used in the processes of self-regulation (Barkley, 2001). He conceives of executive action as actions toward the self, in order to modify an individual's behavior, and change potential future outcomes of behavior. Barkley created a hybrid model of the brain's executive functions, in which the mechanism of response inhibition permits the effective performance of four distinct executive abilities. In this model, the executive abilities include working memory, the internalization of private speech, the self-regulation of affect-motivation-arousal, as well as reconstitution (Barkley, 2001). This model indicates that the ability to self-regulate behavior is an important aspect of executive function, and is frequently impaired in individuals who have deficits in frontal lobe function.

The pre-frontal lobes of the brain, which enable inhibition, and allow for behavior to be structured across time toward a specific goal or purpose, control the executive functions. When examined in the context of executive function, disorders such as autism, ADHD, and dyslexia are found to be characterized by deficits in behavioral inhibition (Barkley, 1997; Toplak et al., 2005; Bronsnan, 2002). For example, most of the cognitive

deficits associated with the disorder of ADHD, are within the area of self-regulation, or executive function. In ADHD, the core deficit has been determined to be a deficit in inhibitory control, which results in the dysregulation of thought and action (Toplak et al., 2005; Barkley, 1997). Children with ADHD have a diminished capacity for self-regulation of motivation (effort), as well as deficits in working memory and internalization of self-speech (Elias & Berk, 2002). These children have been found to have trouble stopping an ongoing response pattern, and poor response inhibition, which Barkley (2001) has associated with deficits in sense of time. In the disorder of developmental dyslexia, deficits in inhibition (especially in the left pre-frontal cortex) have been theorized to underlie the disorder (Reiter et al., 2004; Bronsnan, 2002). Children with dyslexia frequently have difficulty on the Stroop test; they often need more processing time, and have difficulty with interference on subtests (Reiter, et al., 2004).

In academic environments, disorders in self-regulatory ability can result in academic failure. Therefore, recent research has demonstrated the need to develop intervention strategies which promote self-regulation for students who have ADHD or learning disabilities in the language arts. Research by Elias and Berk (2002) supports Barkely's work in demonstrating that children with ADHD have deficits in their ability to use language to effectively self-regulate behavior. A separate study by Berk and Landau (1993) showed that the development from external, self-guided speech, to internalized private speech, is delayed in children with ADHD compared to typically developing children. Although development follows the same pattern as with typical children, private speech in children with ADHD is not as well integrated with their behavior, as well as being delayed (Berk & Landau, 1993). These researchers therefore, advocate

interventions which require children with ADHD to participate in sociodramatic play in order to strengthen self-regulatory ability. They also believe that it would be beneficial to allow these children to engage in audible self-regulatory speech as needed, in order to facilitate their engagement in academic tasks, and improve performance outcomes (Berk & Landau, 1993).

The concept of self-regulation as defined by Singer and Bashir (1999) is specifically related to performance on academic tasks. Singer and Bashir define self-regulation as behaviors which are used flexibly, in order to guide, monitor, and direct effective performance on tasks. They recognize effective self-regulatory behavior as the degree to which an individual is actively motivationally, behaviorally, and metacognitively engaged in their own learning process (Singer & Bashir, 1999).

Recent research efforts have recognized the importance of developing instructional strategies to improve self-regulatory ability in students with learning disabilities. For example, research by Schunk (2003) has isolated specific strategies demonstrated to be effective in improving students' performance on specific academic tasks, such as writing. Schunk's study emphasizes the importance of incorporating self-regulation strategies through the use of modeling and goal setting techniques. These types of strategies have proven to be effective in improving writing performance for students with learning disabilities, because they have required the use of self-monitoring and self-evaluation, which are critical skills in effective self-regulation (Schunk, 2003).

Other studies have also reinforced the importance of using strategies which promote self-regulation in interventions for students with learning disabilities in the language arts. Work by Troia (2005) states that interventions must incorporate strategies

to promote self-regulation, because students with learning disabilities have been found to be deficient in metacognitive awareness, and the knowledge, skills and strategies required for effective writing. A study by Englert (1992), successfully used strategies in self-regulation to model vocabulary, and self-talk, related to the cognitive processes involved in writing. Her students used these techniques until they were able to regulate their cognitive processes independently. Findings from her study showed that the ability to carry on an internalized dialogue with oneself is an important goal in literacy, and a critical aspect of effective self-regulation (Englert, 1992).

Work by Singer and Bashir (1999) demonstrates the success of a design which integrated metacognitive strategies with speech-language strategies, for intervention work with a student who displayed learning disabilities in the language arts. These researchers taught the student to use metacognitive self-talk as an aid in planning, organizing, analyzing, and regulating his oral and written language production. They also incorporated strategies which fostered self-reflection and self-regulatory behaviors by using the sub-processes of self-observation, self-judgement, and self-reaction. Their intervention proved to be quite successful, because their subject was able to develop and improve his ability to self-regulate behavior effectively, and apply them to this language production in written work (Singer & Bashir, 1999). Therefore, research in the area of self-regulation shows promise in its ability to help students with learning disabilities develop success in academic learning.

Key Points: Self-Regulation and Language Development

The language system is critical for communication, which enables individuals to interact with their world. However, language is also an integral component of the psychological processes that govern learning. The learning process involves many

interconnected areas of brain function, including attention, memory, language, higher order cognition, emotion, and metacognition, which work in integrated ways to facilitate academic learning.

Metacognition is a particularly important aspect of the learning process, because it allows for the self-monitoring and self-regulation of learning. Therefore, metacognitive language strategies can be used to develop skills in self-regulation in order to moderate behavior. For example “self-talk” strategies (which make use of language directed toward the self), have been used effectively in order to improve student performance on academic tasks, or to alleviate anxiety.

The process of active self-regulation requires the conscious control of cognition, and is directly mind regulated. It can be understood in terms of three related sub-processes which involve self-observation (self-monitoring), self-judgement (self-evaluation), and self-reaction (behavioral adjustment). The active form of self-regulation therefore, requires the conscious use of introspection, reflection, and metacognition.

The process of self-regulation is critical in language development, and is also important to academic learning. As children develop, private speech (speech directed toward the self) gradually becomes internalized, in a process which enables a child’s actions to be brought under the full control of verbal thought. The gradual development of symbolic thought and representational ability through the use of language is critical to the development of the processes of active self-regulation, which include planning, problem solving, and higher order cognition. The cognitive processes of planning, memory, attention, and self-regulation, are all integral to self-regulated behavior, and are also critical to academic success. The ability to self-regulate behavior is also an

important aspect of executive function, which is integrated with the language processes, and is frequently impaired in individuals who have deficits in frontal lobe function. For instance, specific deficits in self-regulation are implicated in a number of disorders, including autism, ADHD, and developmental dyslexia.

Academic failure can result from disorders in self-regulatory ability. Therefore, recent research has demonstrated the need to develop intervention strategies which promote self-regulation, for students who have learning disabilities. For example, interventions which incorporate self-regulation strategies through the use of modeling and goal setting techniques have proven to be helpful in improving writing performance for students with learning disabilities. Other strategies which utilized self-regulatory abilities to model vocabulary and self-talk related to the cognitive processes involved in writing, proved to be successful in enabling students to regulate their cognitive processes independently. One very successful intervention incorporated the use of metacognitive self-talk to aid in planning, organizing, and analyzing a student's oral and written language production. In this intervention, these metacognitive strategies were coupled with strategies which used the sub-processes of self-observation, self-judgement, and self-reaction to successfully foster self-reflection and self-regulatory ability in expressive language production.

Description of the Demystification Process

The process of *Demystification* was developed as an integral aspect of the comprehensive process of *Attuning a Student*, through the Schools Attuned Program for Educators from All Kinds of Minds (All Kinds of Minds, 2001-2006). The process of *Attuning a Student* was developed to provide methods and tools for helping teachers, students, and parents understand how students' unique neurodevelopmental differences

impact their learning process. The program provides teachers with tools and methods which enable them to accurately observe and describe students' strengths and weaknesses in learning, in order to better understand an individual's unique learning process, with less reliance on diagnostic labels. The process of *Attuning a Student* utilizes multiple perspectives (including insights from the student and parent, as well as the teacher) in order to identify recurring themes in the areas of strengths and difficulties for an individual student. The process of *Demystification* is a key part of the process, because it is designed to help the student come to understand his or her unique neurodevelopmental profile and the ways in which it may affect performance in the school environment.

The *Demystification* process is primarily a process of communication, which is carefully planned and executed. An individual student's *Demystification* session is designed according to the specific needs of the individual, though it is based on a structured set of guidelines. It should be designed to effectively communicate three interrelated themes, which are critical to the *Demystification* process. The first theme of the *Demystification* process is termed "Destigmatization", which is focused on developing the student's awareness that all individuals have areas of strength and weakness in learning. Emphasis is given to helping the student understand that many individuals (including very successful people) struggle with areas of weakness, and that knowledge of strengths and weaknesses in learning can actually help a person learn how to become more successful.

The second theme of the *Demystification* process is termed "Alliance Formation", and it consists of conveying the awareness that you are working with the student to achieve a common goal, so that the student will feel that you are working together as a

team to solve the learning difficulties. It is important to draw the student into the conversation about the management plan, and emphasize the student's role as a self-advocate, in order to successfully convey this theme.

The final theme of the process is termed "Infusion of Optimism", which requires fostering an atmosphere of optimism to help the student develop hope in the possibility of overcoming learning difficulties. Examples of the student's strengths can be used in the discussion, to offer possibilities for future success in careers which tap similar strengths.

The five steps of the *Demystification* process are presented to the student in a specific order, to address the roles that the student's strengths, weaknesses, and affinities may play in the student's school performance. The management plan is also introduced, therefore specifying goals, objectives, and strategies for improving specific areas of school performance.

The first step in the process of *Demystification* involves discussing the student's strengths. It is important at this stage, to constantly maintain a genuine focus on the student's strengths, and to discuss them thoroughly, before moving into a discussion of the student's areas of weakness. Examples of strengths which are specific, concrete, and linked to instances of the student's actual school performance should be included.

The second step involves a discussion of some of the areas of weakness, where the student struggles with specific aspects of learning. Only three of the student's weaknesses should be addressed and discussed during the session. The student will need to be given the conceptual framework and vocabulary (at a level which is appropriate for their stage of development) to help them understand the nature of the learning process, in order for them to effectively discuss their specific learning weaknesses. It is important to

provide specific, concrete examples from the student's work, with fairly short explanations of each of the three areas of weakness.

The third step in the process involves a discussion of the student's affinities. The student is encouraged to identify their own affinities, which can be used to develop optimism. The student's affinities can be used in the discussion as metaphors, to illustrate different aspects of the learning process, and they can also be used to leverage interest in future career goals, or learning goals.

The fourth step is focused on a discussion of the management plan. The management plan is used to set a goal to improve certain aspects of school performance, by focusing on a limited number of objectives. The student should be involved in a discussion of the management plan, through a discussion of strategies chosen, and an explanation of how the strategies relate to the student's specified weaknesses in learning. The discussion should be specifically focused, and should make use of concrete examples to ensure understanding.

The final step of the *Demystification* session requires a wrap up, by briefly summarizing the discussion of the student's strengths, weaknesses, and affinities. The specific strategies outlined in the management plan should be reviewed, with the emphasis placed on trying the strategies, and determining together, whether or not they prove to be effective. The student is made aware that it is possible to modify the management plan, in order to make it more effective in helping the student succeed.

Key Points: *Demystification*

The process of *Demystification* is primarily a process of careful communication, which is specifically designed to convey three themes critical to helping a student

understand, and effectively cope with, differences in learning. The first theme focuses on relieving a sense of stigma which the student may experience in association with learning difficulties. The second theme conveys to the student a sense of working together with professionals, toward the goal of solving the problems which the student is experiencing in areas of difficulty with learning. The third theme fosters an atmosphere of optimism, in order to help the student develop a sense of hope in overcoming learning difficulties.

The formal *Demystification* session is presented in five distinct steps in a discussion with the student, and it can include parents, or other teachers who are considered appropriate to the student's situation. The first step in the session involves a discussion of the student's strengths in learning. Specific examples are provided, and are linked to instances of the student's actual school performance, when possible. The second step involves a discussion of no more than three of the student's weaknesses in learning. For the discussion to be most effective, the student should be given the necessary conceptual framework and vocabulary which is required in understanding the nature of the learning process. Specific, concrete examples, drawn from the student's work, may be used to effectively illustrate the selected areas of weakness. The third step requires a discussion of the student's affinities, which are used to leverage interest in the learning process. The student's management plan is discussed during the fourth step of the process. The student can be involved in the process of discussing, and possibly choosing, strategies related to specific weaknesses in learning, in order to improve aspects of school performance. The fifth, and final, step of the *Demystification* process involves a summary of the previous discussion. The student's strengths, weaknesses, and affinities should be summarized, and the important points of the management plan should

be reviewed. The emphasis is placed on enabling the student to become an active participant in the process of implementing the objectives of the management plan.

CHAPTER THREE

METHODOLOGY

This pilot study is designed using a rich descriptive case study method, with two cases, in order to gain information about the self-perceptions of the student participants following an intervention, which incorporates the process of *Demystification*. The multiple-case design was chosen over the single-case design, in order to gain the benefits of replication logic, in strengthening the external validity of the findings (Yin, 2003). Another benefit and strength of the case study design is the ability to use multiple sources of evidence, in data triangulation (Yin, 2003). The method of data triangulation allows the researcher to use multiple sources of evidence to develop lines of inquiry which converge upon certain themes (Yin, 2003). A variety of sources of evidence were used in the process of data collection for this study, including measurement instruments, questionnaires, observation tools, and interviews. The case study design was chosen for this pilot study in order to gather information about any changes which may have occurred in the individual students' perceptions of self-efficacy, interest, or writing apprehension, with respect to the writing process, following the intervention. The study design includes an examination of changes in the students' levels of effort and persistence on the writing task, as well as changes in levels of writing performance.

The purpose of this study is to examine the effects of an intervention, intended to impact components of motivational engagement (interest and writing apprehension) and

self-efficacy beliefs, for students who meet the criteria of twice-exceptional learners, in order to determine how this relates to the student's levels of effort and persistence on writing tasks. The study will utilize the intervention process of *Demystification* to inform students (who meet the criteria of twice-exceptional learners), of their areas of strength and weakness in learning. The intervention process will enable these students to use the knowledge of their personal learning style, in order to select appropriate writing strategies to enhance their ability to perform a writing task. It is hoped that the use of an intervention designed to help students understand their strengths and weaknesses as learners, will result in reductions in writing apprehension, and increases in measures of interest, positive self-efficacy beliefs, and levels of effort and persistence in a writing task; therefore resulting in improved performance.

The specific questions to be addressed through this research study include the following:

1. How does the student's personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student's levels of writing apprehension?

2. How does the student's personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student's self-efficacy beliefs in writing, and his/her interest in the writing task?

3. How does the student's personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) affect the student's levels of effort, persistence and performance on the writing task?

Chapter Three begins with a description of methods used in selecting participants for the study. It includes a description of the instruments used, and the procedures for data collection. It continues with a description of the different phases of the study, and the methods for analyzing the data. It concludes with a chapter summary.

Selection of Participants

This pilot study utilized a sample of convenience, due to the limited resources of the researcher, and the scarcity of students meeting the criteria for participants. The two participating students were chosen from a small group of students in a tutorial setting, which was specifically designed for students with learning disabilities in the language arts. Through prior tutorial work with the students, the researcher had gained contact information for the parents. The parents were given copies of the recruitment ad, and were asked to contact the researcher if they were interested in having their child participate in the study.

The parents who expressed interest in participating were given copies of the IRB study Consent Form: *Parental Permission for a Minor Child to Participate in a Research Study*. The parents were asked to read the form and sign it to indicate their consent.

The interested participants were initially screened by the researcher for deficits in written language, using the TOWL-3 (Test of Written Language, 3rd edition). The researcher also requested information about measured I.Q. level for each student, from each of the participating parents. This information was taken from measures of recent intelligence testing, in order to determine whether or not each student met the criteria for “twice-exceptional” learner, as established by the guidelines outlined by Nielsen & Higgins (2005), which states that diagnostic evaluation reveals a discrepancy between the

child's intellectual ability (IQ) and academic achievement scores. Measures of intellectual ability (expectancy IQ, verbal IQ, performance IQ, and full scale IQ) were accepted within the range of approx. 120-150, with achievement scores at least 15 points below the Full Scale IQ score.

The TOWL-3 test was administered to each student individually in one session which lasted for approximately 1.5 hours. The researcher scored the results of the TOWL-3 independently. At this time, the specific results were shared with neither the student nor the parent. However the parent was informed that their child was considered eligible to participate in the complete study.

Instruments

This study used six different measures to collect data for the Entry and Exit phases of the study design. In addition, a series of questionnaires from the *Schools Attuned Program from All Kinds of Minds* (2001-2006), were used to collect data relevant to the intervention. Data tools in the form of interview protocols, designed by the researcher, were also used in this study. Examples of the instruments are included in the appendices.

Participants were initially screened for deficits in written expression, by using the TOWL-3 to evaluate general skill in writing composition. Entry Phase and Exit Phase measures of levels of writing apprehension, interest, and self-efficacy were collected by administering the following tests: Writing Apprehension was measured using a scale adapted by Pajares & Valiante (2001), from Daly and Miller's (1975) Writing Apprehension Test (WAT). Interest was measured with a questionnaire using a 5-point Likert scale, based on a design by Hidi, et al (2002). Self-efficacy was assessed using a

measure of writing self-efficacy, designed for use with middle school students by Pajares & Valiante (2001).

Effort was operationalized as *Task Completion Performance*. It was assessed by scoring, based on effective completion of all aspects of the writing task, using the scoring criteria of the spontaneous writing subtests from the TOWL 3.

Levels of persistence were assessed through observation during the writing composition task. Persistence was operationalized as *Time on Task*, and was measured by the number of times during the writing task that the student exhibited “off task” behaviors. *Off Task* behaviors were noted under two categories. Category 1 (*Help-Seeking Behaviors*), noted the student’s request for help with clarification, spelling, or prompts for strategy use. Category 2 (*Frustration Level Rating*) noted the number of times in which the student exhibited indications of frustration with the task. These behaviors also included prolonged pauses in the task, expressions of frustration, and indications of distraction from focus on the task.

Test of Written Language (TOWL-3), AGS Publishing

The TOWL-3 is a standardized test which is unbiased relative to gender, race, social class and disabled groups. It is the most comprehensive, reliable, and valid norm-referenced test of written language currently available. The TOWL-3 measures writing competence using eight subtests, which use both essay-analysis (spontaneous) formats and traditional test (contrived) formats. The test yields standard scores, percentile ranks, and grade equivalents.

Measure of Writing Self-Efficacy (Pajares & Valiante, 2001)

The authors operationalized writing self-efficacy as “student’s judgements of their confidence that they possessed the various composition, grammar, usage, and mechanical skills appropriate to their academic level” (Pajares & Valiante, 2001, p. 369). The measure of writing self-efficacy was initially adapted by Pajares & Johnson (1997), from the Writing Skills Self-Efficacy scale, originally developed by Shell et al. (1989). Reliability scores of .95 were reported by Shell et al. for this measure, in a study with undergraduate students. Pajares & Valiante (2001) adapted the scale for use with middle school students, and reported coefficient alpha reliability of .90. This scale consists of 10 items, which ask students to rate their confidence in specific writing skills on a scale from 0 (no chance) to 100 (completely certain). The skills listed have been identified as those appropriate for middle school students’ written composition.

Measure of Writing Apprehension (Pajares & Valiante, 2001)

The measure of writing apprehension was adapted from a 26 item instrument by Daly and Miller (1975); Writing Apprehension Test (WAT). It is regarded as a reliable measure of writing anxiety. The test was designed to measure writing apprehension defined as ‘a person’s tendencies to approach or avoid situations perceived to potentially require writing accompanied by some amount of perceived evaluation’ (Daly & Wilson, cited by Pajares & Valiante, 1997, p. 4). The authors reduced the instrument to 14 items, for use with middle school students, and created a 6 point Likert scale. The authors reported an alpha coefficient of .78, though previous studies using similar measures reported levels ranging from .83 to .93 (Pajares & Valiante, 2001).

Measure of Interest in Writing (adapted from design by Hidi et al., 2002)

This test consists of items assessing level of interest in the writing task, using a traditional 5 point Likert scale.

Measure of Effort: Task Completion Performance (original design)

Effort was operationalized as *Task Completion Performance*, and was scored based on the student's successful completion of each element of the writing task.

The "spontaneous subtests" criteria of the TOWL-3 were used to analyze and score the quality of the students' writing tasks. The specific subtests used included subtest 6 (contextual conventions; which measures punctuation, spelling and capitalization), subtest 7 (contextual language; which measures language structure, grammar and vocabulary), and subtest 8 (story construction; which measures use of prose, action, sequencing, and theme).

Measure of Persistence: Time on Task (original design)

Persistence was operationalized as *Time on Task*, and was measured by the number of times during a 10 minute segment of the writing task that the student exhibited "off task" behaviors. *Off Task* behaviors were noted under two categories: Category 1. (*Help-Seeking Behaviors*) noted the student's request for help with clarification, spelling, or prompts for strategy use. Category 2 (*Frustration Level Rating*) noted the number of times in which the student exhibited indications of frustration with the task. These behaviors included prolonged pauses in the task, expressions of frustration, and indications of distraction from focus on the task.

Questionnaires regarding each student's general learning ability were used as required by the intervention procedure. The questionnaire system, developed for *Schools Attuned Programs for Educators from All Kinds of Minds* (All Kinds of Minds, 2001-

2006), required the use of three different questionnaires, to be completed separately by the student, the student's parent, and the student's relevant teachers.

The *Student's View; Secondary School* is a questionnaire which is designed to be completed by the student, in order to reflect the student's unique perspective on the areas of strength and weakness in learning, which impact their experience in an academic situation in different subject areas. It asks the student to rate statements on a scale of 1-5, to determine the relevance of the statements to their personal experience of each of eight major constructs important to the learning process; attention, memory, language, temporal-sequential ordering, spatial ordering, neuromotor function, higher order cognition, and social cognition. For example, the rating scale for the construct of attention, requires the student to rate a statement such as "I can concentrate enough to finish a task or assignment", in the subject areas of English, Math, and Science (All Kinds of Minds, 2002). The student must respond to the question by using a rating scale from #1 "Very true for me", through #4 "Not at all true for me", with the additional option of designating an undecided response; "I'm not sure" (All Kinds of Minds, 2002). *A Student's View Key; Secondary School* accompanies the questionnaire, and is designed to guide the teacher in interpreting the observations gathered from the student.

The *Parent's View; Secondary School* is a questionnaire which is designed to gain the parent's perspective of their child's areas of strength and weakness in learning. It is also designed to gain information about the student's ability in each of eight major constructs related to the learning process; attention, memory, language, temporal-sequential ordering, spatial ordering, neuromotor function, higher order cognition, and social cognition. A series of questions are posed regarding the student's ability in each of

the areas of learning, however subject areas are not specified. Each statement requires the parent to respond by highlighting one of four response options, as they pertain to the student's ability; "almost never, sometimes, often, almost always" (All Kinds of Minds, 2002). A separate comment section is provided for each statement. For example, the first statement under the construct of *Attention*, states "Concentrates enough to finish a task or assignment" (All Kinds of Minds, 2002). A separate form, *Parent's View Key; Secondary School* is designed to accompany the questionnaire, and enables the teacher to interpret the observations gathered from the parent.

The final questionnaire, the *Teacher's View; Secondary School*, is designed to be completed by the student's relevant teachers. It includes twelve observation windows, organized by specific content areas such as English and Social Studies. It is also organized by observational situations, such as Written Output, or Oral Language. An online key accompanies the *Secondary School Teacher's View*, in order to help the coordinating teacher consolidate and interpret the collected observations. The coordinating teacher may also choose to complete specific observation windows appropriate to the situation, and may involve other colleagues in filling out observation windows as appropriate. For the purposes of this research study, the researcher acted as the coordinating teacher, and chose to use the following observation windows, which were relevant to the student's ability in the area of language arts: #1 English, #10, Oral Language, #11 Written Output, and #12 Relating to Other Students. The final observation window (#12 Relating to Other Students) was chosen in order to gain insight into the participant's general communication skills, and ability to take the perspective of an other, which can be important in the writing process. Acting as the coordinating teacher, the

researcher filled out the chosen observation windows in the *Teacher's View; Secondary School* for each participant, and requested that one other language arts teacher for each student also complete the questionnaire. Each observation window was designed with a series of statements of possible observations. For example, window #11 for *Written Output* states: “#1. Writes too slowly for the task”, and lists as possible responses: “almost always, often, sometimes, almost never, and cannot say” (All Kinds of Minds, 2002). A separate space for comments is provided with each statement.

Protocols, designed by the researcher, were used during the Entry and Exit phases of the study, as well as during the practice sessions of the intervention. The protocols for the Entry and Exit phases included text describing appropriate communication with the student, the measures to use and the order in which they were to be administered, the steps to follow throughout the session, and the way in which the writing task would be scored.

The protocols for the practice sessions described appropriate communication with the student, the appropriate picture prompt to be used at each session, and the stages, in order, by which each session was organized.

An *Exit Interview*, designed by the researcher, was used to gather information about the student's self-perceptions following the exit phase of the intervention. The *Exit Interview* asked the following questions: 1. “What did you learn about your strengths and weaknesses in learning, through the intervention process?” 2. “How did the intervention process (where you learned about your areas of strength and weakness in learning), affect your level of apprehension about approaching the writing composition task?” 3. “How did knowledge of your weaknesses in writing help you in your performance on the

writing composition task?” 4. “How did knowledge of your strengths in learning help you in your performance on the writing composition task?” 5. “How did knowledge of your strengths and weaknesses in learning affect your interest in the writing composition task?” 6. “Were you able to select strategies that helped to enhance your writing skills?” 7. “How did your ability to choose appropriate strategies affect your interest in the writing task?” 8. “Tell me about your level of confidence in your ability to perform a writing composition task.”

Procedures for Data Collection

Due to the requirements of the intervention procedure, additional parties were requested to participate by filling out questionnaires regarding each student’s general learning ability, using the questionnaire system developed for *Schools Attuned Programs for Educators from All Kinds of Minds* (All Kinds of Minds, 2001-2006). The *Schools Attuned Program* required questionnaires to be submitted to the student’s parent (*The Parent’s View; Secondary School*), the student (*The Student’s View; Secondary School*), and the student’s relevant teachers (*The Teacher’s View; Secondary School*), which in this case were the language arts teacher and the language arts tutor. The instructions for the *Teacher’s View; Secondary School* questionnaire allow the coordinating teacher to choose the appropriate observation windows, among twelve possible, for relevant subject areas. For the purposes of this research project, the researcher chose to use four of the twelve observation windows from the *Teacher’s View; Secondary School*, which included Observation Window #1: English, #10, Oral Language, #11 Written Output, and #12, Relating to Other Students.

The parent and student were also required to fill out the appropriate questionnaires. Therefore, upon receipt of the consent form, the researcher asked the parent to also fill out the IRB form: *Consent to Participate in a Research Study*. The student was also asked to fill out the IRB form: *Assent to Participate in a Research Study Minor Subjects*. The researcher next requested contact information for the student's language arts teacher, in order to gain their consent to participate in the study. The relevant teachers were also asked to fill out the IRB form: *Consent to Participate in a Research Study*. The researcher also requested current work samples for each student from the parent. The researcher, who had worked with each student previously in a language arts tutorial setting, also completed a copy of *The Teacher's View; Secondary School* questionnaire, regarding each student's learning ability.

Developing the Neurodevelopmental Profile

The researcher collected the completed questionnaires (*The Student's View; Secondary School, The Parent's View; Secondary School* and *The Teacher's View; Secondary School*), and consolidated the information following the procedures outlined in *The Schools Attuned Program; Subject Specialist Path; Attuning a Student Guidelines* (All Kinds of Minds, 2001-2006). The guidelines for "attuning a student" require that observational data has been collected from at least four sources (*Parent's View; Secondary School, Student's View; Secondary School, Teacher's View; Secondary School*, and student work samples)"(All Kinds of Minds, 2006, p. 12). The researcher followed the guidelines as outlined, and used the resources from her training in the *Schools Attuned Program* (August 2005), in the process of consolidating the information to build a profile of the student's strengths and weaknesses in learning.

The process of developing a neurodevelopmental profile for an individual student allows for the ability to analyze data from multiple perspectives. Following the *Schools Attuned* guidelines, the researcher next examined the patterns or themes which recurred across the four perspectives provided by data from the questionnaires and work samples. The data was compiled in a *Views Consolidation and Profile Summary*, in order to develop hypotheses about the student's strengths and weaknesses in learning from the overall picture of the student's neurodevelopmental profile. For the purposes of this study, the analysis of strengths and weaknesses was related primarily to the student's performance in the language arts.

The next stage of the process involved creating a *Management Plan* for the student, in order to make connections between the areas of weakness reflected in the student's school performance, and the unique neurodevelopmental profile of the student. Links between the individual's school related skills, and specific neurodevelopmental constructs and functions were examined and listed. The development of a *Management Plan* required awareness of the student's strengths and affinities in order to foster those strengths, while simultaneously determining, and selecting among, accommodations or intervention strategies designed to improve levels of academic functioning for the student. In the case of this study, the focus of the *Management Plan* was designed to improve academic functioning for the student in the area of language arts, with an emphasis on writing skills. For the purposes of this study, specific strategies were selected for each student from the intervention strategies outlined in the *Schools Attuned Management Resources* (All Kinds of Minds, 2000-2004), which were determined by the

researcher to meet the individual students' needs in the area of expressive writing, and also to foster skills in self-monitoring and self-regulation.

The final phase of the process involved outlining the *Demystification* session for each student, in order to determine that the desired message would be conveyed effectively. The researcher followed the guidelines for the *Demystification* session from *The Schools Attuned Program; Subject Specialist Path: Attuning a Student Guidelines* (All Kinds of Minds, 2001-2006) in preparing the *Demystification Plan, Guide* and the *Demystification Message* (All Kinds of Minds, 2001) for each individual student in advance of the intervention. The *Demystification Plan* (All Kinds of Minds, 2001) is a brief outline of the date, time, duration of the session, materials required, and follow-up plan. The *Demystification Guide* (All Kinds of Minds, 2001) allows for organization of the communication process for the session, by asking the facilitator to consider the following questions before initiating the session: 1. "What developmental needs will I consider?", 2. "How familiar is this student with the concepts I will share?", 3. "Are there emotional needs to consider?", 4. "What aspects of this student's learning profile might affect this demystification?". The final outline for the *Demystification* session required composing a plan for conveying the important themes of the *Demystification* process, which included *Destigmatization*, *Alliance Formation*, and *Infusion of Optimism* (All Kinds of Minds, 2001-2006). The steps of the *Demystification Message* (All Kinds of Minds, 2001) were also outlined, and notes were made about how each of the messages would be conveyed. The steps required discussing the student's strengths and weaknesses in the following order: first, including five of the student's strengths, next, three of the student's affinities, and finally, three of the student's weaknesses.

During the *Demystification* process, the three themes of *Destigmatization*, *Alliance Formation*, and *Infusion of Optimism* were integrated within the five steps of the session, which included: 1. discussing student strengths, 2. discussing student weaknesses, 3. leveraging affinities, 4. discussing a management plan and 5. summarizing (All Kinds of Minds, 2001-2006). The researcher followed the guidelines outlined in the *Demystification Guide* (All Kinds of Minds, 2001) in developing an appropriate *Demystification Plan* (All Kinds of Minds, 2001) for each individual student, to be used during the intervention phase of the study.

Entry Phase (Week 1)

The actual study was designed to run over the course of six weeks, as illustrated in the table below.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Entry Phase	Interv/Demyst.	Interv/Pract Session #1	Interv/Pract. Session #2	Interv/Pract. Session #3	Exit Phase

Table 1. Time Frame of Study

This time frame allowed each phase of the study to be held during a separate session, spaced at weekly intervals. For each phase of the study, the researcher had developed protocols in advance, which outlined the steps to be followed consistently with each participant during the different phases of the study. The first phase of the actual study was the Entry Phase.

During the Entry Phase of the study, the researcher followed a protocol which outlined the steps to be followed. Initially, the student was greeted, and asked to make

him or herself comfortable at a desk area. The student was told by the researcher that he or she would be given a writing task to complete. The student was instructed to look at a picture prompt, and to compose a story based on the picture. The student was asked to use characters with names, and to include a beginning, middle, and end to the story. The student was also asked to use paragraphs with correct punctuation, and capitalization. The student was told that the writing task would be timed, and that only 15 minutes would be allowed to complete the story.

However, before beginning the task, the researcher asked the student to fill out three brief forms which questioned how they felt about writing. When the student was ready, he or she was given the first of the forms to complete: the *Writing Self-Efficacy Scale*. The student was asked to read each of the questions and answer each as honestly as possible. When the first form was completed, the student was given the second form: the *Measure of Writing Apprehension*, following the same guidelines. When that form was complete, the student was given the final form: the *Scale of Interest in Writing*.

The student was allowed to take a 10 minute break after completing the three forms, during which time the researcher prepared the writing desk with adequate paper and pencils.

When the student returned from a break, the researcher administered the writing task, based on the entry phase protocol. The student was first given a picture prompt (“The Bicycle Race”, by Antonio Ruiz). The researcher followed the instructions from the TOWL-3 spontaneous writing test, in administering the writing task to the student, based on the writing prompt. The researcher read the instructions for the writing task to

the student, verbatim. The student was allowed 15 minutes to complete the task, and was asked to stop when the time elapsed.

During the writing task, the researcher measured *Time on Task* using the prepared measures to indicate the number of help-seeking behaviors which the student exhibited during the writing task, as well as the number of times the student exhibited expressions of frustration during the entire fifteen minutes of the writing task. *Off Task* behaviors were noted under two categories, as either *Help-Seeking Behaviors*, or *Frustration Level Rating*.

When the student had completed the writing task, he or she was thanked for participating, and was free to leave. The researcher later scored the student's level of effort on the task, based on the operationalized measure of *Task Completion Performance*. This measure was based on the student's successful completion of each element of the writing task, using the "spontaneous subtests" criteria of the TOWL-3 (Hammill & Larson, 1996, p. 28).

Intervention Phase (Week 2)

The next phase of the study was the intervention phase, which was held one week after the entry phase. The intervention phase of the study was designed based on the *Schools Attuned Guidelines* for the *Demystification* process (All Kinds of Minds, 2001-2006). Therefore, a specific *Demystification Plan* was created for each individual student, and a *Demystification* session was conducted separately for each student, based on the guidelines for *Demystification* as outlined in the *Subject Specialist Path: Attuning a Student Guidelines* (All Kinds of Minds, 2000-2006), and drawing from the *Demystification* guidelines outlined in the *Schools Attuned Management Resources* (All Kinds of Minds, 2000-2004).

The researcher opened the session using the guidelines from *Schools Attuned Management Resources for Initiating the Session* (Management Resources, 2000-2004).

The student was informed that the purpose of the session was to help them learn more about the learning process in general, as well as about their own style of learning.

Differences in individual styles of learning were emphasized, in making clear that no two students' minds were identical. It was also stressed that all individuals had strengths and weaknesses in learning, and that it was important for an individual to understand the ways in which their mind worked best. The researcher restated that the purpose of the session was to teach students about their own learning style, and about the differences between individual minds and learning styles.

The researcher placed the diagram titled "A Table of Neurodevelopmental Constructs" (Levine, 2005) on the table within the student's view. The researcher introduced the discussion by explaining to the student that the diagram illustrated the eight different constructs involved in the learning process, and that the student was invited to talk about his or her own perspective on each. (The main constructs which appear on the diagram are: attention, temporal-sequential ordering, spatial ordering, memory, language, neuromotor functions, social cognition, and higher order cognition.) Because the diagram is fairly complex, the researcher stressed to the student that the discussion would be about the eight main constructs listed at the top of the diagram. The diagram was simply used as a visual aid, to help the student follow the discussion that followed. The researcher then initiated a brief discussion of the constructs individually, in the following steps.

The student was given their completed copy of the *Student's View* questionnaire (which briefly defined each of the eight constructs, and required the student to answer questions about each construct in relation to their own learning style). The student was asked to open their copy of the *Student's View* to the first page, which asked questions about the construct of *Attention*, for example. The researcher asked the student what they thought “attention” meant in order to initiate a brief discussion of attention. The discussion of the construct of *Attention* was kept to a brief summary, based on the guidelines *Discussion of Attention* from *Management Resources* (All Kinds of Minds, 2000-2004, p. GDL-28-29). Next, the student was gently invited to comment about any areas of attention they had listed on their *Student's View*, which they felt were important in their style of learning.

The researcher briefly discussed each of the remaining constructs with the student, in the order presented in the *Schools Attuned Management Resources* (All Kinds of Minds, 2000-2004), which included a discussion of memory, language, temporal-sequential ordering, spatial ordering, neuromotor function, higher order cognition, and social cognition. For each construct, the student was invited to comment on any aspect which they felt was important in their style of learning, drawing from the information presented on their *Student's View* questionnaire.

Only a few minutes was spent in highlighting the defining aspect of each construct, followed by a brief discussion, in order to spark awareness in the student of each aspect of the learning process, and how it might impact their unique style of learning. The researcher took brief notes as the student made comments about their own

learning style, in relation to the eight neurodevelopmental constructs. The entire discussion lasted for approximately ten minutes.

Next, the researcher briefly touched on some of the ways in which each of the constructs reviewed above were integrated in the writing process. For example, the researcher briefly highlighted ways in which attention was important in the writing process in the ability to maintain concentration, to keep from becoming distracted, and to be able to stay focused on a task even if it was not interesting. She also noted that attention was important in writing production, for example in skills that involved self-monitoring the writing for accurate spelling, punctuation, etc.

Next, the researcher briefly highlighted the importance of memory in writing, by saying that active working memory was important in holding all of the task demands of writing in mind simultaneously. For example, it was important in organizing ideas effectively, and building logical sentences, while trying to work through the writing from the beginning to the conclusion. Long term memory was mentioned as the ability to remember things accurately, such as correct spelling, punctuation, and grammar.

The researcher briefly discussed the importance of language in writing; in using words accurately, in building logical sentences, using description, and in elaborating ideas. The ordering systems were mentioned next, with temporal-sequential ordering being important in organizing ideas in a logical order, and spatial ordering important in arranging the words on paper.

The researcher also discussed the importance of higher order cognition in writing, as being important in forming concepts. Examples included creativity and brainstorming, problem solving, and reasoning or logical thinking. The importance of

graphomotor function in writing was mentioned next, as the ability to form letters correctly, and to write fluently in either cursive or print. Finally, social cognition was mentioned as the ability to recognize the audience for the writing task, as well as interpreting the feelings of characters within a story. The entire discussion was kept to approximately 5 minutes in length.

When the discussion was complete, the researcher referred to the individual *Demystification Plan and Guide* (All Kinds of Minds, 2001) and the *Demystification Message* (All Kinds of Minds, 2001), as well as the *Management Plan* (All Kinds of Minds, 2001) which she had completed in advance, to use as guidelines for the discussion of the individual student's unique strengths and weaknesses in learning.

The researcher opened the discussion by referring to the eight neurodevelopmental constructs which had previously been discussed, and stressed that each person had different combinations of strengths and weaknesses in each of the eight areas, which resulted in unique learning profiles. The researcher mentioned that she also had strengths as well as weaknesses in learning, and that the knowledge of her own strengths, as well as weaknesses, was helpful to her in school, and at work. The researcher told the student that she had listed some of the things that she believed might be areas of strength for the student. Each of the areas of strength were discussed with the student, followed by specific examples from the data previously collected, about the student's learning profile. Next, the student was invited to engage in a discussion of his or her own strengths with the researcher. As the discussion progressed, the researcher directed the student's attention to ways in which the specific strengths of the student, which were being discussed, were important in the area of language arts, and specifically

in the area of writing. This was done purposefully, in order to foster an optimistic perspective on the part of the student.

The next stage involved discussing three of the student's affinities. The researcher had carefully chosen three affinities (from many previously listed by the student in the *Student's View* questionnaire), which could be related to the language arts, and the writing process. The researcher engaged the student in talking about some of those things that they really enjoyed doing, and the skills that were involved in those activities. The researcher then linked the skills mentioned to similar skills that were involved in the writing process. The researcher again purposefully guided the discussion in this way, to foster optimism regarding the student's strengths in learning.

Finally, the researcher gently initiated a discussion about three of the student's areas of weakness, related to the writing process. The researcher talked briefly with the student about the different aspects of the learning process which were involved in each of the areas where the student was having difficulty.

The researcher next moved the discussion to the ways in which the student's weaknesses could be managed. (The researcher had previously developed a *Management Plan* (All Kinds of Minds, 2001) for each student, which outlined the student's strengths, and strategies to strengthen their strengths, as well as weaknesses. It also outlined strategies for either accommodating the weaknesses, or interventions for strengthening weak functions. From the *Management Plan* (All Kinds of Minds, 2001) developed for each student, the researcher had previously chosen specific writing strategies which she believed would be helpful in strengthening each student's weaknesses in writing.)

At this point, the researcher discussed some writing strategies with the student participant, which might help them with specific writing tasks. For instance, a group of approximately 5 different strategies were presented, along with a basic format for organizing a writing task. For the purposes of the research study, the student was asked to choose from among certain strategies offered (pre-selected by the researcher in advance), which the student believed might be helpful in strengthening areas where their writing showed weakness.

The student was initially asked to choose a basic format for writing (based on a mnemonic strategy) which would help them to remember a series of five steps to follow from the beginning to the end of the writing process. This was done to help the students commit the stages of writing to memory.

Next, the student was introduced to the steps of a format for planning their writing, which was designed by the researcher based on the mnemonic strategies listed above, as well as on information about writing from *Schools Attuned Management Resources; Management Strategies for Writing* (2000-2004), and resource books on the writing process (Peregoy & Boyle, 2005; King, 1985). The planning format was titled Planning Writing, and it broke the writing process into five distinct stages, which included: 1. choosing a topic, 2. brainstorming, 3. organizing, 4. editing, and 5. revising. The student was asked to record the time spent at each stage of the process, and to list it on the Planning Writing format.

Although this planning process followed a basic format for the planning of a writing task, it also allowed each student to choose from among different strategies at different stages of the writing process. For example, if the student had difficulty with the

process of organizing their writing, they were asked to choose one strategy from among 3 different strategies offered for organizing a writing task, which the student believed to be most appropriate for their own learning style. For instance, the student could choose from among a mind-map (of their own creation), a standard outline, or a graphic organizer, to organize their ideas for the writing task.

The requirement to record the time spent at each stage of the writing process allowed each student to self-monitor, and regulate their progress through each stage of the writing process. The students were also asked to choose among strategies which fostered self-monitoring ability in other areas of the writing process. For example, each student was asked to create a *Self-Check List*, which they were to use during the process of revising their writing. In order to do this, each student initially selected specific questions from a *Self-Check List* (All Kinds of Minds, 2000-2004) of fifteen suggested questions, for editing and revising writing work. The student was asked to think about his or her areas of both strength and weakness in writing, while selecting from the questions listed. Next, the student created a specific list from the questions outlined, which he or she believed addressed his or her own general needs in revising writing work. The student was told that he or she would be asked to use this list at the stage of revising his or her own writing tasks.

Students who displayed difficulty in maintaining attention on the writing task were also asked to select from among two different strategies designed to monitor either attention level, or level of mental effort. They were asked to choose the strategy which they felt was most appropriate in helping them to monitor their attention during the writing task.

When the student finished choosing among the strategies offered, those strategies were briefly reviewed with him or her, by the researcher. The researcher invited the student to reflect on the things that he or she had learned in the session, regarding his or her own specific strengths and weaknesses in the area of writing. Finally, the researcher told the student that the current session had ended, and that he or she would be able to practice using the selected strategies during the next session. The researcher finally thanked the student for participating, and allowed the student to leave.

Practice Phase of Intervention Stages I, II, III (Weeks 3, 4, & 5)

One week after the *Demystification* session was complete, the first practice session was held on an individual basis, for each student. The researcher followed a protocol in conducting each of the practice sessions, which were held at weekly intervals for a total of three different sessions. Different picture prompts were used at each separate practice session. However, other than the difference in picture prompts the protocols were similar for each of the three practice sessions.

Initially, the student was welcomed. The researcher told the student that he or she would have a chance to practice the strategies previously selected (during the Demystification process), in order to help them with a writing task. When the student was ready to begin, the researcher first reminded the student of the writing strategy mnemonic that he or she had chosen to use to memorize the stages of the writing task.

If the researcher had previously determined that the student had general difficulty in maintaining attention on a writing task, the student was asked to use the strategy which he or she had selected to monitor either attention level, or level of mental effort. The student was asked to use this strategy to monitor levels of attention during the beginning, middle, and end of the writing task.

The researcher then told the student that he or she would be given a writing task to complete, within a fifteen minute time frame. Next, the researcher showed the student the Planning Writing sheet, and said that during the practice sessions, he or she would be given time to use the planning strategies outlined on the Planning Writing sheet, in order to practice strategies which might help with the writing task.

The researcher reviewed the first three steps of the Planning Writing sheet with the student as follows: step one required the student to select a topic for the writing, and to record the time spent in completing step one. Step two required the student to brainstorm, and list ideas related to his or her topic. The student was then required to record the time spent in completing step two.

Step three required the student to organize ideas for the writing task. During this step, the researcher asked the student to use the format which he or she had previously selected from three offered; a mind map, conventional outline, or graphic organizer. The student was asked to use the format that would work best for his or her own learning style. The researcher had previously circled the student's choice on the Planning Writing sheet, and asked the student to use his or her selected format to organize ideas, by writing them in the format chosen. Finally, the student was asked to record the time spent completing step three.

Step four required the student to use the COPS technique to check capitalization, organization, punctuation and spelling, in his or her writing work. The student was required to record the time spent in completing step four.

Step five required the student to revise and rewrite his or her work. The student was specifically asked to use the *Self-Check List* which he or she had created, to

determine how the writing might need to be revised. The student was required to record the time spent in completing step five.

Next, the researcher asked the student if he or she was ready to begin the writing task (after completing the review of the steps listed on the Planning Writing sheet).

When the student was ready, the researcher placed the picture prompt in view, and asked the student to begin the first three steps, and to record the time spent at each step of the Planning Writing exercise.

After the first three steps of the Planning Writing sheet were completed by the student, and the time spent on each step was recorded, the researcher told the student that it was time to begin the writing task. The researcher removed the Planning Writing sheet from the student's view, and read the instructions for the writing task to the student, indicating that they would have fifteen minutes to complete the writing task. The researcher then instructed the student to begin the writing task. When fifteen minutes had elapsed, the researcher stopped the student's writing.

At this point, the researcher returned the Planning Writing sheet to the student, and asked the student to edit his or her writing, as outlined by step four; editing, using the COPS technique. The student was asked to record the time spent in completing step four.

Finally, the student was asked to use the *Self-Check List* which he or she had created, to revise the writing work as needed. The student was asked to record the time spent in completing step five. At this point, the practice session was ended. The researcher thanked the student for participating, and the student was free to leave.

At each successive practice session (for a total of three sessions spaced at weekly intervals) the student practiced a writing task using the selected strategies in the format outlined above. The protocol for the practice sessions was followed during each session.

Exit Phase (Week 6)

The Exit Phase of the study was held individually, with each student, one week following the third practice session. The researcher followed a protocol for the Exit Phase, which she had prepared in advance of the study. The protocol outlined the steps to be followed consistently, with each participant. The Exit Phase was the final phase of the study.

During the Exit Phase, the student was initially greeted, and asked to sit comfortably at a writing desk. The student was told by the researcher that they would be given a writing task to complete. The student was instructed that they would be given a picture to look at, and were asked to compose a story based on the picture. The student was asked to use characters with names, and to include a beginning, middle, and end to their story. They were also asked to use paragraphs, with correct punctuation and capitalization. They were then told that they would have 15 minutes to complete their story.

However, before they began the task, the researcher asked them to fill out three brief forms which asked how they felt about writing. When the student was ready, he or she was given the first of the forms to complete: the *Writing Self-Efficacy Scale*. The student was asked to read each of the questions and answer each as honestly as possible. When the first form was completed, the student was given the second form: the *Measure*

of Writing Apprehension, following the same guidelines. When that form was complete, the student was given the final form: the *Scale of Interest in Writing*.

The student was allowed to take a 10 minute break after completing the three forms, during which time the researcher prepared the writing desk with adequate paper and pencils.

When the student returned, the researcher administered the writing task, based on the post-test protocol. The student was first given a picture prompt, from the TOWL-3 form A or B, to follow. (Either TOWL-3 form A or B was used, to ensure that the picture prompt was different than the one used during the TOWL screening.) The researcher followed the instructions from the TOWL-3 spontaneous writing test in administering the writing task to the student, based on the writing prompt. The student was allowed 15 minutes to complete the task, and was asked to stop when the time elapsed.

During the writing task, the researcher measured *Time on Task* using the prepared measures to indicate the number of help-seeking behaviors which the student exhibited, as well as the number of times the student exhibited expressions of frustration during the fifteen minute period of the writing task. *Off Task* behaviors were noted under two categories, as either *Help-Seeking Behaviors*, or *Frustration Level Rating*.

When the writing task had been completed, the researcher conducted an *Exit Interview* with the student. The researcher informed the student that a tape-recorded interview would be conducted for the purposes of the research study. During the interview, the student would be asked to answer questions about the things that they had learned during the intervention process. The researcher informed the student that there would be a total of eight questions, and asked the student to take time to reflect, and

answer each question honestly. The researcher told the student that the interview would be tape-recorded, but that their responses would remain anonymous.

When the student was ready to begin, the researcher turned on a portable tape-recorded and proceeded to ask the student a series questions, allowing the student to answer each question with as much elaboration as possible. The eight questions were posed in the following order:

1. What did you learn about your strengths and weaknesses in learning, through the intervention process?
2. How did the intervention process (where you learned about your areas of strength and weakness in learning), affect your level of apprehension about approaching the writing composition task?
3. How did knowledge of your weaknesses in writing help you in your performance on the writing composition task?
4. How did knowledge of your strengths in learning help you in your performance on the writing composition task?
5. How did knowledge of your strengths and weaknesses in learning affect your interest in the writing composition task?
6. Were you able to select strategies that helped to enhance your writing skills?
7. How did your ability to choose appropriate strategies affect your interest in the writing task?
8. Tell me about your level of confidence in your ability to perform a writing composition task.

The researcher allowed time for the student to fully elaborate on each of the questions posed. The researcher tape-recorded the responses, and also took brief notes as needed. When the interview was completed, the researcher thanked the student for participating in the research study. The researcher told the student that the study was completed, and that they were free to leave.

The researcher later scored the student's level of effort on the task based on the operationalized measure of *Task Completion Performance*. This measure was based on the student's successful completion of each element of the writing task, using the *Spontaneous Subtests* criteria of the TOWL-3.

CHAPTER FOUR

ANALYSIS PLAN AND RESULTS

Chapter four consists of background information for each student, as well as the analysis plan, and study results for each of the case study participants. Part I is focused on the male participant (who will be referred to by the pseudonym “Tony”). Part I opens with a case description, and moves into the case analysis, which is organized according to the analysis plan designed to address each specific research question. The participant’s responses to each of the measures are included under the heading of each appropriate research question. Results are also delineated in accordance with the plan of analysis for each research question. Part II is organized in a similar manner however it is focused on the responses of the female participant (who will be referred to by the pseudonym “Robin”).

Part I

Individual Case Description: Tony

Tony is a white adolescent male, who was born in 1991. His age was 15 years and 9 months at the beginning of the study. Tony is a very bright, witty, sensitive, and socially astute teenager, who is currently in the 10th grade of a local public school. He plans to attend college upon completing high school. Tony is a talented artist, who is entertaining ideas of majoring in the arts, and has begun to compile a portfolio of his work. Tony is a single child, who lives with both his mother and father. He is an active

teenager, who enjoys skateboarding, music, foreign languages and cultures, as well as literature.

Tony exhibits a number of cognitive strengths, however he also struggles with specific learning disabilities. Results of testing on the WISC III, from his elementary school years, displayed a statistically significant difference between his Verbal IQ score of 135 (99%), and his Performance IQ score of 119 (90%), which resulted in a Full Scale IQ Score of 130 (98%). Results of achievement testing at that time revealed that he was performing below expectations especially in reading, and written language, with some additional difficulty in the area of math. Weaknesses were identified in his ability to decode words, and in his poor mastery of sound/symbol associations. He also displayed weak spelling skills. He tended to work impulsively, and make careless errors.

Weaknesses were also found in the areas of visual sequencing, attention/concentration skills, and graphomotor coordination. Tony did receive tutoring in different formats during his elementary years, and he did make progress, especially in the area of reading.

However, results of a recent psychological report, at age 15, indicated a somewhat similar pattern of strengths and weaknesses. Results of the recent evaluation, from the Wechsler Intelligence Scale for Children- Fourth Edition (WISC-IV), indicated that his cognitive ability was in the Superior range, with a Full Scale IQ of 125 (95%). His score on the Verbal Comprehension Index (VCI = 134) indicated verbal reasoning abilities in the Very Superior range (99%). Similarly, his scores on the Perceptual Reasoning Index (PRI = 131) indicated nonverbal reasoning abilities in the Very Superior range (98%). In contrast, his measure of working memory abilities (WMI = 99) was in the average range

(47%). He also performed in the Average range (PSI = 103, 58%) on subtests which examined perceptual-motor processing speed.

The evaluation of Tony's academic achievement from the Woodcock-Johnson Tests of Achievement (WJ III) as compared with the results of the WISC-IV indicated that Tony is performing significantly below predicted levels in math and written language. A comparison of previous and current test results indicated a dramatic improvement in reading from a Broad Reading score of 92 (29%), to the current score of 127 (96%). However, his current score on the writing subtest of the WJ III (SS = 105, 64%) indicates a weakness in writing, and is statistically significant when compared to his FSIQ of 125.

The weakness that Tony exhibited in writing on the WJ III was reinforced by his scores on the screening measure for the current study. The Test of Written Language-Third edition (TOWL-3) was used by the researcher, to screen Tony as a potential participant for the study. Tony's scores on the TOWL-3 subtests ranged from standard scores of 14 (91%) on the Vocabulary subtest, to a standard score of 3 (1%) on the Contextual Conventions subtest. A computation of composite scores showed a sum of standard scores for Contrived Writing as 51 (53%), with the sum of standard scores for Spontaneous Writing as 29 (45%). Tony scored in the 50th percentile on Overall Writing (std. score 80), which was comparable to his score on the WJ-III for Broad Written Language (std score 103), which placed him at the 58th percentile. The discrepancy between Tony's achievement scores in writing, and his FSIQ score of 125 (95%), which was greater than 15 points, met the criteria for twice-exceptional learners established by

Nielsen and Higgins (2005). Therefore he was determined to be eligible to participate in the study.

The development of a neurodevelopmental profile for Tony by the researcher indicated that he had strengths in higher order cognition, specifically in the areas of conceptual reasoning and critical thinking. He also appeared to be a highly creative person, with a vivid imagination. Tony also demonstrated evidence of strengths in receptive language skills (especially in terms of vocabulary comprehension), as well as strengths in the area of verbal expressive language. He also demonstrated evidence of strengths in long-term memory, and he indicated that most aspects of his memory were strong when he was able to link concepts, or ideas.

The development of a Management Plan for Tony focused on these areas of strength initially, and specified the need to utilize metacognitive strategies in order to help him develop his ability to self-regulate his learning. It also emphasized the need to capitalize on his strengths in conceptual reasoning and imagination, by linking them to writing activities. His skills in expressive language could also be linked to the development of skills in written expression. These specific strengths were emphasized during the process of *Demystification* for Tony, and these areas of strength were also linked with examples of their importance in the writing process.

For the purposes of the research study, the three areas of weakness, which were specified on the Management Plan for each student, focused on the area of written language. One of the three areas of weakness in writing, which were specified for Tony, included a weakness in the elaboration of ideas, and in the organization of his writing. The possible neurodevelopmental functions underlying these weaknesses were isolated as

possible difficulties in temporal-sequential ordering (including time management), possible difficulties with attention, at the level of mental energy controls, and difficulties in expressive language, at the level of sentence formulation and discourse production.

The second area of weakness in writing, specified for Tony, was an inconsistent use of the mechanics in writing, such as difficulties with punctuation, capitalization, and spelling. The possible neurodevelopmental functions underlying these weaknesses were isolated as difficulties with active working memory, and difficulties with attention at the levels of processing controls (which may involve difficulties with focal maintenance), and at the level of production controls (which may involve difficulties in pacing, and self-monitoring).

The third area of weakness in writing, specified for Tony, was difficulty with the quality of his handwriting. The formation of his letters was inconsistent, and his writing was frequently illegible, though he was able to produce a better quality of writing when he used cursive, and focused on the physical act of his writing. Possible neurodevelopmental functions underlying these weaknesses were isolated as difficulties with mental effort, as well as possible difficulties with graphomotor memory.

Although accommodations were also noted on the Management Plan format for each student, only specific strategies were selected, for the format of this study, which could work within the parameters of the intervention design. Specific strategies were isolated in the development of the management plan, and incorporated into the intervention, in order to help Tony in his areas of weakness with writing.

The strategies selected included having him follow a sequential plan in organizing his writing, which would incorporate a time management scheme. This was

incorporated into the intervention in the Planning Writing format, which included recording the time spent at each stage of the writing task. Tony was also asked to choose among different formats (including graphic organizers, mind maps, or outlines), to select the format that he felt was most appropriate in helping him to organize his writing. Strategies to help him develop self-regulatory ability in writing skills and attention were also identified. The COPS technique was incorporated into the editing stage of the planning writing format, to help him monitor his skills in capitalization, punctuation and spelling. He was also asked to choose among specific strategies to help guide the revision phase of the writing task. The use of a *Self Check* list was then incorporated into the writing intervention, to focus his attention on developing skills to enable him to self-monitor at many levels of the writing task. Strategies were also incorporated which would allow him to monitor his level of attention. He was allowed to choose whether he wanted to monitor the number of times his attention wandered (listed as *Mind Trips*), or to chart his levels of mental effort on a graph. He chose to monitor his attention level by monitoring his number of *Mind Trips* during the writing task. The tripod pencil grip was also introduced to him, to see if it might help him with the physical act of writing.

Individual Case Analysis: Tony

Research Question no. 1

The plan of analysis used to address the first research question required an analysis of data collected through two different sources. The analysis therefore, involved a comparison of the student's responses to statements on the Entry and Exit Phases of measures of writing apprehension. It also included an examination of the student's response to question no. 2 of the Exit Interview, which asked the student directly how the

intervention process affected his or her level of apprehension about approaching the writing task.

Tony:

Research Question no. 1:

How does the student’s knowledge of personal strengths and weaknesses in learning, gained through the process of *Demystification*, impact their levels of writing apprehension?

Measures to Address:

Entry Phase Wrt. Appr.

Exit Phase Wrt. Appr.

Analysis Plan:

Compare Entry and Exit scores

Exit Interview

Analysis of Measure of Writing Apprehension

Comparison of Entry and Exit Phase Measures

Tony’s responses to the Entry Phase and Exit Phase *Measure of Writing Apprehension* ratings were similar in general. The table below shows a comparison of Tony’s responses on this measure at both the Entry and Exit Phases of the study.

#	Statements: levels of Writing Apprehension	Entry Phase	Exit Phase
1	I like to write.	A little bit true	A little bit true
2	I look forward to writing down my ideas.	A little bit false	A little bit false
3	I am afraid of writing when I know it will be graded.	A little bit false	A little bit false
4	I like to write my ideas down.	A little bit true	A little bit true
5	I’m nervous about writing.	Mostly false	A little bit false
6	I never seem to be able to clearly write ideas.	A little bit true	A little bit true
7	Writing is a lot of fun.	Mostly false	Definitely False
8	Just thinking about writing makes me feel nervous.	Mostly false	A little bit false
9	Compared to others my age I am a good writer.	A little bit false	Mostly false
10	I get good grades in writing.	Mostly false	A little bit false

11	Writing is easy for me.	Mostly false	Mostly false
12	I am not a good writer.	A little bit true	A little bit true
13	Learning how to be a better writer is easy for me.	A little bit false	A little bit false
14	I have always done well on writing assignments.	A little bit false	Mostly false

Table 2. **Comparison of Responses: Measure of Writing Apprehension (Tony)**

Though a number of Tony’s responses remained unchanged, slight differences in response were noted for the following questions:

Tony’s Entry Phase response to statement no. 5 (“I’m nervous about writing”) was rated as “mostly false”. However, his Exit Phase response changed slightly to “a little bit false”; thus indicating that he felt slightly **more nervous** about writing following the intervention. A **similar change** was apparent on statement no. 8 (“Just thinking about writing makes me feel nervous”). Tony’s Entry Phase response to this statement was “mostly false”, however his Exit Phase response was rated at “a little bit false”, reinforcing the response to statement no. 5.

Tony’s response to statement no. 7 “Writing is a lot of fun”, also changed from “mostly false” on the Entry Phase, to “definitely false” on the Exit Phase measure; indicating a **slight negative change** in his feelings about writing.

Responses to statements which indicated his feelings about his ability to write well also changed slightly from the Entry Phase to the Exit Phase measures. For example, Tony’s response to statement no. 9 (“Compared to others my age I am a good writer”) changed from “a little bit false” on the Entry Phase measure, to “mostly false” on the Exit Phase measure. Similarly, his response to statement no. 14 (“I have always done well on writing assignments”) changed from “a little bit false” on the Entry Phase

measure, to “mostly false”, on the Exit Phase measure; indicating a **slightly more negative perception** of his skill in writing.

However, his response to statement no. 10 (“I get good grades in writing”) changed slightly from “mostly false” on the Entry Phase measure to “a little bit false” on the Exit Phase measure; indicating a **slightly positive change** in his perceptions of his graded writing.

No changes were indicated between the Entry Phase and Exit Phase measures for the following statements:

Tony responded to statements no. 1 (“I like to write”), and no. 4 (“I like to write my ideas down”) as “a little bit true”; indicating a slight feeling of enjoyment in writing, which remained unchanged. However, his response to statement no. 2 (“I look forward to writing down my ideas”), which he rated as “a little bit false”, is contradictory to the previous statements.

Tony’s response to statement no. 3 (“I am afraid of writing when I know it will be graded”), as “a little bit true”, indicates a **slight degree of apprehension** about writing tasks which will be evaluated.

Tony’s responses to the remaining statements indicate that he perceives himself as having difficulty with writing. For example, his response to statement no.6 (“I never seem able to clearly write ideas”) is rated as “a little bit true”. Similarly, his response to no. 12 (“I am not a good writer”) is “a little bit true”.

Finally, his responses indicate that he does not feel that writing is an easy process for him, as indicated by his responses to statements no. 11 and 13. His response to

statement no. 11 (“Writing is easy for me”) is “mostly false”, and his response to no. 13 (“Learning how to be a better writer is easy for me”) is rated as “a little bit false”.

Research Question no. 1:

Tony:

How does the student’s knowledge of personal strengths and weaknesses in learning, gained through the process of *Demystification*, impact their levels of writing apprehension?

Measures to Address:

Entry Phase Appr.
Exit Phase Appr.
Exit Interview

Analysis Plan:

Compare Entry and Exit scores
Exit Interview

Analysis of Measures of Writing Apprehension

Exit Interview

2. How did the intervention process (where you learned about your areas of strength and weakness in learning), affect your level of apprehension about approaching the writing composition task?

“I guess I always have been a little nervous on writing, and I’ve kind of gotten over that, so writing isn’t really scary for me any more. So that didn’t really increase, or decrease my apprehension.”

(Do you have any idea how long it took for you to get over your apprehension about writing?)

“I mean, I still don’t like writing in class, like when I have to turn it in. I don’t know.... I guess eighth grade,... ninth grade.”

Tony’s responses regarding his level of writing apprehension on the Exit Interview are fairly consistent with his responses on the Measure of Writing

Apprehension. For instance, Tony indicated that he feels slightly apprehensive about writing tasks which will be evaluated. The timed nature of the writing task also appeared to increase his level of apprehension slightly, although in general he perceives that he has learned to effectively deal with his apprehension toward writing.

**Individual Case Analysis: Tony
Research Question no. 2**

The plan of analysis used to address the second research question required an analysis of data collected through three different sources. Therefore, the analysis involved a comparison of the student's responses for the Entry and Exit Phases of the Measure of Writing Self-Efficacy. It also required a comparison of responses for the Entry and Exit Phases of the Measure of Interest in writing. Finally, it required an examination of the student's responses to questions nos. 8, 5, and 7, on the Exit Interview, which inquired about the student's level of confidence in their ability to perform a writing task, how knowledge of their strengths and weaknesses affected their level of interest in the writing task, and finally, how the ability to choose appropriate strategies may have affected their interest in the writing task.

**Research Question 2:
Tony**

How does the student's personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student's self-efficacy beliefs in writing, and their interest in the writing task?

Measures to Address:
Entry Phase Self. Eff.
Exit Phase Self Eff.
Entry Phase Interest
Exit Phase Interest

Analysis Plan:
**Compare Entry &
Exit scores**
Exit Interview

Analysis of Measure of Self-Efficacy
Comparison of Entry and Exit measures

#	Statement re: self-efficacy Rating scale: 1-100	Entry Phase Scores	Exit Phase Scores
1	Correctly spell all words in a one page story or composition.	20	0
2	Correctly punctuate a one page story or composition.	20	0
3	Correctly use all parts of speech in a written composition.	80	60
4	Write simple sentences with good grammar.	80	80
5	Correctly use singulars and plurals, verb tenses, prefixes, and suffixes.	70	80
6	Write a strong paragraph that has a good topic sentence or main idea.	60	60
7	Structure paragraphs to support ideas in the topic sentence.	70	70
8	End paragraphs with proper conclusions.	50	60
9	Write a well-organized and well-sequenced paper that has a good introduction, body, and conclusion.	50	60
10	Get ideas across in a clear manner by staying focused without getting off the topic	60	70

Table 3. Comparison of Responses: Measure of Self-Efficacy (Tony)

An analysis of the Entry Phase and Exit Phase scores indicates **negative changes** in the ratings **for the first three statements**, from the Entry Phase to the Exit Phase scores. For example, Tony changed the rating of his ability to spell all words correctly (#1) from a 20 (Entry Phase), to a 0(Exit Phase), indicating that he believed he had no chance to perform this skill. Similarly, his rating of his ability to correctly punctuate all words in a one page story or composition (#2) changed from an Entry Phase rating of 20, to an Exit Phase rating of 0 (no chance). Finally, his rating of his ability to correctly use all parts of speech in a written composition (#3) dropped by 20 points; from 80 (Entry Phase) to 60 (Exit Phase).

Tony's ratings of his ability to write simple sentences with good grammar (#4), to write a strong paragraph with a good topic sentence or main idea (# 6), and his ability to structure paragraphs to support ideas in the topic sentences (#7) all **remained unchanged** from Entry Phase to Exit Phase ratings.

Finally, Tony's ratings of **statement nos. 5, 8, 9, and 10** indicated **positive changes** of 10 points each, from Entry Phase to Exit Phase. The positive changes reflected his perceptions of his abilities to correctly use singulars and plurals, verb tenses, prefixes and suffixes (# 5), to end paragraphs with proper conclusions (#8), to write a well-organized and well-sequenced paper that has a good introduction, body, and conclusion (#9), and to get his ideas across in a clear manner by staying focused, without getting off the topic (#10).

Research Question 2:
Tony

How does the student's personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student's self-efficacy beliefs in writing, and their interest in the writing task?

Measures to Address:

Entry Phase Self. Eff.

Exit Phase Self Eff.

Entry Phase Interest

Exit Phase Interest

Analysis Plan:

Compare Entry &

Exit scores

Exit Interview

Analysis of Measures of Interest
Comparison of Entry and Exit Measures

There was a **positive difference** between Entry Phase and Exit Phase ratings of the measure of interest on Tony's response.

Comparison of Entry and Exit Phase Measures of Interest in Writing

Statement of Interest in writing Rating 1-5: Strongly Disagree-Strongly Agree	Entry Phase Rating 1-5	Exit Phase Rating 1-5
“I am interested in writing”.	3	4

Table 4. Comparison of Responses: Measure of Interest (Tony)

For the Entry Phase measure of interest, Tony rated the statement “I am interested in writing” as a 3 (indicating that he neither agreed nor disagreed with the statement). However, on the Exit Phase measure, Tony rated the statement “I am interested in writing” as a 4 (indicating that he agreed with the statement). This change was supported by his response on the Exit Interview.

**Research Question 2:
Tony**

How does the student’s personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student’s self-efficacy beliefs in writing, and their interest in the writing task?

Measures to Address:

Entry Phase Self. Eff.
Exit Phase Self Eff.
Entry Phase Interest
Exit Phase Interest
Exit Interview

Analysis Plan:

Compare Entry &
Exit scores
Exit Interview

Analysis of Measures of Self-Efficacy and Interest

Exit Interview

8. Tell me about your level of confidence in your ability to perform a writing composition task.

“My confidence....I um,....I guess I’m confident in that I will finish it at some point. And the teacher will look at it, and say what they’re going to say...and I, um, will

need to work on some things next time. I guess, so...I mean I guess I'm slightly more confident in my knowing where my boundaries are.”

(O.K. ...Did you notice any difference in your confidence level between the first time I asked you to do a writing task....?)

Here he interrupted me, and said: “Yeah” “ I feel like I know what I'm doing more now, and like when I had to do the tenth grade writing test, I kind of felt like, ‘Well, I've been doing this every Wednesday...this shouldn't be so hard...’ “so...”

(Is there anything else that you would like to add?)

“I wouldn't like to add anything else.”

5. How did knowledge of your strengths and weaknesses in learning affect your interest in the writing composition task?

“I was never really partial to the writing composition task in the first place. Um... it didn't really affect me either way.”

(So, it didn't affect you either way?) “No”

7. How did your ability to choose appropriate strategies affect your interest in the writing task?

“Well, I wasn't told to do a specific thing, so I guess I liked that more than just ‘You have to do it this way, or you have to do it that way’so that increased my interest..... I mean I guess it decreased my disinterest!”

“And that is all I have to say...”

**Individual Case Analysis: Tony
Research Question no. 3**

The plan of analysis used to address the third research question required an analysis of data collected through three different sources. The analysis therefore, involved a comparison of the student's scores on the Entry and Exit Phases for the measure of effort and performance, which was operationalized as *Task Completion Performance*. It also required a comparison of the student's scores on the Entry and Exit Phases for the measure of persistence, which was operationalized as *Time on Task*. It also required an examination of the student's responses to questions nos. 1, 3, 4, and 6 of the Exit Interview, which inquired about how knowledge of personal strengths or weaknesses in writing may have helped with the student's performance on the writing task. Question no. 6 of the interview asked specifically whether or not the ability to select strategies enhanced performance on the writing task.

Research Question no. 3:

Tony

How does the student's knowledge of personal strengths and weaknesses in learning affect the student's levels of effort, persistence, and performance on the writing task?

Measures to Address:

Entry T.C.P

Exit T.C.P.

Observation:

Entry T.O.T.

Exit T.O.T.

Exit Interview

Analysis Plan:

Compare Entry & Exit scores.

Compare observations

Exit Interview

Analysis of Measures of Effort and Performance

Comparison of Entry and Exit Measures of Task Completion Performance

The student's level of effort on the writing task was operationalized as *Task Completion Performance*, which was scored based on the student's successful completion of each element of the writing task. The *spontaneous subtests* criteria of the TOWL-3

was used to analyze and score the quality of the student’s written work. The specific subtests used included subtest 6 (contextual conventions; which measured punctuation, spelling and capitalization), subtest 7 (contextual language; which measured language structure, grammar and vocabulary), and subtest 8 (story construction; which measured use of prose, action, sequencing, and theme).

Comparison of Spontaneous Subtest Scores: Entry and Exit: Tony

Spontaneous Subtests Std. Scores: Tony	Entry Phase	Exit Phase
<i>Contextual Conventions (CC)</i>	6 (9%)	6 (9%)
<i>Contextual Language (CL)</i>	10 (50%)	13 (84%)
<i>Story Construction (StC)</i>	15 (95%)	15 (95%)

Table 5. Comparison of Spontaneous Subtest Scores (Tony)

Contextual Conventions (CC): measures the student’s mastery of the conventions of written language, such as spelling, capitalization, and punctuation.

Contextual Language (CL): measures the student’s use of language in writing, such as the use of grammar, structure, and vocabulary.

Story Construction (StC): evaluates the student’s use of prose, sequencing, action, and theme in story construction.

Comparison of All Spontaneous Subtests Scores: Tony

	<i>CC</i> : Std. Score:	%ile	<i>CL</i> : Std. Score:	%ile	<i>StC</i> : Std. Score:	%ile	Sum:Std.Scr. Quo. / %ile
Screening:	3	1%	13	84%	13	84%	29, 98, 45%
Entry Phase:	6	9%	10	50%	15	95%	31, 102, 55%
Practice #1:	6	9%	10	50%	16	98%	40, 121, 92%
Practice	6	9%	11	63%	16	98%	43, 128, 97%

#2:							
Practice #3:	7	16%	15	95%	17	99%	50, 143, 99%
Exit Phase:	6	9%	13	84%	15	95%	45, 132, 99%

Table 6: Comparison of All Spontaneous Subtest Scores (Tony)

**Research Question no. 3:
Tony**

How does the student’s knowledge of personal strengths and weaknesses in learning affect the student’s levels of effort, persistence, and performance on the writing task?

Measures to Address:

Entry T.C.P

Exit T.C.P.

Observation:

Entry T.O.T.

Exit T.O.T.

Exit Interview

Analysis Plan:

Compare Entry & Exit scores.

Compare observations

Exit Interview

Analysis of Measure of Persistence
Comparison of Observations measured as Time on Task

The student’s level of persistence on the writing task was operationalized as *Time on Task*. Differences between Entry Phase and Exit Phase scores were noted, using the observation measure *Time on Task*, to evaluate instances of *Help-Seeking Behaviors*, and indications of *Frustration Level* during the writing task.

A comparison of Entry Phase and Exit Phase measures for *Time on Task*, showed distinct differences in *Frustration Level* and *Help-Seeking Behaviors* for Tony. During the observation of the writing task at the **Entry Phase**, Tony engaged in no help-seeking behaviors. Instead of positive, help-seeking behaviors, he exhibited a variety of behaviors which indicated frustration. For example, the researcher recorded 5 instances of distractive behaviors (such as tapping his pencil, or looking around the room), as well as 3 pauses during the writing task. One expression of frustration was recorded, when

Tony expressed concern about being able to finish in the allotted time, and said “Do I only have 5 minutes left?”

In contrast however, **Exit Phase measures** for *Time on Task* showed a variety of positive help-seeking behaviors, and only a few expressions of frustration. For example, Tony engaged in 3 instances of help-seeking behaviors, in seeking clarification and strategy prompts. Initially, before beginning the writing task, Tony asked if he could “plan it out on paper”. He also asked for indications of the amount of time remaining; once, at the beginning of the task, and once toward the end of the task. Tony also asked for one strategy prompt by questioning whether or not he needed to edit his story.

In contrast to the Entry Phase measures, Tony showed no indications of distraction during the Exit Phase observation of the writing task. The only indications of frustration level were 2 instances when Tony yawned, as if he was tired, and they were recorded as *Expressions*, indicating frustration level.

Time on Task / Off Task Behaviors: Tony

Help-Seeking Behaviors:	Entry	Exit	Frustration Level:	Entry	Exit
Clarification	0	3	Pauses	3	0
Spelling	0	0	Expressions	1	2
Strategy Prompts	0	1	Distraction	5	0

Table 7: Comparison of Scores: Time on Task (Tony)

**Research Question no. 3:
Tony**

How does the student’s knowledge of personal strengths and weaknesses in learning affect the student’s levels of effort, persistence, and performance on the writing task?

Measures to Address:
Entry T.C.P
Exit T.C.P.
Observation:
Entry T.O.T.

Analysis Plan:
Compare Entry & Exit scores.
Compare observations
Exit Interview

Exit T.O.T.
Exit Interview

Analysis of Measure of Effort and Performance
Exit Interview

1. *What did you learn about your strengths and weaknesses in learning, through the intervention process?*

“I...um...I guess I have a lot of weaknesses in writing...., I don’t know I’m...I .guess since I never really got to go over all of the written essays... I felt like I kind of realized things, like we.....I worked on....I guess I didn’t really learn about my strengths and weaknesses, but I kind of felt like I’ve gotten better at writing from doing it, in a very structured way.”

(O.K. Do you remember the intervention session where we sat down and talked about the constructs in learning?...)

“Yeah, yeah, I mean...I guess, if that’s included... I’m good at some parts of writing, and bad at some parts of writing, and I need to work at the parts that I’m bad at. I guess that I kind of already had a pretty good idea of what my strengths and weaknesses were.”

(O.K. Is there anything else that you’d like to add?)

“That’s all.”

3. *How did knowledge of your weaknesses in writing help you in your performance on the writing composition task?*

“I was more aware, I mean, I guess I wasn’t really aware when I was writing, but if I wouldn’t do a capital, I’d kind of be like... O.K., I really need to focus on my

capitals. I know there should be a comma here, I need to focus on my commas, so I guess I was more aware of what I needed to do.”

4. *How did knowledge of your strengths in learning help you in your performance on the writing composition task?*

“Um....I guess in the same way, I knew what I could not really...didn’t need to focus on, and I knew what I needed to focus on, so it kind of was helpful.... and I did not focus on irrelevant areas, and areas that I was already O.K. with.”

(O.K. Do you want to tell me specifically what some of those are?)

“I don’t know, like...um....I guess I’m O.K. at getting my ideas across. I just need to focus on making them clearly formatted, so I can kind of trust my ideas. I just need to kind of focus on how I give them to the reader.”

(O.K. Is there any thing else you’d like to add?)

“No, that’s all.”

6. *Were you able to select strategies that helped to enhance your writing skills?*

“I was.”

(You were? Would you like to elaborate on that, and tell me specifically...?)

“Yes, when you showed me those different strategies, I was able to pick which ones...I guess I kind of had that in mind as I was writing, and when I was writing those stories, and I would get to do the beginning, middle, and end...if I think about it like that it’s a lot easier to write it, instead of kind of just writing, and not really knowing where I’m going.”

(Is there anything else that you would like to add?)

“That’s all.”

Part II

Individual Case Description: Robin

Robin is a white adolescent girl, who was born in 1994. She was 12 years and 10 months old at the beginning of the study. Robin is a very confident, home-schooled child, who works hard and handles responsibility well. Although she is home-schooled, she also takes a variety of courses in classroom settings designed for home-schooled children. Robin is the youngest in a family of five children, who live with both parents. She has two brothers who attend high school, and two sisters who are currently in college. Robin has a passionate interest in animals, and a fascination with horses. She enjoys riding, and enjoys helping to care for her family's horses. Robin plans to attend college, and looks forward to developing a career which encompasses her passion for horses.

Robin is a cheerful and outgoing adolescent, who expresses herself effectively. She prefers active pursuits to academic tasks. However, she demonstrates strong skills in mathematics reasoning, and vocabulary comprehension. Robin also shows evidence of distractibility however, and has some difficulty engaging in academic tasks. Results of a psychological evaluation in 2003, when Robin was 9 years old, indicate that Robin has strengths in math, and math reasoning skills. Test results for Robin on the Wechsler Intelligence Scale for Children –III indicate strengths in verbal reasoning, and in working with concepts. She earned a Verbal IQ score of 118, a Performance IQ score of 112, and a Full Scale IQ score of 116. Her scores on the Verbal Scale indicated strengths in her knowledge of vocabulary (98th percentile). Weaknesses were apparent in the areas of auditory memory and phonemic processing. An evaluation of academic skills, using the

Wechsler Individual Achievement Test –II, indicated weaknesses in reading and writing skills, with strengths in math reasoning. Composite scores for reading (87) 19th percentile and written language (86) 18th percentile, fell below average, while her score in math (106) was in the 66th percentile. Though her reading comprehension subtest scores, and her written expression subtest scores were within the low average range, difficulties with word decoding, and writing mechanics negatively affected the composite scores.

Robin’s scores on the screening measure for the current study, the Test of Written Language Third edition (TOWL-3), were in a range similar to that measured by the WIAT-II for written language (86 at the 18th percentile). Her composite scores on the TOWL-3 for overall writing, showed a sum of standard scores at 67, with a quotient of 89, at the 23rd percentile. Robin’s scores on the subtests ranged from standard scores of 7 (16th percentile) on the spelling subtest, to a standard score of 10 (50th percentile) on the contextual language subtest. A computation of her composite scores showed a sum of standard scores for Contrived Writing as 39 (16th percentile), with the sum of standard scores for Spontaneous Writing as 27 (35th percentile). The discrepancy between Robin’s achievement scores in writing, (overall: 67, 23rd %ile) and her Verbal IQ score (118) met the criteria for twice exceptional learners, established by Nielsen and Higgins (2005). Although Robin’s IQ score was not exactly at 120 or above, her scores were considered close enough to qualify her for the study (especially in light of the fact that IQ scores are frequently inaccurate due to the influence of learning disabilities). Therefore, she was considered to be eligible to participate in the study.

The development of a neurodevelopmental profile for Robin, by the researcher, indicated that she had strengths in the area of higher order cognition, receptive language,

and memory. Robin displayed evidence of an active imagination, and she enjoyed linking her passion for horses, in imaginative ways, to a variety of academic tasks. Her strengths in receptive language were particularly evident in vocabulary comprehension (but were coupled with weaknesses in receptive language at the level of phonemic processing). She also showed some evidence of strength in verbal expressive language skills. Robin demonstrated evidence of a strong memory for factual information, particularly in the areas of science and math, however it was also apparent in her ability to learn new vocabulary quickly.

The development of a Management Plan for Robin focused on her areas of strength initially. Her strengths in receptive language (apparent at the level of vocabulary comprehension), and aspects of higher order cognition, coupled with strengths in memory, indicated that she may be able to use metacognitive strategies effectively in learning to self-regulate her writing. Robin also demonstrated evidence of strength in attention, and strong perseverance in many subjects, though it was weaker in the language arts. Her strength in imagination was emphasized in importance when linked to writing through brainstorming activities, and developing story plots. These specific areas of strength were emphasized for Robin during the process of *Demystification*, and linked with examples in the writing process.

For the purposes of the research study, the three areas of weakness, which were specified on the Management plan for each student, focused on the area of written language. One of the three areas of weakness in writing, specified for Robin, included difficulty in organizing her writing into an effective introduction, body, and conclusion. She also demonstrated difficulty in developing, or elaborating, on concepts which held a

low level of interest for her. Some possible neurodevelopmental functions underlying these weaknesses included attention, at the level of mental energy controls. She also seemed to have difficulty with expressive language at the level of verbal elaboration, which may have inhibited her in developing concepts in writing. She also showed evidence of difficulty with temporal-sequential ordering, possibly at the level of sequential output, which may have affected her ability to effectively organize her writing.

The second area of weakness in writing, specified for Robin, focused on her difficulty with the mechanics of writing. She had some difficulty with punctuation, however her primary problems in this area were with poor spelling skills. The possible neurodevelopmental functions underlying her weakness with spelling, were isolated as difficulties with phonemic processing, possible difficulties with attention (at the level of processing, and production controls), and possible weaknesses in active working memory.

The third area of weakness in writing, specified for Robin, was difficulty with handwriting. Robin's writing tends to be messy, though it is generally legible. Her cursive writing appears neater, and more legible than her print, though it is a slower process for her. The possible neurodevelopmental functions underlying this weakness may include difficulties with spatial organization, and possible difficulties with graphomotor function.

Strategies were isolated in the development of the Management Plan, and incorporated into the plan of the intervention, in order to help Robin in her areas of weakness with writing. Strategies determined to help Robin with her difficulties in organizing writing included having her follow a sequential plan to structure her written

work. For instance, Robin was allowed to choose the method which she believed would be most effective for her, from the options of a mind-map, graphic organizer, or outline format, to organize the introduction, body, and conclusion for her writing. She was also required to follow a sequential plan in organizing her writing, which was incorporated into the intervention in the Planning Writing format. This included having Robin record the time she spent at each stage of the writing task. Strategies were also incorporated to help her develop skills in self-regulating her writing in the area of mechanics, by using the COPS technique in the editing stage of the planning writing format, to help her monitor her skills in spelling and punctuation. The use of a *Self Check* list was also incorporated into the writing intervention, to help her develop skills in self-monitoring at many levels of the writing task. Strategies were also incorporated to help her monitor her level of mental effort. She was allowed to choose whether she wanted to monitor the number of times her attention wandered (listed as *Mind Trips*), or to chart her levels of mental effort on a graph. She chose the latter. Finally, the tripod pencil grip was introduced to her, to see if it would help her with the physical act of writing.

Individual Case Analysis: Robin

Research Question no. 1

The plan of analysis used to address the first research question required an analysis of data collected through two different sources. The analysis therefore, involved a comparison of the student's responses to statements on the Entry and Exit Phases of measures of writing apprehension. It also included an examination of the student's response to question no. 2 of the Exit Interview, which asked the student directly how the intervention process affected his or her level of apprehension about approaching the writing task.

Research Question no. 1:

Robin

How does the student’s knowledge of personal strengths and weaknesses in learning, gained through the process of *Demystification*, impact their levels of writing apprehension?

Measures to Address:

Entry Phase Wrt. Appr.

Exit Phase Wrt. Appr

Exit Interview

Analysis Plan:

Compare Entry & Exit scores

Exit Interview

Analysis of Measure of Writing Apprehension

Comparison of Entry and Exit Measures

Robin’s responses to the Entry Phase and Exit Phase *Measure of Writing Apprehension* showed many differences. The table below shows a comparison of Robin’s responses at the Entry and Exit Phases of the study:

#	Statements: Levels of Writing Apprehension	Entry Phase	Exit Phase
1	I like to write.	Mostly True	A little bit True
2	I look forward to writing down my ideas.	Mostly True	A little bit False
3	I am afraid of writing when I know it will be graded.	Mostly False	A little bit True
4	I like to write my ideas down.	None	A little bit True
5	I’m nervous about writing.	Definitely False	A little bit True
6	I never seem to be able to clearly write ideas.	Mostly False	Mostly True
7	Writing is a lot of fun.	Mostly True	A little bit True
8	Just thinking about writing makes me feel nervous.	Definitely False	A little bit False
9	Compared to others my age I am a good writer.	Mostly True	A little bit true
10	I get good grades in writing.	Mostly True	A little bit True
11	Writing is easy for me.	A little bit True	A little bit True
12	I am not a good writer.	A little bit False	Mostly False

13	Learning to be a better writer is easy for me.	Mostly True	A little bit True
14	I have always done well on writing assignments.	A little bit True	A little bit True

Table 8: **Comparison of Responses: Measure of Writing Apprehension (Robin)**

A comparison of Robin’s responses between the Entry and Exit Phase measures showed **marked negative differences** for the following questions:

Robin’s Entry Phase response to statement no. 2 (“I look forward to writing down my ideas”) was rated as “mostly true”. However, her Exit Phase response changed from the previous positive response, to “a little bit false”; indicating a lessening of enjoyment in writing. Similarly, her answers to statements no.5, 6, and 8, reflected **negative changes** from Entry Phase ratings to Exit Phase ratings. For example, Robin initially rated her response to no. 5 (“I’m nervous about writing”) as “definitely false” at the Entry Phase, however, her response to statement (no.5) changed on the Exit Phase to “a little bit true”; indicating an increase in her feelings of nervousness about writing. This was reinforced by her response to statement no.8 (“Just thinking about writing makes me feel nervous”) which she initially rated as “definitely false” at the Entry Phase, however she changed her response to “a little bit false” at the Exit Phase. Robin’s response to question no. 6 (“I never seem to be able to clearly write ideas”) also changed, from “mostly false” on the Entry Phase measure, to “mostly true” on the Exit Phase measure.

Robin’s response to statement no. 3 (“I am afraid of writing when I know it will be graded”) also showed a **negative change** from Entry Phase to Exit Phase. Her Entry Phase rating of no. 3 was “mostly false”, however she changed the rating to “a little bit true” at the Exit Phase; indicating an increase in concern about having her written work graded.

Robin's responses to the following questions indicated **slight negative differences** between Entry Phase and Exit Phase ratings: For example, her response to statement no. 1 ("I like to write") changed from "mostly true" on the Entry Phase rating, to "a little bit true" on the Exit Phase rating. Similarly, her response to statement no. 7 ("writing is a lot of fun") changed from "mostly true" at the Entry Phase to "a little bit true" at the Exit Phase. Robin's responses to statement nos. 9, 10, and 13 followed a similar pattern. Her response to no. 9 ("Compared to others my age I am a good writer") changed slightly from a rating of "mostly true" at the Entry Phase to "a little bit true" at the Exit Phase. Similarly, her response to no. 10 ("I get good grades in writing") changed from "mostly true" at the Entry Phase measure, to "a little bit true" on the Exit Phase measure. A similar change occurred on her response to statement no. 13 ("Learning how to be a better writer is easy for me"), which she initially rated as "mostly true" on the Entry Phase measure, but changed to "a little bit true" on the Exit Phase measure.

One **slight positive** change was noted in her response to statement no. 12 ("I am not a good writer"). She initially rated the statement as "a little bit false", on the Entry Phase measure, however her rating on the Exit Phase measure changed to "mostly false".

No changes occurred in her responses to statement nos. 11 ("Writing is easy for me"), and 14 ("I have always done well on writing assignments"). Each statement was rated as "a little bit true", on both the Entry and Exit measures.

Research Question no. 1:

Robin

How does the student's knowledge of personal strengths and weaknesses in learning, gained through the process of *Demystification*, impact their levels of writing apprehension?

Measures to Address:

Entry Phase Wrt. Appr.

Exit Phase Wrt. Appr.

Exit Interview

Analysis Plan:

Compare Entry & Exit scores

Exit Interview

Analysis of Measures of Writing Apprehension

Exit Interview

2. How did the intervention process (where you learned about your areas of strength and weakness in learning), affect your level of apprehension about approaching the writing composition task?

“What do you mean by that?”

(Your level of apprehension means how anxious you might have felt about the writing task. Did the intervention process (which was when we talked about your strengths and weaknesses in learning, and selected strategies for you to try)...did that affect your level of apprehension about the writing task at all?)

“No”

(O.K. Is there anything else that you would like to add?)

“No”.

(O.K.)

It is interesting that Robin’s response on the Exit Interview regarding levels of writing apprehension indicated that she had no awareness of changes in her levels of apprehension toward writing. In contrast, her responses on the Measure of Writing Apprehension indicated increases in levels of apprehension following the intervention.

Individual Case Analysis: Robin

Research Question no. 2

The plan of analysis used to address the second research question required an analysis of data collected through three different sources. Therefore, the analysis involved a comparison of the student’s responses for the Entry and Exit Phases of the Measure of Writing Self-Efficacy. It also required a comparison of responses for the Entry and Exit Phases of the Measure of Interest in writing. Finally, it required an examination of the student’s responses to questions nos. 8, 5, and 7, on the Exit Interview, which inquired about the student’s level of confidence in their ability to perform a writing task, how knowledge of their strengths and weaknesses affected their level of interest in the writing task, and finally, how the ability to choose appropriate strategies may have affected their interest in the writing task.

Research Question 2:

Robin

How does the student’s personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student’s self-efficacy beliefs in writing, and their interest in the writing task?

Measures to Address:
Entry Phase Self Eff.
Exit Phase Self Eff.
 Entry Phase Interest
 Exit Phase Interest

Analysis Plan:
Compare Entry & Exit scores

Analysis of Measure of Self-Efficacy
Comparison of Entry and Exit Measures

#	Statement re: self-efficacy Rating scale: 1-100	EntryPhase Scores	Exit Phase
1	Correctly spell all words in a one page story or	10	80

	composition.		
2	Correctly punctuate a one page story or composition.	50	90
3	Correctly use all parts of speech in a written composition.	90	98
4	Write simple sentences with good grammar.	100	99
5	Correctly use singulars and plurals, verb tenses, prefixes, and suffixes.	80	99
6	Write a strong paragraph that has a good topic sentence or main idea.	80	90
7	Structure paragraphs to support ideas in the topic sentence.	80	90
8	End paragraphs with proper conclusions.	80	98
9	Write a well-organized and well-sequenced paper that has a good introduction, body, and conclusion.	60	80
10	Get ideas across in a clear manner by staying focused without getting off of the topic.	80	90

Table 9: Comparison of Responses: Measure of Self-Efficacy (Robin)

An analysis of the Entry Phase and Exit Phase scores indicates **positive changes** in the ratings for 9 out of the 10 statements. The only negative change in rating was for statement no. 4, which asked the student to rate his or her ability to “Write simple sentences with good grammar”. The rating for this statement changed by only 1 point from an Entry Phase rating of 100, to an Exit Phase rating of 99.

The remaining 9 statements **changed from less positive** on the Entry Phase measures, to **more positive** on the Exit Phase measures, with **changes ranging from 70 points, to 8 points**. For example, Robin changed her rating of her ability to correctly spell all words in a writing task (#1) from an Entry Phase rating of 10 to an Exit Phase rating of 80 (which indicated a **positive change of 70 points**). Similarly, Robin’s rating of her ability to correctly punctuate a one page story (#2) rose from her Entry Phase

rating of 50, to an Exit Phase rating of 90 (which indicated a **positive change of 40 points**).

Robin's rating of her ability to correctly use all parts of speech in a written composition (#3) showed a positive change of 8 points (from 90 to 98). Similarly, her rating of her ability to correctly use singulars and plurals, verb tenses, prefixes and suffixes (#5) changed by 19 points (from an Entry Phase rating of 80, to an Exit Phase rating of 99). Robin's responses to statements #6 and #7 changed by 10 points each, from Entry Phase ratings of 80, to Exit Phase ratings of 90; **indicating a positive change** in her ability to both write a strong paragraph with a good topic sentence and main idea, and to structure paragraphs to support ideas in the topic sentence. Robin's rating of her ability to end paragraphs with proper conclusions (#8) showed a **positive increase of 18 points**, from the Entry Phase score of 80, to the Exit Phase score of 98. Robin's rating of her ability to write a well-organized and well-sequenced paper that has a good introduction, body, and conclusion also **increased by 10 points** (from Entry Phase: 60, to Exit Phase: 70), as did her rating of her ability to get ideas across in a clear manner, by staying focused (#10) which **increased by 10 points** (from Entry Phase: 80, to Exit Phase: 90).

Overall, Robin's responses to the Measure of Self-Efficacy indicated dramatic increases in her levels of self-efficacy beliefs regarding writing, relative to this specific writing task.

Research Question 2: Robin

How does the student’s personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student’s self-efficacy beliefs in writing, and their interest in the writing task?

Measures to Address:
 Entry Phase Self Eff.
 Exit Phase Self Eff.
Entry Phase Interest
Exit Phase Interest

Analysis Plan:
Compare Entry & Exit scores

Analysis of Measure of Interest
Comparison of Entry and Exit Measures

There was no change between Entry Phase and Exit Phase ratings of the measure of interest in writing for Robin.

Comparison of Entry and Exit Phase Measures of Interest in Writing

Statement of Interest in writing Rating 1-5: Strongly Disagree-Strongly Agree	Entry Phase Rating 1-5	Exit Phase Rating 1-5
“I am interested in writing”.	3	3

Table 10: **Comparison of Responses: Measure of Interest (Robin)**

For the Entry Phase measure of interest, Robin rated the statement “I am interested in writing” as a 3 (indicating that she neither agreed nor disagreed with the statement). On the Exit Phase measure, Robin rated the statement the same, as a 3 (indicating that she neither agreed nor disagreed with the statement). This response was supported by her responses on the Exit Interview.

Research Question 2:
Robin

How does the student's personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student's self-efficacy beliefs in writing, and their interest in the writing task?

Measures to Address:

Entry Phase Self Eff.

Exit Phase Self Eff.

Entry Phase Interest

Exit Phase Interest

Analysis Plan:

Compare Entry & Exit scores

Exit Interview

Exit Interview

8. *Tell me about your level of confidence in your ability to perform a writing composition task.*

“It depends on the writing task.”

(O.K. Let's think about the tasks that you've had to do over the last 6 weeks. Do you feel that your level of confidence in performing that task changed from the beginning to the end?)

“A little bit. Just because I set the strategy in, where I had a certain amount of time....so I couldn't spend too much time on it.”

5. *How did knowledge of your strengths and weaknesses in learning affect your interest in the writing composition task?*

“Well...the interest in the writing task...I made it interesting.”

(Can you tell us how you made it interesting?)

“Because, I picked something, and then I created a story out of it that was interesting.”

(O.K.)

“My interests might bore everyone to death...but it interests me..”

7. *How did your ability to choose appropriate strategies affect your interest in the writing task?*

“It didn’t affect my interest at all.”

(O.K.....So, even knowing that you had figured out how to organize your time, and structure your time....)

“Well, my interest pretty much stayed the same, because I could have written and written, and written, and written, and written....but just taking that much, and saying, you only have this much, your interest can stay the same, but you have to spread your interest out, and not like shove it all into the first time, and not finish the story.”

Individual Case Analysis: Robin

Research Question no. 3

The plan of analysis used to address the third research question required an analysis of data collected through three different sources. The analysis therefore, involved a comparison of the student’s scores on the Entry and Exit Phases for the measure of effort and performance, which was operationalized as *Task Completion Performance*. It also required a comparison of the student’s scores on the Entry and Exit Phases for the measure of persistence, which was operationalized as *Time on Task*. Finally, it required an examination of the student’s responses to questions nos. 1, 3, 4, and 6 of the Exit Interview, which inquired about how knowledge of personal strengths or weaknesses in writing may have helped with the student’s performance on the writing task. Question no. 6 of the interview asked specifically whether or not the ability to select strategies enhanced performance on the writing task.

Research Question no. 3

Robin:

How does the student’s knowledge of personal strengths and weaknesses in learning affect the student’s levels of effort, persistence and performance on the writing task?

Measures to Address

Entry Phase T.C.P

Exit Phase T.C.P.

Observation:

Entry Phase T.O.T.

Exit Phase T.O.T.

Exit Interview

Analysis Plan

Compare Entry & Exit scores.

Compare observations

Exit Interview

Analysis of Measures of Effort and Performance

Comparison of Entry and Exit Measures of Task Completion Performance

The student’s level of effort on the writing task was operationalized as *Task Completion Performance*, which was scored based on the student’s successful completion of each element of the writing task. The *spontaneous subtests* criteria, of the TOWL-3, was used to analyze and score the quality of the student’s written work. The specific subtests used included subtest 6 (contextual conventions; which measured punctuation, spelling and capitalization), subtest 7 (contextual language; which measured language structure, grammar and vocabulary), and subtest 8 (story construction; which measured use of prose, action, sequencing, and theme).

Comparison of Spontaneous Subtest Scores: Entry and Exit: Robin

Spontaneous Subtests Std. Scores: Robin	Entry Phase	Exit Phase
<i>Contextual Conventions (CC)</i>	7 (16%)	10 (50%)
<i>Contextual Language (CL)</i>	7 (16%)	13 (84%)
<i>Story Construction (StC)</i>	10 (50%)	13 (84%)

Table 11: Comparison of Spontaneous Subtest Scores (Robin)

Contextual Conventions (CC): measures the student’s mastery of the conventions of written language, such as spelling, capitalization, and punctuation.

Contextual Language (CL): measures the student’s use of language in writing, such as the use of grammar, structure, and vocabulary.

Story Construction (StC): evaluates the student’s use of prose, sequencing, action, and theme in story construction.

Comparison of All Spontaneous Subtests Std. Scores: Robin

	CC: Std. Score:	%ile	CL: Std. Score:	%ile	StC: Std. Score:	%ile	Sum:Std.Scr. Quo. / %ile
Screening:	7	16%	10	50%	10	50%	27, 94, 35%
Entry Phase:	7	16%	7	16%	10	50%	24, 87, 19%
Practice #1:	9	37%	12	75%	11	63%	38, 117, 87%
Practice #2:	7	16%	13	84%	15	95%	43, 128, 97%
Practice #3:	7	16%	13	84%	13	84%	42, 126, 96%
Exit Phase:	10	50%	13	84%	13	84%	43, 128, 97%

Table 12: **Comparison of All Spontaneous Subtest Scores (Robin)**

Robin’s scores show improvements on each of the subtest scores between the Entry Phase and Exit Phase measures. When the changes in percentile ranges are examined for the sub tests scores, marked improvements in Robin’s scores are apparent on the Exit Phase measures. For example, on the contextual conventions sub-test, Robin’s score was in the 16% on the Entry Phase however, it jumped to the 50% on the Exit Phase measure. Robin’s score on the contextual language sub-test was at the 16% on the Entry Phase however her score jumped to the 84% on the Exit Phase. Similarly, Robin’s score on the story construction sub-test jumped from the 50% on the Entry Phase, to the 84% on the Exit Phase. Therefore, Robin’s scores demonstrated improvements at each level of the Exit Phase measures of the *Spontaneous Subtests*.

Research Question no. 3

Robin:

How does the student's knowledge of personal strengths and weaknesses in learning affect the student's levels of effort, persistence and performance on the writing task?

Measures to Address

Entry Phase T.C.P

Exit Phase T.C.P.

Observation:

Entry Phase T.O.T.

Exit Phase T.O.T.

Exit Interview

Analysis Plan

Compare Entry & Exit scores.

Compare observations

Exit Interview

Analysis of Measure of Persistence

Comparison of Entry and Exit Observations measured as Time on Task

Differences between Entry Phase and Exit Phase scores were noted, using the observation measure *Time on Task*, to evaluate instances of *Help-Seeking Behaviors*, and indications of *Frustration Level* during the writing task.

A comparison of Entry Phase and Exit Phase measures for *Time on Task*, showed distinct differences in *Frustration Level* and *Help-Seeking Behaviors* for Robin. During the observation of the writing task at the **Entry Phase**, Robin indicated only one request for *Clarification* with the writing task by saying "I don't know what country this is." The researcher responded that she could use her imagination to decide which country the story would be set in. The researcher noted her request under *Help-Seeking Behaviors/Clarification*. In contrast, Robin exhibited a variety of behaviors which indicated frustration. For example, the researcher noted 2 instances of *Expressions* of frustration with the task. At the beginning of the task Robin said, "I hate to write stories from a picture." As her writing progressed, she expressed frustration about not knowing the specific country depicted by the picture prompt, and again said "but I don't know what country this is." The researcher recorded 3 *Pauses* in the writing task, as Robin stretched and dropped her pencil twice, and finally leaned back to stretch.

In contrast however, **Exit Phase** measures for *Time on Task* showed a variety of positive help-seeking behaviors, with only 2 brief pauses during the writing task. For example, at the beginning of the writing task, Robin asked “How many minutes ago did I start?” She also checked her watch very quickly for a total of 4 times, as the writing progressed. Therefore, the researcher recorded a total of 5 *Help-Seeking Behaviors*, listed under *Clarification*. The only indications of frustration were 2 instances when Robin paused briefly, to breathe deeply. The researcher recorded these as *Pauses*, under the column *Frustration Level*.

Time on Task / Off Task Behaviors: Robin

Help-Seeking Behaviors:	Entry	Exit	Frustration Level:	Entry	Exit
Clarification	1	5	Pauses	3	2
Spelling	0	0	Expressions	2	0
Strategy Prompts	0	0	Distraction	0	0

Table 13: Comparison of Scores: Time on Task (Robin)

Research Question no. 3

Robin:

How does the student’s knowledge of personal strengths and weaknesses in learning affect the student’s levels of effort, persistence and performance on the writing task?

Measures to Address

- Entry Phase T.C.P
- Exit Phase T.C.P.
- Observation:
- Entry Phase T.O.T.
- Exit Phase T.O.T.
- Exit Interview**

Analysis Plan

- Compare Entry & Exit scores.
- Compare observations
- Exit Interview**

Analysis of Measures of Effort and Performance

Exit Interview

1. What did you learn about your strengths and weaknesses in learning, through the intervention process?

Silence..... (Do you know what I mean by the intervention process?...
when we sat down and talked about the different aspects of learning, and what your areas
of strength and weakness were...)

“I didn’t really learn anything though.”

(Do you want to elaborate on that a little bit?... Did you feel like you already
knew the things that we discussed?)

“Yeah”.

(O.K. Can you add a little more information to that?)

“I already knew I was bad at reading, and I already knew I was bad at spelling,
and I knew I can’t write really well on timed tests.”

(O.K. Did you learn anything about your strengths in that discussion?)

“Not really. I already knew what were my strengths and what were my
weaknesses.”

(O.K., That’s fine.)

***3. How did knowledge of your weaknesses in writing help you in your performance on
the writing composition task?***

“Well, since I kind of already knew they were there, and I knew what they were,
it didn’t really change it.”

***4. How did knowledge of your strengths in learning help you in your performance on
the writing composition task?***

“Will you repeat that question again?” (Repeated).

“I don’t think that it helped me at all....Once you already know what they
are...what your strengths and weaknesses are, then everything kind of goes around that.”

(What do you mean by “everything goes around” it? Can you elaborate on that?)

“Not really....I can’t elaborate...it’s hard to explain....It’s kind of like you already adjusted yourself into a category....where this is how strong you are at something, and this is how weak you are at it,...and you’re right in this area.”

(O.K. And do you think that there is any way that you can change?)

“You could.”

(Or use some of your areas of strength to help you in the areas where you are weak?)

“Yes. Like, there’s different categories...and each category has a different level, like low would be that you can’t spell, read, you can’t write, you can’t do anything. And then, medium would be where you can spell some, but it would be like first grade, second grade, third grade, where you can move up and out of those groups, but it takes strengthening at all those points to move up.”

(O.K. Do you feel like some of your areas of strength you can use to bring to your areas of weakness?)

“Yes, some.”

(Could you give me an example of that?)

“I don’t think so, not right now.”

(Not right now?....O.K.....Let’s try to give one example though. ... What about your strength in working with concepts? Do you think that that strength helped you in your ability to organize your writing? Or do you see how it could have helped you with your writing at all?)

“I’m trying to think.”

(O. K.)

“I don’t really get what you’re asking.”

Note: At this point, the researcher decided to try to use specific examples in order to determine whether or not Rachel even remembered this, from the intervention process, because she had apparently not understood the question.

(O.K. Basically what I’m asking is....that when we went over the things that you were good at and that you enjoyed doing, and the things that you were strong at... you had strengths in higher order cognition. Do you remember that?)

“A little bit”.

(And working with concepts....that is something that is very important in writing because it helps you figure out how to organize and express your ideas, and so if you are strong in an area like that, but have weaknesses in spelling or in trying to plan your writing, so that you can use these to write effectively...Do see any ways in which your strengths help you)

“It can help.” “I think I get what you’re saying.”

(Do you have any specific ideas of how that might have helped you?)

“Not that I can think of.”

(O.K.)

“I don’t pay attention to that. It’s kind of like, it’s over with, it’s in the past, it’s over...I’m not going to go back and worry about it.”

6. *Were you able to select strategies that helped to enhance your writing skills?*

“Like giving yourself a certain amount of time to do each thing?...and then that way I got through the whole thing, no matter how good it was.”

(O.K. so that was one of the things that you practiced during the practice sessions....O.K. What about when I asked you to choose among certain strategies? Did you feel that that was helpful to you, when you were able to choose?)

“I guess.”

(O.K., but the thing that helped you most was?..)

“That I had a set time. You do this much in this time, this much in this time, and if you have extra time... you can pull off the rest of it...”

(O.K....So you were really able to regulate your writing so that you knew how much you could write in that period of time, and it helped you organize your writing so that you could complete the task. Is that correct?)

“Yes.”

(O. K.)

CHAPTER FIVE

DISCUSSION

Chapter five presents a discussion of the results, following the organizational structure of the previous analysis section, which addressed each research question independently, per case. For instance, the discussion section is divided into three sections, which include first, a discussion of the single case results for Tony, based on the analysis plan presented for each research question addressed. It is followed by a discussion of the single case results for Robin, presented in the same manner. The discussion of the single case analyses is followed by a discussion of the results of the cross-case analyses.

Part I

Individual Case Discussion: Tony

Research Question no. 1

Discussion / Tony:

Research Question no.1

How does the student's knowledge of personal strengths and weaknesses in learning, gained through the process of Demystification, impact their levels of writing apprehension?

The plan of analysis used to address the first research question required an analysis of data collected through two different sources. The analysis therefore, involved a comparison of the student's responses to statements on the Entry and Exit phase of

measures of writing apprehension. It also included an examination of the student's response to question no. 2 of the Exit Interview, which asked the student directly how the intervention process affected his or her level of apprehension about approaching the writing task.

Tony's responses to the Entry and Exit phase measures of writing apprehension indicated only slight differences in his responses. Although the slight differences could have been due to chance alone, changes in his responses to questions #s 5, 8, 7, 9, and 14 indicated slight negative changes in his perception of his skill in writing, and in his feeling toward writing following the intervention. For instance, his responses to the inquiries as to whether he felt nervous about writing indicated that he felt slightly more nervous about writing following the intervention. Such changes in response may have been due to chance, or to the design of the writing task used in the intervention, which set specific goals to be achieved under timed conditions.

No changes were indicated in his responses to questions #1, 4, 2, 3, 6, 12, 11, and 13. Tony's responses to these questions indicated in general, that he has a slight feeling of enjoyment in writing. They also indicated that he feels a slight degree of apprehension about writing when he is aware that it will be evaluated, and that he perceives himself as having difficulty with writing.

Tony's response to question no. 2 on the Exit Interview, which asked him directly how the intervention process affected his level of apprehension in approaching the writing task, reinforced some of the results of the other measures. Tony indicated that he had always felt a little nervous about writing, but he believed that the intervention process had neither increased, nor decreased his level of apprehension. Therefore,

although the measures did indicate a slight degree of writing apprehension both prior to the intervention, and following the intervention, Tony may have remained unaware of changes in his level of apprehension toward writing.

Individual Case Discussion: Tony

Research Question no. 2

Discussion / Tony:

Research Question no. 2

How does the student's personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student's self-efficacy beliefs in writing, and their interest in the writing task?

The plan of analysis used to address the second research question required an analysis of data collected through three different sources. Therefore, the analysis involved a comparison of the student's responses for the Entry and Exit phases of the measure of writing self-efficacy. It also required a comparison of responses for the Entry and Exit phases of the measure of interest in writing. Finally, it required an examination of the student's responses to questions nos. 8, 5, and 7, on the Exit Interview, which inquired about the student's level of confidence in their ability to perform a writing task, how knowledge of their strengths and weaknesses affected their level of interest in the writing task, and finally, how the ability to choose appropriate strategies may have affected their interest in the writing task.

An analysis of the Entry and Exit phase scores on the Measure of Self-Efficacy in Writing indicate **negative** changes (by 20 points each) in Tony's responses to statements 1 – 3, which focus on his ability to correctly spell all words in a one page story, to correctly punctuate the story, and to correctly use all parts of speech within the story.

These results are interesting, especially when compared with the scores on *Task Completion Performance* for each of the writing tasks. The scores on the *TCP* reveal that Tony's weakest area in writing is measured on the contextual conventions subtest, which primarily measures ability in the areas of spelling, punctuation, and capitalization. The negative changes in his responses to these questions may have indicated his recognition of his inability to fully edit and correct all of his errors in spelling, punctuation, and capitalization in the time allowed for the writing task (15 minutes). On the Entry phase measure, he indicated his ability to correctly spell all words, and use correct punctuation in a one page story at the low rating level of 20 (out of 100). However, on the Exit phase measure, he changed this response to indicate absolutely no chance (0). In contrast, he changed the rating of his ability to correctly use all parts of speech in a written composition from 80 (out of 100, which indicates a fairly high degree of confidence), to a 60 (a drop of 20 points). Although his scores on *Task Completion Performance* indicated increases in his ability in most of these areas, his self perception was accurate, in that he never did achieve a composition which had perfect punctuation, capitalization, or spelling.

Three of Tony's responses remained **unchanged** from the Entry to the Exit phase. These statements reflected that he was fairly confident of his ability to write simple sentences with good grammar (80), to write a strong paragraph with a good topic sentence and main idea (60), and to structure paragraphs to support ideas in the topic sentence (70).

Slight **positive changes** (of 10 points each) were indicated by a comparison of his responses on the Entry and Exit phase measures to questions nos. 5, 8, 9, and 10, which

indicated his ability to correctly use word forms (80), and to create a well organized, and well sequenced paper (60), with clear ideas (70), and proper conclusions (60). Although these slight changes may have been due to chance, the relatively high scores on these measures were consistent with his stronger performance on the *TCP* subtests which measured contextual language (structure, grammar and vocabulary), and story construction (prose, action sequencing, and theme). The positive changes may also have indicated the effectiveness of the Planning Writing format of the intervention, which presented strategies to effectively organize the writing task, in order to develop a complete, edited composition within the time frame allotted. In general, Tony's responses to the measures of self-efficacy did reflect his areas of strength and weakness in writing.

The plan of analysis also required a comparison of the Entry Phase and Exit Phase responses to the Measure of Interest. A **positive** difference was apparent between the Entry Phase and Exit Phase ratings of the measure of interest. On the Entry Phase measure, Tony indicated that he neither agreed nor disagreed with the statement "I am interested in writing", by rating it as a 3. However, on the Exit Phase measure, he gave the statement the rating of 4, which indicated that he did agree with the statement.

Tony's increase in level of interest in the writing task was reinforced by his response to questions no. 5 and no. 7 of the Exit Interview. His response to question no. 5 indicated that knowledge of his strengths and weaknesses in learning did not affect his interest "either way". However his response to question no. 7, which asked how his ability to choose appropriate strategies affected his interest in the writing task, indicated that his ability to choose among strategies did increase his interest somewhat.

Individual Case Discussion: Tony
Research Question no. 3

Discussion / Tony:

Research Question no. 3

How does the student's knowledge of personal strengths and weaknesses in learning affect the student's levels of effort, persistence, and performance on the writing task?

The plan of analysis used to address the third research question required an analysis of data collected through three different sources. The analysis therefore, involved a comparison of the student's scores on the Entry and Exit Phases for the measure of effort and performance, which was operationalized as *Task Completion Performance*. It also required a comparison of the student's scores on the Entry and Exit Phases for the measure of persistence, which was operationalized as *Time on Task*. It also required an examination of the student's responses to questions nos. 1, 3, 4, and 6 of the Exit Interview, which inquired about how knowledge of personal strengths or weaknesses in writing may have helped with the student's performance on the writing task. Question no. 6 of the interview asked specifically whether or not the ability to select strategies enhanced performance on the writing task.

A comparison of the Entry Phase and Exit Phase scores on the measure of *Task Completion Performance* indicate a **positive** change on the Contextual Language subtest, which measures the student's use of language in writing, such as the use of grammar, structure, and vocabulary. The score on the Contextual Language subtest at the Exit Phase increased by 3 points (from 10 pnts., at the 50th %ile, to 13 pnts., at the 84th %ile). There was **no difference** between the Entry and Exit Phase measures on either of the other two subtests; Contextual Conventions (6 pnts., at the 9th %ile), and Story

Construction (15 pnts., at the 95th %ile). However, due to the change on the Contextual Language subtest, a comparison of the overall scores between the Entry and Exit Phase measures indicated a **positive** increase: the sum of standard scores for the three subtests at the Entry Phase was 31, with a quotient of 102, at the 55th %ile, whereas the sum of standard scores at the Exit Phase was 45, with a quotient of 132, at the 99th %ile.

An examination of the range of scores on the three subtests from the Entry Phase of the Study through the Exit Phase indicated slight improvements on each of the three subtest scores from the first practice session to the third practice session (which showed higher scores on each of the subtests than those on the Exit Phase measure). For example, the scores on each of the three subtests at Practice Session no. 1 were similar to the scores at the Entry Phase: CC: 6 - 9%, CL: 10 - 50%, StC: 16 - 98%, with Sum of Standard Scores = 40, Quotient = 121, at the 92nd %ile. In contrast, the scores on Practice Session no. 3 indicated **increases** in each of the scores: CC: 7 - 16%, CL: 15 - 95%, StC: 17 - 99%, with Sum of Standard Scores = 50, Quotient = 143, at the 99th %ile.

The positive increase in scores on each of the subtests throughout the practice sessions indicate that the intervention did have a positive impact on Tony's ability to effectively complete this specific writing task under timed conditions. Improvements in his writing were noted during the practice sessions on each subtest, however the scores on the Exit Phase measure did not indicate improvements on the Contextual Conventions subtest (CC: 6 - 9%) and the Story Construction subtest (StC: 15 - 95%) when compared with his scores on the Entry Phase measures. However, because the scores on the series of practice sessions indicated improvement in each subtest area, and a comparison of the overall scores between the Entry Phase and Exit Phase measures indicated a general level

of improvement (Entry: 31, 102, 55% / Exit: 45, 132, 99%), there is reason to believe that the intervention did help Tony improve his level of writing skill on this specific writing task. This conclusion is reinforced by Tony's responses on the Exit Interview, as well as by the observation measure *Time on Task*.

A comparison of the analysis between the Entry and Exit Phase measures for *Time on Task* indicates a **positive** change from the Entry phase to the Exit phase on measured levels of help-seeking behaviors vs. measured levels of expressions of frustration. There were distinct differences in his observed behaviors at the Exit Phase when compared to those on the Entry Phase measures. For example, during the Entry Phase, Tony engaged in **no** help-seeking behaviors. He instead exhibited a number of behaviors which indicated frustration. Five such behaviors were noted as distractive behaviors, as well as three pauses during the writing task. He also indicated frustration about being able to finish in the time allotted.

In contrast to Tony's lack of help-seeking behaviors noted on the Entry Phase, at the Exit Phase of the study, the measure of *Time on Task* indicated a variety of positive help-seeking behaviors, and only a few expressions of frustration. For example, Tony engaged in 3 instances of help-seeking behaviors, in seeking clarification and strategy prompts. In general, the increase in help-seeking behaviors indicated a higher degree of engagement with the writing task. Tony also asked for indications of the amount of time left on the task, which indicated evidence of his attempt to self-regulate, in organizing his writing, and structuring the format to fit the time allotted for the task. Tony also asked for a clarification as to whether he needed to edit his story, which again indicated engagement with the writing task.

In contrast to the Entry Phase measures, Tony showed no indications of distraction during the Exit Phase observation of the writing task, which also indicated a higher level of engagement with the task. The only indications of possible frustration were noted as 2 instances when Tony yawned, as if he was tired, which were recorded as *Expressions*, indicating frustration level. The overall results of the comparison between the Entry and Exit Phase measures of *Time on Task* indicated a higher level of persistence, and engagement with the task at the Exit Phase. The results on this measure support the findings of results on comparison of Entry and Exit Phase scores on *Task Completion Performance*. His overall scores on the writing task were higher on the Exit Phase measure, indicating a slight increase in effort and performance. While the results of the Exit Phase measures of *Time on Task* indicate an increase in his level of persistence on the writing task.

The results of both measures were reinforced by Tony's responses to the relevant questions on the Exit Interview. For example, when asked how his knowledge of his weaknesses in writing helped him with his performance on the writing composition task (question no. 3), Tony responded that he was more aware of the areas which required extra focus; "...I really need to focus on my capitals. I know there should be a comma here, I need to focus on my commas, so I guess I was more aware of what I needed to do".

The response to question no.3, which indicates an increase in Tony's ability to focus, was especially interesting in light of his tendency to be distractible. Tony's response to question no. 4 reinforces the idea that Tony was more able to self-regulate by directing his focus during the writing task. For instance, in response to question no. 4,

which asked how knowledge of his strengths in learning helped him with his performance on the writing task, Tony replied that "...I knew what I didn't need to focus on, and I knew what I needed to focus on, so it was kind of helpful...and I did not focus on irrelevant areas, and areas that I was already O.K. with". Tony noted that a specific area of strength for him was in the area of higher order cognition, or in generating concepts and ideas, though he did not use the specific terminology. For example, he replied that "...I guess I'm O.K. at getting my ideas across. I just need to focus on making them clearly formatted, so I can kind of trust my ideas. I just need to kind of focus on how I give them to the reader".

Tony's response to question no. 6, which asked if he was able to select strategies that helped him to enhance his writing skills, was very positive. He indicated that his ability to choose the strategy which he believed would be most helpful to him, did actually help him to regulate the flow of his writing, and to better organize and structure the writing task. For instance, he replies that "...when I was writing those stories, and I would get to do the beginning, middle, and end...if I think about it like that it's a lot easier to write it, instead of kind of just writing, and not really knowing where I'm going".

Overall, the positive increases in the Exit Phase measures of *Task Completion Performance*, and *Time on Task*, coupled with Tony's responses on the *Exit Interview*, indicate increases in his ability to self-regulate and self-monitor his writing during the writing composition task.

Part II

Individual Case Discussion: Robin

Research Question no. 1

Discussion / Robin:

Research Question no. 1

How does the student's knowledge of personal strengths and weaknesses in learning, gained through the process of *Demystification*, impact their levels of writing apprehension?

The plan of analysis used to address the first research question required an analysis of data collected through two different sources. The analysis therefore, involved a comparison of the student's responses to statements on the Entry and Exit Phases of measures of writing apprehension. It also included an examination of the student's response to question no. 2 of the Exit Interview, which asked the student directly how the intervention process affected his or her level of apprehension about approaching the writing task.

Robin's responses to the Entry and Exit Phase measures of writing apprehension indicated **marked negative differences** in her responses to statements nos. 2, 5, 8, 3, and 6 on the Exit Phase measure as compared to her Entry Phase responses. For example, her response to statement no. 2 ("I look forward to writing down my ideas") changed from "mostly true" at the Entry Phase, to "a little bit false" at the Exit Phase, indicating that her enjoyment of writing had decreased after the intervention.

Similarly, her responses to statements nos. 5 and 8 strongly indicated an increase in feelings of nervousness about writing following the intervention. On the Entry Phase measure, she had rated statement no. 5 ("I'm nervous about writing") as "definitely false", however on the Exit Phase measure, her response was changed to "a little bit true". Likewise, her response to statement no. 3 ("I am afraid of writing when I know it will be graded") as changed from "mostly false" on the Entry Phase measure, to "a little

bit true” at the Exit Phase. Also, her response to statement no. 8 (“Just thinking about writing makes me nervous”) changed from “definitely false”, at the Entry Phase measure, to “a little bit false” at the Exit Phase. Robin’s response to question no. 6 (“I never seem to be able to clearly write ideas”) also changed, from “mostly false” on the Entry measure, to “mostly true” on the Exit Phase measure. These substantial changes in her perception of apprehension about writing may have been due in part to her concern about timed writing tasks. Robin had had very little exposure to timed writing assignments as a home-schooled child, and she stated her concern clearly.

Robin’s responses to statement nos.1, 7, 9, 10, and 13 also indicated negative changes her response toward writing, however the responses indicated **slight negative differences** between Entry and Exit Phase measures. For instance, Robin’s responses to statement no. 1 and 7, which indicated enjoyment in writing changed from agreement of “mostly true”, to only “a little bit true” at the Exit Phase. Robin’s perception of her skill in writing as positive (as indicated by statement nos. 9, 10, and 13), changed from strong agreement “mostly true”, to “a little bit true” at the Exit Phase measure. These responses reinforced the more marked negative changes, which indicated increases in levels of apprehension toward writing following the intervention.

However, **no changes** occurred in her responses to statement nos. 11 (“Writing is easy for me”) and 14 (“I have always done well on writing assignments”), each of which she rated as “a little bit true”. The positive tone of these responses was reinforced by a **positive change** in her response to statement no. 12 (“I am not a good writer”). At the Entry Phase she rated this statement as “a little bit false”, however at the Exit Phase she

rated it as “mostly false”, which indicated a slight positive change in her perception of her skill in writing.

Interestingly, Robin’s responses to questions on the Exit Interview indicated a complete lack of awareness of feelings of anxiety or apprehension toward the writing task. Her response to question no. 2, which asked how the intervention process affected her level of apprehension about approaching the writing task, initially indicated that she may not have understood the question. Although the question was rephrased, and repeated, she still responded that it did not affect her level of apprehension at all. This response contradicts the results of the comparisons of scores to nos. 5 and 3 on the measure of writing apprehension, which indicated some degree of nervousness about writing.

Individual Case Discussion: Robin
Research Question no. 2

Discussion / Robin:

Research Question no. 2

How does the student’s personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student’s self-efficacy beliefs in writing, and their interest in the writing task?

The plan of analysis used to address the second research question required an analysis of data collected through three different sources. Therefore, the analysis involved a comparison of the student’s responses for the Entry and Exit Phases of the measure of writing self-efficacy. It also required a comparison of responses for the Entry and Exit Phases of the measure of interest in writing. Finally, it required an

examination of the student's responses to questions nos. 8, 5, and 7, on the Exit Interview, which inquired about the student's level of confidence in their ability to perform a writing task, how knowledge of their strengths and weaknesses affected their level of interest in the writing task, and finally, how the ability to choose appropriate strategies may have affected their interest in the writing task.

An analysis of the Entry and Exit Phase scores on the Measure of Self-Efficacy in Writing indicate **positive changes** in Robin's responses for 9, out of the 10 statements listed. Robin's ratings on these statements **changed from less positive** on the Entry Phase measures, to **more positive** on the Exit Phase measures, with degree of change ranging from 70 points, to 8 points.

For example, Robin changed her rating of her ability to correctly spell all words in a writing task (#1) from an Entry Phase rating of 10 to an Exit Phase rating of 80 (which indicated a positive change of 70 points). Similarly, Robin's rating of her ability to correctly punctuate a one page story (#2) rose from her Entry Phase rating of 50, to an Exit Phase rating of 90 (which indicated a positive change of 40 points). In each instance, it is possible that the intervention strategies introduced, which required her to organize her writing according to a specific format, in order to allow time to edit her work, may have influenced her perception of her skill in these areas.

Robin's rating of her ability to correctly use all parts of speech in a written composition (#3) showed a positive change of 8 points (from 90 to 98). Robin's rating of her ability to correctly use singulars and plurals, verb tenses, prefixes and suffixes (#5) changed by 19 points (from an Entry Phase rating of 80, to an Exit Phase rating of 98). Her responses to statements #6 and #7 changed by 10 points each, from Entry Phase

ratings of 80, to Exit Phase ratings of 90; indicating a positive change in her ability to both write a strong paragraph with a good topic sentence and main idea, and to structure paragraphs to support ideas in the topic sentence. Robin's rating of her ability to end paragraphs with proper conclusions (#8) showed a positive increase of 18 points, from the Entry Phase score of 80, to the Exit Phase score of 98. Robin's rating of her ability to write a well-organized and well-sequenced paper that has a good introduction, body, and conclusion jumped by 10 points (from Entry Phase: 60, to Exit Phase: 80). Similarly, her rating of her ability to get ideas across in a clear manner, by staying focused (#10), increased by 10 points (from Entry Phase: 80, to Exit Phase: 90).

The only **negative change**, was a change of 1 point, in the rating for statement no. 4, which asked the student to rate his or her ability to "Write simple sentences with good grammar". The rating for this statement changed by only 1 point, from an Entry Phase rating of 100, to an Exit Phase rating of 99.

In general, the positive increases in each of these ratings strongly indicate that Robin's perceptions of self-efficacy in writing, for this composition task, showed a marked improvement following the intervention. Her perceptions of her improved skill in writing reflected increases in her scores on the measure of *Task Completion Performance*, indicating that her perceptions were somewhat accurate in that actual improvement on the writing task had occurred, following the intervention.

Although Robins' self-efficacy beliefs showed dramatic increases between the Entry Phase measures and the Exit Phase measures, **no change** was indicated when the scores on the Measures of Interest in Writing were compared. For each measure, Robin

indicated by a rating of 3, that she neither agreed nor disagreed with the statement “I am interested in writing”.

Robin’s responses to the questions on the Exit Interview were interesting, but rather difficult to interpret, because they were not straight forward responses. Her responses indicated variation in interpretation of the questions. For example, in response to question no. 8, which inquires about the student’s level of confidence in their ability to perform a writing composition task, Robin initially responds that “it depends on the writing task”. However, when prompted to think about the writing tasks she had performed over the course of the six week study, she responded that she felt that her level of confidence had changed “a little bit”, primarily due to using the strategy which helped her organize her writing in the time allowed for the task; ...”Just because I set the strategy in, where I had a certain amount of time...so I couldn’t spend too much time on it”. This response seems to be an understatement when compared with the dramatic positive change indicated by her Exit Phase responses to the Measure of Self-Efficacy. However, the response may indicate a general lack of awareness of changes in her self-perceptions, or a general reticence with regard to the interview (which is also evident in her responses to other questions).

Robin’s response to question no. 5 (How did knowledge of your strengths and weaknesses in learning affect your interest in the writing composition task?) indicated that knowledge of her strengths and weaknesses were irrelevant. She simply made the writing task interesting for herself; “Because, I picked something, and then I created a story out of it that was interesting”. Similarly, her response to question no. 7 (How did your ability to choose appropriate strategies affect your interest in the writing task?)

indicated that her ability to choose strategies had no affect on her level of interest. Rather, her level of interest simply stayed the same, which reinforced her neutral response to the Measure of Interest in Writing.

Individual Case Discussion: Robin

Research Question no. 3

Discussion / Robin:

Research Question no. 3

How does the student's knowledge of personal strengths and weaknesses in learning affect the student's levels of effort, persistence, and performance on the writing task?

The plan of analysis used to address the third research question required an analysis of data collected through three different sources. The analysis therefore, involved a comparison of the student's scores on the Entry and Exit Phases for the measure of effort and performance, which was operationalized as *Task Completion Performance*. It also required a comparison of the student's scores on the Entry and Exit Phases for the measure of persistence, which was operationalized as *Time on Task*. The analysis also required an examination of the student's responses to questions nos. 1, 3, 4, and 6 of the Exit Interview, which inquired about how knowledge of personal strengths or weaknesses in writing may have helped with the student's performance on the writing task. Question no. 6 of the interview asked specifically whether or not the ability to select strategies enhanced performance on the writing task.

A comparison of the Entry Phase and Exit Phase scores on the measure of *Task Completion Performance* indicate **positive changes** on each of the subtest measures. On the Contextual Conventions subtest, which measures the student's mastery of the conventions of written language; spelling, capitalization, and punctuation, Robin's

standard scores increased by 3 points (from 7 – 16%, to 10 – 50%) from the Entry Phase to the Exit Phase measures. The most dramatic increase was apparent on the subtest measure of Contextual Language, which measures the student’s use of language in writing, such as the use of grammar, structure, and vocabulary. On this subtest, Robin’s scores increased by 6 points, between the Entry Phase measure of 7 – 16%, and the Exit Phase measure of 13 – 84%. Robin’s scores on the final subtest measure of Story Construction, which measures the student’s use of language in writing, such as the use of grammar, structure, and vocabulary, increased by 3 points. Her Entry Phase standard score on this subtest was 10 – 50%, however her Exit Phase standard score increased to 13 – 84%.

A comparison of Robin’s scores on the Entry and Exit Phases therefore, clearly indicate improvements at each subtest level for an improvement in overall writing ability, in the sum of standard scores; from Entry Phase: 27, Quotient 94, 35th %ile, to Exit Phase: 43, Quotient 128, 97th %ile. The increase in scores on each of the subtests was reinforced by comparing Robin’s scores on the three practice measures. Gradual improvements were apparent at each subtest measure during the course of the practice phase of the intervention, with one score on the Story Construction subtest showing that the highest level of performance (15 – 95%) was achieved during the second practice session.

A comparison of these scores overall, indicates that Robin’s level of effort increased from the Entry to the Exit Phase, as her performance scores consistently increased. The positive increase in scores on each of the subtests from the Entry to the Exit Phases indicate that the intervention did have a positive impact on Robin’s ability to

effectively complete this specific writing task under timed conditions. This conclusion is reinforced by Robin's scores on the observation measure *Time on Task*, and to some degree, by her response to question no. 6 on the Exit Interview.

The results of a comparison of the analyses between the Entry and Exit Phase measures for *Time on Task* indicates a **positive** change from the Entry Phase to the Exit Phase, on measured levels of help-seeking behaviors vs. measured levels of expressions of frustration. There were distinct differences between Robin's observed behaviors at the Exit Phase, when compared to those on the Entry Phase measures; she engaged in more help-seeking behaviors during the Exit Phase, as well exhibiting fewer behaviors which indicated frustration.

For example, during the Entry Phase observation, Robin engaged in only one instance of a help-seeking behavior, by seeking clarification about the country depicted in the writing prompt. In contrast however, during the Exit Phase observation, Robin engaged in a number of positive, help-seeking behaviors, which primarily involved monitoring her time at different intervals. For instance, at the beginning of the task, she asked "How many minutes ago did I start?" She continued to check her watch at four different intervals throughout the writing task, in order to monitor her writing progress based on the time allotted. Although it was apparent during the observation, her purpose in monitoring her writing was clarified by her response on the Exit Interview, when she discussed using the strategy to organize her writing by stages, to fit the specific time frame of the writing task.

Measures which indicated levels of frustration also showed marked differences between the Entry and Exit Phase measures. For example, during the Entry Phase

observation, the researcher recorded three pauses in the writing task, as Robin stretched, and dropped her pencil twice, and finally leaned back in her chair to stretch. The researcher also noted two expressions of frustration with the writing task. Initially, Robin voiced her frustration by saying “I hate to write stories from a picture”, and as her writing progressed, she expressed overt frustration about not knowing the specific country depicted by the picture prompt, and again said “but I don’t know what country this is.”

In contrast, the only indications of frustration during the Exit Phase measure were two instances, when Robin paused to breathe deeply. These instances were recorded as *Pauses* and were counted as indications of frustration. Therefore, only two instances of frustration were noted on the Exit Phase measure, compared to five instances of frustration noted during the Entry Phase observation. The positive changes in scores overall on the measure of *Time on Task* indicate a somewhat higher level of persistence during the writing task. These results are reinforced by the positive changes in performance on the writing task, as indicated by the comparison of Entry and Exit Phase scores on the measure of *Task Completion Performance*.

Robin’s response to question no. 6, which asked if she was able to select strategies that helped her to enhance her writing skills, reinforced to a degree, the results of the previous measures. For example, Robin responded that the strategy which helped her the most was having a set time limit for each aspect of the writing task: “That I had a set time. You do this much in this time, this much in this time, and if you have extra time...you can pull off the rest of it...” This was an indication to the researcher, that the intervention had helped Robin learn to self-regulate her writing by organizing it effectively to fit the time allotted for the writing task.

However, Robin's responses to the remaining questions (nos. 1, 3, and 4) showed little indication that knowledge of either her strengths or weaknesses in learning were helpful to her during the writing task. For instance, to question no. 3, which asked whether knowledge of her weaknesses helped her on the writing task, Robin replied that it "didn't really change it", because she felt that she had already known what her weaknesses were, prior to the intervention. Similarly, her response to question no. 4 which asked how knowledge of her strengths in learning helped her in her performance on the writing task, indicated that she was not very aware of specific ways in which it may have helped her. She did indicate awareness however, that it was possible to use one's strengths to help improve areas of weakness, but she could not think of specific examples during the interview, and did not seem to apply this awareness to her own learning process in general: "I don't pay attention to that. It's kind of like, it's over with, it's in the past...I'm not going to go back and worry about it."

Robin's response to question no. 1, which asked what she learned about her strengths and weaknesses in learning through the intervention process, indicated that she felt that she had not learned anything new. Her response seemed to focus on her areas of weakness primarily, in specific areas such as reading, and timed writing, (which were not actually discussed during the intervention process). Therefore, her perceptions of her strengths and weaknesses appeared to be generally unaffected by the intervention. When asked if she had learned anything new, she responded "Not really. I already knew what were my strengths and what were my weaknesses"....."Once you already know.... what your strengths and weaknesses are, then everything kind of goes around that."..."It's kind of like you already adjusted yourself into a category...where this is how strong you are at

something, and this is how weak you are at it...and you're right in this area". Although she did acknowledge, when prompted by the researcher, that it was possible to use areas of strength to help you in areas of weakness, she was not able to give any examples of this, related to her own learning process.

Part III

Discussion of Cross Case Trends

Research Question no. 1

Discussion / Tony and Robin:

Research Question no. 1

How does the student's knowledge of personal strengths and weaknesses in learning, gained through the process of *Demystification*, impact their levels of writing apprehension?

The plan of analysis used to address the first research question required an analysis of data collected through two different sources. The analysis therefore, involved a comparison of the student's responses to statements on the Entry and Exit Phase measures of writing apprehension. It also included an examination of the student's response to question no. 2 of the Exit Interview, which asked the student directly, how the intervention process affected his or her level of apprehension about approaching the writing task.

Tony's responses to the Entry and Exit Phase measures of Writing Apprehension indicated only slight differences in his responses, which may have been due to chance. However, the changes in ratings to the statements presented on the measure indicated **slight negative changes** in his perception of his skill in writing, following the intervention. His responses also indicated slight increases in his feeling of being nervous

about writing. Responses which remained unchanged indicated that in general, he maintained a slight feeling of enjoyment in writing.

Robin's responses to the Entry and Exit Phase measures of Writing Apprehension indicated primarily **marked negative changes** which indicated increased feelings of nervousness or apprehension about writing, following the intervention. Some of her responses also indicated decreases in her level of enjoyment in writing, though others indicated that she maintained a slight degree of enjoyment in writing. However, her response to statement no. 12 ("I am not a good writer"), indicated a slight positive change in her perception of her skill in writing.

The results of the measures illustrated that the responses of both students indicated negative changes in their experience of apprehension toward the writing task following the intervention, although to differing degrees. It is possible that the timed format of the writing task, which allotted only 15 minutes for the student to develop and complete a composition, was intimidating for both students. Robin voiced her concern openly about her lack of ability to perform a timed writing task. Although Tony did not openly voice his concerns about being timed, his responses on the measure of writing apprehension did indicate an increase in his level of apprehension on a writing task which would be evaluated.

The responses of both students to question no. 2 on the Exit Interview, which asked how the intervention process affected their level of apprehension toward the writing task, indicated that neither student believed that the intervention had had an effect on their levels of writing apprehension. Tony responded that he believed the intervention had neither increased nor decreased his levels of apprehension toward writing, which was

plausible when compared with the results of the writing apprehension measure, which indicated only slight negative changes in his responses. In contrast, Robin's response that the intervention had not affected her level of apprehension at all, countered the results of the writing apprehension measure, which indicated marked negative differences in her feelings of apprehension toward writing.

Discussion of Cross Case Trends

Research Question no. 2

Discussion / Tony and Robin:

Research Question no. 2

How does the student's personal knowledge of his/her unique strengths and weaknesses in learning (as obtained through the intervention process of *Demystification*) impact the student's self-efficacy beliefs in writing, and their interest in the writing task?

The plan of analysis used to address the second research question required an analysis of data collected through three different sources. Therefore, the analysis involved a comparison of the student's responses for the Entry and Exit Phases of the measure of writing self-efficacy. It also required a comparison of responses for the Entry and Exit Phases of the measure of interest in writing. Finally, it required an examination of the student's responses to questions nos. 8, 5, and 7, on the Exit Interview, which inquired about the student's level of confidence in their ability to perform a writing task, how knowledge of their strengths and weaknesses affected their level of interest in the writing task, and finally, how the ability to choose appropriate strategies may have affected their interest in the writing task.

Trends in responses to the Measure of Self-Efficacy were different between the two students. However, for each student, their responses on the Measure of Self-Efficacy

did reflect trends in their scores on the measure of *Task Completion Performance*, which indicates that the student's self-perceptions were indicative of actual levels of achievement. For example, a comparison of Entry and Exit Phase scores for Tony, on the Measure of Self-Efficacy, indicated negative changes in his responses to questions nos. 1, 2, and 3, may have indicated his recognition of his inability to fully edit and correct all of his errors in spelling, punctuation, and capitalization in the time allotted for the writing task. . The negative changes resulting from a comparison of scores for the Measure of Writing Apprehension occurred in Tony's areas of greatest weakness in writing. Although his scores on the measures of *Task Completion Performance* indicated Exit Phase increases in his ability in most of these areas, his self perception was accurate, in that he never did achieve a composition which had perfect punctuation, capitalization, or spelling.

In contrast, slight positive changes in Tony's perceptions of self-efficacy occurred primarily in areas of greater strength, as reflected in his higher scores on the subtest measures of *Task Completion Performance*. The positive changes may also have indicated the effectiveness of the writing format used at the practice phase of the intervention, which presented strategies to effectively organize the writing task, in order to develop a complete, edited composition within the time frame allotted. In general, Tony's responses to the measures of self-efficacy did reflect his areas of strength and weakness in writing.

Robin's responses on the Measure of Self-Efficacy indicated **positive changes** on most of her responses regarding her perceptions of self-efficacy in writing. Some of the changes were dramatic (such as her rating of her ability to spell words correctly, which

changed by 70 points, and her ability to use correct punctuation, which rose by 40 points). In general, the positive increases in each of the ratings strongly indicate that Robin's perceptions of self-efficacy in writing, for this composition task, showed a marked improvement following the intervention. Her perceptions of her improved skill in writing were also reflected by increases in her scores on the measure of *Task Completion Performance*, indicating that her perceptions were somewhat accurate, in that actual improvement on the writing task had occurred, following the intervention. Although Robin never achieved perfect scores on spelling and punctuation, her subtest scores did show consistent improvement, and it is possible that the intervention strategies introduced, which required her to organize her writing according to a specific format, in order to allow time to edit her work, may have influenced her perception of her skill in these areas.

No trend was indicated between students in a comparison of Entry and Exit Phase scores on the measure of Interest in Writing. Tony's scores indicated an increase in level of interest, but Robin's scores remained unchanged.

One trend which was apparent between the responses of both students on the Exit Interview was illustrated by their responses to question no. 5, which asked how knowledge of the student's strengths and weaknesses in learning affected their level of interest in the writing task. Both students responded that it had not affected their interest levels at all.

A second trend which was apparent in their pattern of responses however, indicated that it was the ability to choose, and make use of strategies, which affected changes in their responses from Entry Phase to Exit Phase measures on either levels of

interest, or self-efficacy. Tony indicated that his ability to choose among appropriate strategies for the writing task increased his level of interest in the writing task. While Robin indicated that her level of confidence in writing had changed “a little bit”, primarily due to using the strategy which helped her organize her writing in the time allowed for the task; “...because I set the strategy in, where I had a certain amount of time...so I couldn’t spend too much time on it”.

Discussion of Cross Case Trends

Research Question no. 3

Discussion / Tony and Robin:

Research Question no. 3

How does the student’s knowledge of personal strengths and weaknesses in learning affect the student’s levels of effort, persistence, and performance on the writing task?

The plan of analysis used to address the third research question required an analysis of data collected through three different sources. The analysis therefore, involved a comparison of the student’s scores on the Entry and Exit Phases for the measure of effort and performance, which was operationalized as *Task completion Performance*. It also required a comparison of the student’s scores on the Entry and Exit Phases for the measure of persistence, which was operationalized as *Time on Task*. The analysis also required an examination of the student’s responses to questions nos. 1, 3, 4, and 6 of the Exit Interview, which inquired about how knowledge of personal strengths or weaknesses in writing may have helped with the student’s performance on the writing task. Question no. 6 of the interview asked specifically whether or not the ability to select strategies enhanced performance on the writing task.

A number of trends were identified between students in regard to measures of levels of effort, persistence, and performance on the writing composition task. For instance, a comparison of the Entry Phase and Exit Phase scores on the measure of *Task Completion Performance*, indicated positive increases in overall performance for each student following the intervention. A comparison of overall writing scores for Tony indicated a **positive increase**: the sum of standard scores for the three subtests at the Entry Phase was 31, with a quotient of 102, at the 55th percentile, whereas the sum of standard scores at the Exit Phase was 45, with a quotient of 132, at the 99th percentile. Similarly, a comparison of the overall writing scores for Robin indicate a dramatic **positive increase**: the sum of standard scores at the Entry Phase was 27, with a quotient of 94, at the 35th percentile, whereas the sum of standard scores at the Exit Phase was 43, with a quotient of 128, at the 97th percentile.

An analysis of the Entry Phase and Exit Phase scores, including the scores on the three practice sessions, for each of three subtests indicates that each student showed improvements on each of the subtests at some point during the course of the practice phase of the intervention. However, for each student, the most substantial increases on the subtest scores occurred on the subtest measures of Contextual Language (which measures the student's use of language in writing, such as the use of grammar, structure, and vocabulary). On this subtest, Tony's standard scores increased by 3 points, between the Entry Phase measure of 10 – 50th percentile, and the Exit Phase measure of 13 – 84th percentile. Robin's standard scores on the Contextual Language subtest increased by 6 points, between the Entry Phase measure of 7 – 16th percentile, and the Exit Phase measure of 13 – 84th percentile. The positive increases in scores for both of the students

indicate that the intervention did increase levels of effort and performance, resulting in an overall positive impact on the students' ability to effectively complete the writing task under timed conditions. This conclusion is reinforced by both students' scores on the observation measure *Time on Task*.

A comparison of the analyses for both students, between the Entry and Exit Phase measures for *Time on Task*, indicates a positive change from the Entry to the Exit Phase, on measured levels of help-seeking behaviors vs. measured levels of expressions of frustration. There were distinct differences in observed behaviors for both Tony and Robin at the Exit Phase, when compared to those on the Entry Phase measures. For example, both students engaged in more help-seeking behaviors during the Exit Phase, and both students exhibited fewer indications of frustration during the Exit Phase observation. In general, the increase in help-seeking behaviors exhibited by both students indicated a higher degree of engagement with the writing task, as well as increased levels of persistence. Each student also monitored their time more closely during the Exit Phase observation, thus indicating attempts to self-regulate in organizing their writing, and structuring it to fit the time allotted for the task.

Measures which indicated levels of frustration also showed marked differences for both students in a comparison of the Entry and Exit Phase measures. For each student the number of behaviors exhibited which indicated frustration, dropped from a variety of 5 behaviors at the Entry Phase, to only 2 pauses observed during the Exit Phase, indicating that each student was more engaged in the writing task during the Exit Phase observation.

The responses of each of the students on certain questions posed during the Exit Interview, indicated that they had each developed self-regulatory skills during the intervention phase, which helped to enhance their performance on the writing task. Tony indicated by his response to question no. 3, that the knowledge he gained during the intervention about his areas of weakness in writing enabled him to be more aware of the specific areas in his writing which required extra focus. His response to question no. 4, which inquired how knowledge of his strengths in learning helped with his performance on the writing task, reinforced the idea that Tony was more able to self-regulate by directing his focus to appropriate areas during the writing task: "...I knew what I needed to focus on, so it was kind of helpful....and I did not focus on irrelevant areas, and areas that I was already O.K. with". Tony's response to question no. 6, which asked him if he was able to select strategies that helped to enhance his writing skills, indicated that his ability to select strategies did actually help him to regulate the flow of his writing, and to better organize and structure the writing task. For instance, he replied that "...when I was writing those stories, and I would get to do the beginning, middle, and end...if I think about it like that it's a lot easier to write it, instead of kind of just writing, and not really knowing where I'm going". Therefore, the positive increases in the Exit Phase measures of *Task Completion Performance*, and *Time on Task*, coupled with Tony's responses on the Exit Interview, indicate general improvements in his ability to self-regulate and self-monitor his writing during the writing task, following the intervention.

An analysis of Robin's responses on the Exit Interview, support a trend similar to Tony's results, in an improvement in her ability to self-regulate her writing during the composition task. For instance, Robin's response to question no. 6, which asked if she

was able to select strategies that helped to enhance her writing skills, indicated that the strategy which involved monitoring the time spent on each phase of the writing task was helpful to her. That aspect, coupled with the organizational strategy chosen by Robin to structure her work, seemed to help her develop her skills in effectively self-regulating her writing: "...I had a set time. You do this much in this time, this much in this time, and if you have extra time....you can pull off the rest of it..." Therefore, Robin's response was an indication to the researcher that the intervention process had helped Robin to learn to self-regulate her writing by organizing it effectively to fit the time allotted for the writing task.

However, Robin's responses to the remaining questions, 1, 3, and 4, which asked her whether knowledge of her strengths and weaknesses had helped her in her performance on the writing task, indicated that it had not really made a difference; "it didn't really change it". Unlike Tony, although Robin did indicate a level of awareness that it was possible to use one's strengths to help improve areas of weakness, she was unable to give specific examples. She did not seem to actively apply this awareness to her own learning process, as Tony had done.

Both students had felt that they had had previous knowledge of their areas of strength and weakness in learning prior to the intervention. However, Tony's responses indicated that he had applied knowledge of his strengths and weaknesses, gained during the intervention, to his own writing process. In contrast, Robin did not show indications of having actively applied knowledge of her strengths and weaknesses, gained during the intervention, to her own writing process. Nevertheless, both students exhibited marked

improvement on measures of effort, performance, and persistence on the writing task, following the intervention.

CHAPTER SIX

CONCLUSION

This pilot study examined the responses of two participants, who exhibited cognitive strengths coupled with learning disabilities. Each of the participants met the criteria for classification as twice-exceptional learners, with deficits in the academic area of writing. Students meeting this highly selective criteria were chosen for the study due to the students' marked differences between areas of strength and weakness in learning, in contrast to the less pronounced discrepancies found in more typical students with learning disabilities. The marked discrepancies between areas of strength and weakness, demonstrated by the selected participants, enabled the researcher to more easily isolate the variables of interest, and incorporate metacognitive strategies into the intervention process.

An examination of the self-efficacy beliefs of the participants was appropriate, because studies have shown that students who meet the criteria for twice-exceptional learners frequently demonstrate self-efficacy beliefs which are lower than those found in typical students with learning disabilities (Baum, 2004; Howard, 1994). These students also frequently demonstrate heightened vulnerability to emotional challenges (Baum, 2004; Nielsen & Higgins, 2005; Baum, 1994). Students who meet the criteria for twice-exceptional learners have also been found able to make effective use of metacognitive strategies, in order to self-regulate performance in their areas of weakness; they have therefore proved able to select and utilize strategies appropriate to their needs (Singer &

Bashir, 1999; Hannah & Shore, 1995; Coleman, 1992). A study with students who met these criteria provided a chance for the researcher to examine the individual variables of self-efficacy beliefs, writing apprehension, interest, persistence, and effort, within the context of a writing task.

In each case, both participants in the study showed marked improvement in levels of effort, persistence, and performance on the writing task, following only a short period of practice time. Both of the students also proved to be able to actively use the strategies presented, in order to self-regulate their performance on the writing task. It is possible that the process of enabling the students to develop the ability to self-regulate their work may have been the key to marked improvement in performance on the writing tasks. The knowledge which each student gained about their learning process may also have helped them in the process of self-regulation; which reinforces the importance of integrating metacognitive strategies with skills in self-regulation processes (Reis, et al, 2004).

Findings from the study also indicated that the process of engaging the student in choosing strategies appropriate to their needs may foster both cognitive engagement and behavioral engagement, through utilizing the processes of self-monitoring and self-evaluation. The process of engaging students in choosing appropriate strategies may also increase levels of interest in the task (as seen in Tony's case) by making the task personally relevant to the student, and therefore resulting in possible increases in motivational engagement. Findings from the study also indicated that levels of self-efficacy beliefs for both students were indicative of actual performance to some degree, in that their increases in self-efficacy beliefs specific to aspects of the writing task, reflected specific areas of improvement in their levels of performance.

Although this study was done with a select group of students, students in the general education population may also benefit from an examination of their unique learning profiles. All students could be taught to use personal knowledge of their areas of strength and weakness in learning to aid in the process of self-regulating their academic work. Students with less developed metacognitive abilities could benefit from being given concrete examples linking their areas of strength and weakness in learning to specific self-regulatory strategies, which they could internalize through practice. Skills in self-monitoring and self-evaluation are also important to develop in the general population of students, as well as for the population of students with learning disabilities (who often demonstrate deficits in accurate self-evaluation). These skills may also be applicable to a wide range of academic subject areas. Although they have been demonstrated to be effective in writing, the principles of developing metacognitive strategies, and utilizing strategies in self-monitoring, self-evaluation, and self-regulation could be used in subject areas as diverse as mathematics, history, or science, because they are skills critical to academic production and performance.

Developing methods of giving accurate feedback regarding performance on specific tasks may also help students develop skills in self-correction and self-monitoring (Schunk & Pajares, 2002). Accurate and effective feedback may further increase skills in self-regulation, and empower the student with a sense of autonomy in learning, which can result in a mastery focus, and deeper engagement with academic tasks (Schunk Pajares, 2002; Miller & Meece, 1997). Utilizing such strategies in developing an individualized approach to education is critical to enabling educators to meet the challenge of providing optimal learning environments across the spectrum; to meet the needs of students who

have been identified with learning disabilities, as well as the needs of those who have been identified with cognitive strengths (Snow, 1986).

Limitations were noted in the current study due to the researcher's decision not to score each practice test during the intervention phase of the study. Providing the student with accurate feedback following each practice session might have resulted in further improvement of the students' understanding of their specific areas of strength and weakness in learning. It might also have enabled the students to better focus on their areas of deficit; thereby linking this knowledge to strategies which could further enhance performance.

The complexity of the intervention process could also be found to be a limitation of this study. The intervention process was complex, in that the *Demystification* process was closely intertwined with the actual strategies chosen, and used during the intervention phase. This complexity created difficulty in isolating the specific causes of the effectiveness of the intervention in improved performance for the students. Links between the student's specific areas of strength and weakness in learning, and the strategies chosen to enhance performance must be specifically clarified, during the course of the intervention procedure, in order for the student to be certain to fully understand and consciously use the strategies.

The current study was also designed to have teacher questionnaires supplied from two sources (an independent language arts teacher as well as the tutor/researcher). However, the teachers did not respond to requests to participate in the study, therefore the researcher acted as both the coordinating teacher/language arts tutor and the language arts teacher. Although the study still fit within in the parameters specified (of having four

independent perspectives; parent, teacher, student, and work samples), it would have been preferable to have two different sources of information from the students' teachers in the area of language arts. Multiple perspectives regarding each student's areas of strength and weakness in learning allow for a richer and more detailed analysis of the student's neurodevelopmental profile.

This pilot study was designed as a qualitative, descriptive case-study which incorporated quantitative measures, due to the limited resources of the researcher, and the necessity of working with a sample of convenience. A larger sample size would allow for quantitative analysis of the interactions among the variables, as well as a determination of statistical significance for outcomes of performance. Future research may examine these processes with a range of students at different levels of ability, in order to determine whether strategies which enhance self-efficacy beliefs and incorporate strategies in metacognition and self-regulation, are effective in the general population.

Appendix A:

Measure of Persistence Operationalized as “Time on Task”

Time on Task

Time allotted for writing composition task: 15 minutes

Note number of times during 15 min. segment, that student displays Off Task Behaviors.

Off Task Behaviors

Help-Seeking Behaviors

Frustration Level

1. Clarification:

1. Pauses:

15 min:

15 min:

2. Spelling:

2. Expressions:

15 min:

15 min:

3. Strategy prompts:

3. Distraction:

15 min:

15 min:

Appendix B:

Exit Interview

Questions asked of participants by researcher upon completion of study.

1. What did you learn about your strengths and weaknesses in learning, through the intervention process?

2. How did the intervention process (where you learned about your areas of strength and weakness in learning), affect your level of apprehension about approaching the writing composition task?

3. How did knowledge of your weaknesses in writing help you in your performance on the writing composition task?

4. How did knowledge of your strengths in learning help you in your performance on the writing composition task?

5. How did knowledge of your strengths and weaknesses in learning affect your interest in the writing composition task?

6. Were you able to select strategies that helped to enhance your writing skills?

7. How did your ability to choose appropriate strategies affect your interest in the writing task?

8. Tell me about your level of confidence in your ability to perform a writing composition task.

Appendix C:

Protocol for Entry Phase (Spring 2007)

At the Entry phase of the study, the student will be asked to write a story during a 15-minute period, based on a standard format. Before attempting the writing task, the student will be given 3 brief measures to complete: 1. Writing Self-Efficacy, 2. Measure of Writing Apprehension, 3. Scale of Interest in Writing. The student will be given a 10-minute break before beginning the writing task. During the writing task, the researcher will use observational techniques to measure levels of persistence (operationalized as *Time on Task*). Off Task Behaviors will be noted, and recorded as either Help-Seeking Behaviors or Expressions of Frustration. The measure of levels of effort (operationalized as *Task Completion Performance*) will be scored after the session ends.

Stages:

1. Initially, greet the student, and ask them to sit down and make themselves comfortable. Tell them that they will be given a writing task to complete.

“I am going to ask you to complete a writing task. I will give you a picture to look at, and I would like you to compose a story based on the picture. Please use characters with names, and include a beginning, middle, and end to your story. Please use paragraphs, and correct punctuation and capitalization. You will have 15 minutes to complete your story.”

“However, before we begin the writing task, I would like you to fill out three brief forms which ask you how you feel about writing.”

2. Ask the student if they are ready to begin. Then give them the first of the 3 measures. (Read the instructions to the student, and be sure that they understand how the rating scales work before they complete each measure.) Then say: “Please read each question and answer each one as honestly as possible.”

Give the measures in the following order:

1. Writing Self-Efficacy Scale
2. Measure of Writing Apprehension
3. Scale of Interest in Writing

3. When the student is finished, allow him/her to take a 10 min. break.

4. When the break is over, be sure that the writing desk is prepared (with pencil and extra paper). Administer the Spontaneous subtest from the TOWL 3 to the student following the protocol designated in the administration instructions (pg. 13). (Use response booklet Form B (picture) for the Post-Test phase. However, for the Pre-Test phase use the following picture prompt: *The Bicycle Race* by Antonio Ruiz.)

The instructions from the TOWL follow:

Give the student the appropriate picture prompt, with the picture “The Bicycle Race”. Say, “THIS EXERCISE IS DESIGNED TO SEE HOW WELL YOU CAN WRITE A STORY. LOOK AT THE PICTURE BEFORE YOU. YOU ARE TO WRITE A STORY ABOUT THAT PICTURE. BEFORE YOU BEGIN WRITING, TAKE TIME TO PLAN YOUR STORY. A WELL-WRITTEN STORY USUALLY HAS A BEGINNING, MIDDLE, AND END. IT ALSO HAS CHARACTERS THAT HAVE NAMES AND PERFORM CERTAIN ACTIONS. USE PARAGRAPHS TO HELP ORGANIZE YOUR STORY. CORRECT PUNCTUATION AND CAPITALIZATION WILL MAKE YOUR STORY EASIER TO READ. AFTER YOU HAVE MADE A PLAN FOR YOUR STORY, BEGIN WRITING. TRY TO WRITE AS LONG A STORY AS YOU CAN. IF YOU NEED MORE PAPER, JUST LET ME KNOW. YOU WILL HAVE ONLY 15 MINUTES TO THINK ABOUT YOUR STORY AND TO WRITE IT. WRITE THE BEST STORY YOU CAN. READY? BEGIN.

When 15 minutes have elapsed, say STOP.

**During the writing task, the researcher will measure Time on Task, and record Off Task behaviors, using the measure: *Time on Task*. These will include noting the no. of Help-Seeking Behaviors which the student exhibits during the writing task (15 mins), as well as the number of times the student exhibits expressions of frustration during the 15 minutes allotted for the writing task.

Off Task behavior will be noted under two categories. Category 1. (*Help-Seeking Behaviors*) will note the student’s request for help with clarification, spelling, or prompts for strategy use. Category 2. (*Frustration Level Rating*) will note the number of times in which the student exhibited indications of frustration with the task. These behaviors will include prolonged pauses in the task, expressions of frustration, and indications of distraction from focus on the task.

5. When the student has completed the task, they will be free to leave. Thank them for their participation. After the student has gone, the researcher will score the student’s story under the guidelines for *Task Completion Performance* as follows:

Effort will be operationalized as Task Completion Performance, and will be scored based on the student’s successful completion of each element of the writing task. The “spontaneous subtests” criteria of the TOWL-3 will be used to analyze and score the quality of the student’s writing tasks. The specific subtests used include subtest 6 (contextual conventions; which measures punctuation, spelling and capitalization), subtest 7 (contextual language; which measures language structure, grammar and vocabulary), and subtest 8 (story construction; which measures use of prose, action, sequencing, and theme).

Appendix D:

Protocol for Practice Session One - Three (Spring 2007)

Note: The basic protocol for each student will be the same, however they have each chosen slightly different strategies, so aspects of the protocol will differ.

I. Welcome the student, and let them know that we are going to practice using the strategies that they previously selected.

*At this point remind the student that they have chosen to monitor either their level of Mental Effort or their Attention. Use the appropriate form for the student to self-monitor, and keep records. Ask them to try to be aware of this, and record it as they work through the task. Be sure to self-monitor at least at three different points (the beginning, middle, and end of the task).

II. Review the strategies in the following order:

1. Show the student the *Planning Writing Sheet*, and tell them that they will use this as they plan and organize their thoughts for the writing task.

2. First, remind them of the writing strategy mnemonic which they chose to follow (either * POWER or TOWER).

3. *Write it at the top of the *Planning Writing Sheet*, and tell them that you would like them to commit it to memory, so that they will automatically use it as they begin their writing task.

4. *Go over each aspect of it with them*, in order to review it and to explain how it will be used:

Say: "I will give you a timed writing task, which I will ask you to complete in 15 minutes. However, before you begin this task, I will give you some time to use the planning strategy to organize your ideas."

Let's review the steps.

1. Topic: "First, you will think of a topic, and write it down here. Please record the time that you spent thinking of the topic."

2. Brainstorm: "Next, you will spend a little time thinking of ideas related to the topic. List some of them here, and please record the time that you spent doing this."

3. Organize: “At this stage, you will use the format that you chose to organize the writing for your actual story. Please fill out the form and record the time that you spent doing this.”

“When you have completed the first three stages, I will allow you fifteen minutes to write your complete story.”

“Now that we have reviewed the steps, are you ready to begin?” *Show the picture prompt to the student, and allow them to organize their ideas, and structure their story based on the format above.*

III. Writing Stage: Remove the Planning Sheet from the student’s view. Tell the student that they will have 15 minutes to complete the writing task, and read the instructions as specified in the TOWL-3. When 15 minutes have elapsed, ask the student to stop writing, and go to step IV.

When the writing task has been completed, return the Planning Sheet to the student, and ask them to finish the following steps.

IV. Edit: “Now, please use the COPS technique to check Capitalization, Organization, Punctuation and Spelling. Please record the time you spent doing this.”

V. Revise and Rewrite: “Now, please use the Self-Check List which you created, to correct and polish your writing”. “Please record the time that you spent doing this.”

*Note: The strategies have been chosen by the researcher to promote self-monitoring and self-regulation during the writing task.

Appendix E:

Protocol for Exit Phase (Spring 2007)

At the Exit Phase of the study, the student will be asked to write a story during a 15-minute period, based on a standard format. Before attempting the writing task however, the student will be given 3 brief measures to complete: 1. Writing Self-Efficacy, 2. Measure of Writing Apprehension, 3. Scale of Interest in Writing. The student will then be given a 10-minute break, before beginning the writing task. During the writing task, the researcher will use observational techniques to measure levels of persistence (operationalized as *Time on Task*). *Off Task Behaviors* will be noted and recorded, as either *Help-Seeking Behaviors* or expressions of *Frustration*. The measure of levels of effort (operationalized as *Task Completion Performance*) will be scored after the session ends. After the student has completed the writing task, the researcher will conduct an *Exit Interview*. During a tape recorded interview session, the researcher will ask the student to elaborate on a series of eight questions, regarding their perceptions of the impact of the intervention process. When the interview is complete, the student will be free to leave.

Stages:

1. Initially, greet the student, and ask them to sit down and make themselves comfortable. Tell them that they will be given a writing task to complete.

“I am going to ask you to complete a writing task. I will give you a picture to look at, and I would like you to compose a story based on the picture. Please use characters with names, and include a beginning, middle, and end to your story. Please use paragraphs, and correct punctuation and capitalization. You will have 15 minutes to complete your story.”

“However, before we begin the writing task, I would like you to fill out three brief forms which ask you how you feel about writing.”

2. Ask the student if they are ready to begin. Then give them the first of the 3 measures. (Read the instructions to the student, and be sure that they understand how the rating scales work before they complete each measure.) Then say: “Please read each question and answer each one as honestly as possible.”

Give the measures in the following order:

1. Writing Self-Efficacy Scale
2. Measure of Writing Apprehension
3. Scale of Interest in Writing

3. When the student is finished, allow him/her to take a 10 min. break.

4. When the break is over, be sure that the writing desk is prepared (with pencil and extra paper). Administer the Spontaneous subtest from the TOWL 3 to the student following the

protocol designated in the administration instructions (pg. 13). (Use response booklet Form B (picture) for the Post-Test phase if the student used Form A for the screening).

The instructions from the TOWL follow:

“Give the student the appropriate Student Response Booklet (B) opened to the page with the picture. Say, “THIS EXERCISE IS DESIGNED TO SEE HOW WELL YOU CAN WRITE A STORY. LOOK AT THE PICTURE BEFORE YOU. YOU ARE TO WRITE A STORY ABOUT THAT PICTURE. BEFORE YOU BEGIN WRITING, TAKE TIME TO PLAN YOUR STORY. A WELL-WRITTEN STORY USUALLY HAS A BEGINNING, MIDDLE, AND END. IT ALSO HAS CHARACTERS THAT HAVE NAMES AND PERFORM CERTAIN ACTIONS. USE PARAGRAPHS TO HELP ORGANIZE YOUR STORY. CORRECT PUNCTUATION AND CAPITALIZATION WILL MAKE YOUR STORY EASIER TO READ. AFTER YOU HAVE MADE A PLAN FOR YOUR STORY, BEGIN WRITING. TRY TO WRITE AS LONG A STORY AS YOU CAN. IF YOU NEED MORE PAPER, JUST LET ME KNOW. YOU WILL HAVE ONLY 15 MINUTES TO THINK ABOUT YOUR STORY AND TO WRITE IT. WRITE THE BEST STORY YOU CAN. READY? BEGIN.

When 15 minutes have elapsed, say STOP.

**During the writing task, the researcher will measure *Time on Task*, and record *Off Task behaviors*, using the measure: *Time on Task*. These will include noting the no. of *Help-Seeking Behaviors* which the student exhibits during the writing task (15 mins), as well as the number of times the student exhibits expressions of frustration during the 15 minutes allotted for the writing task.

Off Task behavior will be noted under two categories. Category 1. (*Help-Seeking Behaviors*) will note the student’s request for help with clarification, spelling, or prompts for strategy use. Category 2. (*Frustration Level Rating*) will note the number of times in which the student exhibited indications of frustration with the task. These behaviors will include prolonged pauses in the task, expressions of frustration, and indications of distraction from focus on the task.

5. When the student has completed the task, the researcher will conduct a tape-recorded, *Exit Interview* with the student. During the interview, the researcher will ask the student a series of 8 questions, regarding their perceptions of the impact of the intervention. At the beginning of the interview, the researcher will state:

“Now I would like to ask you questions about what you may have learned during the intervention process, when we discussed your strengths and weaknesses in learning. There will be 8 questions, and I would like you to take your time to think about each question. Please reflect on the ways in which you may have used the knowledge of your

strengths and weaknesses in learning to help you with the writing tasks. I will need to tape record this interview for the purposes of the research study. However, your responses will remain anonymous. The tape recording will only be used for the purposes of the research study. Are you ready to begin?"

6. When the Exit Interview is finished, the student will be free to leave. Thank them for their participation.

7. After the student has gone, the researcher will score the student's story under the guidelines for *Task Completion Performance* as follows:

Effort will be operationalized as *Task Completion Performance*, and will be scored based on the student's successful completion of each element of the writing task. The "spontaneous subtests" criteria of the TOWL-3 will be used to analyze and score the quality of the student's writing tasks. The specific subtests used include subtest 6 (contextual conventions; which measures punctuation, spelling and capitalization), subtest 7 (contextual language; which measures language structure, grammar and vocabulary), and subtest 8 (story construction; which measures use of prose, action, sequencing, and theme).

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