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WRITING MOTIVATION OF STUDENTS WITH SPECIFIC LANGUAGE IMPAIRMENTS

by

Kyle Lee Brouwer

A DISSERTATION

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WRITING MOTIVATION OF STUDENTS WITH SPECIFIC LANGUAGE IMPAIRMENTS

Kyle Lee Brouwer, Ph.D.

University of Nebraska, 2010

Adviser: Roger H. Bruning

This study was designed to compare the writing motivation of students with specific language impairments with their non-disabled peers. Due to the cognitive and linguistic demands of the writing process, students with language impairments face unique difficulties during the writing process. It was hypothesized that students with specific language impairments will be more likely to report lower levels of perceived writing competence and be less autonomously motivated to write. Students in grades 3-5 in 11 schools (33 with specific language impairments, 242 non-disabled peers) completed self-report measures, designed from a Self-Determination Theory perspective, which measured the degree that students are intrinsically motivated to write as well as their perceived writing competence. Statistical analyses showed that (1) students with specific language impairments reported lower levels of perceived writing competence and autonomous writing motivation; (2) SLI status was a significant predictor of perceived writing competence after spelling, grade, and gender were controlled; and (3) when spelling, grade, and gender were controlled, perceived writing competence was a significant predictor of autonomous writing motivation, but SLI status was not. The results of this study are expected to inform the current understanding of the relationship between language ability and writing motivation in students with specific language impairments, as well as the design of future writing interventions.

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Chapter 1: Introduction

Students with learning disabilities often face unique challenges that impede their progress as writers. For the purposes of this study, *learning disabilities* refers to "a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical skills" (Hammill, Leigh, McNutt, & Larsen, 1981, p.339). Students with learning disabilities have considerably more difficulty than their peers in their approach to writing and their knowledge of writing, resulting in significantly lower outcomes (Graham & Harris, 2003; Salahu-Din, Persky, & and Miller, 2008). Without an elevated level of motivation, students with learning disabilities are unlikely to close the gap with their peers and develop adequate literacy skills (Guthrie, 2004; Morgan & Fuchs, 2007). For this reason, building motivation to write should be an essential instructional focus for classroom teachers and special educators.

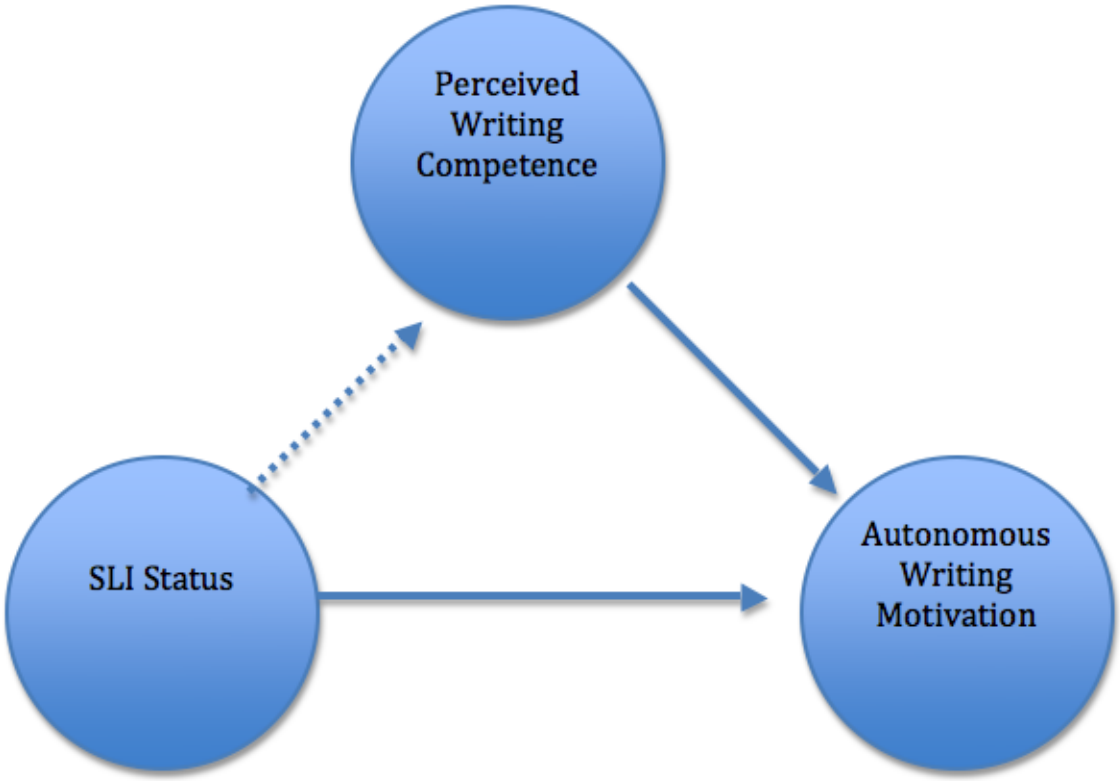
Schunk, Pintrich, and Meece (2008) define *motivation* as "the process whereby goal-directed activity is instigated and sustained" (p. 4). To date, most research investigating the skills and motivation of struggling writers has focused on students who are broadly identified as learning disabled (Nelson, Bahr, & Van Meter, 2004; Scott, 2002; Singer & Bashir, 2004). Students with learning disabilities, however, are a heterogeneous group who present difficulties related to a number of primary and co-existing challenges in underlying processes. For example, difficulties in acquiring literacy skills have been linked to phonological processing, memory, attention, and language processes (e.g., Cutting & Denckla, 2003; Mann, 2003; Siegel, 2003; Swanson & Saez, 2003). While these underlying processes may all contribute to delayed literacy

skill acquisition, each one is likely to have a unique influence on the development of writing skills.

This study focused on a subset of learning disabled students—students with *specific language impairments* (SLI) who, despite apparently average cognitive abilities, have a disability related to their use of language to express ideas and to comprehend messages. There were two primary purposes of the current study. First, this study compared the *autonomous writing motivation* of students with SLI and their non-disabled peers. Autonomous motivation will be further explained in this chapter, and is conceptualized as engaging in an activity for intrinsic, as opposed to extrinsic, purposes. Second, multiple regression analysis was used to examine the hypothesis that *perceived writing competence*, a self-evaluative judgment of writing competence, mediates the relationship between SLI status (SLI or non-SLI) and autonomous writing motivation.

Figure 1

Proposed Model of Autonomous Writing Motivation



A basic assumption underlying this study is that students with SLI face unique challenges during the writing process. For example, writers with smaller vocabularies and decreased syntactic maturity will be at a disadvantage when attempting to express themselves through writing. Because language use is an essential part of the writing process, difficulty with language is likely to negatively affect writing outcomes and attitudes towards writing, including perceived writing competence(Scott, 2002). To this point, however, very few studies have specifically investigated the writing motivation of this population. The purpose of this study is to extend the current writing motivation literature by investigating students with SLI.

Characteristics of Students with SLI

Children with SLI have "significant limitations in language functioning that cannot be attributed to deficits in hearing, oral structure and function, or general intelligence" (Leonard, 1987, p. 1). These language limitations can involve both language form (phonology, morphology, and syntax) and language content (semantics) (American Speech-Language-Hearing Association (ASHA) 1993, p. 40). According to Rice (2007), students with SLI have at least average (standard score > 85) IQ, but perform below the 15th percentile when compared to same-aged peers on a comprehensive language assessment. These assessments typically focus on the semantic, syntactic and discourse elements of oral language (Catts, Adolf, Hogan, and Weismer, 2005). To further describe the characteristics of students with SLI, the following sections describe several dimensions of language that are most problematic for the writing of students with SLI.

Specific Language Impairments and Semantics

Semantics is an important component of school-aged language development. Semantics, often equated with vocabulary knowledge, are "an individual's learning and storage of the meanings of words" (Pence & Justice, 2008, p. 73).A person's semantic abilities are strongly related to verbal expression and comprehension of language. In addition, vocabulary is a key component of quality literacy instruction (National Institute of Child Health and Human Development, 2000). Vocabulary development in students with SLI is often slower and less robust than for typically developing children (Leonard, 2000). In addition, students with SLI often demonstrate word retrieval difficulties that may reflect an impoverished lexical network or long-term memory storage problems (Owens, 2003). Students with specific language impairment often use a less diverse

expressive vocabulary, which results in a higher proportion of non-specific word choices (Nelson et al., 2004).

Specific Language Impairments and Syntax

Syntax, which is generally synonymous with grammar, is defined as "the rules of language that govern how words are organized into sentences" (Pence & Justice, 2008, p. 88). Syntactic skills allow students to comprehend, express, and recall increasingly difficult levels of academic discourse. For these reasons, syntactic deficits have been linked to significant academic difficulties (Kamhi & Catts, 1999; Snowling, Bishop, & Stothard, 2000).For students with language impairments, grammatical deficits often persist during the school years. These students' syntactic development is characterized by higher rates of grammatical errors and more difficulty producing complex sentences (Eisenberg, 2006).

Specific Language Impairments and Morphology

Morphology relates to the use of morphemes, which are the smallest units of language capable of carrying meaning. For example, the word "talk" is one morpheme. This word conveys meaning and cannot be broken down into smaller, meaningful parts. That is, word parts such as "alk" or "ta" do not have meaning. However, consider the word "talked", which contains two morphemes (talk + ed). When –ed is added to the end of a word, it is meaningful because it conveys past tense. Past tense –ed is an example of a *bound morpheme*, because it must be bound to other words to have meaning. Affixes, prefixes, suffixes, and grammatical markers are examples of bound morphemes. In contrast, morphemes such as "talk" are considered *free morphemes* because they can stand alone and still convey meaning. Children with SLI are often delayed in their

acquisition of grammatical morphemes and advanced prefixes/suffixes, negatively influencing their oral and written language abilities (Nagy, Berninger, & Abbott, 2006). This is particularly noticeable in early childhood, but these difficulties often persist into the school age years (Seiger-Gardner, 2009).

Specific Language Impairments and Spelling

While language is an important part of the writing process, so is the ability to decode and spell words (Hayes, 2000). Students who struggle with spelling will likely find the writing process more laborious than their typically developing peers. For this reason, it is important to note that students with SLI often will have significant challenges learning to read and write, and studies have shown that SLI and *dyslexia* often co-exist (American Speech-Language Hearing Association, 2001).

Dyslexia describes characteristics of another subgroup of students with learning disabilities, and is characterized "…by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities" (Lyon, Shaywitz, & Shaywitz, 2003, p. 2). These literacy difficulties are not due to an overall cognitive deficit, as students with dyslexia have normal intelligence. Students with dyslexia also do not have any sensory impairments that affect their reading development, such as visual difficulties or hearing loss. However, while SLI and dyslexia often may co-exist, they typically are considered distinct disabilities (Aaron, Joshi, & Williams, 1999; Bishop & Snowling, 2004; Catts, Fey, Zhang, & Tomblin, 1999; Catts, Hogan, & Fey, 2003; Catts, Adlof, Hogan, & Weismer, 2005; Catts, Adlof, & Weismer, 2006; Eisenmajer, Ross, & Pratt, 2005; Fraser, Goswami, & Conti-Ramsden, 2010; Hendriksen et al., 2007; Larkin & Snowling, 2008). Because very few studies of writing motivation have intentionally

sampled students with SLI, this study has the potential to help form a more refined understanding of writing motivation in general, as well as begin to uncover the role language ability might play in maintaining writing engagement.

Theoretical Perspective: Self-Determination Theory

Self-Determination Theory (Ryan & Deci, 2000b) was the primary motivational perspective of this study. While there are a number of well-respected motivation theories that potentially could be useful to the purposes of this study (e.g., self-efficacy theory, attribution theory, goal orientation theory), Self-Determination Theory (SDT) was chosen for four major reasons. First, this theory has been developed over decades through quality research design, and has been shown to be valid across many contexts (e.g. sports, academics, work) and cultures(Guay, Ratelle, & Chanal, 2008; Reeve, 2002; Ryan & Deci, 2000a). Second, SDT attempts to provide insight into the complex relationship between individual and environmental variables that result in different motivational styles. As Ryan and Deci (2000b) point out:

> Although motivation is often treated as a singular construct, even superficial reflection suggests that people are moved to act by very different types of factors, with highly varied experiences and consequences. People can be motivated because they value an activity or because there is strong external coercion. They can be urged into action by an abiding interest or by a bribe. They can behave from a sense of personal commitment to excel or from fear of being surveilled (p. 69).

Third, SDT is compatible with other well-respected theories of academic motivation. Because SDT integrates multiple constructs from these theories, researchers

can more comprehensively test broader motivational models. The relationship between these theories and SDT will be discussed in further detail later in Chapter 1, after I have given an overview of the theory and discussed variables related to lower levels of academic motivation. Finally, SDT provides a theoretical framework for understanding why students facing unique writing challenges, (e.g., students with SLI) may be at-risk for lower levels of writing engagement. Towards this purpose, an overview of SDT is presented in the next section. This overview is followed by specific hypotheses, formulated from an SDT perspective, about the writing motivation of students with SLI.

Overview of Self-Determination Theory

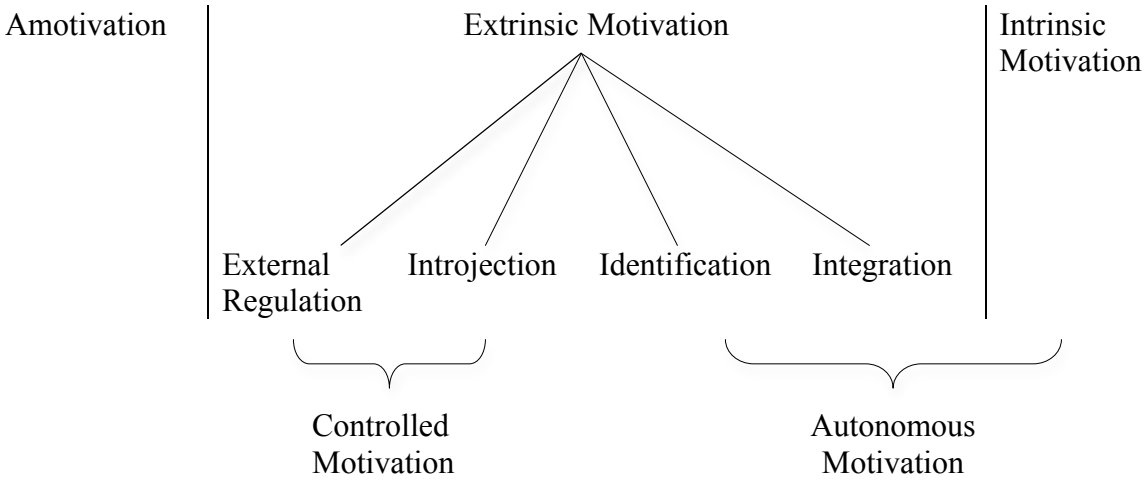
In this dissertation, I take the position that Self-Determination Theory (SDT; Ryan & Deci, 2000a) is useful for understanding the writing motivation of students with disabilities. SDT proposes that individuals may be intrinsically or extrinsically oriented towards a task. *Intrinsic motivation* refers to performing a behavior because the activity is inherently interesting or enjoyable. Individuals who are intrinsically interested in an activity are more likely to demonstrate increased persistence and experience more positive emotional wellbeing (Burton, Lydon, D'Alessandro, & Koestner, 2006; Grolnick & Ryan, 1987; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). *Extrinsic motivation* occurs when an individual engages in an activity for external reasons (e.g. rewards, ego), or for reasons other than inherent interest. Extrinsic motivation is not a unitary construct, however, as there is a continuum of the quality of extrinsic motivation. If an individual feels motivated by external controls (e.g. punishment, threats, preserving ego) and less by personal choice, this type of motivation is less self-determined and is likely to result in a lower quality of motivation. At the other end of the continuum, individuals may feel

more autonomous and experience more of a sense of personal agency and enjoyment during the activity. As Ryan and Deci (2000a) point out, many educational tasks are not inherently interesting, so it is important that educators are able to facilitate more self-determined forms of extrinsic motivation.

Deci and Ryan's subtheory of SDT, *Organismic Integration Theory (OIT),* describes the environmental variables that facilitate more autonomous motivation, as well as four differentiated types of external motivation: *external regulation, introjection, identification, and integration.*As can be seen in Figure 1, these subcategories of extrinsic motivation can be differentiated based on the external or internal orientation of an individual's behavior.

Figure 2

A taxonomy of human motivation (adapted from Ryan & Deci, 2000a)



At the far left of Deci and Ryan's continuum is *amotivation*. Students who are amotivated lack the intention to act. This may be due to a perceived lack of competence, control, or task value. To the right of amotivation are four levels of extrinsically

motivated orientations. The first level of extrinsic motivation, *external regulation*, is generally a matter of compliance focused on an external demand or consequence. External regulation also is accompanied by feelings of external locus of control. During *introjection,* individuals complete activities with a focus on avoiding negative emotions (e.g. guilt, anxiety) or to enhance one's ego. These activities are focused on maintaining contingent self-esteem and self-worth. *Identification* reflects a more internally regulated style of extrinsic motivation. Here the person has recognized the activity's importance, and is internally regulating the necessary behaviors to complete the task. The most autonomous form of extrinsic motivation, *integration,* occurs when the reasons for an activity have been integrated with one's sense of self, values, and needs.

As SDT has developed, it is generally accepted that external regulation and introjection represent a controlled motivation style (Figure 2). In contrast, *autonomous motivation* consists of the identified, integrated, and intrinsic forms of motivation. (Deci & Ryan, 2000a). Autonomous motivation is conceptualized as engaging in an activity for internal, as opposed to external, purposes. Numerous studies have linked autonomous motivation with improved academic outcomes and emotional well-being (for a review, see Guay et al., 2008). For this reason, it is important for educators to understand and utilize methods that will facilitate autonomous motivational orientations towards academic tasks. The distinction between controlled and autonomous motivation also is important to the design of this study, as autonomous motivation was a primary dependent variable.

SDT proposes three essential psychological needs that are necessary for the development of more autonomous forms of extrinsic motivation: relatedness,

competence, and autonomy. A key reason people will complete activities for an external reason is to feel *related* to significant others. If the activity is valued by significant other(s), the individual is more likely to value it as well (Furrer & Skinner, 2003). In addition to feeling a sense of relatedness, a sense of *autonomy* is necessary towards the development of intrinsic motivation and internally regulated extrinsic motivation (Katz & Assor, 2007; Vansteenkiste et al., 2004). Autonomy refers to "the need to feel a sense of control, agency, or autonomy in interactions in the environment" (Schunk, Pintrich, & Meece, 2008, p. 248). Finally, it is unlikely that students will internalize an activity if they don't perceive that they are *competent* and capable of being successful. This sense of perceived competence is central to this study, as it is reasonable to expect that difficulties with language and spelling could negatively influence students' perceived writing competence.

Self-Determination Theory and Other Motivational Constructs

While no one theory can be all encompassing, SDT includes a number of useful perspectives. Specifically, SDT contains elements of three motivational constructs appearing in other major theories of academic motivation: *capacity beliefs*, *control beliefs*, and *interest/value*. The relationship between SDT and these constructs will be discussed in the next section.

Capacity beliefs. It is well established that an individual's perceived competence is a powerful variable in human motivation (e.g., Schunk, Pintrich, Meece, 2008). For example, self-efficacy theory (e.g., Bandura, 1997) has generated a large body of convincing research in the area of academic motivation. Self-efficacy is task specific, and refers to an individual's beliefs about one's ability to complete a particular task. Students

with a high sense of self-efficacy are more likely to engage in a task and persist towards completion (Pajares, 1996). As explained earlier in this section, perceived competence is also a major component of SDT. However, SDT takes a broader perspective by considering the interaction between perceived competence and other individual/environmental variables, such as autonomy and relatedness.

Control beliefs. Another key motivational construct is perceived control. An individual's sense of control over future outcomes is related to persistence and engagement (Dweck, 1999; Weiner, 1986). For example, Carol Dweck's line of research has shown that implicit beliefs about ability have a powerful influence on an individual's motivation. Individuals who believe that ability is largely a fixed state experience a lower level of personal control over outcomes than individuals who perceive ability as malleable and improved incrementally. Attribution theories (e.g., Weiner, 1986)are another motivational perspective that considers control beliefs. Within an attribution model, individuals are more motivated when they regularly attribute positive outcomes to factors that are controllable (e.g. effort) than if they feel outcomes are linked to uncontrollable factors (e.g. difficulty of task, health).

Control beliefs also are considered within SDT, as autonomy is a central tenet. As conceptualized in SDT, the need for autonomy "refers to the need to feel a sense of control, agency, or autonomy in interactions in the environment, or a perceived internal locus of causality from an attribution point of view"(Schunk, Pintrich, & Meece, 2008, p. 249). Because SDT proposes a relationship between control beliefs and capacity beliefs, research from this perspective can take on a broader scope while utilizing these well-established motivational constructs.

Interest and value. Prior research has shown that individuals are more persistent during activities that interest them (Hidi & Renninger, 2006) and they value (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006). SDT also allows the researcher to consider these constructs, as the continuum of extrinsic and intrinsic motivational styles relates to both inherent interest in an activity as well as the value of the activity. That is, if individuals are more autonomously self-regulated during an activity, it is likely that theywill find the activity interesting as well as valuable. Value, within the SDT perspective, is determined by integration of an activity with the individual's sense of self.

In summary, SDT contains multiple motivational constructs that have been validated by research conducted from diverse, but related, perspectives. This allows the researcher to integrate these constructs and to take a more comprehensive view of academic motivation.

The Hypothesized Model

Figure 1 on p. 3 represents the hypothesized model of autonomous writing motivation that was tested in this study. Beginning on the left side of Figure 1, SLI status was hypothesized to influence the perceived writing competence of the participants. SLI status refers to the students' eligibility for special education services in the area of language, and students in this study are categorized as either SLI or non-SLI. It is hypothesized that students with SLI will report lower levels of perceived writing competence due to the linguistic challenges of the writing process, which will be discussed further in Chapter 2.

Within SDT, perceived competence generally is considered to be a primary determinant of autonomous motivation (Deci & Ryan, 2000). For this reason, in the

present study perceived writing competence is hypothesized to have a direct relationship with students' autonomous writing motivation. It also is hypothesized that perceived writing competence will mediate the relationship between SLI status and autonomous writing motivation.

Control Variables

Researchers have identified a number of variables other than language that may be related to writing motivation. Spelling ability, gender, and grade were control variables in the present study. The rationale for their inclusion as control variables will be discussed in the following sections.

Spelling ability. Deficits in spelling also can influence writing outcomes and a student's perceived writing competence (Berninger, Abbott, Abbott, Graham, & Richards, 2002; Berninger et al., 2006; Berninger & Hidi, 2007; Graham, Berninger, & Fan, 2007). Researchers have proposed at least two possible reasons that spelling deficits are negatively related to a student's perceptions of writing competence. First, spelling errors are likely to negatively influence an adult's perception of a child's writing (Marshall & Powers, 1969). That is, writing with spelling errors is more likely to receive critical feedback. Second, spelling difficulties may interfere with fluent writing composition (e.g., Graham, Harris, & Chorzempa, 2002). Students need to be able to transcribe their message efficiently so they can devote working memory resources towards other components of the writing process. Because spelling can influence students' attitudes towards writing and many students with SLI have difficulty with spelling, it is an important control variable in this study. The relationship between

spelling ability and perceived writing competence also will be described in greater detail in Chapter 2.

Gender. It could also be expected that gender influences writing motivation. Gender differences related to motivation have been observed across domains, cultures, and age (Hyde & Durik, 2005). However, the nature of these gender differences appears to be, at least in part, domain-specific. For example, boys report higher levels of perceived competence than girls in science, math, and athletics (Meece, Glienke, & Burg, 2006). On the other hand, girls report that they feel more competent than boys in language arts (Guay, Chanal, Ratelle, Marsh, Larose, & Boivin, in press; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002). In a review of writing-related literature, Pajares and Valiante (2006) found that, in general, girls feel more competent about their writing skills than boys.

Grade. Developmental differences in writing motivation might also be expected within this study's participants. Research conducted from variety of motivational perspectives suggests that student motivation generally declines as a student progresses through school (Eccles, Wigfield, & Schiefele, 1998; Harter, 1981; Schunk, Pintrich, & Meece, 2008). This trend has been observed in a number of domains, including writing (Pajares, 2003; Pajares, Johnson, & Usher, 2007).

Purpose and Research Questions

Because of the high rates of co-morbidity between SLI and dyslexia, it is likely that students with SLI have been included in many studies of the writing of students with learning disabilities. To date, however, few studies have specifically focused on the

writing motivation of students in the more homogeneous subgroup of struggling writers identified with SLI. In order for educators to provide better specificity in matching instruction with student needs, it is necessary to study the writing motivation of more homogeneous groups. According to Deci and Ryan (2000a), students experiencing a lack of perceived competence will be less autonomously motivated and more dependent on external motivators. It is possible that significant language deficits, which increase the difficulty of writing, have a significant influence on students' perceived competence and attitudes towards writing. This relationship between perceived competence, language skills, autonomous writing motivation in students with SLI has yet to be scientifically investigated. As our understanding of writing motivation in students with SLI improves, educators presumably will be better equipped to design instruction targeting students' writing abilities and writing motivation. Towards this purpose, the present study is designed to answer the following questions:

1) Are there differences in perceived writing competence and autonomous writing motivation between students with SLI and non-disabled peers?

2) Does SLI status predict perceived writing competence, after controlling for grade, gender, and spelling ability?

3) Does perceived writing competence mediate the relationship between SLI status and autonomous writing motivation, after controlling for grade, gender, and spelling ability?

The Current Study

To answer these research questions, I sampled 272 students in grades 3-5 (33 students with SLI, 242 non-disabled peers) in 11 schools. Students in the SLI group met the Nebraska Rule 51 guidelines for language impairment, as determined by a speech-

language pathologist with a master's degree in speech-language pathology as well as the ASHA Certification of Clinical Competence (CCC). Students in the second group were not identified with any disability.

The two groups completed the Self-Regulation Questionnaire-Adapted (SRQ-A), which was adapted to measure autonomous writing motivation. The SRQ-A is the primary instrument used for measuring autonomous and controlled motivation from a Self-Determination Theory perspective, including its use in studies that have surveyed students with learning disabilities (Deci, Hodges, Pierson, & Tomassone, 1992; Grolnick & Ryan, 1987; Grolnick & Ryan, 1989; Ryan & Connell, 1989; Ryan & Deci, 2000b). The current scale was designed to measure a student's level of autonomous writing motivation.

Participants in the present study also were asked to spell 20 grade-appropriate spelling words taken from a standardized spelling measure. The students' spelling raw scores transformed into within-grade z-scores. Finally, the students completed a measure of perceived writing competence. Regression analyses were used to test the hypothesized model and to answer the research questions.

Chapter 2: Review of the Literature

This study is designed to examine the differences in writing motivation between students with SLI and their non-disabled peers, and to investigate factors that may contribute to this difference. In Chapter 1, I described the unique characteristics of students with SLI and how these characteristics relate to academic settings. The primary language-related characteristics identified were significant difficulties with grammar, vocabulary, spelling, and morphology. The first section of Chapter 2 will provide a further review of the relationship between spelling, SLI, and dyslexia. I then will utilize current models of writing cognition to examine the unique writing challenges faced by students with language impairments. A primary purpose for this section will be to present an argument about how the writing process can create a significant cognitive load for students with language impairments. Increased cognitive load is likely to influence the difficulty of writing for these students and their perceived writing competence. As discussed in Chapter 1, SDT generally predicts that lower levels of perceived competence will contribute to a lower quality of motivation (Ryan & Deci, 2000a). This makes SDT a useful perspective in examining the writing motivation of a student population (students with SLI) that is likely to experience decreased perceived writing competence. From this perspective, I will review research that provides insight into reasons for lower levels of academic motivation, especially as it relates to students with disabilities. In the final section of Chapter 2, studies investigating the writing motivation of at-risk students and students with disabilities are reviewed, providing a context in the current writing motivation literature for the present study.

Specific Language Impairments as a Unique Challenge in the Writing Process

Since literacy development is intimately related to language proficiency, students with SLI often are at-risk for lower levels of literacy achievement and are often diagnosed with reading disabilities (for review see American Speech-Language-Hearing Association, 2001). As mentioned in Chapter 1, however, dyslexia and SLI are typically considered distinct disabilities. A brief review of the cognitive-linguistic foundations of spelling will be presented in the next section to clarify the relationship between language impairments and spelling difficulties, as there is a linguistic base to spelling. Following this, research investigating the relationship between SLI and dyslexia also will be reviewed to further explain why students with language impairments face unique writing challenges.

Cognitive-Linguistic Foundations of Spelling

Spelling is "a code that uses letter sequences to represent specific words that have an associated pronunciation and meaning within the mental dictionary" (Berninger & Fayol, 2008, p. 1). There are three primary codes that contribute to spelling: phonological, orthographic, and morphological (Berninger & Favol, 2008; Pollo, Treiman, & Kessler, 2008). As children begin to spell words, they must use their *phonological knowledge*, or knowledge of the sound structure of a word, to segment words into the individual sounds and represent these sounds with the appropriate symbol(s). For example, to spell the word "cat", the child must recognize that there are three phonemes (/k/, /a/, /t/) that need to be represented by letters. The child then uses *orthographic knowledge,* or knowledge of how sounds are mapped to symbols of a language, to represent each sound with the appropriate letter. *Morphological knowledge*

also contributes to a student's developing spelling ability (Berninger, 2000; Bourassa & Treiman, 2009). For example, the past tense suffix *-ed* is pronounced /t/ in words such as "packed" and as /d/ in words such as "begged." However, despite this variability in speech production, it is always spelled "-ed." In addition, because it relates to identifying root words, prefixes, and suffixes, morphological knowledge has been shown to be significantly related to advanced spelling skills even after controlling for phonological skills (Nagy et al., 2006)

As students' skills develop it is typical for them to produce phonetically plausible spellings that do not match the standard spelling. For example, spellings like "jrie" for "dry" and "sbot" for "spot" make sense based on the sound-symbol relationships. However, from these examples it is evident that using only phonological, morphological, and orthographic knowledge is not adequate in developing mature spelling skills. There are a number of other cognitive and linguistic processes that contribute to spelling development. For example, students must develop an automatized lexicon of *mental graphic representations* (MGRs). MGRs are "mental representations of written words, or parts of words, in memory" (Wolter & Apel, 2010, p. 180). Students also need to learn and internalize spelling rules (Berninger & Fayol, 2008). Finally, children use vocabulary and syntactic knowledge to differentiate the spelling of homophones (e.g., They wound gauze around the wound).

To summarize, spelling skills are largely built on phonological, orthographic, and morphological knowledge, but development of MGRs and increased familiarity with spelling rules also support spelling development. Semantic and syntactic knowledge play a further role in becoming an accurate speller. The linguistic demands of spelling may

provide some explanation for research demonstrating a high co-morbidity rate between SLI and dyslexia. Research that has investigated this relationship will be reviewed in the next section.

Empirical Investigations of SLI and Dyslexia

In recent years, researchers have shown an increased interest in understanding the relationship between SLI and dyslexia. One key to understanding the relationship between these two disabilities is to distinguish between phonological skills and *non-phonological oral language skills* (Bishop & Snowling, 2004; Catts et al., 2005; Fraser et al., 2010). Children with SLI demonstrate significant difficulty with these non-phonological language skills, which include semantics, syntax, and discourse. However, students with SLI do not necessarily have phonological deficits, as they are typically identified based on their non-phonological language development (Rice, 2007). There seems to be strong evidence linking phonological deficits to difficulty in developing sound-symbol and orthographic knowledge (for a review, see Troia, 2004). Bishop and Snowling (2004), in an influential comprehensive review of genetic and empirical research, proposed three groups of struggling readers: 1) dyslexia only (deficient decoding/typical non-phonological oral language), 2) SLI only (typical decoding/deficient non-phonological oral language), and 3) SLI and dyslexia (deficient decoding/ deficient non-phonological oral language).

A number of researchers have conducted investigations that have shed further light on the relationship between SLI and dyslexia. In general, these researchers administered a battery of phonological, nonphonological language, literacy, and IQ assessments to elementary and middle school students. In general, the results support

Bishop and Snowling's three groups. For example, Tomblin et al (2000) found that 52% of 164 2nd grade students with language impairments met the criteria for reading disabilities but 48% did not, suggesting a high but not complete correlation between SLI and dyslexia. McArthur et al. (2000) found that 51% of 5-9-year old students with SLI ages had a reading disability. Catts et al. (2005) expanded on these studies by sampling 527 children in 2nd, 4th, and 8th grade and also found evidence for a significant overlap between SLI and dyslexia. Consistent with previous results, however, not all students with SLI met the criteria for dyslexia, and some students with significant reading disabilities had adequate language skills. Eisenmajer et al. (2005) also found three different groups in children ages 7-12, with 57% of the disabled students meeting the criteria for both SLI and dyslexia. Most recently, Fraser et al (2010) assessed students aged 9-11. Out of 51 disabled students, 16 students were identified as SLI only, 14 only had reading difficulties, and 21 met the criteria for both SLI and dyslexia. Of the studies that specifically measured phonological skills (Catts et al., 2005; Eisenmajer et al., 2005; Fraser et al., 2010) phonological processing deficits were linked to reading difficulties. In addition, some studies found that children with SLI and adequate reading skills do not demonstrate as significant phonological processing deficits (Catts et al., 2005, Eisenmajer, 2005). However, the relationship between phonological deficits and the literacy skills of students with SLI is still an area in need of further research (Messaoud-Galusi & Marshall, 2010).

In summary, even though students may on the surface appear to have similar literacy difficulties, three differential profiles related to underlying deficits in decoding and language have emerged (Bishop & Snowling, 2004; Catts et al., 2005): a) dyslexia

with intact oral language skills, b) dyslexia with deficient oral language skills, and c) oral language deficits with intact decoding skills. Towards a better understanding of how these difficulties affect the writing process in unique ways, the following section will provide an overview and discussion of a prominent model of writing cognition in relationship to these disabilities.

Writing Cognition and SLI

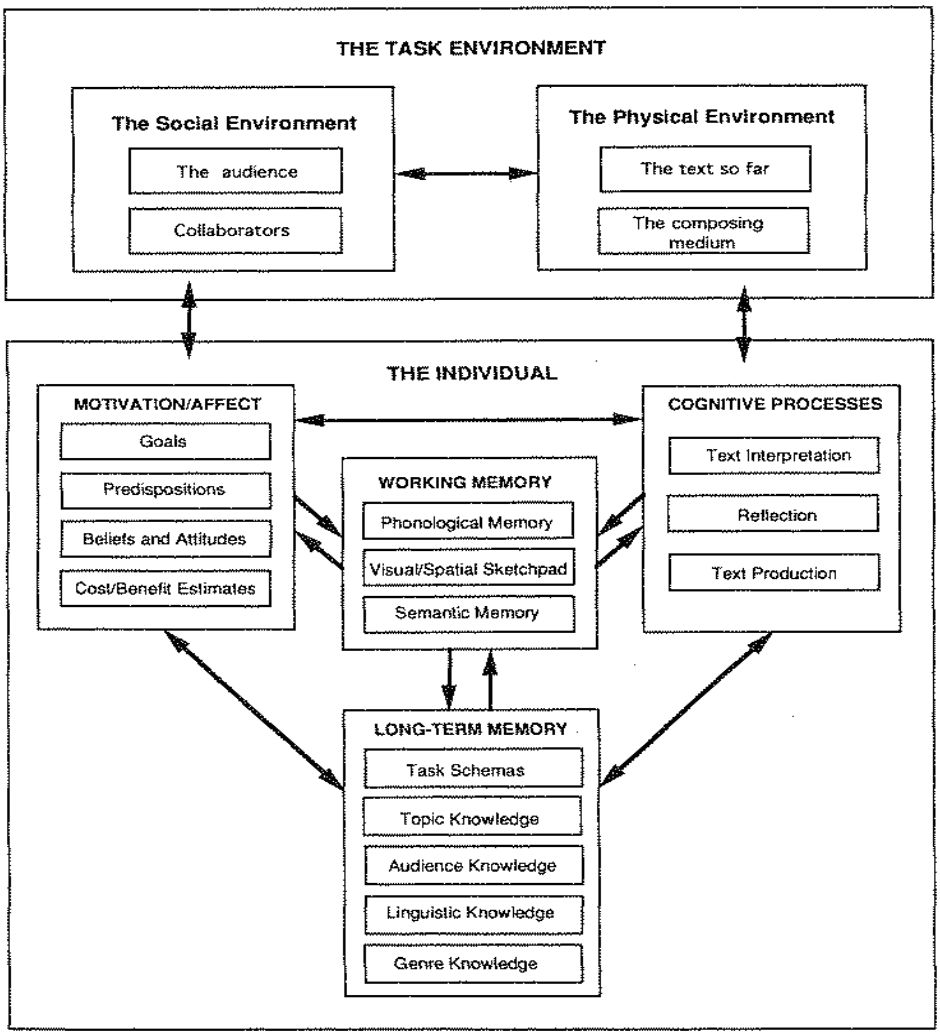
Flower and Hayes's model of writing (Flower & Hayes, 1980; Hayes, 2000) model of writing details a relationship between the task environment and individual social-cognitive processes. Hayes' 2000 version of the model is presented in Figure 2.The task environment includes the social environment and the physical environment. The writer must mentally represent the task, which includes consideration of the audience. Writing also is a social process, so collaborators can also be a part of the task environment. The physical environment includes both the text of writer's current draft and the composing medium (e.g., paper and pencil, word processor). While consideration of this task environment is important, most of the attention of this section will be on the individual difficulties likely to be faced by students with SLI.

Within the individual, four elements key to successful writing performance are posited: motivation/affect, working memory, cognitive processes, and long-term memory. These elements simultaneously interact and influence each other during the writing process. At the center of the individual elements is *working memory,* as all other processes interact with working memory. Working memory is also in a central role because this is where all non-automatic processes are executed. Working memory is a limited resource—the writer can process only a finite amount of information or processes

at one time. It should be noted that one component of working memory is the phonological loop, where acoustic information is temporarily held. This is relevant to the purpose of this review because poor phonological memory and working memory deficits have been shown to be correlated with language impairments (Graf Estes, Evans, & Else-Quest, 2007; Montgomery, 1995; Montgomery, 2000; Montgomery & Evans, 2009). For some students with SLI, it is possible that working memory deficits make it much more difficult to manage the complex cognitive demands of the writing process.

Figure 3

A Cognitive Model of Writing (from Hayes, 2000)



Long-term memory, as represented in Hayes's model, is where the writer retrieves stored cognitive knowledge. This information includes task schemas, which direct the procedures enacted during the writing process, and also knowledge related to audience and genre. However, the most significant consideration related to students with SLI is that linguistic knowledge and topic knowledge are major components of long-term memory that are essential in the writing process. This is important because students with SLI, who by definition have smaller vocabularies and decreased syntactic maturity, will be at a disadvantage when attempting to draw from their relatively impoverished linguistic knowledge base. In addition, due to the language demands of learning new information, students with SLI are more likely to have difficulty acquiring topic knowledge (Leonard, 2000). This combination of decreased working memory capacity and long-term memory due to language difficulties are likely to have detrimental effects on text production (e.g. quantity of ideas, sentence complexity), text revision, and text quality (e.g. word choice, cohesion of ideas, sentence grammar) (Nelson et al., 2004; Scott, 2002; Singer & Bashir, 2004).

The three proposed *cognitive processes* in Hayes' model are text interpretation, reflection, and text production. These processes refer to reading the text, evaluating the text, and generating new content. Once again, each of these processes is likely to hold unique challenges for the writer with SLI as writers must use vocabulary and grammar knowledge in each of these processes. During text generation the writer must retrieve and manipulate grammar and vocabulary to form sentences. Writers also draw on semantic and syntactic knowledge when reflecting on written text and making revisions

to their manuscript. Because of the heavy language demands of these tasks, it is likely that students with SLI will have significant difficulty with these cognitive processes.

To summarize, writers with SLI are likely to face many significant difficulties in the writing process. Writing is a complex cognitive task that requires individuals to balance multiple processes in working memory. However, students with SLI often have impoverished working memory capacity, particularly in the area of phonological memory. This deficit is likely to diminish these individual's capacity to balance the cognitive challenges of writing. In addition to these working memory difficulties, students with SLI will be less proficient at retrieving linguistic knowledge for text generation from long-term memory. This is further complicated by their difficulty in using language to acquire an adequate base of topic knowledge. Because of these unique challenges, writing can be an extraordinarily demanding cognitive task for students with specific SLI. For this reason, it seems realistic to hypothesize that these unique challenges will affect the perceived writing competence of students with SLI.

In addition to these language difficulties, proficient writers must also possess adequate decoding and phonics knowledge to transcribe language into print. While some students with language impairments have deficits in these areas, some do not (e.g., Bishop & Snowling, 2004). Deficits in decoding and spelling will impede the writing process in different ways than oral language difficulties. For example, at a basic level, spelling ability deficits will interfere with text generation by diverting working memory resources away from composing the ideas and towards the basic symbolic encoding of the words. Spelling and decoding deficits also make it more difficult to revise text due to higher frequency of spelling errors and inefficient reading abilities. Inadequate reading

abilities will also make it more difficult to access external texts necessary for building up topic knowledge for the writing task (e.g. from web material, textbooks, reference books).

Students demonstrating difficulties with decoding *and* oral language face compounding obstacles in transcription and language generation. Both language impaired student profiles (language impairment only, language impairment + dyslexia), however, present a set of challenges that are distinct from those faced by students with dyslexia and intact oral language skills. These students (dyslexia-only) may have less difficulty generating language for writing tasks, but struggle with transcribing language orthographically. Careful consideration of these specific literacy profiles and writing cognition leads to the possibility that students with language impairments face unique challenges during writing tasks. The motivational implications of this lower level of perceived writing competence will be revisited in the next section, which reviews academic motivation from a SDT perspective.

SDT and Academic Motivation

In Chapter 1, I presented an overview of SDT. As a brief review, SDT proposes a continuum of motivational orientations. Individuals may be intrinsically motivated to engage in an activity due to inherent interest or enjoyment. In contrast, individuals may also be extrinsically motivated. Deci and Ryan (2000a) proposed a continuum of extrinsic motivation, from more controlled orientations (external and introjected orientations) to autonomous orientations (identified, integrated, and intrinsic orientations).

Because educators want to maximize student motivation, it should be noted that an individual's motivational orientation can change over time. For example, an individual's early encounter with an activity may be completed in a way that is consistent with externally regulated motivation, but eventually develop into more of an autonomous motivational style. These differences in the quality of external motivation are based on the level of *internalization*, or "the process of taking in a value or regulation" (Ryan & Deci, 2000a, p. 60), and *integration,* which refers to "the process by which individuals more fully transform the regulation into their own so that it will emanate from their sense of self" (Ryan & Deci, 2000a, p. 60).

Numerous studies have validated these tenets of SDT, as well as the strong relationship between autonomous motivation (intrinsic, identified, integrated) and positive academic outcomes(Burton et al., 2006; Grolnick & Ryan, 1987; Lepper, Iyengar, & Corpus, 2005; Reeve, 2002; Reis et al., 2000; Ryan & Connell, 1989; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Ryan and Connell (1989) conducted one of the first and most important studies that differentiated styles of extrinsic motivation. In an exploratory study, Ryan and Connell sampled from urban (n=112), suburban (n=156), and rural (n=450) elementary schools, grades 3-6. Within this sample, there was an ordered correlation, providing strong validation for their model of differentiated motivational orientations. More recent studies have linked different types of motivation to academic and affective outcomes. For example, Lepper, Corpus, and Iyengar (2005) sampled 797 children in grades 3-8 and found that intrinsic motivation was positively related to both grades and standardized test scores, while extrinsic motivation was negatively correlated with these outcomes. This research by Lepper and

colleagues had a diverse sample and found very few differences across gender or ethnicity groups. However, Lepper et al. did not discriminate between different types of extrinsic motivation, so it is difficult to discern from this study the relationship between more autonomous forms of extrinsic motivation and academic achievement. In recent studies that have made this distinction, emotional well-being is strongly correlated with intrinsic motivation, but more self-regulated styles of extrinsic regulation has been a better predictor of academic outcomes (Burton et al., 2006; Walls & Little, 2005).

The primary instrument used to determine an individual's motivational disposition on this continuum is the Self-Regulation Questionnaire (SRQ) (Ryan & Connell, 1989). For the purposes of this study, I adapted the SRQ to reflect attitudes towards writing. Students completing the SRQ thus encountered statements that reflected autonomous writing motivation (identification, integrated) and reported how congruent the statement was with their attitude towards the given task. This instrument has possessed good reliability in a number of investigations with school children of a similar age to those in this study (Deci, Hodges, Pierson, & Tomassone, 1992; Grolnick & Ryan, 1989, Ryan & Connell, 1989) The SRQ is also the primary measure of autonomous writing motivation in this study.

Reasons for Lower Levels Of Academic Motivation

As discussed in Chapter 1, SDT proposes three primary reasons for lower levels of academic motivation: lack of autonomy supports, lower perceived competence, and relatedness. Autonomy supports facilitate a sense of personal agency and decrease feelings of being controlled. Some examples of autonomy supportive behavior would include allowing for student choice, providing meaningful rationales, and timely positive

feedback. This is in contrast to controlling behaviors, such as reward contingencies, deadlines, and controlling language. In an exemplar study, Assor, Kaplan, Kanat-Maymon, and Roth (2005) found that, for 4th and 5th grade general education students, directly controlling teacher behaviors were related to negative outcomes such as anger, anxiety, decreased engagement, and externally focused motivational styles. In another recent study, Legault, Green-Demers, and Pelletier (2006) investigated the primary factors leading to amotivation, or lack of motivation. Their exploratory factor analysis of 741 non-disabled high school students found that one of the key contributors to amotivation was low ability beliefs. In addition, social support, which relates to autonomy and relatedness within SDT, predicted motivation and academic outcomes.

Relatedness, autonomy, and perceived competence also are highly relevant considerations related to the motivation of students with learning disabilities. For example, Deci, Hodges, Pierson and Massone (1992) investigated the relationship between students with learning disabilities' perceptions of autonomy and competence with their academic achievement and social adjustment, and consistent with SDT, perceptions of competence and autonomy were primary predictors of adjustment and achievement. Similarly, Grolnick and Ryan (1990) compared the perceived competence and autonomous motivation of students with learning disabilities to three other groups: matched for IQ, low-achievers, and randomly selected non-disabled peers. In this research, the students with learning disabilities and lower achievers reported lower levels of academic perceived competence and were less autonomously motivated. In addition, teachers rated the students with LD as significantly less competent and less motivated.

To summarize the preceding sections, SDT proposes a continuum of extrinsic and intrinsic motivation. In order to facilitate more self-determined motivation, three key variables are proposed: relatedness, perceived competence, and autonomy support (Ryan & Deci, 2000b). Research in the SDT tradition has accumulated strong evidence for this perspective on human motivation across ethnic, gender, and age groups (Guay et al., 2008; Ryan & Deci, 2000a), including students with learning disabilities. Within the larger group of students with learning disabilities, those students who have significant difficulties with language are likely to face distinctive challenges towards becoming proficient writers. As SDT is applied to education, it is expected that a consistent lack of academic success will decrease perceived competence and motivation for academic tasks (Deci, Hodges, Pierson and Massone, 1992; Grolnick & Ryan, 1990; Guay, et. al, 2008). It would follow that students with SLI, because they have significant difficulties with the linguistic challenges of the writing process, are at-risk for lower levels of perceived writing competence and autonomous writing motivation. A review of empirical research related to writing competence and at-risk students will be presented next to situate this study within the current literature.

Writing Competence and Motivation in Students with SLI

Some researchers have tested the hypothesis that inadequate writing ability relates to lower levels of writing motivation in students with learning disabilities, and the available evidence generally supports this proposition (for a review see Graham, 2006). For example, Shell, Colvin, and Bruning (1995) did not specifically study students with learning disabilities, but found significant differences in three motivational variables (self-efficacy, attribution, and outcome expectancies) when comparing high achieving

writers to low achieving writers. Graham et al (1993) found that students with learning disabilities had a less favorable view of writing than their non-disabled peers, but no significant differences were found when comparing the motivational variable between these groups. While some intervention studies have discovered a relationship between improved competence and writing motivation (Berninger & Hidi, 2007; Garcia-Sánchez & Fidalgo-Redondo, 2006; Graham & Harris, 1989), others have not (Garcia-Sánchez & Fidalgo-Redondo, 2006; Graham, Harris, & Mason, 2005; Harris, Graham, & Mason, 2006; Page-Voth & Graham, 1999). Because of these mixed results, it is necessary to continue investigation into the writing motivation of students with learning disabilities in order to form a more complete and better-validated model of their motivation.

While previous research related to writing motivation and learning disabilities provides some insight for understanding writing motivation in students with SLI, caution must be exercised when making this generalization. Because many students have dyslexia and SLI(ASHA, 2001), it is likely that many of the participants in these studies had significant difficulties with the language demands of the writing process. However, most of the studies reviewed for this study have utilized a broad definition of learning disabilities as a significant discrepancy between ability and achievement, and did not specifically measure oral language functioning. One study (Harris et al., 2006) did reference language impairments in how its sample was defined, but did not examine the unique motivational profile of this subgroup. A study focusing on writing motivation in students with SLI, a previously understudied population, would extend the current writing motivation literature.

Summary, Purpose and Research Questions

Research with more homogenous groups within the wide range of students with learning disabilities is needed to form models of writing motivation better matched to these groups. Students with language impairments are an example of such a homogeneous group, and the nature of this disability holds important implications and challenges related to the writing process. Because language skills are essential to the writing process, it seems likely that the language difficulties faced by students with SLI could negatively influence the perceived writing competence and subsequent quality of writing motivation. Thus, it would be beneficial to investigate this relationship further. It is currently unclear how significant language impairments relate to students' perceptions of competence and to their overall writing motivation. It also still remains to be determined whether language impairments have a unique relationship with writing motivation that is independent of spelling ability, gender, and grade. Research focused on these possibilities has the potential to help inform the design of interventions aimed at improving writing motivation in students with language impairments, as well as educators' ability to provide greater specificity in matching instruction with student exceptionalities.

The purpose of this study is to compare the writing motivation of students with SLI and non-disabled peers. In addition, this study investigated the role perceived competence and spelling ability plays in the writing motivation of students with SLI. Three research questions were proposed.

1. Are there differences in perceived writing competence and autonomous writing motivation between students with SLI and non-disabled peers?

2. Does SLI status predict perceived writing competence, after controlling for grade, gender, and spelling ability?

3. Does perceived writing competence mediate the relationship between SLI status and autonomous writing motivation, after controlling for spelling ability, gender, and grade?

The hypotheses follow from these questions and the relationships shown in Figure 1. The first of these is that students with SLI status will report lower levels of perceived writing competence and autonomous writing motivation than their non-disabled peers. It also is hypothesized that perceived writing competence mediates the relationship between SLI status and autonomous writing motivation.

This hypothesized mediated relationship will be tested by following the logic of Baron and Kenny (1986), who describe four steps in determining the presence of a mediating variable: 1) determining if there is a direct link between the initial variable (SLI status) and the dependent variable (autonomous writing motivation); 2) determining if the initial variable (SLI status) is related to the mediator (perceived writing competence; 3) determining if there is a link between the mediator (perceived writing competence) and the dependent variable (autonomous writing motivation); and 4) determining if the link between the initial variable (SLI status) and dependent variable (autonomous writing motivation) becomes insignificant when the mediator (perceived writing competence) is present.

Chapter 3: Methods

Participants

Students in grades 3-5 (33 with specific language impairments (SLI), 239 non-disabled peers) in 11 schools in a Midwestern state participated in the study. Students in a total of 31 classrooms were surveyed. Demographic and geographic characteristics of the participating schools are presented in Table 1. In general, the students attended schools in rural towns (population <10,000) or micropolitan cities (population 10,000-50,000).

Table 1

Demographic and Geographic Characteristics of Participating Schools

School	Setting	% Eligible for free and reduced lunch	% White, Not Hispanic Students	% Hispanic Students	% Black, Asian/Pacific Islander, or Native American
School A	Micropolitan	> 50%	< 50 %	40% - 60%	< 10 %
School B	Micropolitan	> 50%	50 - 70%	10% – 20%	< 10%
School C	Rural	30% - 50%	> 70%	< 10 %	< 10 %
School D	Rural	30% - 50%	> 70%	< 10 %	< 10 %
School E	Rural	30% - 50%	> 70%	< 10 %	< 10 %
School F	Rural	30% - 50%	> 70 %	< 10 %	< 10 %
School G	Micropolitan	30% - 50%	> 70 %	10 – 20 %	< 10 %
School H	Micropolitan	30% - 50%	> 70 %	< 10 %	< 10 %
School I	Micropolitan	30% - 50%	> 70 %	< 10 %	< 10 %
School J	Rural	< 30%	> 70%	< 10 %	< 10 %
School K	Rural	< 30%	> 70%	< 10 %	< 10 %
School L	Micropolitan	< 30%	> 70%	< 10 %	< 10 %

Specific language impairment group. Students with SLI (n=33) had been evaluated or re-evaluated within three years of this study, and met the same state eligibility requirements for speech language impaired in the area of language as determined by their local IEP team. All students in the SLI group had an assessed IQ above 85 and scored more than 20 standard score points lower than their assessed ability level on at least one comprehensive measure of language. All students who met the state eligibility requirements for speech language impaired were evaluated by a certified speech language pathologist who holds a masters degree and the American Speech-Language Hearing Association's certificate of clinical competence. The primary investigator gathered eligibility information in collaboration with the speech-language pathologists at the participating schools. Tests used included the Clinical Evaluation of Language Fundamentals, Fourth Edition (CELF-4; Semel, Wiig, & Secord, 2003); Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 1999); Peabody Picture Vocabulary Test, Fourth Edition (PPVT-4; Dunn & Dunn, 2007); Test of Language Development-Primary, Fourth Edition (TOLD-P:4; Hammill & Newcomer, 2006); Wechsler Intelligence Scale for Children, Fourth Edition (WISC-IV; Wechsler, 2003); and Comprehensive Test of Nonverbal Intelligence, Second Edition (CTONI-2; Hammill, Pearson, & Widerholt, 2009).

Because language impairments often co-exist with other disabilities, several exclusion/inclusion decisions were made. Consistent with the guidelines described by Rice (2007), students with hearing loss, syndromic conditions, and autism were excluded because these disabilities present pervasive challenges that are not language-specific. Children with severe intellectual disabilities also were excluded, as students with SLI are

judged to have at least average (standard score > 85) IQ scores. Students with co-existing non-pervasive disabilities, such as speech production disabilities and reading disabilities, were included.

Non-disabled peer group. Non-disabled peers in the same classroom as the students with language impairments also were surveyed. These students were not eligible for special education services and did not receive special education services of any kind.

In the participating schools, parent consent letters were sent home with all students in classrooms that had at least one student with SLI. One school preferred not to send home consent forms to all students in the classroom, so in this school non-disabled peers were randomly selected to receive consent forms. The overall response rate was 53%.

Participant characteristics are presented in Tables 2 and 3. There were more boys with SLI (n = 20, 61%) than girls (n = 13, 39%). However, there were an almost equal number of boys and girls in the non-SLI group (Male n = 121, Female n = 118). In the overall sample, there were fewer 5th graders (n = 79) than 3rd graders (n = 101) and 4th graders (n = 92).

Table 2

Participant Characteristics by Grade, Gender, and SLI Status

		SLI status		Gender	
Grade	n	SLI	Non-SLI	Male	Female
3rd	101	10	91	64	37
4th	92	11	81	46	46
5th	79	12	67	31	48
Total	272	33	239	141	131

Table 3

Language Group Characteristics by Grade and Gender

Grade	SLI		Non-SLI	
	Male	Female	Male	Female
3rd	7	3	57	34
4th	8	3	38	43
5th	5	7	26	41
Total	20	13	121	118

Measures

Spelling ability. The measure of spelling included in the present study was designed to provide an indicator of the students' ability to spell single words of varying difficulty. The primary researcher asked students to spell 20 grade-appropriate spelling words from the Test of Written Spelling, Fourth Edition (TWS-4). The authors of the TWS-4 suggested that these 20 words, which can be found in Appendix A, were appropriate for group administration. Students were given a sentence to accompany each spelling word, and each item was scored as either correct or incorrect. The students' responses in each grade were equally distributed and possessed adequate reliability, as measured by Cronbach's α (third grade =.78, fourth grade =.83, fifth grade =.77). Students' raw scores were converted to within-grade z-scores.

Student perceived writing competence. In this study, SLI status and spelling ability were hypothesized to affect perceived writing competence. It also was predicted that perceived writing competence is a determinant of autonomous writing motivation. For these reasons, a measure of perceived writing competence was included in this study. Students completed an adapted version of Bouffard, Marcoux, Vezeau, & Bordeleau's scale(2003), which originally was designed to measure perceived competence within an academic domain. While the original scale measured perceptions of competence in the domains of reading and mathematics, it was adapted in the present study to reflect perceptions of writing competence (Appendix B). For each of the nine items, two groups are depicted and the students must indicate which group more closely describes their beliefs about writing. In addition, the student indicates if that group's beliefs are "Really true for me" or "sort of true for me." Example statements include "Some kids think that

they are among the best in writing in their class" and "Some kids find writing very difficult to them." An example item is below:

Really True For Me	Sort of True For Me	1. In the circles group, kids find writing very difficult for them	**BUT**	In the squares group, kids do not find writing very difficult	Sort of True For Me	Really True For Me

Factor analysis confirmed that all items loaded on one factor. Internal consistency for this measure as determined by Cronbach's alpha was .80 for all students. Reliability was acceptable for both groups (SLI group=.80, Non-SLI group=.78).

Autonomous writing motivation. Six items from the Academic Self-Regulation Questionnaire-Adapted (SRQ-A; Deci, Hodges, Pierson, & Tomassone, 1992), were adapted to assess students' style of writing motivation (see Appendix C), and were administered by the primary investigator. As mentioned earlier, autonomous motivation is conceptualized as engaging in an activity for internal, as opposed to external, purposes. The students were presented with reasons for engaging in writing activities that are representative of an autonomous writing orientation. The students then responded on a 4-point Likert-type scale, reporting how often (always, most of the time, sometimes, never) they demonstrate that behavior. An example item is "I try to do well on my writing assignments because I like doing a good job on my school work."

It should be noted that the original scale consisted of four different subscales measuring two controlled SDT constructs (external regulation, introjected regulation) and two autonomous SDT constructs (identified regulation, integrated regulation). However, these four dimensions of writing motivation were not supported by factor analysis in the

current study, which is similar to a recent finding by Guay et al. (in press) in a study of children in grades 1-3. The subscales measuring autonomous motivation, which only had three items each, also had less than desirable reliability. For these reasons, the procedures of Vankeenkiste, Zhou, Lens, & Soenens (2005) were followed. The two autonomous subscales (identified regulation, integrated regulation) were combined to create one autonomous motivation scale with improved reliability (Cronbach's alpha = .78) Factor analysis was used to determine that the six items used for the autonomous motivation scale loaded onto one factor.

Data Collection

The primary investigator then administered the measures to students with parental consent for participating in the research. The students' classroom teacher determined whether a small group or classroom setting would be optimal for the students and the class schedule. For this reason, the measures were administered both in small and larger groups. Following the procedures of Graham and Berninger (2007), the primary investigator introduced the measures by stating, *"I am interested in how you and other kids feel about writing. So, I am going to ask you some questions. This is not a test or anything that you need to worry about. It won't affect your grades. I will be the only person who sees your answers. I will not be sharing them with your teacher. Just try to answer my questions as honestly as you can."* The primary investigator also gave instructions for completing the scales, which were read aloud. Speech-language pathologists provided the primary investigator with information related to student eligibility for meeting the state guidelines for SLI (see Appendix D). All data were

collected between November and February of the same school year. It took students approximately 30 minutes to complete all measures.

Chapter 4: Results

This study examined the relationship between SLI status (SLI or non-SLI) and writing motivation by investigating if students with language impairments reported lower levels of writing motivation. The current study also investigated if perceived writing competence mediates the relationship between SLI status and autonomous writing motivation. Results of the study are presented in this chapter. Descriptive data are presented first, followed by t-tests comparing the perceived writing competence and autonomous motivation of students with SLI and their non-disabled peers. Next, the results of two stepwise regression analyses are presented to determine if (a) SLI status is a significant predictor of perceived writing competence after controlling for spelling ability, gender, and grade; and (b) if perceived writing competence mediates the relationship between SLI status and autonomous writing motivation after controlling for spelling ability, gender, and grade.

Descriptive Data

Descriptive statistics for the study participants are presented in tables 4, 5, 6, and 7. Tables 4-6 compare the mean spelling and motivation scores between grade, gender, and language groups. Table 7 presents the correlations between study variables.

Spelling. The non-SLI (M = 14.7, SD 3.6) group performed significantly better on the spelling task, $t(36) = 7.0$, $p < .01$, than the students with SLI (M= 8.4, SD 5.2), and there was more variability of scores within the SLI group (Table 4). This finding was expected given previous literature documenting a significant overlap between SLI status and dyslexia, which often includes spelling deficits. In addition, girls (M = 14.5, SD = 3.8) scored significantly higher than boys (M = 13.5, SD = 4.8) in spelling in the overall

sample $t(270) = 2.4$, $p = .01$. There were no gender differences in the SLI group, $t(31) = .83$, $p = .41$.

Table 4

Comparison of Spelling Raw Scores by Grade, Gender and SLI Status

	SLI			Non-SLI		
Grade	Male	Female	Both	Male	Female	Both
3rd	10.4	8.7	9.9	15.7	16.3	15.9
4th	6.0	8.7	6.7	12.4	13.5	13.0
5th	6.6	10.1	8.7	14.6	15.5	15.1
Total	7.7	9.5	8.4	14.4	15.0	14.7

Note. Spelling range = 0-20.

Perceived writing competence. Perceived writing competence means are presented in Table 5. There was a significant difference between males (M = 2.8, SD = .64) and females (M = 3.0, SD = .53), $t(250) = 2.6$, $p = .01$. There was also a significant difference between the SLI group (M = 2.4, SD = .68) and the non-SLI group (M= 3.0, SD = .55), $t(250) = 5.3$, p , .01. There were no gender differences within the SLI or non-SLI groups.

Table 5

Comparison of Perceived Writing Competence Mean by Grade, Gender, and SLI Status

	SLI			Non-SLI		
Grade	Male	Female	Both	Male	Female	Both
3rd	2.2	2.8	2.4	3.0	3.2	3.1
4th	2.1	2.2	2.1	2.8	3.0	2.9
5th	2.6	2.8	2.7	2.8	3.0	2.9
Total	2.3	2.6	2.4	2.9	3.0	3.0

Note. Range = 1-4.

Autonomous writing motivation. Autonomous writing motivation means are presented in Table 6. In the non-SLI group, there was a significant difference between males (M = 2.78, SD = .75) and females, (M = 3.10, SD = .58), $t(233) = 3.70$, $p < .01$. However, there were no gender differences in the SLI group, $t(31) = 1.44$, $p = .161$, and also no significant differences between grades, $F(2, 265) = 2.06$, $p = .129$

Table 6

Comparison of Autonomous Writing Motivation Scale Means by Grade, Gender, and SLI Status

	SLI			Non-SLI		
Grade	Male	Female	Both	Male	Female	Both
3rd	2.4	3.2	2.6	2.9	3.3	3.1
4th	2.5	2.8	2.6	2.7	3.0	2.9
5th	2.8	2.8	2.8	2.6	3.0	2.9
Total	2.5	2.9	2.7	2.8	3.1	2.9

Note. Range = 1-4.

As seen in Table 7, the strongest relationships observed were between spelling and SLI status (r = .50), perceived writing competence and autonomous motivation (r = .45), perceived competence and spelling (r = .38), perceived competence and SLI status (r = .32), and autonomous motivation and gender (r = .24). Significant correlations also existed between perceived competence and gender (r = .16), spelling and gender (r = .15), autonomous motivation and SLI status (r =.13), and spelling and autonomous motivation (r = .12).

Motivational differences between schools. A one-way analysis of variance (ANOVA) was conducted to determine if between-school differences existed among the 11 participating schools for the two motivational variables, perceived writing and autonomous writing motivation. No between-school differences existed for perceived writing competence, F(10, 240)=1.42, p=.17, or for autonomous writing motivation,

F(10, 256)=1.319, p=.22. For this reason, all students were included in the study and a matching design was not utilized.

Table 7

Zero-order Correlations Between Study Variables

	1	2	3	4	5	6
1. Autonomous Motivation	___	.13*	.45**	.12*	.24**	.10
2. SLI status		___	.32**	.50**	NA	NA
3. Perceived competence			___	.38**	.16*	.07
4. Spelling				___	.15	.00
5. Gender					___	NA
6. Grade						___

Note. * = p < .05, ** = p. < 01, NA = Correlations between categorical variables were not reported

Analysis of the Research Questions

Question 1: Are there differences in perceived writing competence and autonomous writing motivation between students with SLI and non-disabled peers?

An independent-samples *t* test was conducted to evaluate the hypothesis that students with SLI would report lower levels of perceived writing competence and autonomous writing motivation than their non-disabled peers (Table 8). Because there were no significant differences between schools on these measures, all students were included. Differences in perceived writing competence were significant, t(250)=5.293, p=<.01. Students in the SLI group (M=2.42, SD=.68) reported significantly lower levels of perceived writing competence than students in the non-SLI group (M = 2.98, SD =

.55). Cohen's d was .91, indicating a large effect size (Cohen, 1988). Differences on the autonomous writing motivation measure also were significant, t(266) = 2.05, p = .04. Students in the SLI group (M = 2.68, SD = .72) reported significantly lower levels of autonomous writing motivation than students in the non-SLI group (M = 2.94, SD = .68). Cohen's *d* was .37, indicating a small to medium effect size.

Table 8

Perceived Writing Competence and Autonomous Writing Motivation for SLI and Non-SLI

	SLI status			
	SLI	Non-SLI	*T*	*df*
Perceived writing competence	2.42 (.68)	2.98 (.55)	5.29**	250
Autonomous writing motivation	2.68 (.72)	2.94 (.68)	2.05*	266

Note. * = $p \leq .05$, ** = $p \leq .001$. Standard deviations appear in parentheses below means.

Question 2: Does SLI status predict perceived writing competence, after controlling for spelling ability, gender, and grade?

A multiple regression analysis was conducted to evaluate whether SLI status predicted perceived writing competence over and above gender, grade, and spelling ability, (Table 9). An ordered series of predictors was entered stepwise to the regression model. In the first two steps, gender and grade were entered into the model to act as controls for subsequent variables. In the third step, spelling ability accounted for a significant proportion of the perceived writing competence after controlling for gender and grade, R^2 change = .13, F(1, 246) = 37.70, p < .01. In the fourth step, SLI status accounted for a significant proportion of the perceived writing competence after gender,

grade, and spelling ability were controlled, R^2 change = .02, F(1, 245) = 6.256, p = .01. The interaction between SLI status and spelling was not a significant predictor in the final model.

Because there were a number of significant correlations among variables (Table 8), the potential for multicollinearity was considered. Multicollinarity can affect the quality of regression results and interpretation of variable relationships. Multicollinearity diagnostics are presented in Appendix G. One measure of multicollinearity is a variable's tolerance, or the percentage of variance that is not shared with other independent variables. While some authors suggest that tolerance < .20 indicates a problem with multicollinarity (Pedhazer, 1997), no variables in this model possessed tolerance less than .70. Another measure of multicollinearity is the variance inflation factor (VIF). Again, no problematic values (greater than 10) were present in this model. This suggests that there was not significant multicollinearity among the variables entered into the model.

Table 9

Summary of Hierarchical Regression Analysis for Variables Predicting Perceived Writing Competence

Step and predictor	*R*	R^2	*F* change	Final β
Spelling, controlling for grade and gender				
1. Grade	.07	.01	1.2	.09
2. Gender	.19	.04	8.0**	.13*
3. Spelling	.42	.18	37.7**	.36**
SLI status, controlling for grade, gender, and spelling				
1. Grade	.07	.01	1.2	.08
2. Gender	.19	.04	8.0*	.12*
3. Spelling	.42	.18	37.7**	.28**
4. SLI status	.44	.20	6.3*	.17*

Note. * = p < .05, ** = p. < 01

Question 3: Does perceived writing competence mediate the relationship between SLI status and autonomous writing motivation, after controlling for spelling ability, gender, and grade?

A second stepwise regression analysis was conducted to evaluate a) if there is a direct link between SLI status and autonomous writing motivation; b) if there is a link between perceived writing competence (hypothesized mediator) and autonomous writing motivation; and c) if the link between SLI status and autonomous writing motivation becomes insignificant when perceived writing competence is entered into the regression equation (Table 10). The control variables, gender and grade, again were entered in the

first two steps of the ordered sets of predictors. In the third step, spelling ability did not account for a significant proportion of the variance after controlling for grade and gender, R^2 change = .01, F(1, 243) = 1.61, p = .21. SLI status also did not account for a significant proportion of the variance when added to the model in the fourth step, R^2 change = .004, F(1, 242) = 1.21, p = .27. However, in the fifth step, perceived competence was a significant predictor of autonomous writing motivation above and beyond gender, grade, spelling, and SLI status, R^2 change = .16, F(1, 241) = 49.79, p < .01. Multicollinearity diagnostics were considered, but there was no evidence of problematic multicollinearity among variables (see Appendix H).

Table 10

Summary of Hierarchical Regression Analysis for Variables Predicting Autonomous Writing Motivation

Step and predictor	*R*	R^2	*F* change	Final β
Spelling, controlling for grade and gender				
1. Grade	.10	.01	2.54	-.14*
2. Gender	.28	.08	18.63**	.25**
3. Spelling	.30	.09	1.61	.08
SLI status, controlling for grade, gender, and spelling				
1. Grade	.10	.01	2.54	-.14*
2. Gender	.28	.08	18.63**	.26**
3. Spelling	.30	.09	1.61	.04
4. SLI status	.31	.10	1.21	.08
Perceived competence, controlling for grade, gender, spelling, and SLI status				
1. Grade	.10	.01	2.54	-.10
2. Gender	.28	.08	18.63**	.20**
3. Spelling	.30	.09	1.61	-.08
4. SLI status	.31	.10	1.21	-.008
5. Perceived competence	.50	.25	49.80**	.44**

Note. * = p < .05, ** = p. < 01

Interaction terms were computed to determine if spelling and perceived competence had different effects based on group membership (e.g., gender and SLI

status). Interaction terms were calculated by multiplying the continuous variables by the categorical variables (e.g., gender x spelling), and then entered into the regression model as independent variables. None of the interaction terms were significant, and thus are not reported in Table 10.

Chapter 5: Discussion

This study was prompted by this writer's observation that significant difficulties with language in SLI students seem to be negatively related to perceived writing competence and subsequently, to autonomous writing motivation. The present study resulted in three main findings: (1) students with SLI do in fact report lower levels of perceived writing competence and autonomous writing motivation; (2) SLI status was a significant predictor of perceived writing competence even when spelling ability, gender, and grade are controlled, and (3) perceived writing competence was a significant predictor of autonomous writing motivation when spelling ability, grade, and gender are controlled, but SLI status was not. Therefore, the hypothesized mediated relationship was partially but not fully supported. The general implications of these findings will be discussed below.

Research Question 1

The first analysis, which compared scores of SLI students with those of their non-SLI peers, suggests that students with language impairments are more likely to report lower levels of perceived writing competence and autonomous writing motivation. The effect size for these differences in perceived writing competence between SLI students and their non-SLI peers was large, while the effect size for the difference between groups on autonomous motivation was small to medium. From these analyses, it seems reasonable to suggest that students with SLI are, on average, considerably less likely to be autonomously motivated to write and more likely to have lower perceived writing competence. Even though these simple comparisons suggest that students with SLI are less motivated to write, they do not consider other variables that may explain this

relationship. The regression analyses and subsequent follow-up analyses, discussed below, provide additional information useful for understanding these relationships.

Research Question 2

The second analysis, which utilized multiple regression to predict the students' perceived writing competence, provided additional insight into the relationship among the variables contributing to perceived writing competence. Each of the independent variables of grade, gender, spelling, and SLI status were significantly related to perceived writing competence ($R = .44$), with approximately 20% of the variance in perceived writing competence explained by these four variables. Spelling ability also was a significant predictor of perceived writing competence, even after controlling for gender and grade. This finding can be seen as consistent with Hayes's (2000) writing cognition model, as difficulty with spelling presumably can demand more working memory resources during the writing process. It also may be that spelling errors are salient visual signals of low writing competence, and that these errors often are the target of negative feedback (Graham & Harris, 2003). However, these possible explanations cannot be determined from the present findings, but could be important areas for future research. SLI status also was a significant predictor of perceived writing competence, even after controlling for spelling, grade, and gender. In the final model, spelling ($\beta = .28$) and SLI status ($\beta = .17$) had the strongest influence on perceived writing competence. The interaction between SLI status and spelling was not significant, suggesting that spelling ability similarly influenced the perceived writing competence both of students with SLI and their non-disabled peers.

Research Question 3

Since SLI status was a significant predictor of perceived writing competence, it seemed reasonable to hypothesize that SLI status also would be related to students' autonomous writing motivation. However, the third analysis did not support this hypothesis. SLI status was not a significant predictor of autonomous writing motivation after spelling, gender, and grade were controlled. In contrast, however, perceived competence was a strong predictor above and beyond the influence of grade, gender, SLI status, and spelling. The final model consisting of grade, gender, spelling, SLI status, and perceived competence showed that these variables were significantly related to autonomous writing motivation ($R = .50$) and explained 26% of the variance. Perceived competence ($\beta = .44$) was by far the strongest predictor of autonomous writing motivation, however. This finding is consistent with one of the central tenets of SDT—that perceived competence is one of the primary determinants of autonomous motivation. Interestingly, gender ($\beta = .21$) was the next most influential variable, as girls were more autonomously motivated to complete writing tasks. By comparison, SLI status ($\beta = .004$) and spelling ($\beta = .081$) showed little direct relationship to autonomous writing motivation. Because there were significant autonomous writing motivation differences between the SLI students and their peers as revealed by an earlier analysis (see Table 8), however, mediating and moderating variables were next considered.

As shown in Figure 1, I hypothesized that perceived competence would mediate the relationship between the, SLI status and the dependent variable, autonomous motivation. Overall, the data did not support this hypothesis. First, there was no direct link between SLI status and autonomous writing motivation after controlling for spelling

ability, gender, and grade. Although the initial t-test indicated that students with SLI reported lower autonomous writing motivation, this relationship was not significant in the regression analyses when spelling ability, gender, and grade were entered as control variables. Second, the standardized beta weight for SLI status was not significantly reduced when perceived competence was entered into the regression model.

One possible explanation for this unexpected finding begins with the realization that perceived competence is only one of the three major variables—perceived competence, autonomy, and relatedness—that are proposed by SDT to contribute to autonomous motivation. While SLI status was related to perceived competence, it seems less likely that SLI status would be related to a student's sense of autonomy or relatedness. Autonomy and relatedness could be considered sociocultural variables that are external to the student, whereas perceived competence is primarily determined by intra-individual skills. For example, the classroom teacher may employ teacher-centered controlling practices, such as pressuring communications or giving few student choices, which could reduce a student's sense of autonomy. A teacher's use of autonomy-supportive or controlling practices seems largely unrelated to a student's language abilities, however. It is more likely that a teacher's writing instruction approach would be consistent across students in the classroom regardless of ability.

On the surface, it appears that the students' sense of relatedness also would be determined by interpersonal interactions that are relatively independent of language ability. However, there does seem to be a relationship between negative peer interactions and academic engagement in early elementary general education students (e.g., Buhs, Ladd, & Herald, 2006). To date, though, it is still unknown to what degree a student's

significant difficulties with language impact their sense of classroom relatedness and subsequent writing motivation. Nonetheless, it is likely that inclusion of these sociocultural variables, autonomy and relatedness, into a future study could significantly enhance a model relating this study's variables to autonomous writing motivation.

A closer look at the amount of variance explained by the first regression model might provide another explanation why SLI status was a significant predictor of perceived writing competence but not autonomous writing motivation. Even though SLI status was a significant predictor of perceived writing competence, 80% of the variability in perceived writing competence remained unexplained. Thus it is fairly certain that there were other unmeasured variables operating in the present study that could potentially predict perceived competence. In addition, the nature of the dichotomous SLI status variable might have hindered its contribution to the proposed regression model. That is, students who may have had a great disparity in language ability were represented in the analysis by either a "0" (non-SLI) or "1" (SLI). If language ability had been measured by a continuous variable, however, such a variable presumably would be more sensitive to the relationship between language and autonomous writing motivation.

Gender's role in predicting autonomous motivation also is an interesting finding in the present study. Consistent with a number of investigations (for a review, see Pajares, 2003), girls in this study reported higher levels of perceived writing competence and autonomous motivation for writing and performed significantly better than boys on the spelling measure. Gender also was influential in the regression analysis, as spelling and SLI status were not significant predictors of autonomous motivation when controlling for grade and gender. Because there were no significant interactions with

gender, it does not seem that gender moderates the relationship between spelling, SLI status, perceived competence, and autonomous writing motivation. In follow-up testing, there were no between-gender autonomous motivation differences within the SLI group. In addition, spelling and SLI status were not significant predictors of autonomous writing motivation for either gender. It appears that the girls were simply stronger in each of the major study variables (perceived writing competence, autonomous writing motivation, and spelling skills), and that gender contributed more to the autonomous motivation regression model than SLI status.

Significance of the Study

Studies of the writing motivation of students with learning disabilities have generally defined at-risk writers in terms of their reading or spelling abilities and have not gathered adequate information about students' language ability. The current study, however, shows that significant language difficulties seem to hinder students' perceived writing competence in the middle and late elementary grades.

Because writing increasingly is recognized as an effective context for inclusive language intervention (e.g., Nelson et al., 2004; Singer & Bashir, 2004), this study has the potential for informing the theory and design of interventions targeting writing competence and engagement. While teachers' and clinicians' observations of students with specific language impairments would seem to indicate that these students are less motivated to write than their non-disabled peers, to date this had not been validated by research. If perceived writing competence is lower for students with language impairments, as the current study strongly suggests, this finding begins to establish the need to design instruction that addresses both writing skills and writing engagement in

this population. In addition, this study supports the hypothesis that significant difficulties with language can contribute to lower levels of perceived competence in the early and middle elementary school years. Thus, this study is a first step in uncovering the unique motivational challenges that students with language impairments face as they attempt to develop as writers. As these challenges are further identified, educators will be more equipped to provide writing instruction that increases students' both writing motivation and writing skills. In addition, the scales used in this study may also be useful in advancing the study of writing motivation and language impairments, as they are utilized or adapted for use in future studies.

Limitations and Research Implications

One limitation of the current design was the reliance on local decision-making regarding eligibility for special education services. Even though the same state criteria were used and the SLPs were adequately credentialed, there is a possibility that some variation in eligibility decisions existed between schools. I attempted to minimize this by obtaining test scores and making sure that all students met the inclusion criteria. However, using a more uniform method of measuring language ability no doubt would improve this design. By using a single standardized measure of language ability across all students, future research could more precisely reflect the relationship between language and writing motivation. For example, it would be interesting to investigate how skills tied to measures of specific language components (e.g., syntax, vocabulary, morphology) relate to a student's perceived writing competence.

Future research utilizing including longitudinal and qualitative dimensions may be particularly useful in forming a more complete understanding of writing motivation in

students with language impairments. These types of designs would allow researchers to investigate how the writing motivation of students with SLI develops over time, as opposed to the current study's design that only allows for a one-time measurement of student attitudes. It would also be beneficial to include more direct behavioral observations and a richer description of writing engagement in future studies to augment the self-report data gathered in the current study. Because the current study was conducted within a region that is generally more homogeneous than other areas of the United States, it will be valuable to include more diverse student populations in future studies. It also is important to stress that, while this study primarily focuses on student variables, factors that are both internal and external to students work reciprocally in the development of writing motivation and competence. As Berninger and Hidi (2007) have stated, "the quality and appropriateness of instruction is just as important as the psychological attributes and attributions of the learner in explaining motivated learning behavior in general and for writing in particular." It is clear that future studies must consider contextual factors and teacher beliefs that contribute to the writing motivation of students with language impairments. SDT posits that autonomy and relatedness, not measured in this study, also likely are variables worthy of future studies.

Ultimately, intervention studies are needed to determine conclusively if increased writing motivation can influence writing and language outcomes. It is not yet known if increased motivation during language intervention, in particular within writing contexts, can contribute to improved language competence in students with language impairments. By showing the differences that do exist in perceived competence and writing motivation, however, the current study provides a foundation for future studies investigating ties

between increased writing motivation and subsequent language development in varying modes (e.g. speaking, listening and reading). For example, intervention studies could investigate the relationship between increased engagement produced by strategic written language instruction and overall language development.

As discussed earlier in the literature review, some previous research (e.g., Garcia-Sánchez & Fidalgo-Redondo, 2006; Graham, Harris, & Mason, 2005; Harris, Graham, & Mason, 2006; Page-Voth & Graham, 1999)has failed to find differences in writing motivation between students with learning disabilities and their non-disabled peers. One hypothesized reason is that students with learning disabilities chronically overestimate their writing competence when comparing their abilities with a task on traditional self-efficacy measures (e.g., Klassen, 2002, 2007). In the traditional self-efficacy measurement format, students judge their ability to perform a specific task on a 7-point Likert Scale or a scale from 0 to 100. Klassen (2002, 2007) has suggested that students with learning disabilities may overestimate their competence in this traditional format due to a lack of task awareness. That is, these students are less proficient at evaluating tasks and predicting their own performance (Butler, 1998). However, the present study, which required students with disabilities to compare themselves to their peers, did reveal significant differences in perceived competence. This suggests that students with learning disabilities might be more accurate in their self-assessments when comparing themselves with their peers as opposed to judging their skills relative to a task. While both methods measure perceived competence, the present study suggests that researchers might be better served by utilizing comparisons with peers rather than comparisons with tasks.

Although the current study suggests that language and spelling deficits contribute to decreased perceived writing competence, the precise reason for these relationships is not entirely clear. As hypothesized earlier, it could be that these difficulties impose high levels of cognitive load that negatively influence students' writing attitudes. This relationship could also be related to the feedback and social comparisons that result from inferior spelling and language skills. Future research is needed to determine key factors that may mediate the relationship between these skills and writing motivation.

Implications for Practice

Writing is an ill-defined, cognitively complex task. This study suggests that it is possible this complexity may influence the writing motivation of students with SLI. For this reason, educators would be advised to draw from the wealth of writing strategy research that has been conducted with at-risk writers and which is aimed at reducing the complexity of the writing process (e.g., Graham & Harris, 2006). These writing strategies have been shown to help students utilize writing goals and procedures that break the complicated writing task into more manageable parts. Theoretically, this should free working memory resources for students with SLI and increase their sense of writing competence. Although there has not been extensive research utilizing writing strategies with students with SLI, improved writing strategy use has been linked to greater writing competence in students with other literacy-related disabilities (Graham & Harris, 2006). In addition, a recent meta-analysis (Graham & Perrin, 2007) found that sentence-combining instruction can improve writing outcomes. This type of instruction seems particularly useful for students with SLI, as it targets the syntactic challenges these students face during the writing process.

In addition, educators should be mindful of the role feedback plays in developing writing skills and motivational orientations. Feedback is a multi-dimensional construct, and can be considered in terms of its focus, complexity, and context. It can be directed towards student performance, task-related processes, student self-regulation, or a student's sense of self (Hattie & Timperly, 2006). Numerous studies imply a link between different types of effective feedback and student motivation (e.g., Schunk, Pintrich, & Meece, 2008), and certain types of feedback would likely provide positive support to strategy instruction. In particular, *strategy feedback,* which helps students focus their attention on strategy use rather than performance outcomes, is one type of feedback that may be an effective complement to strategy instruction with students with SLI. This type of feedback is designed to help students gain control over the self-regulatory processes and writing strategies, which subsequently may increase writing outcomes and perceived competence (Zimmerman & Martinez-Pons, 1992). *Strategy value feedback*, which stresses the value of a particular strategy, also has been shown to increase a student's sense of competence during academic tasks (Schunk, 1989).

Finally, this study's findings provide a rationale for continued study of the relationship between SLI and writing motivation, and for the integration of motivational dimensions into writing instruction for students with SLI. While it seems that students with SLI may be more likely to report lower levels of perceived writing competence, this study also suggests that environmental variables also contribute to these students' writing motivation. Research and research-based interventions targeted at students with SLI has the potential to further our general understanding of writing motivation and effective

instructional practices, which would be valuable in the pursuit of high quality language and literacy instruction for all students.

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Appendix A
Spelling Words

Third Grade Spelling Words	Fourth and Fifth Grade Spelling Words
Yes	When
Bed	People
Let	Hardly
Us	Able
Went	Everyone
Much	Uncle
Next	Strange
Spend	Sure
Who	Brandish
Shake	Hospital
Eight	Forty
Strong	Enough
Pile	Entire
Knife	Pardon
Knew	Political
Tardy	Electricity
Nineteen	Awful
Section	Community
Signal	Salute
Expect	Fallow

Appendix B

Perceived Writing Competence Scale

Really True For Me	Sort of True For Me	1. In the circles group, kids find writing very difficult for them	**BUT**	In the squares group, kids do not find writing very difficult	Sort of True For Me	Really True For Me
Really True For Me	Sort of True For Me	2. In the circles group, kids think that if they want to, they can get good grades on their writing assignments	**BUT**	In the squares group, kids think that even if they want to, they cannot get good grades on their writing assignments	Sort of True For Me	Really True For Me
Really True For Me	Sort of True For Me	3. In the circles group, kids think they will be even better at writing next year	**BUT**	In the squares group, kids think they will not be better at writing next year	Sort of True For Me	Really True For Me
Really True For Me	Sort of True For Me	4. In the circles group, kids think that writing doesn't take much effort for them	**BUT**	In the squares group, kids think that writing does take much effort for them	Sort of True For Me	Really True For Me
Really True For Me	Sort of True For Me	5. In the circles group, kids often make mistakes on their writing assignments	**BUT**	In the squares group, kids do not often make mistakes on their writing assignments	Sort of True For Me	Really True For Me
Really True For Me	Sort of True For Me	6. In the circles group, kids think that if they decide to do a hard writing assignment, they can do it	**BUT**	In the squares group, kids think that even if they decide to do a hard writing assignment, they can't do it	Sort of True For Me	Really True For Me
Really True For Me	Sort of True For Me	7. In the circles group, kids are pretty slow at finishing their writing assignments	**BUT**	In the squares group, kids are pretty fast at finishing their writing assignments	Sort of True For Me	Really True For Me
Really True For Me	Sort of True For Me	8. In the circles group, kids think they are among the best in writing in their class	**BUT**	In the squares group, kids do not think they are among the best in writing in their class	Sort of True For Me	Really True For Me
Really True For Me	Sort of True For Me	9. In the circles group, kids succeed very well in their writing assignments	**BUT**	In the squares group, kids do not succeed very well in their writing assignments	Sort of True For Me	Really True For Me

Appendix C

Academic Self-Regulation Questionnaire, Adapted (SRQ-A)

Why I Write

Name_____ Age_____

Boy or Girl (circle one) Teacher_____

Note: Bolded items represent autonomous writing motivation scale items.

1. I do my writing assignments so that the teacher won't yell at me.

Always Most of the time Sometimes Never

2. I do my writing assignments because I want the teacher to think I'm a good student.

Always Most of the time Sometimes Never

3. I do my writing assignments because I want to learn to be a better writer.

Always Most of the time Sometimes Never

4. I do my writing assignments because I'll feel bad about myself if it doesn't get done.

Always Most of the time Sometimes Never

5. I do my writing assignments because it's fun.

Always Most of the time Sometimes Never

6. I do my writing assignments because that's the rule.

Always Most of the time Sometimes Never

7. I enjoy doing my writing assignments.

Always Most of the time Sometimes Never

8. I try to complete hard writing assignments because I want the other kids to think I'm smart.

Always Most of the time Sometimes Never

9. I try to complete hard writing assignments because I'll feel bad about myself if I don't try.

Always Most of the time Sometimes Never

10. I try to complete hard writing assignments because it's fun to complete hard assignments.

Always Most of the time Sometimes Never

11. I try to complete hard writing assignments because that's what I am supposed to do.

Always Most of the time Sometimes Never

12. I complete hard writing assignments to find out if I've done them right.

Always Most of the time Sometimes Never

13. I try to do well at my writing assignments because that's what I am supposed to do.

Always Most of the time Sometimes Never

14. I try to do well at my writing assignments so my teachers will think I'm a good student.

Always Most of the time Sometimes Never

15. I try to do well on my writing assignments because I like doing a good job on my school work.

Always Most of the time Sometimes Never

16. I try to do well on my writing assignments because I will get in trouble if I don't.

Always Most of the time Sometimes Never

17. I try to do well on my writing assignments because I'll feel really bad about myself if I don't do well.

Always Most of the time Sometimes Never

Appendix D

Reporting Form for Speech-Language Pathologists

Name:

Date of Last Evaluation:

Assessed IQ scores:

Please list language tests administered in last evaluation (e.g. CELF-4, PPVT) and standard scores.

Please list other verifications:

Appendix E

Parental Consent Form

PARENTAL INFORMED CONSENT FORM

Differences in the Writing Motivation of Students with Language Impairments

You are invited to permit your child to participate in this research study. The following information is provided in order to help you to make an informed decision whether or not to allow your child to participate. If you have any questions please do not hesitate to ask.

Your child is eligible to participate in this study for one of two reasons: 1) your child has a language disorder and is receiving special education services, or 2) your child is a classmate of a student who has a language disorder. Your child will also be asked if he/she is willing to participate.

The purpose of this study is to investigate the relationship between language disorders and writing motivation. This study will take approximately 30 minutes of your child's time. The study will be conducted at your child's school and will not interfere with core instructional time. Your child will be given a spelling assessment and complete some questions about his/her attitudes towards writing.

There are no known risks associated with this research. The information obtained from this study may help us to better understand the writing motivation of elementary students.

Any information obtained during this study that could identify your child will be kept strictly confidential. The information will be kept in a locked file in the investigator's office for 3 years and then will be erased. The information obtained in this study may be published in scientific journals or presented at scientific meetings, but your child's identity will be kept strictly confidential.

You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study. Or you may call the investigator at any time, home phone (402-327-0601)

Please contact the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965 for the following reasons:
• you wish to talk to someone other than the research staff to obtain answers to questions about your rights as a research participant
• to voice concerns or complaints about the research
• to provide input concerning the research process
• in the event the study staff could not be reached,

Participation in this study is voluntary. You are free to decide not to enroll your child in this study. You can refuse to participate or withdraw your child at any time without harming their or your relationship with the researchers or the University of Nebraska-Lincoln, your child's school, or in any other way receive a penalty or loss of benefits to which you are otherwise entitled.

DOCUMENTATION OF INFORMED CONSENT

YOU ARE VOLUNTARILY MAKING A DECISION WHETHER OR NOT TO ALLOW YOUR CHILD TO PARTICIPATE IN THE RESEARCH STUDY. YOUR SIGNATURE CERTIFIES THAT YOU HAVE DECIDED TO ALLOW YOUR CHILD TO PARTICIPATE HAVING READ AND UNDERSTOOD THE INFORMATION PRESENTED. YOU WILL BE GIVEN A COPY OF THIS CONSENT FORM TO KEEP.

_____

Child's Name

_____ _____

Signature of Parent Date

INVESTIGATORS
Kyle Brouwer, Primary Investigator, (402) 327-0601
Roger Bruning, Secondary Investigator, 402) 472-2225

Appendix F

Student Assent Form

YOUTH ASSENT FORM

Differences in the Writing Motivation of Students With Language Impairments

We are inviting you to participate in this study because you are an elementary school student, and we are interested in what you think about writing. The research will take you about 30 minutes to do. First you will take a short spelling assessment. Then you will answer some questions about how you feel about writing.

Being in the study will not have direct benefits to you, but it may help researchers and teachers understand how to help students be better writers. Your answers will be private, and your teachers will not look at your answers. We may publish a summary of everybody's responses or present such a summary at a scientific meeting, but your identity and your responses would be totally confidential. We will also ask your parents for their permission for you to do this study. Please talk this over with them before you decide whether or not to participate. If you have any questions at any time, please ask one of the researchers.

_____ _____

Signature of Subject Date

INVESTIGATORS
Kyle Brouwer, Phone (402) 327-0601
Roger Bruning, Secondary Investigator, (402) 472-2225

Appendix G

Collinearity Diagnostics for Regression #1
Dependent Variable=Perceived Competence

Model	Dimension	Eigenvalue	Condition Index
1	1	1.755	1.000
	2	.245	2.677
2	1	2.372	1.000
	2	.402	2.429
	3	.226	3.239
3	1	2.373	1.000
	2	1.011	1.532
	3	.391	2.462
	4	.225	3.251
4	1	2.549	1.000
	2	1.394	1.352
	3	.447	2.389
	4	.389	2.559
	5	.221	3.400

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Student Grade	1.000	1.000
2	(Constant)		
	Student Grade	.972	1.029
	Gendum	.972	1.029
3	(Constant)		
	Student Grade	.971	1.029
	Gendum	.951	1.051
	Zscore: Spelling Raw Score out of 20	.979	1.022
4	(Constant)		
	Student Grade	.967	1.034
	Gendum	.951	1.052
	Zscore: Spelling Raw Score out of 20	.735	1.360
	VerificationDum	.744	1.344

Appendix H

Collinearity Diagnostics for Regression #2

Dependent Variable=Autonomous Motivation

Model	Dimension	Eigenvalue	Condition Index
1	1	1.757	1.000
	2	.243	2.691
2	1	2.377	1.000
	2	.401	2.436
	3	.222	3.269
3	1	2.378	1.000
	2	1.012	1.533
	3	.390	2.469
	4	.221	3.284
4	1	2.555	1.000
	2	1.394	1.354
	3	.446	2.393
	4	.388	2.566
	5	.217	3.434
5	1	3.402	1.000
	2	1.422	1.547
	3	.447	2.759
	4	.393	2.943
	5	.321	3.256
	6	.016	14.477

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Student Grade	1.000	1.000
2	(Constant)		
	Student Grade	.974	1.027
	Gendum	.974	1.027
3	(Constant)		
	Student Grade	.974	1.027
	Gendum	.952	1.051
	Zscore: Spelling Raw Score out of 20	.977	1.023
4	(Constant)		
	Student Grade	.969	1.032
	Gendum	.952	1.051
	Zscore: Spelling Raw Score out of 20	.735	1.361
	VerificationDum	.744	1.344
5	(Constant)		
	Student Grade	.962	1.040
	Gendum	.936	1.069
	Zscore: Spelling Raw Score out of 20	.687	1.455
	VerificationDum	.726	1.378
	PerCompMean	.818	1.223