Implicit Beliefs About Writing: A Task-Specific Study of Implicit Beliefs

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IMPLICIT BELIEFS ABOUT WRITING:
A TASK-SPECIFIC STUDY OF IMPLICIT BELIEFS

by

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A THESIS

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This study investigated students’ implicit beliefs about a writing task. Implicit beliefs are defined as the unconscious cognitive constructs that influence motivation, behavior, and affect (Bruning, Dempsey, Kauffman, & Zumbrunn, 2011). Studies regarding implicit beliefs are applied to many constructs, ranging in specificity from domain-general beliefs such as epistemological beliefs (Schommer, 1990) to domain-specific beliefs such as reading (Schraw & Bruning, 1999). In the present study, implicit beliefs about a specific writing task are compared to implicit beliefs about intelligence, demographic information, and participants’ educational background experiences. Research is reviewed pertaining to a variety of studies of implicit beliefs. One hundred fifty three students enrolled in an educational psychology course at a large Midwestern university completed a modified version of the Writing Habits and Beliefs Scale (Bruning, et al., 2011) twice during the semester. Results indicated that students do have implicit beliefs about a specific writing task and those beliefs are correlated with how well students liked writing as well as implicit beliefs about intelligence. There were other notable correlations between items and factors from the survey. Further, implicit beliefs about the writing task did not affect scores on the writing task.
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Chapter 1

Introduction

The stroke of a pen or the tap of a computer keyboard sets in motion the complex journey of writing. The task requires that the writer manage mechanics of writing such as spelling, punctuation, grammar, and using complete sentences (Nystrand, 1982). Writers must translate thoughts and ideas into words that make sense on the page in a way that articulates the intended message. All the while, the writer must be managing the writing process. This involves making sure that the writing makes sense, flows well, and the product is progressing towards the intended goal.

In addition to these processes, the task of writing involves a host of motivational components including aspects of self-regulation (Zimmerman & Bandura, 1994), goal setting (Bruning & Horn, 2000; Graham, MacArthur, & Schwartz, 1995), and self-efficacy judgments (Pajares, 2003; Pajares & Johnson, 1994; Pajares & Valiente, 1997). Managing these cognitive, behavioral, and motivational factors creates a heavy cognitive load for writers. Writers must identity problems with processing, elaborate to develop meaning constructed at the convergence of new information with prior knowledge, structure the written discourse to create a coherent set of ideas, and plan to guide the organization of ideas (Flower, Stein, Ackerman, Kantz, McCormick, & Peck, 1990). Included among the widely researched components of writing is an influence that has garnered little attention, yet stands to pay dividends in the ways that the writer approaches the task—implicit beliefs about writing.
Defined as “cognitive constructs inaccessible to consciousness” (Bruning, Dempsey, Kauffman, & Zumbrunn, 2011), implicit beliefs play a significant role in the ways that people perceive knowledge (Buehl & Alexander, 2001; Perry, 1968; Schommer, 1990), set goals (Dweck & Leggett, 1988; Schunk, 1995), and perceive themselves (Dweck, 2006; Dweck, Chiu, & Hong, 1995). Historically considered more general in nature, implicit beliefs have recently taken a turn towards specificity. For example, implicit beliefs have been shown to impact reading (Schraw & Bruning, 1996, 1999), morality (Dweck, Chiu, & Hong, 1995), mathematics (Schoenfeld, 1983; Stodolsky, Salk, & Glaessner, 1991), social studies (Stodolsky, Salk, & Glaessner, 1991) and of most importance for the purpose of this study, writing quality (White & Bruning, 2005).

Stemming from research investigating implicit beliefs about reading (Schraw & Bruning, 1996, 1999) and grounded in two dimensions of the purposes of reading (Rosenblatt, 1993a, 1994; Squire, 1994), implicit writing beliefs delineate themselves on a boundary between two distinct beliefs: knowledge-transmitting where the writer perceives the writing task as a perpetuation of already known information and knowledge-transacting where the writer views writing as an opportunity to synthesize content in order to construct his or her own meaning. These two dimensions form the framework to begin the discussion of implicit beliefs about writing. Notably, implicit writing beliefs have received scant attention in the research of writing.

Given the potential that differing implicit beliefs about writing holds in understanding the writing task and progressing the quality of the written product, it
appears paramount to understand the implications of these two implicit writing beliefs. Understanding implicit beliefs of any nature—specifically writing for the purposes of this study—opens a window into the unconscious, yet systematic assumptions that influence cognitive processes, motivation, and behaviors. If we can understand what writers implicitly believe and tease apart the factors that influence those beliefs, we open larger windows to explicitly improving skill, ability, and affect of writers of all ages. In this chapter I will state the problem addressed by this study, define implicit beliefs, propose a model outlining relations of differing specificities of implicit beliefs, describe the theory from which this study stems, apply that theory to implicit beliefs about reading and writing, briefly summarize the notion of sophistication of implicit beliefs, and wrap up the chapter with the research questions and significance of this study.

**Statement of the Problem**

Although implicit beliefs have garnered attention and researchers have found increased evidence for their impact on various cognitive processes, they are largely a study within themselves. In other words, studies of implicit beliefs are largely disconnected from outside factors. Most studies, for example, employ validated self-report inventories. Granted, implicit writing beliefs seem to be connected to writing samples (Mateos, Cuevas, Martin, Echeita, & Luna, 2010; Miras, Gracia, & Castells, 2005; Miras and Solé, 2008; White & Bruning, 2005) and implicit reading beliefs are evaluated within the framework of reading ability (Schraw & Bruning, 1996; 1999). However, scant attention is given to clearly substantiating the root of these beliefs with evidence of other beliefs, as well as assessable behaviors.
Schommer (1990) and Perry (1968) assert that epistemological beliefs develop with subsequent years of education. Specifically, they assert that with each additional year of college education, individuals develop increasingly more sophisticated epistemological beliefs. This argument is based on the assumption that individuals have more prior knowledge, educational experiences, and cognitive development with additional schooling. While that is a legitimate assumption, it has not been exclusively validated. Are implicit beliefs a byproduct of increased knowledge, experiences, and cognitive development? Or are they a totally independent entity, void of any outside influence? These questions are central to this study.

Further, if writing quality is linked to implicit writing beliefs (White & Bruning, 2005) then there is an impetus to discover and understand the factors that contribute to these task-specific implicit beliefs. The National Commission on Writing in America’s Schools and Colleges (2003) acknowledges the deficit that students face in schools with a lack of attention focused on writing. The commission states the following in the opening paragraph of a report highlighting the need for improved writing ability:

American education will never realize its potential as an engine of opportunity and economic growth until a writing revolution puts language and communication in their proper place in the classroom. Writing is how students connect the dots in their knowledge. Although many models of effective ways to teach writing exist, both teaching and the practice of writing are increasingly shortchanged throughout the school and college years.
Writing, always time-consuming for the student and teacher, is today hard-pressed in the American classroom. Of the three “Rs,” writing is clearly the most neglected.

(The National Commission on Writing in America’s Schools and Colleges, 2003, p. 1)

The present study seeks to help understand the link between implicit beliefs about writing and other descriptors of students, such as affect towards writing, experiences with writing, beliefs about intelligence, and demographic information. Specifically, do these factors influence implicit beliefs about writing or do implicit beliefs about writing influence acquisition of knowledge? Understandably, this question is akin to "which came first, the chicken or the egg?" This study does not set out to determine the source and "which came first," but rather to elucidate the connection between implicit beliefs about writing and other factors. Potentially, there is no discernable connection between implicit beliefs about writing and descriptive factors. Such a finding would be just as valuable. That would mean that writers could hold highly sophisticated beliefs about writing, while lacking in their a) understanding of a subject, b) level of prior experiences, c) affect, or d) other demographic factors. In order to understand the concepts related to this problem, I will overview the core tenants supporting the construct of implicit beliefs about writing. A further in-depth analysis and review of the literature will follow in chapter two.

**Implicit Beliefs**

Implicit beliefs are the unconscious cognitive constructs that people hold about themselves, domains, tasks, and behaviors that influence their decisions,
judgments, and goals about those tasks (Bruning et al., 2011). These unconscious
cognitive constructs frame the lens through which people see the world, resulting in
tacit, systematic assumptions about a variety of tasks, contexts, and domains.

Many implicit belief theories find root in American psychologist, therapist,
and educator (Fransella, 2003) George Kelly’s (1955, p. 46) fundamental postulate:
“A person’s processes are psychologically channelized by the ways in which he (or
she) anticipates events.” Kelly was interested in helping his clients discover their
own “constructs” (Fransella, 2003). Kelly’s therapy approach essentially assisted
individuals in understanding their own implicit beliefs in a situation of
psychological therapy.

Kelly (1955) asserts two notions: 1) humans can be better understood if
viewed from a “perspective of the centuries rather than in the flicker of passing
moments,” (p. 3) and 2) each person develops their own personal constructs that
influence his or her own individual perception of the world. With the definition of
these constructs arises a better understanding of the strategies that people
operationalize in approaching tasks.

From Kelly’s (1955) work, both Dweck (1975, 1986, 2006) and Schommer
(1990) pioneered the applied notion of unconscious constructs to different
generalizable domains. Schommer (1990) developed, examined, and validated four
dimensions of epistemological beliefs. Epistemology is concerned with the nature,
scope, and limitations of knowledge (Encyclopedia of Philosophy, 1967).
Specifically, epistemology is the posing of the following questions: What is
knowledge? How is knowledge acquired? How do we know what we know?
Epistemological beliefs are tacit beliefs about the nature and justification of knowledge. Dweck (1975) developed constructs for implicit beliefs of intelligence. Specifically, the theory of implicit beliefs about intelligence posits that individuals hold tacit, unconscious beliefs about the manifestation of intelligence in assessable behaviors, mostly academic tasks. While Schommer (1990) and Dweck (1975) applied Kelly's (1955) fundamental postulate to different domains, they both take root in similar theoretical assumptions. The beliefs theorized and studied were implicit assumptions people individually hold. The beliefs channelize into discernable behaviors, affected by the way one anticipates events.

As evidenced by the lineage and theoretical underpinnings connecting Schommer (1990) and Dweck (1975), there are overlapping definitions of implicit beliefs. For example, Dweck and Leggett (1988) present a research-based model that connects Dweck's original work of implicit beliefs to other domains, such as motivation, goal-orientation, and response to failure. While many of the principles of Dweck's (1975) original work remain, such as the notion of fixed or malleable traits, the concepts morph in adaptation to different situations.

While the traditional operationalization of implicit beliefs is more general in nature, such as epistemology and intelligence, others are much more specific, such as reading and writing. Figure 1 displays the interplay and connection between various beliefs. While generalizable characteristics transfer across domains, new characteristics and behaviors arise with additional stages of specific application. Empirical evidence for domain-general and domain-specific overlay will be explained in chapter two.
Buehl and Alexander (2001) conducted a thorough and in-depth analysis of research on epistemological beliefs. This in-depth historical analysis and present state of research addressing epistemological beliefs begins by dissecting the word epistemology into the Greek roots of the word: *episteme* means knowledge and *logos* means explanation. The philosophical basis dates back to 400 BC with Plato and still continues through the 19th and early 20th centuries. Buehl and Alexander (2001)
make four claims: (1) Epistemological beliefs are multidimensional and multilayered. (2) There are vague and methodologically challenged relationships between epistemological beliefs and learning. (3) Beliefs about academic knowledge are neither truly general nor explicitly specific. (4) There are considerable problems in much of the research addressing epistemological beliefs.

A common thread among implicit beliefs theories is the notion that there is a range of sophistication in students’ beliefs about how to approach or the purpose of various academic tasks. Generally, naive beliefs are simple, unrefined, and lacking in dimensionality whereas sophisticated beliefs are more complex, interwoven, and dynamic. Schommer’s (1990) four dimensions of epistemological beliefs posit a range, naive to sophisticated, on each of the four dimensions including innate ability, simple knowledge, quick learning, and certain knowledge. For example, individuals with naive beliefs of “certain knowledge” hold assumptions that information is definitive and unchanging. Those on the sophisticated end of the spectrum adopt beliefs that knowledge is subject to scrutiny and is substantiated in varied ways and to different degrees. Each of the four dimensions, described in further detail later, has this progressive range.

Implicit beliefs’ influence on behaviors has been challenging to define. It is difficult to quantify characteristics that people struggle articulating themselves. Nevertheless, some have tried to describe implicit beliefs’ role across a variety of settings; many of which were briefly mentioned in the opening to this chapter. The burden of identifying these beliefs in order to understand their effects lies on the shoulders of researchers and psychologists. The implicit nature of these beliefs
makes them even harder to quantify. One of the most common arguments against
the notion of implicit beliefs relates to questions pertaining to the validity of
instruments that supposedly sample beliefs that are tacit to the individual in the
first place.

DeBacker, Crowson, Beesley, Thoma, and Hestevold (2008) suggest that
there are psychometric issues with self-report epistemic belief inventories.
Specifically, they evaluated Schommer’s (1990) Epistemological Questionnaire,
Schraw, Bendixen, and Dunkle’s (2002) Epistemic Beliefs Inventory, and Wood and
Kardash’s (2002) Epistemological Beliefs Survey. They cite problems with the factor
analyses results, constructs from which the instruments were created, and the
conceptualization of beliefs that are not really epistemic in nature. Debacker, et al.
(2008) also throw a broader blanket of critique over all epistemic belief
questionnaires stating that more measures of epistemic beliefs draw from empirical
evidence, as opposed to theoretical evidence. This further substantiates the earlier
statement that beliefs studies are largely a study within themselves. Fully
acknowledging this critique, the present study centers on implicit beliefs of writing
and counters Debacker et al.’s (2008) criticism. The constructs are rooted in theory
and supported by both literary theory and psychological research pertaining to
cognition and development.

Furthermore, the constructs in which implicit beliefs are operationalized
define the strategy that should be employed to understand them. Specifically,
researchers should draw from many sources to build an understanding of the
construct. Empirical, theoretical, and philosophical evidence is gathered and
funneled to the point to round out a more complete understanding of the construct(s). Figure 2 outlines the model used for this study that follows such a guideline.

![Figure 2. Model for developing writing beliefs constructs](image)

When creating efficacy scales, for example, the scale must be linked to factors that directly influence outcomes in the domain (Bandura, 2006). Likewise, when assessing implicit beliefs within a given domain, it makes theoretical and pragmatic sense to clarify and define parallel factor(s) between the domain and the implicit beliefs corresponding to that domain. In the present study, for example, the task required students to write a philosophy of teaching and learning paper that integrated content from an undergraduate educational psychology course. The items on the beliefs scale were applied to writing the philosophy of teaching and learning paper. For example, the statement, “I try to express my feelings when I
write” was reworded, “I will try to express my feelings in this paper.” In summary, the construct of implicit beliefs about writing is rounded out with empirical, theoretical, and philosophical support. Before describing this study in more detail, I first describe the theoretical support of the constructs of implicit beliefs related to literacy, namely reading and writing, followed by a brief description of the assertions pertaining to sophistication of implicit beliefs.

**Two Perspectives of Literature: Transmission & Transaction**

Conceptions of literacy have evolved. With a better understanding of how to improve students’ comprehension, and ultimately learning, classrooms have changed their approach to literature. Bogdan and Straw (1990) provide historical support for three theories of reading comprehension—transmissional, translational, and transactional. During much of the 19th century, meaning resided with the author. Words on a page were merely an agent for the transmission of the author’s intent. All that was necessary to comprehend a text revolved around the author’s history, philosophical beliefs, and agenda. If the reader understood the author, then the reader could understand the text. This mode of reader comprehension is labeled *transmissional*.

As reading-comprehension theory turned the corner to the 20th century, the locus of meaning shifted. No longer was the author the center of attention in terms of reading comprehension; the text was the focus. This shift systematized reading comprehension. Emphasis was placed on the process of comprehension: “decoding skill, word knowledge, and structural analysis ability.” (Bogdan & Straw, 1990, p. 16) With these descriptors, the reader subscribes to a *translational* theory of
reading comprehension. Bogdan and Straw (1990) claim that this theory is possibly the most widely employed in public schools and universities, even today.

More recently, reading comprehension theory posits a heightened focus on the reader, with due respect to both the text and the author. What the reader knows is now just as important as what the author knows. Granted, it is essential for the reader to employ the systematic analytical skills to decode a text, but this occurs under the illumination of the reader’s encounter with the text. This theory, the *transactional* theory of reading comprehension, is the most sophisticated form of literary interpretation utilized by Schraw and Bruning (1996, 1999) in their implicit models of reading and White and Bruning (2005) in implicit models of writing.

Researchers (Schraw & Bruning, 1996, 1999; White & Bruning, 2005) have centered on two classes of implicit beliefs that seem to guide most research about implicit beliefs of literature. Although the terms vary, the intent is nearly the same. The simplistic view of literature is referred to as *transmissional* or knowledge-transmitting and knowledge-telling. Transmissional beliefs are typically simple, static, and uncomplicated. I will describe transmissional beliefs in more detail in the following paragraph. The more sophisticated view is referred to as *transactional* and knowledge-transacting. Knowledge-transacting beliefs are complex, dynamic, and complicated. Transactional beliefs are also described in further detail in the next paragraph.

Transmissional beliefs are characterized by a “Morse code” approach to literature. The writer captures direct thoughts and the reader pulls those thoughts straight from the message, as illustrated by Figure 3.
In contrast, transactional beliefs posit that the sender and receiver are two distinct bodies with independent assumptions, beliefs, and knowledge. During the process of writing the author transforms his or her thoughts. While reading, the receiver interprets the message based on prior knowledge and experiences—all of which is tempered by motivations, beliefs, and other cognitive factors. Figure 4 illustrates the knowledge-transacting model.
Although these two belief classifications are similar across different contexts, the research in these areas has pointed out some specific features related to different reading and writing activities. The knowledge-transacting nature of literature is supported by both researchers and literary theorists. Louise Rosenblatt wrote in her book, *Literature as Exploration*, first published in 1938 and now in its fifth edition (1995), about the need to “view literature in its living context” (Rosenblatt, 1995, p. 23). Social and aesthetic limitations are rejected and literature takes a valuation of infinite assessments of worth. The value of literature is derived from its present face value, as well as the context of its origin and the products of its effects. Essentially, literature is a dynamic transaction of ideas that occurs in all exchanges of information via literature.

Bereiter and Scardamalia (1987) propose two models of writing—*knowledge telling* and *knowledge transforming*. The characteristics of the knowledge telling model are synonymous to the transmissional writing beliefs and the knowledge transforming model is synonymous to transactional beliefs utilized in this study. In contrast to other assumptions, Bereiter and Scardamalia (1987) suggest that people write both well and poorly from the perspective of either model. They do differentiate between writing and literary quality, stating that the more complex model of knowledge transforming encourages greater literary quality. The challenge of acquiring the knowledge transforming model lies in the lack of a discourse partner. In conversation, knowledge is transformed through a dialogue of ideas. With writing, there is no respondent; thus making it more difficult to develop
thought complexity. Also, with reading, there is no active discourse partner. Just like with writing, discourse occurs internally.

At this point, I point out that it is assumed that the transactional model of literature implies a more sophisticated belief. I will describe belief sophistication later in this chapter. Having laid the groundwork of the theory of transmissional and transactional beliefs of writing, next I will describe implicit beliefs about reading. I begin with these implicit beliefs about reading because it is from these beliefs that White and Bruning (2005) developed their scales for the pioneering study of implicit beliefs about writing.

Implicit Beliefs About Reading. Schraw and Bruning (1996, 1999) examined implicit beliefs about reading. They hypothesized that readers have two implicitly held beliefs about reading: transmissional and transactional beliefs. The transmissional model is characterized by readers that believe reading is a one-way street. By reading, information is transmitted from the text to the reader. There is little room for interpretation and the reader is a passive body whose responsibility is to extract the intention and meaning of the author. The author is the source of knowledge and the text is the vehicle. Beliefs of the transmissional nature are knowledge-telling, whereby those that harbor such beliefs assume that the act of writing and reading are merely a process of “telling” someone else the information, much like Morse code—straightforward with little to no room for interpretation. The terms transmissional and knowledge-telling are somewhat interchangeable and will be dually referenced. However, for the purposes of this research, the term transmissional is a more accurate description of the construct.
The transactional model suggests that readers are active agents. Understanding the intent of the author is merely a cog in the wheel of reading comprehension. The reader's goals and objectives direct the construction of meaning from the text. The process is subjective, whereby prior knowledge, past experiences, and assumptions drive the reader's comprehension. Knowledge is transformed as an individual integrates new information with existing information, experiences, and expectations. Transactional beliefs are knowledge-transforming as the individual molds and transforms knowledge. The terms transactional and knowledge-transforming are interchangeable. However, this study adopts the term transactional, although both terms will be used to cite the literature.

**Implicit Beliefs About Writing.** From Schraw and Bruning's (1996, 1999) work on implicit beliefs about reading, White and Bruning (2005) developed the Writing Beliefs Inventory to assess implicit beliefs about writing with the same dimensions of belief—transmissional and transactional. White and Bruning (2005) focused their study on these two simple representations of implicit writing beliefs with the following objectives: 1) Identity if writers held different beliefs about writing. 2) If so, determine how these beliefs influenced the writing process and the quality of a written product.

They conducted three experiments; which will be described in further detail in the subsequent chapter. White and Bruning's (2005) three experiments resulted in a revised Writing Beliefs Inventory that was psychometrically tested and supported to sample participants’ implicit beliefs about writing. It is important to note that correlation does not imply causation (Gravetter & Wallnau, 2009).
Although White and Bruning (2005) developed the Writing Beliefs Inventory that, thus far, is the most well accepted measure of implicit beliefs about writing and sampling results revealed a correlation between writing beliefs and writing quality, it would be incorrect to say that certain writing beliefs *cause* predictable levels of writing quality.

Other studies have utilized White and Bruning’s (2005) Writing Beliefs Inventory to examine various particulars of the writing domain. Mateos et al. (2010) examined the relationship of epistemological, reading, and writing beliefs and the influential role of these beliefs in psychology undergraduates’ degree of perspectivism in a written argumentation task. They found that epistemological, reading, and writing beliefs are not isolated constructs and showed an internal coherence. Miras and Solé (2008) studied the impact of transformational writing beliefs in constructing a synthesis of three provided history texts. Students with the more sophisticated transformational beliefs produced written products that more fully integrated the three history texts, were better organized, and concluded with personal perspectives. The writings of participants with transformational beliefs seemed to portray deeper learning in the writing task.

Implicit beliefs have a range of specificity. The resulting beliefs also have a range of sophistication. For example, *transactional* beliefs are assumed to be more complex and dynamic than *transmissional* beliefs. This differentiation of sophistication is present in other theories and models of implicit beliefs. Next, I will outline the theory of implicit belief sophistication.
Sophistication of Implicit Beliefs

Sophistication of implicit beliefs draws a multitude of proposed sources, causes, and relations. Perry’s (1968) developmental approach to understanding Harvard students’ beliefs about knowledge hypothesized that with subsequent years of schooling, students would develop more complex and critical beliefs about the nature of knowledge and information. Schommer (1990) found that students portrayed more sophisticated epistemological beliefs when they had completed more college classes and when their parents had higher levels of education.

Schommer’s (1990) study formed a framework for the study of epistemology with her four dimensions. Interestingly, she found that students who reported more completed coursework held more sophisticated epistemological beliefs. Perry’s (1968) pioneering work hypothesized that younger college students would hold naive beliefs compared to their more senior counterparts. Although Perry’s (1968) methodology is heavily scrutinized, this was largely found to be true. Further coursework and higher grade levels assume that the student has attained more knowledge and prior knowledge plays a pivotal role in what students are able to learn.

Learning is anchored in prior knowledge (Shell, Brooks, Trainin, Wilson, Kauffman, & Herr, 2010). The more prior knowledge and experience one has with a subject matter, the more likely he or she is to quickly learn new information. A compilation of theories of learning by Shell et al. (2010) claims, “Working memory’s capacity for allocation is affected by prior knowledge” (p. 3) They also state, “Learning is a product of working memory allocation” (p. 3) It is admittedly
challenging to assert a foolproof direct link between learning and implicit beliefs (White & Bruning, 2005). There are legitimate associations between the sophistication of beliefs and learning (Dweck, 2006; Dweck, Chiu, & Hong, 1995; Dweck & Leggett, 1988; Schommer, 1990). Schommer’s (1990) and Perry’s (1968) studies both support the notion that with knowledge gained over a period of time, beliefs become more sophisticated.

**Summary**

In summary, implicit beliefs have garnered more attention as researchers have respected the perceived importance of affective influences on cognitive tasks. Learners are often unaware of these affective influences operationalized as implicit beliefs. Implicit beliefs include general constructs such as intelligence (Dweck, 2006), motivation (Dweck & Leggett, 1988), perceptions of knowledge (Buehl & Alexander, 2001; Perry, 1968; Schommer, 1990), and self-perception (Dweck, 2006; Dweck, Chiu, & Hong, 1995). Implicit beliefs have also been studied more specifically in the areas of reading (Schraw & Bruning, 1996, 1999) mathematics (Schoenfeld, 1983; Stodolsky, Salk, & Glaessner, 1991), social studies (Stodolsky, Salk, & Glaessner, 1991) and of importance for this research, writing (White & Bruning, 2005). Finally, implicit beliefs differ in sophistication (Perry, 1968; Schommer, 1990).

Although the factors that impact sophistication of implicit beliefs is argued, writing beliefs are subject to the same criterion of differing sophistication. The most sophisticated, initially proposed by White and Bruning (2005) is the *transactional* approach to writing; which is supported by both researchers (Bereiter &
Scardamalia, 1987) and literary theorists (Rosenblatt, 1993b, 1995). White and Bruning’s (2005) implicit beliefs of writing have been successfully utilized by other researchers (Mateos et al., 2010; Miras and Solé, 2008). Clearly, implicit beliefs are complex. The complete formula that yields one’s implicit beliefs could be called a “holy grail.” Despite the seemingly insurmountable odds to reach a steadfast conclusion, the benefits of achieving a better understanding what constitutes and influences implicit beliefs are present.

**Research Questions**

Three research questions guided the present study:

1. Do implicit beliefs about writing exist in college students when applied to a specific writing task? (Quantitative)
2. What factors are associated with implicit beliefs about writing? (Quantitative)
3. What are the results of different implicit beliefs about writing? (Quantitative)

**Predictions.** Prior to conducting this study, there are a series of predictions that can be made. These predictions fall in line with prior studies, connections drawn along similar theories, and generalizable assumptions. I will explain predictions for each research question.

The first research question states, “Do implicit beliefs about writing exist in college students when applied to a specific writing task?” I expect a factor structure of two factors representing *transmissional* and *transactional beliefs*. The purpose of this study is to utilize the scores from these two factors to better understand the
nature of implicit beliefs. Although not a main purpose, I predict that the exploratory factor analysis will produce results that suggest further revisions to the Writing Beliefs Inventory-Revised (Bruning, Dempsey, Kauffman, & Zumbrunn, 2011). Should the factor structure of the items in the scale used for this study be stronger, the conclusion could potentially be drawn that task-specific items are a better reflection of the application of implicit beliefs about writing. On the flip side, poorer factor structure may implicate a more general nature to the implicit beliefs about writing scale used.

The second question states, “What factors are associated with implicit beliefs about writing?” In order to answer this question, the relationships between implicit beliefs about writing and other beliefs and demographic information will be explored. Given that the transactional belief of writing is considered to be more complex and dynamic, it seems plausible that there would be a relationship with the more sophisticated incremental belief about intelligence. There is prior evidence of a relationship between increased transactional beliefs and advanced English/Language Arts courses (Bruning et al., 2011), as well as increased transactional beliefs for females (White & Bruning, 2005). I predict that additional coursework as well as female gender will correlate with higher transactional beliefs.

The third question states, “What are the results of different implicit beliefs about writing?” This question will largely be explored via an analysis of participant writing samples. The theory of implicit beliefs about writing proposes a more complex view of the writing process by those holding transactional beliefs. Transmissional beliefs are characterized by simple, state-the-fact approaches to
writing, I would expect stronger writing, as evidenced by stronger scores on a six-traits writing model. While at first glance, it may seem possible to assert that transactional beliefs are related to stronger writing samples, Bereiter and Scardamalia (1987) state the contrary by asserting that individuals with both sets of beliefs write well. The use of the six-traits writing model will help elucidate the different aspects of writing to shed light on any differences in writing ability. In general, I expect a more clear explanation of ideas by participants with higher transactional beliefs.

**Significance of the Study**

These questions are important for several reasons. Theoretically, the exploration of these questions contributes to the notion of implicit beliefs. More specifically, they examine the task-specific nature of implicit beliefs as applied to a writing task. White and Bruning (2005) pioneered the theory of two factors of implicit beliefs about writing and these questions put in place a study that extends that theory. Theoretically, this study also extends the reach of implicit beliefs about writing to other domains, namely implicit beliefs about intelligence, affect towards writing, and prior student experiences.

Empirically, this study examines the psychometric properties of previously used scales as well as the statistical relationships among scales, prior experiences, and participant characteristics. While the scales have previously resulted in desirable psychometric properties, this study will re-test the factor structure and reliability of the Writing Beliefs Inventory-Revised. The empirical findings of the psychometric properties will contribute to the use of the Writing Beliefs Inventory-
Revised and related scales. The correlational data will elucidate relationships between implicit beliefs and other constructs, experiences, and characteristics.

Pragmatically, this study stands to be of benefit for teachers, students, educational researchers and theorists, as well as others interested in positively impacting student writing. Implicit beliefs are pivotal to learning, teaching, and educational research. They drive behaviors and judgments. Sinatra (2001) states, “Understanding the role of learners’ beliefs about the nature of knowledge, or epistemological beliefs, in the learning process is central to the research mission in educational psychology” (p. 321). If teachers could know the implicit beliefs of students and understand the link between beliefs, motivation, and performance the outcome for student writing ability would be astounding. If students believe that by reading they are learning to write, by writing they are learning, and by reading and writing they are learning, (Flower, Stein, Ackerman, Kantz, McCormick, & Peck, 1990), they may approach exercises in literature with a different perspective—a perspective that enhances a desire to make sense of subject matter through reading and writing. While these assertions are perceived fantastical, they are necessary.

The study contributes to the literature of implicit beliefs on the basis that it provides a theoretical and task-specific basis to the constructs of implicit beliefs about writing. DeBacker et al. (2008) critique epistemological belief studies on the basis that they are largely a study within themselves, drawing rationale from other studies and using the empirical basis as the sounding board. Contrary to that argument, this study contributes on the basis of constructs derived from a wide variety of theory, empirical evidence, and even literary theorists.
Before describing the study in more detail, I first turn to a review of the relevant previous research. In the next chapter I will delve further into the empirical support for the theories presented in this chapter. I will review studies of domain-general beliefs such as epistemology and intelligence. Empirical accounts of domain-specific beliefs such as math, social sciences, reading, and writing will also be reviewed. The review will culminate with a review of implicit beliefs about writing, the models of such beliefs, and application of implicit beliefs about writing.
Chapter 2

Literature Review

Implicit beliefs are unconscious constructs that influence behavior, motivation, goal setting, and judgments. The unconscious beliefs people hold result in tacit, systematic assumptions about themselves, domains, tasks, and behaviors. Implicit beliefs project an unconscious influence on multiple aspects of peoples' lives. Recent exploration of implicit beliefs are rooted in theory and supported with research. Beliefs include domain-general topics of intelligence (Dweck & Leggett, 1988), academic knowledge (Buehl & Alexander, 2001), epistemology (Schommer, 1990), and motivation (Dweck & Leggett, 1988). Albeit less-extensively, research has also explored more narrowly defined domains of implicit beliefs, such as reading (Schraw & Bruning, 1996, 1999), morality judgments (Dweck, Chiu, & Hong, 1995), mathematics (Schoenfeld, 1983), and of most importance for this study, writing (White & Bruning, 2005). This chapter begins with two general areas of epistemological beliefs that have received significant attention in research literature—epistemological beliefs and beliefs about intelligence. Next, the focus of implicit beliefs is narrowed to domain-specific beliefs. The empirical framework for implicit beliefs about writing is laid out with a recount of the literature supporting transmissive and transactional models of belief. This culminates with a review of the literature regarding implicit beliefs about writing.
Domain-General Beliefs

**Epistemological Beliefs.** Implicit beliefs about the nature of domains that fall outside the realm of “self” include epistemological beliefs. Early studies of students’ epistemological beliefs viewed such beliefs through a developmental lens. Perry (1968) surveyed Harvard college students to conceptualize and theorize their beliefs about knowledge and learning. Using six graduate students studying the humanities as judges, Perry provided each with 20 transcripts, one at a time, of interviews from students at Harvard and Radcliffe Colleges. Prior to evaluating the transcripts, the judges were briefed with the proposed nine-point developmental scheme, sample interview protocol, and a manual of instructions. The manual included information that helped the judge evaluate transcripts and included a sample rating form. After reviewing the manual and supplemental information, the judges were brought in for an hour of discussion and preparation for the rating task.

Results were reliable, with interrater reliability over .800. The findings substantiated the nine-point developmental scheme of college students suggested in the study. The developmental scheme resulted from a sequence of challenges, common among students, and described by nine positions condensed into the following four categories: dualism, multiplicity, relativism, and commitment within relativism. Results of the analysis of 20 transcribed interviews by six graduate students substantiated a developmental pathway of epistemological beliefs. Early learners were suggested to be simple and naive in their approach to knowledge and viewed the teacher as an authoritative source of knowledge. Later stages of development surfaced more skeptical beliefs about the nature of information and
commitment to factual information was suggested to be much more tentative. Limitations of Perry’s (1968) study include a narrowly defined population to support the findings—20 white, male college students—and a one-dimensional model of belief. The limited, almost single track, oversimplifies the complexity of the nature of implicit beliefs. The next study considers epistemological beliefs on multiple dimensions.

In a two-part experiment as a follow-up to an earlier study (Schommer, 1988, as cited by Schommer, 1990), Schommer (1990) examined student beliefs about the nature of knowledge, how those beliefs affected comprehension, and based on the lack of multiple dimensions in prior studies. Schommer’s motivation for the study stemmed from what she refers to as “shortcoming in the current conception of epistemological beliefs” (Schommer, 1990, p. 498). This study explored the possibility of independent dimensions and their affect on comprehension and learning.

In the Experiment 1, 117 junior college and 149 university students were given a wide range vocabulary test, a 63-item epistemological questionnaire that represented the initially suggested five dimensions of epistemological beliefs, student characteristics survey, and a filler task. The first three portions are relevant to the study and the filler task. Exploratory factor analysis resulted in four factors with eigenvalues greater than one, accounting for 55.2% of the variance. Items loaded to four factors of epistemological belief. Factor one was titled “innate ability” and the belief that learning ability is either innate or subject to development. Factor two was titled “simple knowledge” and the belief that knowledge is either discrete
and unambiguous or subject to interpretation. Factor three was titled “quick learning” and represents the belief that learning is either quick or not at all, contrasted by the belief that learning takes time and deliberate effort. Factor four was titled “certain knowledge” and described by believing either that knowledge could be definitive or open-ended.

Experiment 2 examined the relationship among the four dimensions of epistemological beliefs and students’ comprehension of one of two passages about either psychology or nutrition. Participants included 86 of the original 117 junior college students that participated in the initial study. Students read a passage from one of two domains—psychology or nutrition—each of which had the conclusion paragraph omitted. Upon reading the passage they wrote a conclusion, took a mastery test over the content, self-reported the number of classes they had taken in psychology, sociology, biology, nutrition, and health sciences, and finally responded with a confidence rating exemplifying their confidence in understanding the passage. The second experiment also included a filler task to prevent distractions.

Findings of this two-part study position personal epistemological beliefs as independent dimensions of beliefs; supporting the claim that beliefs are much too complex to conceptualize in a single dimension. Results from multiple regression analysis indicated that Quick Learning beliefs oversimplified results, had poor performance on the mastery test, and portrayed overconfidence in test performance. This meant that a belief that learning happens fast and acquisition of knowledge is all-or-none generated simple conclusions and generally speaking, performed poorly on mastery assessment. Certain Knowledge predicted certain and
absolute conclusions, meaning that conclusions were steadfast, with little room for tentative or alternative conclusions. Interestingly, students with greater prior knowledge, as indicated by more courses completed, wrote tentative conclusion. There was no main effect for passage domain, indicating that beliefs measured in the study are generalizable across the two domains of psychology and nutrition. Interestingly, more education on the part of both students and parents resulted in more sophisticated epistemological beliefs. Schommer (1990) suggests that education may be the key to enhancing epistemological beliefs and countering self-defeating beliefs.

There has been considerable criticism of Schommer’s four dimensions (e.g., Hofer & Pintrich, 1997; Qian & Alvermann, 1995). Specifically, Hofer and Pintrich (1997) point out that Schommer’s four dimensions may not all be beliefs about epistemology, specifically Fixed Ability and Quick Learning. This would explain why, through factor analysis, items relating to Fixed Ability are distinctly separate from others—they describe an entirely different construct. They also criticize the dimension of Quick Learning on the basis that it describes goals and expectancies of the process of learning, not the nature of knowledge. Regardless of the extensive critique the Schommer Epistemological Questionnaire (SEQ) has been unable to escape, Schommer significantly contributed to epistemological beliefs research. The SEQ pioneered a paper and pencil measure whereby epistemological beliefs could be explored using large samples and studied with advanced statistical analysis techniques (Buehl & Alexander, 2001).
Epistemological beliefs seem to be multidimensional (Schommer, 1990). To say that individuals hold a single, distinct belief about the nature of knowledge is overly simplistic. Although Schommer's four tenants of epistemological belief are subject to scrutiny (Hofer & Pintrich, 1997; Qian & Alvermann, 1995), the notion of different factors part of the big picture of epistemological belief seems logical. To further specify implicit beliefs, as they pertain to knowledge and knowing, I turn to implicit beliefs about intelligence.

Beliefs About Intelligence. Dweck (1975) built from Kelly's (1955) perspective on personal constructs to develop a theory that suggests learned helplessness can be overcome when failures and successes are attributed to effort. In one of the initial intervention studies to explore the effect of helping students attribute success and failure to effort, Dweck (1975) identified 12 participant students—5 females and 7 males, between the ages of 8 and 13—that were extreme cases of learned helplessness, as independently identified by the school psychologist, principal, and teacher. Learned helplessness is described as the assumption that despite motivation and ability to overcome adversity or failure, an individual chooses to attribute lack of success due to irreparable characteristics that cannot be changed. In addition to the 12 participants characterized as helpless, 10 contrasting students were chosen considered to be persistent. To insure that the students in each group really were representative of the characteristics they were chosen for, all participants were given the Intellectual Achievement Responsibility Scale, two subscales of the Text Anxiety Scale for Children, and a Repetition Choice
task. Results from these assessments were indicative that the two groups of students were different in their attribution of success and failure.

The 12 students comprising the learned helpless group were subjected to one of two treatments. In the first, participants completed a series of problems where they were able to successfully complete the items within the given amount of time. Failures were glazed over or disregarded. The other group was given a set of items that did not allow them to finish, nor complete all of them correctly. The students that experienced failure, acknowledge the results of coming short of the goal, and received the Attribution Retraining Treatment showed superior performance following the failure. Interestingly, the group that experienced success only did not show marked improvement with continual success. In fact, if they experienced failure, the subsequent results showed a marked impairment below previous performance levels. This intervention study exemplified the detrimental effects of misattribution of success or failure. When success or failure was attributed to effort, students persist not only in the face of challenge, but also in the pursuit of additional success.

Licht and Dweck (1984) studied the impact of imbedding a challenging task within a problem. Their study stemmed from other studies of learned helplessness. Participants include 57 male and 37 female fifth-grade students. All participants were given a similarly structured booklet of information. Each booklet contained five sections with each section containing one to four pages of basic information about psychology. At the end of each section there were one to three multiple-choice questions. For all participants, sections 1, 4, and 5 were identical. There were two
variations of section 2 and 3, given to each group of participants—the confusion group and no-confusion group. For both groups, sections 2 and 3 were irrelevant to the learning goals of the entire booklet. The confusion group booklet included reading in sections 2 and 3 that was arduous, confusing, and elude comprehension even for adults. The non-confusion group booklet included reading in sections 2 and 3 that was clear, straightforward, and easily comprehendible. In addition to the two treatments, participants were also divided based on mastery or helpless orientation. This resulted in a 2 (helpless vs. mastery oriented) x 2 (confusion vs. no-confusion) factorial design.

Results of the no-confusion group saw no discernable difference between mastery orientation and helpless groups (68.36% for mastery oriented, 76.57% for helpless). However, for the group that read the booklets containing the confusing sections, the mastery oriented group significantly outperformed the helpless group (71.88% for the mastery oriented, 34.65% for the helpless). Conclusions drawn from this study point to the notion that, when faced with a seemingly insurmountable obstacle, those with learned helplessness are negatively affected in subsequent learning tasks. For those with a mastery orientation, difficult situations have little to no effect on subsequent learning.

In a review of literature and basis for further research, Dweck and Leggett (1988) built a continuation of earlier studies to further pinpoint the results of learned helplessness. They sought to identify more underlying factors that contribute to scenarios of learned helplessness. Specifically, they examined the influence that implicit theories about intelligence played in adaptive and
maladaptive behavior, also described as mastery-oriented and helpless. These two camps are most commonly labeled as entity and incremental views of intelligence.

Those holding an extreme entity view of intelligence believe that people are born with the amount of intelligence they will hold for the rest of their lives. No amount of effort, experience, or education can change that. Individuals with an incremental view of intelligence believe that intelligence can grow with effort. With deliberate, concerted effort put forth, intelligence improves. Individuals respond somewhere along a continuum from one extreme to the other and may hold either very different theories for various domains or one very generalizable theory (Dweck, Chiu, & Hong, 1995). Specifically, they cite Erdley and Dweck (1993) to show that the notion of entity and incremental theories have domain-specific applications.

Erdley and Dweck (1993) investigated the attribution of entity and incremental theories to assumptions of personality. Participants included 139 fourth and fifth grade students. The study was rooted in entity and incremental theory as it applies to judgments of personality. In one particular portion of the study, participants were shown slides depicting the boy cheating, lying, and stealing. Participants were then asked to predict his subsequent behaviors a few weeks later. Participants with entity views suggested that he would not change. In contrast, those with incremental views proposed that he would likely act in a more respectable manner once he settles down and becomes oriented in his new surroundings. The same responses surfaced when participants were asked to
predict the boy's behavior several years later. The results of this study exemplify the notion that entity and incremental views are transferable to other situations, such as personality judgments.

Blackwell, Trzesniewski, and Dweck (2007) used Dweck and Legget’s (1988) implicit theories of intelligence model in a two-part study examining the role of implicit theories of intelligence in mediating the common decline grades for junior high students. The first part of the study was correlational. They found that an incremental theory of intelligence was associated with positive effort beliefs ($r = .54$, $p<.01$), learning goals ($r = .34$, $p<.01$), low helpless attributions ($r = .44$, $p<.01$), and positive strategies ($r = .45$, $p<.01$). These findings are consistent with the points claimed by Dweck and Legget (1988). Interestingly, in this first part of the study, intelligence beliefs were not significantly correlated with prior grades. However, the trajectory of grade improvement or decline is apparent. There was a significant difference in the change in grades over time for students that held an incremental view of intelligence compared to those that held an entity view.

The second part of the study was experimental. Students were taught to think that their intelligence is malleable. In other words, they were taught the Dweck and Legget’s (1988) incremental view of intelligence. The results were as anticipated, the experimental group taught an incremental view of intelligence curbed the decline in course grades. However, the results were only marginally statistically significant. This may be due to the small sample size and Blackwell et al. (2007) suggest that the study should be replicated with a larger sample size.

Blackwell et al. (2007) summarized the findings stating that incremental views of
intelligence are closely associated with other beneficial and positive endorsements about learning. Also, an incremental theory of intelligence can be taught to students and should show positive results over a period of time by improving grades or at least preventing sharp declines. This study was conducted with junior high students. Given the turbulent nature of this time of transition for students, the teaching of incremental views of intelligence is beneficial.

This brief overview of implicit theories of intelligence illuminates the point that implicit theories have not only broad and far-reaching applications such as epistemological beliefs, but also an ability and performance base as well. The entity and incremental views are widely studied within a framework of intelligence (Dweck, 2006; Dweck & Leggett, 1988). However, as shown, the same constructs are applicable to judgments of personality (Erdley & Dweck, 1993). As with other studies of implicit beliefs, there are challenges in studying beliefs that participants may not even be able to articulate to themselves. Despite the challenges in substantiating reliability and validity in creating instruments assessing implicit beliefs about intelligence, there has been considerable success (Dweck & Leggett, 1988). In this review of implicit beliefs about intelligence, many of the studies were correlational and the portion of Blackwell et al. (2007) that did include an experiment was conducted with a small sample. While this study is subject to the same critique, thus far in this literature review there is an apparent need for more experimental research. Next, I will review literature that further specifies implicit beliefs to more narrowly defined domains.
**Domain-Specific Beliefs**

Buehl and Alexander (2001) cite the growing interest in researching domain-specific characteristics of beliefs. These characteristics range from variable personal definitions of a subject area such as math versus social sciences (Stodolsky, Salk, & Glaessner, 1991) to implicit beliefs about reading (Schraw & Bruning, 1996).

Domain-specific characteristics include beliefs about academic knowledge and even more specifically—mathematics or history. Beliefs have moved further to specific subject-matter areas and beyond to tasks within domains, such as reading (Schraw & Bruning, 1996) and writing (White & Bruning, 1999). While there are general beliefs that are transferrable and generalizable, there are also domain-specific beliefs. This section of the literature review will cite empirical evidence for specificity. The specificity of the belief is dependent upon the definition of the construct and should be reflected in the wording of any questionnaire items. In this section, I review studies that provide evidence for specificity of beliefs and the characteristics of studies that appropriately investigate specific beliefs.

**Comparing Beliefs About Academic Subject Areas.** This first study asserts that there are not domain-specific beliefs, as applied to math and social studies. However, the results fall short in supporting such a conclusion. Stipek and Gralinski (1996) explored the notion of implicit beliefs applied to specific domains of performance, specifically mathematics and social studies, among 319 third through sixth graders. Students completed an identical questionnaire twice during the school year. The questionnaire contained 12 items, representing two factors, similar to Dweck’s two-factor model of *entity* and *incremental* theories of intelligence.
Stipek and Gralinski (1996) labeled their factors as the *Ability-Performance Beliefs* scale and the *Effort-Related Beliefs* scale. Interestingly, there was no discernable difference in the factor loadings between items referring to math and social studies, negating the hypothesis that there would be different beliefs when applied to mathematics and social studies.

The conclusion that there are not domain-specific beliefs falls short on the basis that the items in Stipek and Gralinski’s (1996) questionnaire were not written to apply to the specific nuances of each domain. For example, two items written to reflect math and social studies differed on only one word. The math item stated, “Some kids can never do well in math, even if they try hard.” The social studies item stated, “Some kids can never do well in social studies, even if they try hard.” These items reflect generally held beliefs about entity views of intelligence, rather than highlighting the characteristic differences between math and social studies. If researchers hypothesize a set of domain-specific beliefs, the items must reflect the characteristics of the domain of interest, as opposed to generalizable items that are vague in specificity. The next study sorts out the differences between math and social studies; which should be reflected in an instrument assessing domain-specific beliefs.

Stodolsky, Salk, and Glaessner (1991) examined the beliefs students hold about different subject areas in school. The study was based on goal and achievement theory relating to differing subject matter areas. The participants in the study were 60 fifth grade students from 11 classrooms over two years. The study was qualitative in nature and included a 30-40 minute interview that asked
each student about both subjects. The coding reliability was established at 91% for four randomly selected items and any disagreements in coding were discussed until consensus was reached. The first portion of the interview asked students to define the subject by a hypothetical situation. Students were told that E.T. arrived at their school and the student was to explain what was going on. Students were also asked a variety of questions that assessed what they thought about learning each subject, such as form of instruction and whether they could learn the topic on their own.

Results showed that students typically regarded math as a more clearly defined topic. Five categories of responses about math were provided by greater than 50% of the participants. On the other hand, definitions of social studies were quite variable, with only one category of response provided by greater than 50% of the participants. Interestingly, a smaller number of activities were given as examples for activities conducted in a math class (M=3.6, SD=1.4) than in social studies (M=5.1, SD=1.9). Every student mentioned solving problems as an activity in math class. The results of the study point to students having different views about math and social studies. Whereas math appears to be more clearly defined by common responses from students, social studies evokes variable responses. It seems that variable domains produce variable beliefs. These findings suggest that young students hold differing beliefs about knowledge in reference to mathematics and social studies, pointing to the possibility that students begin to develop epistemological beliefs early and with domain-specificity.
Hofer (2000) explored both domain-general and domain-specific beliefs and their relation to overall academic performance as well as course-specific performance. Specifically, personal epistemology constituted the general domain and domain-specific beliefs were explored in respect to beliefs about psychology and science. The two purposes of the study were (1) to utilize a new instrument to assess dimensions of personal epistemology and (2) examine if there are domain-related differences in epistemological beliefs. The participants were 326 first-year college students. Participants completed a General Epistemological Beliefs Questionnaire containing 32 items derived from the SEQ (Schommer, 1990) and a Discipline-Focused Epistemological Beliefs Questionnaire adapted from existing instruments, as well as new discipline-specific items that contained 27 items. To measure achievement in psychology, the final course grade for the introductory psychology course was used. To measure achievement in science, the participant’s grade in an introductory chemistry course was used. The participant’s grade point average (GPA) was used as the measure of overall academic performance. All students took the General Epistemological Beliefs Questionnaire and both Discipline-Focused Epistemological Beliefs Questionnaires.

Exploratory factor analysis produced a scree plot indicating a natural break at four factors that aligned with Hofer’s theoretical proposition. The items associated with the following factors: Certain/Simple Knowledge, Justification for Knowing, Source of Knowledge, and Attainability of Truth. In addition to the presence of multiple dimensions of epistemological beliefs, the study also resulted in significantly different epistemological perceptions of science and psychology:
certainly / simplicity of knowledge \[ t(325) = -14.63, p < .001 \]; justification for knowing: personal \[ t(325) = 13.01, p < .001 \]; source of knowledge: authority \[ t(325) = -13.85, p < .001 \]; and attainability of truth \[ t(325) = -8.57, p < .001 \]. Participants viewed science knowledge as more certain and unchanging, personal and firsthand experiences as a basis for psychology, authority as a source of knowledge in science, and that truth is more attainable by experts in science. Results of Hofer's (2000) study suggest that there are both domain-general and domain-specific aspects of beliefs. While there may be general categories that are consistent across domains (e.g. epistemology and intelligence), the ways in which individuals personally conceptualize and apply those beliefs across domains differ. It seems plausible that while the theory of epistemological beliefs has transferable qualities, when applied to specific domains, differing beliefs arise.

In contrast to the previously cited studies, Schommer and Walker (1995) assert that beliefs are domain independent. The motivation for their study was to determine if epistemological beliefs were independent or dependent as applied to two different domains: math and social sciences. In Experiment 1, the researchers used two groups of students, 39 students that read a social science passage and 56 students that read a mathematics passage. Both groups of students were twice given the same Schommer Epistemological Questionnaire (SEQ), developed from previous studies (Schommer, 1990). The instructions for completing the SEQ included one differing sentence for each time it was taken. For the math-oriented SEQ the instructions read, “While you are completing this survey, think about mathematics, such as algebra, geometry, and statistics” (Schommer & Walker, 1995, p. 426). The
social studies-oriented SEQ had instructions that began with, “While you are completing this survey, think about social sciences, such as psychology, sociology, and history” (Schommer & Walker, 1995, p. 426). The results were analyzed by determining the consistency of responses across both times students took the SEQ. Chi-square analyses revealed significant findings for the consistency of all four factors of the SEQ: Fixed Ability (79% consistent), Simple Knowledge (76% consistent), Quick Learning (73% consistent), and Certain Knowledge (68% consistent). Experiment 2 was identical to Experiment 1, except for two differences. First, the domain of interest in the SEQ was mentioned not only in the instructions, but also in the middle of the page as well as explicitly in every third item. Second, a control group was implemented with the control answering the SEQ with a social sciences focus both times. Although Schommer and Walker (1995) assert that findings were similar, the consistency percentages were lower, yet significant: Fixed Ability (70% consistent), Simple Knowledge (65% consistent), Quick Learning (57% consistent), and Certain Knowledge (57% consistent).

Schommer and Walker (1995) posit that the findings reveal that there are independent beliefs that transfer across domains. From the consistencies between the two SEQs that participants took, it seems plausible that epistemological beliefs transfer from math to social sciences. However, there are multiple issues suggesting such conclusions from this study. For example, as Buehl and Alexander (2001) point out, the items in the SEQ were the same each time an individual participant took the questionnaire. While the instructions vary, that does not insure that the participant will always answer the question with the domain provided in the instructions in
mind. The SEQ was not originally developed to assess domain-specific epistemological beliefs and to do so without rewording the items raises serious concerns (Buehl & Alexander, 2001). It is difficult to know with certainty that participants would repeatedly think about the application of the item to the domain included in the instructions. It seems plausible that if the items are not worded to the domain or task, the results cannot be reliably reported as a reflection of that domain or task.

In summary, the application of implicit beliefs to specific domains warrants further investigation. There is evidence that students begin to develop different views of academic domains at a young age (Stodolsky, Salk, & Glaessner, 1991). While these different definitions and views start early, they develop into complex beliefs that are both domain-general and domain-specific. The same instrument, worded to apply to different domains will present similar factor structure, yet produce significantly different results elucidating the different beliefs that individuals hold about different domains (Hofer, 2000). This supports the notion that there are implicit beliefs specific to writing.

However, the present state of the literature stops at the domain level. In this review, there were found to be no studies that explored implicit beliefs applied to a specific task. Implicit beliefs about a domain could vary, based on the task. For example, a student that thinks of science in terms of Newton's laws of gravity will probably consider science to be much more conceptual that a student who conjures up images of calculating the density of different solutions in a chemistry lab. The nature of a task varies greatly within a domain. Studies of implicit beliefs, even
domain-specific beliefs, neglect the wide range of variability within a domain.
This study seeks to fill that void by studying student beliefs about a specific writing
task. In the next section, I describe the research regarding implicit beliefs about
reading and writing.

As mentioned, there has been growing interest in the domain-specific
applications of implicit beliefs (Buehl & Alexander, 2001). In these following
sections, I describe research examining the role of literacy, specifically reading and
writing, through a lens of implicit beliefs. These studies will be described with
considerably more length and detail than the previous studies, due to their
importance in arriving at the need for this present study.

**Beliefs About Reading.** White and Bruning (2005) examined the possibility
that individuals can hold two qualitatively different beliefs about the nature of
writing—*transmissional beliefs* and *transactional beliefs*. These two models of
implicit beliefs of writing stem from Schraw and Bruning's (1996, 1999) research of
implicit beliefs about reading; which traces its roots to various sources that cite the
importance of reader-text interaction that is dynamic, fluid, interactive, and
infinitely interpretive (Bogdan & Straw, 1990; Straw & Bogdan, 1993; Wineburg,
beliefs about reading.

Schraw and Bruning (1996, 1999) began with Bogdan and Straw's (1990)
*transmissional, translational, and transactional* theories of reading in their initial
study to examine implicit beliefs about reading (Schraw & Bruning, 1996). The
study was an exploration to determine the beliefs included in an epistemology of
text and how those epistemologies differ. Participants included 153 college students at a large Midwestern U.S. university. 95% of the students were junior or senior status and 90% were enrolled in a teacher certification program. The study included a Reader Belief Questionnaire (later called the Reader Belief Inventory, RBI), reader response checklist, an 800-word text, free recall test booklet, and reader response essay booklet.

The Reader Belief Questionnaire included 14 items that were associated with either a transmissional or transactional belief of reading. The transmissional model includes both Bogdan and Straw’s (1990) transmissional and translational position. Schraw and Bruning (1996) state two reasons for doing this. First, they wanted to simplify the instrument, given the extremely exploratory nature of this pioneering study. Second, the difference between the transmission and translation models is much more difficult to tease apart than the difference between either of them and the transaction model. Therefore, the implicit beliefs about reading theory proposed by Schraw and Bruning (1996) and utilized for their initial study includes two models—transmission and transaction.

The responses to the Reader Belief Questionnaire were analyzed using principal factor analysis using both an oblique varimax rotation and orthogonal varimax rotation. Results showed two uncorrelated factors, accounting for 69% of the variance. Four items comprised the transactional model. The factor had an eigenvalue of 1.60, accounted for 40% of the variance, and showed an internal consistency of .76. Six items comprised the transmission model. They had an eigenvalue of 1.350, explained 29% of the variance, and showed internal
consistency of .81. All other factors combined accounted for less variance than either of the two primary factors. In terms of reading comprehension, Schraw and Bruning (1996) found that the transaction scale was positively correlated with proposition recall and the transmission scale was negatively correlated with proposition recall. This suggests that transaction beliefs contribute to understanding and transmission beliefs interfere. The findings of Schraw and Bruning's (1996) study produced two substantial results. First, the two-part model of implicit beliefs about reading supports transmission and transactional models with psychometrically reliable factors stemming from the Reader Belief Questionnaire. Second, the fact that the two beliefs are uncorrelated means that relative agreement with one does not determine whether one agrees with the other. The findings of Schraw and Bruning (1996) are applied within other contexts to reveal influences on motivation to read.

The initial Reader Belief Questionnaire underwent various revisions, resulting in the Reader Belief Inventory (RBI) (Schraw & Bruning, 1999). Schraw (1998) utilized the 14-item uncorrelated factor structure Reader Belief Questionnaire and Schraw and Reisetter (1998) replicated the uncorrelated two-factor structure with an 18-item scale. Both resulted in similar two-factor solutions with equivalent item-to-factor loadings. Results from these uses of RBI show remarkable similarities and when considered together, reveal intriguing characteristics of readers with high-transactional scores. Integrating the findings of Schraw (1998) and Schraw and Bruning (1996), readers with high-transactional
scores produced more thematic, critical, holistic, and personal responses, compared to readers with low-transaction scores (Schraw & Bruning, 1999).

The assumption of a transactional interaction between reader and text is one that is supported by both researchers and literacy theorists (Straw, 1990). Louise Rosenblatt first authored the first of five editions of Literature as Exploration in 1938. Rosenblatt (1995) describes literature as a transaction; an aesthetic journey into a literary world that integrates contexts of the past, present, and future. According to Rosenblatt (1995), “efferent reading” is a dysfunctional view of literature where the reader unidirectionally extracts meaning from the text with concern only for the strict meaning of the words on paper. With the transactional view of literature, reading and writing have a new face. Literature is no longer a means to share information; it becomes an act of constructing information.

In summary, implicit beliefs about reading have been boiled down to two distinct models of belief—transmissional and transactional (Schraw & Bruning, 1999). These two models are assessed with the Reader Belief Inventory. With individuals that represented high-transactional beliefs, new characteristics and correlations arise. This draws one to question the role of the transmissional model. While the theory is plausible, that if one does not believe the transactional nature of reading, he or she should believe the transmissional. While this is not necessarily the case in reading (Schraw & Bruning, 1996), it is a question that arises in implicit beliefs about writing; which I will review next.
**Beliefs About Writing.** White and Bruning (2005) conducted three experiments to construct and validate the Writing Beliefs Inventory and compared writing beliefs to writing quality. Their scale was based on the *transmissional* and *transactional* reading beliefs from Schraw and Bruning (1996, 1999). The study focused on participants’ implicit beliefs with these two simple representations. The authors conducted the study with the following objectives: 1) Identify if writers held different beliefs about writing. 2) Determine how these beliefs influenced the writing process and the quality of the written product. The authors suggested outcomes prior to the study that transmissional writing beliefs would characterize writers with lower levels of affective and cognitive engagement during the writing process. Conversely, writers with transactional writing beliefs would exhibit greater levels of affective and cognitive engagement. Not only would they show these characteristics, they would also compose a higher quality written product. I will explain the three experiments that White and Bruning (2005) conducted in developing the Writing Beliefs Inventory.

In Experiment 1, a 36-item Writing Beliefs Inventory was given to 180 introductory educational psychology students at a Midwestern university. Principal axis analysis was used to determine the factor structure of the 36 items. After oblimin and varimax rotations, 15 of the 36 items emerged, accounting for 28% of the variance. Of the 15 items, seven were identified as transmissional writing beliefs and eight items were identified as transactional writing beliefs. The 15 remaining items were revised before continuing to Experiment 2. The statements were adapted to reflect general beliefs (e.g., “Good writing involves editing it many
times.”) instead of specific behaviors (e.g., “I always want to go back to edit my writing.”) This was an effort to tie the sample items to general beliefs, as opposed to specific behaviors.

In Experiment 2, the participants were 170 students in an introductory educational psychology course at a Midwestern university. The survey included the revised Writing Beliefs Inventory, Reading Beliefs Inventory (Schraw & Bruning, 1996), a writing self-efficacy scale (Shell et al., 1995), a writing apprehension scale (Daly & Miller, 1975), a background writing experience questionnaire specific to the study, and an 877-word story (Borges, 1977, as cited in White & Bruning, 2005). In order to gather a sample of the participant’s writing, after completing the survey students read and responded in writing to a prescribed story. The additional scales were included to assess how participant’s writing quality, writing beliefs, and other writing variables are related.

Again, the authors used principal axis analysis and both oblimin and varimax rotations to examine the factor structure of the 15 items in the Writing Beliefs Inventory. Two factors were selected that accounted for 39% of the variance. As was found in the study of implicit reading beliefs (Schraw & Bruning, 1996), the two factors were uncorrelated (r=.14, NS); meaning that participants’ degree of transactional writing beliefs did not relate to their degree of transmissional writing beliefs, and vice versa. Next, the authors analyzed the relationship between writing beliefs and writing quality scores using 2 x 2 design with the following four categories: 1) high transmissional—high transactional 2) high transmissional—low transactional 3) low transmissional—high transactional 4) low transmissional—low
transactional. Results from ANOVA revealed a statistically significant main effect for both transm issional \((F(3, 70) = 10.20, p = .002)\) and transactional \((F(3, 70) = 8.31, p = .005)\) writing beliefs. Writing scores were out of 30 points. Participants with low transm issional scores had higher writing quality scores \((M = 22.66)\) than those with high transm issional scores \((M = 20.45)\). Participants with high transactional scores had higher writing quality scores \((M = 22.38)\) than those with low transactional scores \((M = 20.61)\).

The results from the second experiment further support the notion of two distinct implicit beliefs about writing. This experiment also elucidates a relationship between writing beliefs and writing quality. Although the results of this experiment were favorable for the authors’ theory, one more experiment was conducted to examine any possible revisions that should be made to the Writing Beliefs Inventory.

In Experiment 3, 129 students in an introductory educational psychology course at a Midwestern university took the same survey as the participants in Experiment 2, with one exception; four items pertaining to transactional beliefs were added to the Writing Beliefs Inventory. Again, principal axis analysis and both oblimin and varimax rotations were utilized to determine the factor structure of the data. One item related to a different writing belief, was regarded as ambiguous, and discarded from the final Writing Beliefs Inventory. The additional four items improved the reliability of the transactional factor.

White and Bruning (2005) concluded their study with a Writing Beliefs Inventory that examined individual’s implicit beliefs about writing. They statistically
identified two beliefs and identified a relationship between those beliefs and writing quality. It is important to note that correlation does not imply causation (Gravetter & Wallnau, 2009). Although there is an apparent relationship between implicit beliefs about writing and writing quality, that does not mean that implicit beliefs cause different qualities of writing. Other studies have extended White and Bruning’s (2005) work and examined implicit writing beliefs in other contexts.

Mateos et al. (2010) examined the relationship of epistemological, reading, and writing beliefs among 118 fourth-year educational psychology students at a state-run Madrid, Spain university. The participants were given the Schommer (1990) questionnaire, a reading beliefs questionnaire (Schraw & Bruning, 1996), a writing beliefs inventory (White & Bruning, 2005), and completed an argumentation writing task. Correlation was found between reading and writing beliefs. Participants characterized by transactional reading beliefs were likely to associate with transactional writing beliefs. The same held for transmissional reading and writing beliefs. This supports the notion that reading and writing beliefs are defined with a sense of coherence between the two. Reading and writing tasks are rarely approached from separate perspectives and are usually performed close to one another. Spivey (2007) defines reading and writing as hybrid acts (as cited in Mateos et al., 2010, p. 1).

One of the objectives of Mateos et al. (2010) study was to examine the role of increased complexity of beliefs. Correlation analysis revealed participants with a complex conception of knowledge tended to associate with transactional beliefs of both reading and writing. Results showed that epistemological, reading, and writing
beliefs are not independent. In fact, they show coherence, justifiable by measures of correlation. This further supports the notion that epistemological, reading, and writing beliefs may be related and increased complexity of beliefs bleeds across the various constructs. These findings support the model of implicit beliefs suggested in chapter one represented by Figure 1.

White and Bruning's (2005) pioneering work framing implicit beliefs of writing within two models—transmission and transaction—has been carried forward. Implicit beliefs about writing are not independent of beliefs about reading, nor beliefs about the nature of knowledge (Mateos et al., 2010). Given the apparent complexity of implicit beliefs about writing and likely connection to infinite other domains, there is a need for further investigation of the nature of implicit beliefs about writing and how the two models associate with other domains and beliefs.

More recently, Bruning, Dempsey, Kauffman, and Zumbrunn (2011) extended the work of White and Bruning (2005) with a revised version of the Writing Beliefs Inventory. Utilizing the Writing Beliefs Inventory—Revised, Bruning et al. (2011) surveyed 556 eleventh graders from two large urban high schools to examine the relationship of implicit beliefs about writing with other motivational and performance characteristics, as well as English/Language Arts course enrollment. Specifically, they examined relationships between implicit beliefs about writing, affect towards writing, writing self-efficacy, grades, and statewide writing assessment score.

Results showed that transactional beliefs had significant relationships with liking writing (0.68), self-efficacy for writing ideation (0.44), self-efficacy for writing
conventions (0.21), self-efficacy for writing self-regulation (0.46), self-reported writing grades (0.27), and the statewide writing assessment score (0.17). In addition to the correlational relationships found, there were trends present with different English/Language Arts courses. On the basis of four different courses, ranging from General English to AP English, students in more advanced courses held, on average, higher transactional beliefs and lower transmissional beliefs. While this study exclusively highlights the transactional and transmissional models of writing and its relationships with other variables, there is other evidence of transmissional and transactional models that are more implicitly implied.

The next study reviewed did not utilize the Writing Beliefs Inventory (White & Bruning, 2005), but did evaluate the uses of writing; which suggests that there are implicit beliefs about the nature of different writing tasks. In a study of 214 teachers and 646 students in secondary schools and universities in Madrid and Barcelona, Spain, Miras, Graça, and Castells (2005) found that the most common of reading and writing were rudimentary, mechanical, and low-level. They used an instrument that sampled the most common uses of reading and writing in education. The lower-level complexity tasks that were found involved little elaboration and construction of knowledge. Such tasks included “taking notes” (84.6%), “reading a text and answering questions on it” (76.1%), “reading a text and underlining it” (73.4%), and “reading a text and identifying the main ideas in it” (71.5%). Most of the tasks involved a single source; which suggests that critical analysis of the source and integration of different approaches is minimal. In contrast, the least common tasks were “writing a reflection about one’s own learning” (11.2%), “reading two or more
texts and drawing up a schema or conceptual map of them” (12.1%), “reading two or more texts and synthesizing them” (18.2%), and “writing an essay” (22.9%). The authors state the following:

In summary, our analysis leads us to the conclusion that the predominant pattern of reading and writing tasks at the educational levels studied favors a superficial methodology and a presumably mechanical and reproductive approach to knowledge. This is an approach that focuses on the recording, identifying, organizing, and reproducing what the teacher or the textbook says. Although the limited scope of our sample warrants caution, the overall data we obtained support our opinion that, whichever way you look at it, reading and writing are seldom used in the classrooms of Spain as instruments of critical thinking, as instruments for learning and continuing to learn in a meaningful way in the new knowledge society.

(Marias, Gracia, & Castells, 2005, p. 137)

In summary, there is evidence of two models of implicit beliefs about writing. The transmissive and transactional models of writing have been supported with reliability and validity measures. There is strength in the use of the Writing Beliefs Inventory (White & Bruning, 2005) and more recently, the Writing Beliefs Inventory-Revised (Bruning et al., 2011). There is an evident relationship between positive aspects of writing (e.g. advanced course enrollment, positive affect towards writing, and greater self-efficacy) and transactional beliefs about writing. Yet, the study of implicit beliefs about writing remains largely a study within itself, correlated with writing characteristics such as writing grades, affect towards
writing, and self-efficacy of writing. The WBI-R, while more specific than a general target of intelligence or epistemology, still studies generally held beliefs about writing.

Writing has different forms and purposes. Consider the following examples. In the first example, a chair of a university educational psychology department is using an email to announce a new set of graduate courses to be offered. While the email may be moderately extensive to explain the nature of the courses, when they will be offered, and how they fit into the mission of the department, the email will be largely explanatory. How does the author approach writing the email? Most likely, it is drafted from a clear-cut set of information and a simple transmission of information.

In the second example, a senior education major is drafting his honors thesis. The thesis is a culmination of four years of undergraduate study, as well as a substantial amount of research. At the onset of writing, the end product is vague. During the writing process, ideas take shape as fuzzy concepts in the writer's mind are transacted with new information from research to develop a coherent theory and thesis.

The studies of implicit beliefs about writing to this point target writing in general. Miras, Gracia, and Castells (2005) highlighted the different uses of writing, ranging from simple to complex. Compare these findings to the two prior examples of writing an email and drafting a thesis. There are apparent different uses of writing. With the different purposes arise different assumptions, approaches, and ultimately, beliefs. This study explores the beliefs of students applied to one
particular task, which can be either transmissional or transactional in nature, and compares those beliefs as they relate to beliefs of intelligence, background, and student characteristics.

**General Summary**

This chapter reviewed the empirical evidence for many channels of implicit beliefs. The Schommer Epistemological Questionnaire (1990) pioneered a paper and pencil assessment of epistemological beliefs employing statistical analysis to surface factors of epistemological belief. Moving from the rather general field of epistemology, I narrowed the focus of implicit beliefs to beliefs about intelligence. Much of the work in this area is based on the work of Dweck (1975) and supported with other research (Dweck & Reppucci, 1973; Erdley & Dweck, 1993; Licht & Dweck, 1984). Notably, implicit theories of intelligence generally agree on two views of intelligence—entity and incremental. These two views of intelligence have wide and far reaching application including goals, motivation, cognition, attribution, and learned helplessness (Dweck & Leggett, 1988).

I then reviewed a variety of domain-specific applications of implicit beliefs such as math versus social sciences (Stodolsky, Salk, & Glaessner, 1991) and reading (Schraw & Bruning, 1996). Hofer’s (2000) work proposes the notion both domain-general and domain-specific beliefs that are multidimensional and potentially overlapping. I then briefly reviewed the empirical evidence for the two models of implicit beliefs about reading—transactional and transmission—as a preface to implicit beliefs about writing.
Finally, I reviewed the landmark article by White and Bruning (2005) that debuted implicit beliefs about writing supported with empirical evidence. That initial study has been used in connection with other studies of implicit beliefs and ends at the doorstep of this study, further exploring the various associations that implicit beliefs.
Chapter 3

Method

The present study aimed to examine college students’ implicit beliefs about writing, using White and Bruning’s (2005) model of transmission and transaction. The study was designed to explore the presence of implicit beliefs about writing and associations of those beliefs with other demographic and descriptive characteristics. In this chapter I begin by describing the sample and sampling method for the study. Next, I will explain the procedures, including how I met ethical standards, and a detailed description of the employed research protocol. Finally, I will explain the instruments I used to explore implicit beliefs about writing, as well as other participant characteristics.

Sample

Participants. Participants included 153 student volunteers enrolled in one of two upper-level educational psychology courses at a large Midwestern university. 66.6% (N = 102) of the participants came from one course and 33.3% (N = 51) came from the other course. Participants were solicited on a volunteer basis at the permission of the course instructor. One faculty member in the Educational Psychology Department not associated with the course visited each class to explain the study and request volunteers. Students were provided with an explanation of the study, IRB-approved informed consent form, and given the opportunity to ask questions. Students received one research participation credit in their educational psychology course in exchange for participation in the study.
The demographics of the students participating in the study are as follows: 77.1% female ($N = 118$) and 22.9% male ($N = 35$); 1.9% African American ($N = 3$), 93.4% Caucasian ($N = 143$), 1.3% Latina/Latino ($N = 2$), and 3.2% reported “other” ($N = 5$); English was the primary language of all but one participant.

**Sampling Method.** The sampling method was a convenience sample of students enrolled in an upper-level educational psychology course on a university campus during the Spring 2011 semester. The instructors granted permission and I was given access. All correspondence with participants was conducted electronically via email, including survey invitation, questions answered, follow-up information, and survey reminders.

**Procedures**

**Ethical Standards.** This study adhered to the guidelines and policies of the Office of Research Responsibility at the University of Nebraska—Lincoln. Permission was sought and granted from the Institutional Review Board. Permission and support was asked of and granted by the Educational Psychology Department at the University of Nebraska—Lincoln. Instructors were asked for their permission in asking their students to volunteer for the study.

A faculty member from the Educational Psychology Department at the University of Nebraska—Lincoln approached all sections of both courses to ask for volunteers and explain the study (see the script used in Appendix A). Participants were asked to voluntarily participate and given the option to withdraw at any time. All potential participants were informed about the nature of the study and potential effects; which were minimal to none and no different than what would be
encountered in daily life at a typical university. They were also encouraged to ask questions at any point of the study and insured of confidentiality and anonymity throughout the study.

They study was completed on the participants’ own time at a location of their choice using the Qualtrics online survey program. IP addresses were not collected. Participants began the survey by inputting a unique participant identification number. The participant identification number granted them access to the survey and was used to verify completion, as participation in the study earned students research credit as a component of the course in which they were registered. The corresponding list of names and identification numbers was kept in a locked file cabinet separate from all survey data. This insured that no reports would ever include names and survey responses. Participants also submitted a paper written for the course. Upon receiving the paper, all identifiable information was removed from the paper and replaced with the participant identification number. This, again, insured that no data would include any personally identifiable information.

**Research Protocol.** Instructors for all sections of both courses granted permission. A professor from the Educational Psychology Department approached all sections, explained the study, and answered questions. In addition to visiting class, an informational letter was email to all students informing them about the study, in the event that there were potential participants absent the day the faculty member visited class (see Appendix B). Students were provided a copy of the Informed Consent Form (see Appendix C) that explained the purpose of the research, procedures, potential risks, benefits, confidentiality, compensation,
opportunity to ask questions, freedom to withdraw, and explanation of consent.

After signing the form, a list of all participating students was generated.

Emails were sent to participants inviting them to take the pre-course survey, the Writing Habits and Beliefs Scale (WHBS) (see Appendix D). I will explain the components of the survey in the following section. The invitation email (see Appendix F) included the survey URL, participant identification number, and contact information for questions. The survey was available for 10 days. Reminder emails (see Appendix G) were sent to participants that had signed Informed Consent Forms, but had not completed the survey within seven days.

Six weeks after the first survey, the post-course survey invitation was sent (post-course survey was identical to pre-course survey, see Appendix D). The invitation email (see Appendix H) was sent only to participants that had completed the first survey. Again, participants were given 10 days to complete the survey, with a reminder email at seven days (Appendix I). Upon completion of the second survey, a final email was sent to participants that had completed both surveys (see Appendix J), thanking them for their participation and requesting a copy of their Philosophy of Teaching and Learning paper completed as a requirement of the course in which they were registered (see assignment guidelines, Appendix K). The entire data set collected included two identical surveys (WHBS) and copies of papers participants wrote for class. Next, I will explain the components of the WHBS.
**Writing Habits and Beliefs Scale**

The Writing Habits and Beliefs Scale (WHBS) used in this study was replicated from a survey utilized by the Writing Research Group in the Educational Psychology Department at the University of Nebraska—Lincoln. Some items were added, others changed, and a few omitted. The most significant change and specifically of interest in this study involved the wording change of the items. Survey items and instructions guided participants to apply their responses to the writing of the Philosophy of Teaching and Learning paper. However, in its general form, the survey remains the same. See Appendix D for a complete version of the WHBS. Next, I will explain each component of the survey.

**Introduction.** The introduction of the survey included a brief overview of the survey and asked students to identify which course they were enrolled in and to input their participant identification number.

**Writing Beliefs Inventory-Revised.** In the second portion of the WHBS, participants completed the 20-item Writing Beliefs Inventory-Revised (Bruning et al., 2011). The Writing Beliefs Inventory (White & Bruning, 2005) and Writing Beliefs Inventory-Revised (Bruning et al., 2011) have been used previously in other literature and the psychometric properties are considered to be adequate. Bruning et al. (2011) reported Cronbach’s $\alpha$ of 0.84 and 0.89 for the transmissive and transational scales on the WBI-R, respectively. Although the structure of the inventory and items remained in the same order, the wording was revised. Each item was applied to the Philosophy of Teaching and Learning paper that students completed as a requirement of the course. For example, the original statement, “I try
to express my feelings when I write” (Bruning et al., 2011) was revised, “I will try to express my feelings in this paper.” See Appendix E for a complete list of the revised statements and original WHBS statements.

Half of the items reflected the transmissional model and the other half represented the transactional model. Participants were asked to respond on a Likert-type scale of 1 to 5, with 1 representing “strongly disagree” and 5 representing “strongly agree.” Examples of the transmissional items include the following:

2. The main purpose of this assignment is to give other people information.
4. My goal in writing this paper is to tell what experts think about the topic.
5. I will try to state the facts when I complete this assignment.

Examples of the transactional items include the following:

3. It is important to develop my own writing style for this assignment.
9. For me, writing this paper will involve a lot of emotion.
16. Revising will help me clarify my ideas while writing this paper.

**Liking Writing Scale.** The next portion of the WHBS included the four item Liking Writing Scale (LWS) intended to survey participant’s affect towards writing. There were two items representing positive affect and two items representing negative affect. All four items were applied to the Philosophy of Teaching and Learning paper. Participants responded on a Likert-type scale of 1 to 5, with 1 representing “strongly disagree” and 5 representing “strongly agree.” To score the LWS, the items representing negative affect towards writing were reverse coded,
resulting in one factor. The two items representing the positive affect were as follows:

1. I will enjoy writing this paper.
2. I will not like writing this paper.
3. Writing this paper will be fun.
4. I get a bad feeling about writing this paper.

The two items representing negative affect were as follows:

Beliefs About Intelligence. A scale measuring participants’ beliefs about intelligence was included. The scale included three items, all representing the entity (Dweck & Leggett, 1988) view of intelligence. The decision to use only the entity-oriented items stems from work of Boyum (1988), Leggett, (1985) and Faria and Fontaine (1989), as cited by Erdley and Dweck (1993). Hong, Chiu, Dweck, Lin, and Wan (1999) also cite several studies that substantiate the use of the three-item intelligence scale. These previous studies found that when both entity and incremental items are included, participants tend to endorse the incremental items. The small number of questions representing the same construct simplifies the sampling process and too many similar questions becomes tedious and alerts the participant. The three statements represent the items with the highest correlations from other studies (Erdley & Dweck, 1993) and have repeatedly shown high internal reliability with alpha from .94 to .98 for sample sizes 32 to 184 (Hong, Chiu, Dweck, Lin, & Wan, 1999). Given that there are only three items, representing the same factors, participants are given an implicit belief about intelligence score by averaging the three items. Scores below 3.0 are considered incremental and scores
over 4.0 are considered entity. Participants responded to the following three items on a 6-point Likert scale:

1. You have a certain amount of intelligence and you can't do much to change it.
2. Your intelligence is something about you that you can't change very much.
3. You can learn new things, but you can't really change your basic intelligence.

**Effective Learning.** To provide a means for qualitative evaluation of students' beliefs about learning, a short essay question was included near the end. Participants responded to the question, “How do teachers help students learn most effectively?” This item was also included to survey if any students would mention writing as a means of learning and if so, what implicit belief(s) about writing do they endorse.

**Background Information.** The final portion of the WHBS included nine items to collect demographic and prior experience data about the participants. Items included declared major, minor (if applicable), gender, primary language, ethnicity, self-reported grades on previous writing assignments, and how many college-level course had been taken with a writing, psychology, and education focus. The background information was collected for the purpose of descriptive analysis of different implicit beliefs about writing.
Philosophy of Teaching and Learning Paper

Participants were asked to submit a copy of their “Philosophy of Teaching and Learning Paper” that was completed as a requirement of the educational psychology course in which they were enrolled. The assignment called for each student to write a personal statement that described his or her individual views of teaching and learning. The paper was to be three to six pages in length, not including the title page or references and should be tied to the concept map that was created as a group project in the course. Finally, the students were to include educational psychology concepts and theories in describing how they will apply what they learned in the course to their future classroom. For the complete assignment page, see Appendix K.

In order to determine the writing samples to analyze, an extreme case sampling (Creswell, 2012) procedure was used to identify six samples for each of the extremes for both transmissive and transactional beliefs. There was no crossover, in that no participant scored on either extreme for more than one of the beliefs. This resulted in twenty-four papers representing high transactional beliefs, low transactional beliefs, high transmissive beliefs, and low transmissive beliefs. The papers were read and evaluated, based on the six-trait writing model as outlined by the Nebraska Department of Education Scoring Guide for Writing. The six traits are ideas/content, organization, voice, word choice, sentence fluency, and conventions. The grading rubric is available in Appendix L.
Summary

This chapter described the method used to complete the present study including a descriptions of the participants in the study, procedures for adhering to ethical policies and guidelines, research protocol, and components of the WHBS. The data collected from both surveys, as well as the data received from the writing samples of students provided a robust set of data to analyze. In the next section I will explain the results of analyzing the data. The section is divided into three sections, each representing one of three phases of data analysis. The first section presents the results from analyzing the psychometric properties of the instruments used in the WHBS. The second section includes descriptive results, correlating implicit beliefs about writing with other results. The final section is an analysis of a select number of student writing samples, chosen to represent purposeful participants from the study.
Chapter 4
Results

Data Analytic Procedure

The study was analyzed in four phases, outlined in Figure 5.

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Figure 5. Data analytic procedure

In the first phase, the data was sorted and prepared for analysis. Each of the final three phases of this study is explicitly connected to one of the three research questions that guided this study. They are as follows: Phase II addressed the research question, “Do implicit beliefs about writing exist in college students when applied to a specific writing task?” Phase III addressed the question, “What factors are associated with implicit beliefs about writing?” Finally, Phase IV addressed the question, “What are the results of different implicit beliefs about writing.”

Phase II included a preliminary analysis of the data to determine the psychometric properties of the instruments utilized in the study and determine if implicit beliefs about writing exist when applied to a specific task. Specifically, factor analysis was used to evaluate the Writing Beliefs Inventory-Revised (WBI-R). The steps and results of the factor analysis will be described in greater detail in the
following section. Cronbach’s $\alpha$ reliability coefficients were determined for the items in the WHBS.

Phase III utilized the results of the instruments to study the descriptive and correlational nature of the results in order to determine the factors associated with implicit beliefs about writing. Implicit beliefs data were correlated with other data collected, such as demographic information and other instruments in the study. Since the data was collected in a pre-survey and post-course survey from the same sample population, differences in scores were analyzed and reported.

Phase IV included an analysis of the writing samples to explore the results of different implicit beliefs about writing. The extreme high and low scores for both transactional and transmissional beliefs were used to determine the participant writing samples to evaluate. Together, both the survey and writing sample data provide a more well-rounded and broad picture of the phenomenon of implicit beliefs about writing. Therefore, Phase II and Phase III are distinctly separate phases. In the following sections I will describe the steps and results of all four phases.

**Phase I**

The first survey resulted in 165 responses and the post-course survey returned 162 responses. However, not all responses were fit for analysis in this study. Responses were purged based on the following criteria: repeat participant identification numbers, incomplete surveys, and participant identification numbers that were not present in both surveys. After removing those survey responses, the data included 153 participant responses. Student writing samples were organized
and reviewed to insure that identifiable information was removed. After all data was organized and properly labeled, the final three phases of analysis commenced.

**Phase II**

**Writing Beliefs Inventory-Revised.** The first step in determining the psychometric properties of the WHBS was an exploratory factor analysis of the Writing Beliefs Inventory-Revised (Bruning et al., 2011). Although there were some minor wording changes made to items in order to apply to the Philosophy of Teaching and Learning paper, the scale remained intact. The initial exploratory factor analysis was run in a sequence of steps to determine if any items were unsatisfactory for use in Phase II. To determine the set of items, data from the pre-course survey was used. The pre-course survey was chosen for two reasons: (1) this was participants’ first exposure to the survey and (2) given the content of the courses in which participants were enrolled, there was a possibility that participants may begin to assume the principles and theory underlying various aspects of the survey.

The initial unforced, exploratory factor analysis was run with all 20 items, using a varimax rotation with Kaiser normalization. This resulted in five factors with an eigenvalue greater than one, accounting for a cumulative 60.9% of the variance. Both the component and rotated component matrix failed to show consistent factor loadings that supported the two-factor model of previous research and theory. The second factor analysis was run, consistent with previous research (White & Bruning, 2005; Bruning et al., 2011) by forcing the items into two factors. Using the same 17 items as Bruning et al. (2011), I ran a second two-factor forced, factor analysis using
varimax rotation with Kaiser normalization. The two resulting factors cumulatively accounted for 39.1% of the variance. One item (#3) cross-loaded. The factor loadings of all 17 items are reported in Table 1.
Table 1.

*Factor Loadings for Two-Factor Forced Exploratory Factor Analysis with Varimax Rotation with Kaiser Normalization*

<table>
<thead>
<tr>
<th>Items</th>
<th>Implicit Belief Factor Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Transaction</td>
</tr>
<tr>
<td>1. I will try to express my feelings in this paper.</td>
<td>0.45</td>
</tr>
<tr>
<td>2. The main purpose of this assignment is to give other people information.</td>
<td>0.11</td>
</tr>
<tr>
<td>3. It is important to develop my own writing style for this assignment.</td>
<td>0.35</td>
</tr>
<tr>
<td>4. My goal in writing this paper is to tell what experts think about the topic.</td>
<td>0.01</td>
</tr>
<tr>
<td>5. I will try to state the facts when I complete this assignment.</td>
<td>0.10</td>
</tr>
<tr>
<td>6. A good written product for this assignment will require many revisions.</td>
<td>0.72</td>
</tr>
<tr>
<td>7. I will go back over my writing to improve it.</td>
<td>0.70</td>
</tr>
<tr>
<td>9. For me, writing this paper will involve a lot of emotion.</td>
<td>0.62</td>
</tr>
<tr>
<td>11. The key to successfully writing this paper is telling what experts think.</td>
<td>-0.18</td>
</tr>
<tr>
<td>12. The main purpose of writing this paper is getting information across to readers.</td>
<td>0.07</td>
</tr>
<tr>
<td>13. The process of writing this paper will be a satisfying one.</td>
<td>0.63</td>
</tr>
<tr>
<td>14. For this paper, good writers report information directly from their sources.</td>
<td>0.22</td>
</tr>
<tr>
<td>15. The process of writing this paper will be exciting.</td>
<td>0.74</td>
</tr>
<tr>
<td>16. Revising will help me clarify my ideas while writing this paper.</td>
<td>0.71</td>
</tr>
<tr>
<td>17. Writing this paper will help make my own ideas clearer.</td>
<td>0.54</td>
</tr>
<tr>
<td>18. One of my writing goals it to make as few changes as possible.</td>
<td>-0.26</td>
</tr>
<tr>
<td>19. Using many quotations will make this paper convincing.</td>
<td>-0.11</td>
</tr>
</tbody>
</table>

*Note.* Factor loadings > .30 are in boldface.
A third, and final, factor analysis was run with items from the previous analysis that did not cross-load. The final 16 items loaded into two forced-factors using varimax rotation with Kaiser normalization. The two factors accounted for 40.6% of the variance. The individual factor loadings for each item are reported in Table 2.
Table 2.

Factor Loadings for Two-Factor Forced Exploratory Factor Analysis with Varimax Rotation with Kaiser Normalization

<table>
<thead>
<tr>
<th>Items</th>
<th>Implicit Belief Factor Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Transaction</td>
</tr>
<tr>
<td>15. The process of writing this paper will be exciting.</td>
<td><strong>.74</strong></td>
</tr>
<tr>
<td>16. Revising will help me clarify my ideas while writing this paper.</td>
<td><strong>.73</strong></td>
</tr>
<tr>
<td>6. A good written product for this assignment will require many</td>
<td><strong>.73</strong></td>
</tr>
<tr>
<td>revisions.</td>
<td></td>
</tr>
<tr>
<td>7. I will go back over my writing to improve it.</td>
<td><strong>.71</strong></td>
</tr>
<tr>
<td>13. The process of writing this paper will be a satisfying one.</td>
<td><strong>.63</strong></td>
</tr>
<tr>
<td>9. For me, writing this paper will involve a lot of emotion.</td>
<td><strong>.61</strong></td>
</tr>
<tr>
<td>17. Writing this paper will help make my own ideas clearer.</td>
<td><strong>.54</strong></td>
</tr>
<tr>
<td>1. I will try to express my feelings in this paper.</td>
<td><strong>.41</strong></td>
</tr>
<tr>
<td>4. My goal in writing this paper is to tell what experts think about</td>
<td>-.01</td>
</tr>
<tr>
<td>the topic.</td>
<td></td>
</tr>
<tr>
<td>2. The main purpose of this assignment is to give other people</td>
<td><strong>.09</strong></td>
</tr>
<tr>
<td>information.</td>
<td></td>
</tr>
<tr>
<td>5. I will try to state the facts when I complete this assignment.</td>
<td><strong>.09</strong></td>
</tr>
<tr>
<td>11. The key to successfully writing this paper is telling what</td>
<td>-.17</td>
</tr>
<tr>
<td>experts think.</td>
<td></td>
</tr>
<tr>
<td>12. The main purpose of writing this paper is getting information</td>
<td><strong>.08</strong></td>
</tr>
<tr>
<td>across to readers.</td>
<td></td>
</tr>
<tr>
<td>14. For this paper, good writers report information directly from</td>
<td><strong>.23</strong></td>
</tr>
<tr>
<td>their sources.</td>
<td></td>
</tr>
<tr>
<td>19. Using many quotations will make this paper convincing.</td>
<td>-.11</td>
</tr>
<tr>
<td>18. One of my writing goals it to make as few changes as possible.</td>
<td>-.26</td>
</tr>
</tbody>
</table>

*Note. Factor loadings > .30 are in boldface.*
These 16 items were then evaluated for consistency with the underlying
type of implicit beliefs about writing. The items were compared to their original
intent as representing either transmissional or transactional implicit beliefs. Each
item correctly aligned with its the original intent. Cronbach’s α for the 16 items was
.708 overall and was .802 and .708 for the items representing transactional and
transmissional items, respectively. The 16 items were retained for subsequent
analyses.

**Liking Writing Scale.** The liking writing scale is a four item scale used to
assess students’ affect toward writing. The scale is written with two positively
worded and two negatively worded items. After reverse coding the negatively
worded items, Cronbach’s α for the Liking Writing Scale was .903.

**Beliefs About Intelligence.** The Cronbach’s α of the three items composing
the scale measuring beliefs about intelligence was .891. The reliabilities of all
portions of the WHBS are reported in Table 3.

Table 3.

*Reliability Coefficients for Factors*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beliefs About Writing</td>
<td>.708</td>
</tr>
<tr>
<td>Transactional Factor</td>
<td>.708</td>
</tr>
<tr>
<td>Transactional Factor</td>
<td>.802</td>
</tr>
<tr>
<td>LWS</td>
<td>.903</td>
</tr>
<tr>
<td>Beliefs About Intelligence</td>
<td>.891</td>
</tr>
</tbody>
</table>
Phase III

Given that implicit beliefs about writing are suggested to be distinctly separate entities where individuals can hold high and low levels of each (White & Bruning, 2005), each individual participant was given both a transmissional and transactional score. Participants were also assigned scores from the LWS and beliefs about intelligence score, respectively. These calculated scores were then used for further descriptive and correlational analysis.

Measures of Central Tendency. The mean transmissional and knowledge-transacting scores of the pre-course survey were 3.16 (N=153, SD=0.52) and 3.86 (N=153, SD=0.51), respectively. The mean of the transmissional and knowledge-transacting scores of the post-course survey were 3.05 (N=153, SD=0.57) and 3.73 (N=153, SD=0.53), respectively.

The mean LWS score from the pre-course survey was 1.01 (N=153, SD=3.42). The mean score for beliefs about intelligence from the pre-course survey was 2.67 (N=153, SD=1.10). The mean LWS score from the post-course survey was 0.64 (N=153, SD=3.29). The mean score for beliefs about intelligence from the post-course survey was 2.88 (N=153, SD=1.23).

All scores for both the pre-course survey and post-course survey were normally distributed. This was verified with a Q-Q plot.
Table 4.

Means and Standard Deviations

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-course survey</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmission</td>
<td>3.16</td>
<td>0.52</td>
</tr>
<tr>
<td>Transaction</td>
<td>3.86</td>
<td>0.51</td>
</tr>
<tr>
<td>LWS</td>
<td>1.01</td>
<td>3.42</td>
</tr>
<tr>
<td>Intelligence</td>
<td>2.67</td>
<td>1.10</td>
</tr>
<tr>
<td><strong>Post-course survey</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmission</td>
<td>3.05</td>
<td>0.57</td>
</tr>
<tr>
<td>Transaction</td>
<td>3.73</td>
<td>0.53</td>
</tr>
<tr>
<td>LWS</td>
<td>0.64</td>
<td>3.29</td>
</tr>
<tr>
<td>Intelligence</td>
<td>2.88</td>
<td>1.23</td>
</tr>
</tbody>
</table>

Mean Differences. Literature suggests that implicit beliefs are developmental (Schommer, 1990) and changeable (Dweck, 2006). To test whether the implicit beliefs about writing, beliefs about intelligence, and LWS measured by the WHBS changed over the six-week duration, a paired samples t-test was used.

A paired samples t-test was conducted to compare implicit beliefs about writing on a pre-course survey and post-course survey. Both the transmissional and transactional belief scores yielded significant differences from pre-test to post-test. The LWS did not yield a significant difference from the pre-test to the post-test. Finally, intelligence did yield a significant difference from pre-test to post-test.

There was a significant difference in the scores for the implicit beliefs about writing for the pre-course survey transmissive belief (M=3.16, SD=0.52) and post-
There was a significant difference in the scores for the implicit beliefs about writing for the pre-course survey *transmissional* belief (M=3.86, SD=0.51) and post-course survey *transactional* belief (M=3.73, SD=0.53); t(152)=2.987, p = 0.003.

There was not a significance difference on the LWS between the pre-test (M=1.01, SD=3.42) and post-test (M=0.64, SD=3.29) scores; t(152)=1.63, p = 0.106.

There was a significant difference in implicit beliefs about intelligence on the pre-test (M=2.67, SD=1.10) and post-test (M=2.88, SD=1.23) scores; t(152)=-2.531, p = 0.012. This points to a change towards entity beliefs about intelligence.

**Correlation.** Included in the WHBS were other demographic and participant characteristic questions. These questions asked participants which educational psychology course they were currently enrolled in, gender, whether English was the primary language, ethnicity, grades typically received on writing assignments in all classes, the number of college-level writing classes taken, the number of college-level psychology classes taken, and the number of college-level education classes taken. A Pearson product-moment correlation coefficient was computed to assess the relationship within and between all variables: demographics (except gender), implicit beliefs about writing scores, LWS scores, and implicit beliefs about intelligence scores. A point-biserial correlation was computed to assess the relationship between gender and other variables, given that gender is a dichotomous variable. Nearly all participants (N=152) reported English as their primary language. Participants reported the following ethnicities: 1.9% African American (N = 3), 93.4% Caucasian (N = 143), 1.3% Latina/Latino (N = 2), and 3.2%
reported “other” (N = 5). Due to the homogeneity of the sample in terms of primary language and ethnicity, those variables were not further analyzed. Both sets of data—pre-course survey and post-course survey—were analyzed to understand correlations. Results are reported in Table 5 and Table 6.

First, correlations were analyzed from the pre-course survey to understand the relationship between variables. Transactional beliefs correlated with three other variables: LWS, intelligence beliefs, and college-level writing courses completed. Transmissional beliefs correlated with one other variable: reported grades received on other writing assignments. Interestingly, there was no correlation between transactional and transmissional beliefs. In addition to a correlation with transmissional beliefs, reported grades on other writing assignments also correlated with the following variables: beliefs about intelligence and gender. In addition to transactional beliefs and grades on other writing assignments, beliefs about intelligence correlated with one other variable: college-level writing courses completed. There was a three-way correlation between college-level writing courses taken in writing, education, and psychology.

There was a positive correlation between transactional beliefs and LWS, $r = .560$, $n = 153$, $p < .01$, two tails. This indicates that individuals holding stronger transactional beliefs indicated that they like writing more. There was a negative correlation between transactional beliefs and entity beliefs of intelligence, $r = -.210$, $n = 153$, $p < .01$, two tails. Given that a higher score on the intelligences beliefs scale reflects stronger entity views of intelligence, the negative correlation indicates lower transactional scores indicated stronger entity beliefs of intelligence. There
was a positive correlation between transactional beliefs and college-level writing courses completed, $r = .260, n = 153, p < .01$, two tails. This indicates stronger transactional beliefs correlate with more college-level writing courses completed.

There was a negative correlation between transmissive scores and reported grades on other writing assignments, $r = -.163, n = 153, p < .05$, two tails. This negative correlation indicates stronger transmissive beliefs correlate with lower reported grades on other writing assignments.

There was a negative correlation between reported grades on other writing assignments and entity beliefs of intelligence, $r = -.207, n = 153, p < .05$, two tails. This reflects the finding that lower reported grades correlates with stronger entity views of intelligence. There was a positive correlation between grades on other assignments and gender, $r = .199, n = 153, p < .05$, two tails. Due to the format of the survey, this suggests that a response of female correlates with higher grades on other writing assignments.

There was a positive correlation between the LWS and the number of college-level writing courses completed, $r = .163, n = 153, p < .01$, two tails. This indicates that there is a relationship between the number of college-level writing courses and how much participants like writing. A stronger degree of liking writing relates to more college-level writing courses. There was a negative correlation between beliefs about intelligence and college-level writing courses completed, $r = -.250, n = 153, p < .01$, two tails. This shows that stronger entity views of intelligence correlated with fewer college-level writing courses completed.
There was a positive correlation between the number of college-level writing courses taken and the number of college-level psychology courses taken, $r = .188$, $n = 153$, $p < .05$, two tails. There was a positive correlation between the number of college-level writing courses taken and the number of college-level education courses taken, $r = .279$, $n = 153$, $p < .01$, two tails. Lastly, there was a positive correlation between college-level education courses taken and college-level psychology courses taken, $r = .182$, $n = 153$, $p < .05$, two tails. These three correlations indicate that more courses taken in any of the three areas correlates with more courses taken in any of the two remaining areas.
Table 5.

*Correlations of Items and Factors on the Pre-Course Survey*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Transactional</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Transmissional</td>
<td>.013</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. LWS</td>
<td>.560**</td>
<td>-.062</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Intelligence</td>
<td>-.210**</td>
<td>.115</td>
<td>-.095</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Gender</td>
<td>.110</td>
<td>.096</td>
<td>-.057</td>
<td>-.045</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Grades on Other Writing Assignments</td>
<td>.074</td>
<td>-.163*</td>
<td>-.150</td>
<td>-.207*</td>
<td>.199*</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. College-Level Writing Courses</td>
<td>.260**</td>
<td>-.058</td>
<td>.163*</td>
<td>-.250**</td>
<td>-.025</td>
<td>.091</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. College-Level Psychology Courses</td>
<td>-.068</td>
<td>.059</td>
<td>-.008</td>
<td>.061</td>
<td>.013</td>
<td>.010</td>
<td>.188*</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>9. College-Level Education Courses</td>
<td>.024</td>
<td>.048</td>
<td>.099</td>
<td>.062</td>
<td>-.039</td>
<td>-.047</td>
<td>.279**</td>
<td>.182*</td>
<td>---</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

After analyzing correlations from the pre-course survey, the same analysis was run on the post-course survey results to understand correlations between the variables. Transactional writing beliefs significantly correlated with the LWS and beliefs about intelligence. Transmittional writing beliefs did not correlate with any variables. In addition to the transactional beliefs, the LWS significantly correlated with beliefs about intelligence and college-level writing courses completed. There was a significant correlation between grades on other writing assignments and
gender. Finally, there was a significant correlation between college-level writing courses and college-level education courses completed.

There was a positive correlation between transactional beliefs and the LWS, \( r = .461, n = 153, p < .01, \) two tails. This indicates that higher transactional beliefs correlate with more positive affect towards writing. There was a negative correlation between transactional beliefs and beliefs about intelligence, \( r = -.246, n = 153, p < .01, \) two tails. This indicates stronger transactional beliefs correlate with more incremental views of intelligence.

There was a negative correlation between the LWS and beliefs of intelligence, \( r = -.244, n = 153, p < .05, \) two tails. Due to the format of the survey, this indicates that responses of liking writing more correlates with weaker entity beliefs of intelligence. There was a positive correlation between the LWS and number of college-level writing courses completed, \( r = .269, n = 153, p < .01, \) two tails. This indicates a correlation between more positive affect towards writing and increased number of college-level writing courses completed.

There was a positive correlation between gender and reported grades on other writing assignments, \( r = .274, n = 153, p < .01, \) two tails. Due to the format of this survey, this indicates that female gender correlates with higher reported grades on other writing assignments.

There was a positive correlation between the number of college-level writing courses completed and the number of college-level education courses completed, \( r = .229, n = 153, p < .01, \) two tails. This correlation indicates a relationship between
more college-level writing courses completed and more college-level education courses completed.

Table 6.

*Correlations of Items and Factors on the Post-Course Survey*

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Transactional</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Transmissional</td>
<td>.142</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. LWS</td>
<td>.461**</td>
<td>-.136</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Intelligence</td>
<td>-.246**</td>
<td>.084</td>
<td>-.244*</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Gender</td>
<td>.093</td>
<td>-.009</td>
<td>.040</td>
<td>-.047</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Grades on Other Writing Assignments</td>
<td>.017</td>
<td>-.156</td>
<td>-.095</td>
<td>-.080</td>
<td>.274**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. College-Level Writing Courses</td>
<td>.118</td>
<td>.121</td>
<td>.269**</td>
<td>-.087</td>
<td>-.073</td>
<td>.011</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. College-Level Psychology Courses</td>
<td>-.157</td>
<td>-.050</td>
<td>.028</td>
<td>-.007</td>
<td>-.003</td>
<td>-.098</td>
<td>.148</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>9. College-Level Education Courses</td>
<td>.101</td>
<td>-.073</td>
<td>.052</td>
<td>-.005</td>
<td>-.038</td>
<td>-.077</td>
<td>.229**</td>
<td>.139</td>
<td>---</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Finally, the correlations from both the pre-course survey and post-course survey were analyzed to understand consistency from pre- to post-course survey. There were five correlations that showed significant results on both surveys. Transactional beliefs about writing significantly correlated with the LWS and beliefs about intelligence. Transmissional beliefs about writing did not have significant correlations that repeated on both surveys. The LWS significantly correlated with
the number of college-level writing courses completed, in addition to transactional beliefs. Gender and grades on other writing assignments resulted in significant correlations. Finally, there was a significant correlation on both surveys between the number of college-level writing courses and college-level education courses. The variables that revealed significant correlations on both surveys and the value of those correlations is reported in Table 7.

Table 7.

*Correlations Yielding Significant Results on Both the Pre-Course Survey and Post-Course Survey*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Pre-Course Survey Correlation</th>
<th>Post-Course Survey Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transactional &amp; LWS</td>
<td>.560**</td>
<td>.461**</td>
</tr>
<tr>
<td>Transactional &amp; Intelligence Beliefs</td>
<td>-.210**</td>
<td>-.246**</td>
</tr>
<tr>
<td>LWS &amp; College-Level Writing Courses</td>
<td>.163*</td>
<td>.269**</td>
</tr>
<tr>
<td>College-Level Writing Courses &amp; College-Level Education Courses</td>
<td>.279**</td>
<td>.229**</td>
</tr>
<tr>
<td>Gender &amp; Grades on Other Writing Assignments</td>
<td>.199*</td>
<td>.274**</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).  
*Correlation is significant at the 0.05 level (2-tailed).
Phase IV

Next, I turn to writing samples from the participants in the study. Using the results from the pre-course survey, 24 writing samples were selected for analysis—six samples in each of four categories. These 24 papers represented high transactional beliefs, low transactional beliefs, high transmissional beliefs, and low transmissional beliefs. The writing samples were evaluated using the six-traits writing model from the Nebraska Department of Education Scoring Guide for Writing. Each writing sample was read and scored. Upon the completion of scoring, each writing sample had a score for each of the six traits, as well as an overall score. One additional reader evaluated the writing samples to determine interrater reliability. The interrater reliability for the raters was 0.61 (p < 0.001). This Cohen’s Kappa coefficient reflects substantial agreement (Landis & Koch, 1977). The mean and standard deviations of writing scores are reported in Table 8.
### Table 8.

*Writing Sample Scores for Varying Writing Beliefs*

<table>
<thead>
<tr>
<th></th>
<th>Transactional</th>
<th></th>
<th>Transmissional</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Ideas/Content</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>2.5</td>
<td>3.5</td>
<td>2.5</td>
<td>2.0</td>
</tr>
<tr>
<td>SD</td>
<td>1.0</td>
<td>0.5</td>
<td>1.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>2.7</td>
<td>3.2</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>SD</td>
<td>0.5</td>
<td>1.0</td>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Voice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>2.8</td>
<td>3.0</td>
<td>2.3</td>
<td>2.0</td>
</tr>
<tr>
<td>SD</td>
<td>0.8</td>
<td>0.6</td>
<td>0.5</td>
<td>1.1</td>
</tr>
<tr>
<td>Word Choice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
<td>2.7</td>
</tr>
<tr>
<td>SD</td>
<td>0.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Sentence Fluency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>2.7</td>
<td>2.2</td>
<td>2.5</td>
<td>2.2</td>
</tr>
<tr>
<td>SD</td>
<td>0.5</td>
<td>0.4</td>
<td>0.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Conventions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>2.8</td>
<td>2.3</td>
<td>2.8</td>
<td>2.5</td>
</tr>
<tr>
<td>SD</td>
<td>0.4</td>
<td>0.5</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>2.8</td>
<td>2.9</td>
<td>2.6</td>
<td>2.3</td>
</tr>
<tr>
<td>SD</td>
<td>0.5</td>
<td>0.4</td>
<td>0.5</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Given the small number of scores analyzed during this phase (N=24), a correlational analysis was not run between writing scores and other factors. A simple observation of these results surfaces interesting characteristics. Consistent with Bereiter and Scardamalia’s (1987) assertion that both individuals with transmissive or transactional beliefs will write well, there is little evidence in this small-scale analysis to support the claim that different beliefs contribute to writing quality.
Chapter 5

Discussion

The purpose of this study was to explore implicit beliefs about a specific writing task. The results determine that students do, in fact, hold implicit beliefs about a writing task. Furthermore, those implicit beliefs are related to other factors of writing and implicit beliefs. Finally, while students may hold different beliefs about writing and those beliefs correlate with other factors such as how much they like to write, when evaluated on a six-traits writing model there is no discernable difference in writing quality. I will further explain, in greater detail, the results from this study as they pertain to each research question and the implications for instruction and research.

Research Question 1: Do implicit beliefs about writing exist in college students when applied to a specific writing task?

Exploratory factor analysis revealed that when the items on the Writing Belief Inventory-Revised (Bruning et al., 2011) were rewritten to be applied to a specific writing task, students do hold two distinct beliefs about writing. These beliefs are represented by the transactional and transmissional beliefs about writing and supported by other studies (Bruning et al., 2011; Mateos, Cuevas, Martin, Echeita, & Luna, 2010; White & Bruning, 2005). The same items that were identified as reflecting transactional or transmissional writing beliefs by other researchers were identified in this study through exploratory factor analysis. This supports the notion that while there are domain-specific beliefs about writing, those same
implicit belief constructs are supported by empirical evidence when applied to a specific task.

There are 16 items from the Writing Beliefs Inventory—Revised (Bruning et al., 2012) that were deemed to be quality items in this study, as determined by a factor analysis. This leaves room for improving the inventory as a method of assessing the implicit beliefs that students hold about writing. The pool of items continues to narrow. White and Bruning (2005) began with 36 items. The WBI-R (Bruning et al., 2011) contained 20 items, 19 of which were analyzed in this study, resulting in 16 items that had desirable factor loadings. The 16 items with acceptable factor loadings in this study have stood the test of multiple studies. They warrant further investigation and use. Furthermore, the reliability and validity WBI-R (Bruning et al., 2011) can be improved by the development of items to replace those that have been culled.

It is challenging to compare the task-specific results of this study in order to draw claims about how task-specific beliefs are different from domain-general or domain-specific beliefs. To this point, other studies have only hypothetically addressed task-specific scenarios when studying implicit beliefs (Stipek & Gralinski, 1996; Stodolsky, Salk, & Glaessner, 1991). In some cases, studies claimed to be domain-specific in nature implied domain-specificity in only the directions without rewording any of the statements to reflect the domain of interest (Schommer & Walker, 1995). There is clearly a need for more research that ties implicit beliefs to a defined task by the wording of the items.
From the investigation of research question one, it was found that students do hold task-specific implicit beliefs about a writing task. The task-specific belief gives students a more clearly defined vision of the task they are to perform. When asked to respond to a statement such as, "Writing's main purpose is to give other people information," the meaning could potentially appear confusing. The student may wonder if the statement is referring to writing a letter, composing a scientific laboratory report, or composing a personal journal. All three contexts have different characteristics; from which could logically arise different implicit beliefs. Responding to the statement, "The main purpose of this assignment is to give other people information," gives a clear application for the statement.

For teachers, results discovered from addressing question one means that students will approach a task with a set of implicit beliefs that are relevant to that task. It would be inappropriate at this point to claim that the student will, without a doubt, hold completely different implicit beliefs when approaching different tasks in the same domain, such as writing a letter versus writing a report. However, it seems plausible that there are some differences from task to task. Teachers, parents, tutors, and others interesting in helping students become better writers should know that students hold assumptions about writing tasks that are unconscious and implicit, yet systematic. Given that implicit beliefs drive behavior, motivation, and achievement (Bruning et al., 2011), student writing can be supported by acknowledging and supporting the development of those beliefs.
Research Question 2: What factors are associated with implicit beliefs about writing?

Given that all participants took the survey twice and there are two data sets examining the same constructs, there is a more reliable analysis of the factors that are related to implicit beliefs about writing. I will review the significant findings from the pre-course survey and post-course survey, as well as the relationships that were indicated in both surveys.

The pre-course survey revealed significant correlations between implicit beliefs about writing and the following factors: Liking Writing Scale, implicit beliefs about intelligence, college-level writing courses, and grades on other writing assignments. All of these correlations were with the transactional belief, except grades on other writing assignments, which correlated with the transmissinal belief. Specifically, students with higher transactional writing beliefs also reported that they liked writing more, as well as had more incremental views of intelligence, and had taken more college-level writing courses. Students with higher transmissional writing beliefs reported lower grades on writing assignments in other courses.

In addition to the correlation of implicit beliefs about writing, there were other significant correlations from the pre-course survey. Female students correlated with higher grades on other writing assignments as well as having taken more college-level writing courses. There was a positive correlation between how much students reported liking writing and how many college-level writing courses they had taken. Finally, there were positive correlations among all three items
asking how many college-level courses students had taken in the three areas of writing, psychology, and education.

The post-course survey revealed that implicit beliefs about writing had significant correlations with the following factors: Liking Writing Scale and implicit beliefs about intelligence. There was a positive correlation between higher transactional beliefs and liking writing. There was a negative correlation between the transactional belief score and the beliefs about intelligence score, meaning that higher transactional beliefs correlated with greater adoption of incremental views of intelligence.

In addition to correlations between implicit beliefs about writing and other items and factors, there were other significant correlations in the post-course survey. Specifically, there was a significant negative correlation between the Liking Writing Scale and implicit beliefs about intelligence scores, meaning that the more students reported liking writing the more they adopted an incremental view of intelligence. There was also a positive correlation between female gender and reporting higher grades on other writing assignments. Finally, there was a positive correlation between the number of college-level writing courses and college-level education courses taken.

One of the strengths of this study is the increased reliability in reporting these relationships, due to the fact that there are two data sets from the same identical sample population. I was able to compare the results from the pre- and post-course survey to determine correlations that showed up on both accounts. There were five such correlations exhibited in both the pre- and post-course survey.
There was a positive correlation between the transactional view of writing and the Liking Writing Scale. There was a negative correlation between the transactional view of writing and implicit beliefs about intelligence scores, meaning that greater transactional views correlated with more incremental views of intelligence. There was a positive correlation between the Liking Writing Scale and the number of college-level writing courses taken. There was a positive correlation between the number of college-level writing courses and college-level education courses completed. Finally, there was a positive correlation between the female gender and reported grades on other writing assignments.

The definition of the construct of transactional beliefs about writing lends itself to the assumption that those who adopt such beliefs would also enjoy writing; which was supported empirically with this study. From the transactional lens, writing is a complex process that involves emotion. The product of writing is not only words on a page, but arriving at a better state of understanding. When writing is approached from the transactional perspective, the writer sees writing as a pleasurable journey, not a prescribed behavior.

Just like the transactional belief is considered a more sophisticated belief (White & Bruning, 2005), so is the incremental view of intelligence (Dweck & Leggett, 1988). It makes sense that there is a relationship between transactional beliefs and incremental intelligence beliefs. While these two beliefs have familiar surface features, this finding highlights the complex and dynamic views of more sophisticated implicit beliefs. While the correlation was not perfect, it was significant at the 0.01 level and consistent across both surveys. This supports the
model of implicit beliefs presented in Figure 1 of this study. There are generalizable and transferable beliefs that bleed across domains of beliefs, while retaining individual aspects. For example, implicit beliefs about intelligence interplay with implicit beliefs about a specific writing task, yet each belief construct retains its own individual characteristics. Different domains of implicit beliefs are inextricably intertwined, yet undeniably unique.

It is impossible to say from these results whether a transactional belief about writing causes one to like writing more or vice versa. Again, correlation does not imply causation (Gravetter & Wallnau, 2009). However, the relationship is an important piece in the puzzle of improving writing instruction. Given the irreplaceable position that writing holds in education (National Commission on Writing, 2003), influencing student beliefs about writing is imperative. Implicit beliefs are malleable and changeable (Dweck, 2006) and further experimental research should explore strategies for influencing implicit belief change.

Research Question 3: What are the results of different implicit beliefs about writing?

Interestingly, there was no discernable difference in scores across the different extremes for each of the two beliefs about writing. This supports the claim made by Bereiter and Scardamalia (1987) that while students may hold different beliefs about literature and writing, they may very well write proficiently within those different beliefs. In the final phase of this multi-phase quantitative study, I found no real difference in the writing scores of extreme beliefs for both constructs.
of transactional and transmissional beliefs. The reasoning and rationale for this occurrence are complex.

First, and arguably most importantly, the scoring procedure for evaluating these writing samples does not match the constructs of transmissional and transactional beliefs. This disparate relationship between implicit belief constructs and evaluation is problematic not only for drawing conclusions about the writing ability of students with different beliefs from this study, but also for instructors and educational researchers alike.

Evaluation procedures and scoring rubrics for student writing do not match the current state of writing research outside of implicit beliefs either. For example, Bruning et al. (2011) identified not only constructs of implicit beliefs about writing, but also factors of writing self-efficacy and goal-orientation towards writing. Given the significant impacts of self-efficacy (Bandura, 1997) and goal-orientation (Pintrich, 2003) on student performance, it is imperative educational practice and research aligns to meet the goal of creating and updating progressive instructional strategies.

Second, the results of this study elucidate a relationship between writing beliefs and the writing that students seek out. The more students like writing, the more writing courses they complete. They also like writing more when adopting a transactional belief. While students with a transmissional belief are able to write just as well to fulfill a requirement in a course, their less-sophisticated beliefs may lead to implications in other areas of cognitive development and learning. It has already been said, but writing is important for student learning (National
Commission on Writing, 2003). From these findings, it is evident that evaluating student writing scores on a rubric that is disconnected from research is not adequate.

Implications of the Study

This study highlights the existence of task-specific implicit beliefs. When students approach writing, they do so with a unique set of beliefs, assumptions, and motivations. It is obvious that students enter the classroom with a wide variety of skill sets, experiences, and prior knowledge. It is also known that students enter the classroom with varying degrees and types of motivation. Furthermore, it is now evident that students approach different subject areas and tasks with a variety of implicit beliefs. These implicit beliefs are significant influences in the motivation and behavior of those students.

While those beliefs, whether task-specific or domain-specific may exhibit new and unique characteristics, they correlate with other beliefs that are much more general in nature. It would be incorrect to say with a correlational study such as this that one belief causes the other. Regardless, the implications and benefits of increased sophistication of beliefs is evident and if there are correlations between more sophisticated implicit beliefs about writing and implicit beliefs intelligence, there is an opportunity to help students develop motivation, cognition, and affect by a holistic instructional approach considering that a wide range of implicit beliefs affect students in varying ways across all academic subject areas. Specifically through writing, we see substantial benefits for students by encouraging them to purposefully reflect on what is taught in the classroom.
The power of reflection in improving retention is well-documented (Britton, 1993; Douillard, 2002; Langer & Applebee, 1987; Richardson & Morgan, 2003). Beed et al. (2005) overviewed suggested strategies for including reflective exercises to reinforce learning. They suggest questions that students can answer for different grade levels and content areas. By reflecting on what a student knows, he or she increases metacognitive awareness and improves self-regulatory strategies. Beed et al. (2005) conclude that students know themselves and the content better through reflection.

**Limitations of the Study**

The first limitation of this study is concerned with the method by which data was collected. Participants completed both the pre-course survey and post-course survey using a Qualtrics online survey. They took the survey at a time of their choosing, at a location they picked, and under their own time constraints. This may have contributed to the small standard deviations present in the results of some of the scales. Students received credit in the educational psychology course in which they were enrolled for completing both surveys. The only requirement for credit was participation. There is a possibility that participants may have not taken the surveys with the same amount of diligence that they would have had they taken it with a pencil and paper at a predetermined time.

The second limitation is the nature of studying implicit beliefs about writing. The field is somewhat in its infancy. At the time of this writing, the inception of the Writing Beliefs Inventory (White & Bruning, 2005) was only six years prior. The instrument is not fully developed and the construct has not been widely applied.
This limitation is unavoidable and it is only by studies such as this that the limitation will be mitigated.

The third limitation is the correlational nature of this study. While the study contributes valuable information to the field of study about implicit beliefs, it does not provide much in the way of causal understanding. There was found to be a correlation between implicit beliefs about writing and beliefs about intelligence. However, this does not tell much about which causes the other or if there is even a relationship that is causal in nature. There could be some other mediating factor(s) that lies central to both of these beliefs, as well as independent factors that influence each belief separately. At first glance, one may believe that the relationship between implicit beliefs is simple, described by Figure 6. However, the potential of other mediating factors makes the relationship much more complex, as would be described by Figure 7.
Future Research

This study begins the search for outside correlations and influences on differing specificities of implicit beliefs. Prior research has essentially posited implicit beliefs as a study within themselves. Researchers have explored the nature of what students believe about different domains, both general and specific in nature. However, that is where research has stopped. This study highlights the relationships among implicit beliefs, specifically beliefs about a writing task and beliefs about intelligence. This study also falls victim to the same criticism of being a study within itself. While a brief analysis of writing samples was conducted, it was
fairly unfruitful. Future research should examine the causes of implicit beliefs, ideally through experimental studies.

Many researchers assert that implicit beliefs can change (Dweck & Leggett, 1988; Schommer, 1990). However, there is a gap in determining just how to go about instituting that change. Potentially, the change is largely developmental and trying to encourage development of implicit beliefs would be a futile effort. That cannot be known without trying.

This study highlighted the correlation between implicit beliefs about writing and implicit beliefs about intelligence, two differing levels of specificity. Experimental studies could measure the effects of variables attempting to encourage development and change of implicit beliefs. Using this study as a model, the target belief could be intelligence or writing or both. The results would shed light on the causal relationship of these two domains of belief. The results of the experiment would also inform best-teaching practices to encourage students to be better writers and ultimately, better students.
References


epistemology: The psychology of beliefs about knowledge and knowing (pp. 103-118). Mahwah, NJ: Erlbaum.


Appendix A

Script Used to Describe the Study in Class

Read the following instructions to students in the class prior to handing out the Informed Consent Letters. If there are any questions about the nature of this study, please refer them to me by email (kperry5@gmail.com) or phone (308-241-0099).

Kyle

Thank you for a few minutes of your time. As a student in EDPS 362/457, you are being asked to take part in a study about writing. Your involvement is voluntary and the study follows the guidelines of the Office of Research Responsibility at the University of Nebraska—Lincoln. This study is not a requirement of this course and should you refuse to participate, your grade will not be penalized.

With full participation in this study you can receive two credit hours towards the research requirement of this course, as outlined in the syllabus. Full participation includes completing both surveys—one at the beginning of the semester and one at the end of the semester. Partial credit for incomplete participation is unavailable.

The letter I am about to hand out explains, in greater detail, the nature of this study, the commitment of your involvement, and resources to answer any questions that should arise. To receive credit for your involvement, you must complete both surveys—one at the beginning and one at the end of the semester. Please read the Informed Consent Letter that I am handing out. Should you choose to be a part of this study, please sign your name at the bottom and hand it back to me. I will then provide you a copy of the letter for your records.
Hello EDPS 362/457 Student,

My name is Kyle Perry and I am a graduate student in Educational Psychology. I am currently in the phase of collecting data to complete a masters thesis and I request your assistance in my data collection. My research is focused on undergraduate students’ writing beliefs and the influence of knowledge on those beliefs. I hope that my research will be beneficial to those that teach and evaluate writing, as well as people seeking to become better writers.

Your involvement in this study consists of two online surveys, one at the beginning and one at the end of the semester. In addition to the surveys, relevant coursework will be included in the data. There is an Informed Consent letter available in class that outlines the specifics of your involvement, should you choose to participate. Full participation in this research project can count towards the research credit hours requirement outside of class, as stated in the course syllabus. You will receive two research credit hours for full participation; which means you must complete both surveys. Any form of partial credit for incomplete participation is not available. This study is not a requirement of EDPS 362/457 and refusing to participate will not penalize your grade.

If you choose to participate, please read and sign the Informed Consent form provided in class and provide your email address. I hope that you will consider involving yourself in this study. I believe that teachers, students, writers, policy-makers, and writers all stand to gain from the findings of this study. Thank you for your time.

Best,
Kyle Perry
Appendix C

Informed Consent Form

IRB# 20110211361

**Identification of Project:** Effects of Prior Knowledge on Implicit Beliefs About Writing

**Purpose of the Research:** This is a research project that will investigate the role that prior knowledge plays in beliefs about writing. The research project will conclude by August 1, 2011. You were selected for this study because you are a student in either Educational Psychology 362 or 457. You must be 19 years of age or older to participate.

**Procedures:** Participation in this study will take approximately 45 to 60 minutes of your time outside of regular class for each session, once at the beginning of the semester and once at the end. This study is not considered part of EDPS 362 or EDPS 457. First, you will complete an online survey outside of class at the beginning of the semester. This survey includes items that sample aspects of writing, as well as your experiences with writing. At the end of the semester, you will complete a similar final online survey outside of class. By consenting to the procedures of this study you agree to release your course grades, attendance, and “Philosophy of Learning and Teaching” paper for this course (EDPS 362 or EDPS 457) to the investigators of this study. The results of the survey will be correlated with demographic information and course data. Therefore, we ask for your permission to use the information for these purposes. If you choose to consent to this survey, you will be contacted via email.

**Risks and/or Discomforts:** There are no known risks or discomforts associated with participating in this research.

**Benefits:** There are no direct benefits from participating in this study. The results of this study will inform teachers, students, teacher educators, educational psychologists, cognitive psychologists, psychology and educational researchers, and others interested in improving students’ writing abilities. Results of this study will improve the understanding of cognitive components of the writing process so those that instruct and provide feedback for writing can be more effective. Finally, writers wanting to improve writing ability can do so with a better understanding of cognitive aspects of writing.

**Confidentiality:** Any information obtained during this study that would identify any individual will be kept strictly confidential. Online survey data will be encrypted, accessible only to registered investigators for this study. Course data such as grades, attendance, and writing samples will have all identifiable information removed.
Research data will be kept for five years. The findings of this study will be published in the principal investigator's master's thesis and potential academic journals, popular press, and/or conferences. Any and all findings will be reported as aggregated data with no individual identifying information about participants in the study. Contact information collected for the purposes of this study will only be used for survey dissemination.

**Compensation:** This is a department- and IRB-approved study and participants who complete all portions of this study can receive two credit hours counting towards the research credit hour requirement for the course (EDPS 362 or EDPS 457). This survey is not a requirement of EDPS 362 or EDPS 457 and your grade will not be penalized for refusing to participate.

**Opportunity to Ask Questions:** You have the right to ask questions about the study at any point and to have those questions answered before or during the study. Please contact the principal investigator Kyle Perry by phone (308-241-0099) or email (kperry5@gmail.com) with any questions, concerns, or complaints. Occasionally study participants have questions or concerns about their rights and prefer not to ask the investigators. In that case, you should call the University of Nebraska-Lincoln Institutional Review Board at 402-472-6965.

**Freedom to Withdraw:** Participation in this study is voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researchers or the University of Nebraska-Lincoln, or in any other way receive a penalty or loss of benefits to which you are otherwise entitled.

**Consent, Right to Receive a Copy:** You are voluntarily making a decision whether or not to participate in this research study. Your signature certifies that you have decided to participate having read and understood the information presented. You will be given a copy of this consent form to keep.

**Signature of Participant:**

____________________________________  __________________________
Signature of Research Participant        Date

Kyle R. Perry, Principal Investigator Phone: (308) 241-0099
Douglas F. Kauffman, Ph.D., Secondary Investigator Phone: (402) 472-1667
Appendix D

Pre- and Post- Survey (Writing Habits and Beliefs Scale)

Welcome

As a student in either EDPS 362 or EDPS 457, this semester you will cover various aspects of learning and motivation theory so that it may inform best teaching practices. From the content of this course, you are expected to write a “Philosophy of Learning and Teaching” paper due at the end of the semester.

The following survey will sample your views on writing the “Philosophy of Learning and Teaching” paper for this course (EDPS 362 or EDPS 457). The intent of this survey is to better understanding students’ task-specific views of writing. Answer each question with your own opinion—there are no right or wrong answers. Unless otherwise stated, consider all of the statements and questions in reference to the “Philosophy of Learning and Teaching” paper to be completed at the end of this semester.

Please indicate the course in which you are enrolled.

1 – EDPS 362
2 – EDPS 457

Please type your individual "Participant ID" below.

_____________________

Beliefs About Writing

People have different beliefs about writing. Please read the following statements and select the response that best describes how much you disagree or agree with each statement. Each statement refers to the “Philosophy of Learning and Teaching” assignment for this course. There are no correct answers.

1 – Strongly Disagree | 2 – Disagree | 3 – Neither Agree Nor Disagree | 4 – Agree | 5 – Strongly Agree

1. I will try to express my feelings in this paper.

2. The main purpose of this assignment is to give other people information.

3. It is important to develop my own writing style for this assignment.

4. My goal in writing this paper is to tell what experts think about the topic.
5. I will try to state the facts when I complete this assignment.
6. A good written product for this assignment will require many revisions.
7. I will go back over my writing to improve it.
8. I think writing this paper will be an uncomplicated activity.
9. For me, writing this paper will involve a lot of emotion.
10. I see writing this paper as a complex process.
11. The key to successfully writing this paper is telling what experts think.
12. The main purpose of writing this paper is getting information across to readers.
13. The process of writing this paper will be a satisfying one.
14. For this paper, good writers report information directly from their sources.
15. The process of writing this paper will be exciting.
16. Revising will help me clarify my ideas while writing this paper.
17. Writing this paper will help make my own ideas clearer.
18. One of my writing goals it to make as few changes as possible.
19. Using many quotations will make this paper convincing.
20. For me, writing this paper is a straightforward process.

**Feelings About Writing**

People have different attitudes towards writing. Please read the following and select the response that best describes your initial feelings towards the “Philosophy of Learning and Teaching” paper.

1 – Strongly Disagree | 2 – Disagree | 3 – Neither Agree nor Disagree | 4 – Agree | 5 – Strongly Agree

1. I will enjoy writing this paper.
2. I will not like writing this paper.
3. Writing this paper will be fun.
4. I get a bad feeling about writing this paper.
Beliefs About Intelligence

People have different beliefs about intelligence. Please read the following statements and select the number 1-6 that best describes how much you disagree or agree with each statement. There are no correct answers.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
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<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

1. You have a certain amount of intelligence and you can’t do much to change it.
2. Your intelligence is something about you that you can’t change very much.
3. You can learn new things, but you can’t really change your basic intelligence.

Effective Learning

The focus of this course (EDPS 362 or EDPS 457) is intended to help you become a better teacher. Over this semester you will further your current understanding of how students learn. Answer the next question in paragraph form to the best of your ability.

How do teachers help students learn most effectively?

Background

Please answer the following questions to help us get a better understanding of who you are and learn about your experiences with writing, as well as learning and motivation theory.

1. What is/are your major(s)?
2. What is your minor? (if applicable)
3. What is your gender?
   _ Male
   _ Female
4. Is English your primary language?
   _ Yes
   _ No

5. What is your ethnicity?
   _ African American
   _ Asian/Pacific Islander
   _ Caucasian
   _ Latina/Latino
   _ Native American
   _ Other

6. The grades on my writing assignments in all of my classes are typically...
   _ A
   _ B
   _ C
   _ D
   _ F

7. How many college-level courses have you taken with a writing focus? (e.g. ENGL 150)

8. How many college-level courses have you taken with a psychology focus? (e.g. PSYC 181)

9. How many college-level courses have you taken with an education focus? (e.g. CEHS 200)
Appendix E

Writing Beliefs Inventory Revised Statements

The original statements are from the “Beliefs About Writing” section of the Writing Habits and Beliefs Scale (Bruning et al., 2011). The revised statements reflect changes to make them task-specific to the “Philosophy of Learning” paper in EDPS 362 and EDPS 457.

---------------------------------

Original: I try to express my feelings when I write.
Revised: I will try to express my feelings in this paper.

Original: Writing’s main purpose is to give other people information.
Revised: The main purpose of this assignment is to give other people information.

Original: It’s important to develop my own writing style.
Revised: It is important to develop my own writing style for this assignment.

Original: My goal in writing is telling what experts think about a subject.
Revised: My goal in writing this paper is to tell what experts think about the topic.

Original: I just try to state the facts when I write.
Revised: I will try to state the facts when I complete this assignment.

Original: Good writing often requires many revisions.
Revised: A good written product for this assignment will require many revisions.

Original: I always go back over my writing in order to improve it.
Revised: I will go back over my writing to improve it.

Original: I think writing is an uncomplicated activity.
Revised: I think writing this paper will be an uncomplicated activity.

Original: For me, writing is a process involving a lot of emotion.
Revised: For me, writing this paper will involve a lot of emotion.

Original: I see writing as a complex process.
Revised: I see writing this paper as a complex process.

Original: The key to successful writing is telling what experts think.
Revised: The key to successfully writing this paper is telling what experts think.
Original: Writing’s main purpose is getting information across to readers.
Revised: The main purpose of writing this paper is getting information across to readers.

Original: The process of writing is a satisfying one.
Revised: The process of writing this paper will be a satisfying one.

Original: Good writers report information directly from their sources.
Revised: For this paper, good writers report information directly from their sources.

Original: The process of writing can be exciting.
Revised: The process of writing this paper will be exciting.

Original: Revising helps me clarify my ideas.
Revised: Revising will help me clarify my ideas while writing this paper.

Original: Writing helps make my own ideas clearer.
Revised: Writing this paper will help make my own ideas clearer.

Original: One of my writing goals is to make as few changes as possible.
Revised: One of my writing goals is to make as few changes as possible.

Original: Using many quotations makes writing convincing.
Revised: Using many quotations will make this paper convincing.

Original: For me, writing is a straightforward process.
Revised: For me, writing this paper is a straightforward process.
Hello EDPS 362/457 Student,

Thank you for choosing to participate in the study “Effects of Prior Knowledge on Implicit Beliefs About Writing.” Allow 60 minutes to complete the survey. Please complete the survey in one setting. It is important that you include your participant ID number at the beginning of the survey. Without this ID number, your participation cannot be verified and you will not receive research credit. Below is your participant ID and the URL to take the survey. If you have questions, feel free to contact myself (kperry5@gmail.com) or Dr. Douglas Kauffman (dkauffman2@unl.edu).

Participant ID: ######
URL: https://unleducation.qualtrics.com/SE/?SID=SV_1YZ5K1xgULMKDeA

Thank you,
Kyle Perry
Appendix G

Pre-Course Survey Reminder Email

Hello EDPS 362/457 Student:

This is a reminder that you have signed up to participate in the research study “Effects of Prior Knowledge on Implicit Beliefs About Writing” and have not completed the online survey. Please complete the survey at your earliest convenience. Below is your participant ID and survey URL.

Participant ID: ######
URL: https://unleducation.qualtrics.com/SE/?SID=SV_1YZ5K1xgULMKDeA

Without the online survey, your involvement in this study cannot be taken into account and your participation in the study would be greatly appreciated. If you have any questions please contact myself (kperry5@gmail.com) or Dr. Douglas Kauffman (dkauffman2@unl.edu).

Thank you,
Kyle Perry
Hello EDPS 362/457 Student,

Thank you for taking the first survey in the study “Effects of Prior Knowledge on Implicit Beliefs About Writing.” This is the second survey. Please complete the survey in one setting. It is important that you include your participant ID number at the beginning of the survey, not your NU ID number. Without this participant ID number, your participation cannot be verified and you will not receive research credit. Below is your participant ID and the URL to take the survey. If you have questions, feel free to contact myself (kperry5@gmail.com) or Dr. Douglas Kauffman (dkauffman2@unl.edu).

Please take the survey by 5:00 pm on Friday, April 29.

Participant ID: ######
URL: https://unleducation.qualtrics.com/SE/?SID=SV_6FPM1LhIuMrINW

Thank you,
Kyle Perry
Appendix I

Post-Course Survey Reminder Email

Hello,

You are receiving this survey because you are a participant in the study "Effects of Prior Knowledge on Implicit Beliefs About Writing." My records show that you have taken the first survey, but not the second survey. This second survey will be closed Friday, April 29 at 5:00 pm CST. You will not be allowed to take the survey after that time. Thank you for your participation in this study. If you have any questions please email me (kperry5@gmail.com) or Dr. Douglas Kauffman (dkauffman2@unl.edu).

Kyle
Hello,

You are receiving this email because you are a participant in the study "Effects of Prior Knowledge on Implicit Beliefs About Writing." As stated in the Informed Consent form, part of your participation involves the Philosophy of Learning and Teaching paper written for EDPS 362/457. Please send an electronic copy of the paper to myself at the email address kperry5@gmail.com.

All of your personally identifiable information will be removed from the paper immediately upon receiving the document. If you have any questions, please contact either Dr. Douglas Kauffman (kfauffman2@unl.edu) or myself (kperry5@gmail.com). Again, thank you for your time. Your participation in this study is greatly appreciated.

Kyle
Appendix K

Philosophy of Teaching and Learning Assignment Page

Philosophy of Teaching and Learning Paper

Based on the concept map you and your teammate(s) create, you will write a personal statement describing your philosophy of teaching and learning. The paper should be approximately 3-6 pages in length (absolutely no less than 3 pages; NOT including the title and reference pages). Your paper should reflect how you will apply the principles and theory from this class (and your group’s concept map) in your future classroom. You should make sure to tie your concept map directly to your paper, addressing any compromises, differences in opinion you have from your group’s concept map, or how it fits with your philosophy of teaching and learning. Here are some questions to prompt your thinking about your philosophy of teaching and learning. (You cannot answer all of these questions in your 3-6 page personal statement, of course, but you can answer whichever questions best provoke you to respond.) Make sure to include a MINIMUM of two concepts or theories from each unit of the course (before and after the midterm). It is required that you address the final content covered in the course on this final paper. Failure to include information that was taught after the midterm exam will result in a reduction in your grade on this paper.

Questions:

- What are your objectives as a teacher/professional (beyond helping student meet states standard)?
- How do you motivate students to learn?
- What kind of learning environment do you want to create for your students and why?
- What messages about the process of learning do you want to deliver to your students when teaching?
- What classroom goals do you want your students to perceive as important to your class?
- What goals do you hope your students want to pursue personally?
- What are the key cognitive factors that impact student learning (i.e. attention, working memory, etc.)?
- How does a good teacher interact with students?
- What have you learned from this class in terms of teaching and learning?
- What do you still struggle with to improve in your own teaching plans?
- How do you evaluate/access students’ learning outcomes?
- What makes a course/learning activity successful?
- How will you ensure that students stay engaged?
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<th>3+</th>
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<td>structural development includes a functional introduction, body, and conclusion</td>
<td>structural development includes an effective introduction, body, and conclusion</td>
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<td>sequencing is random</td>
<td>sequencing is thoughtful, logical and effective</td>
<td>sequencing is thoughtful, logical and effective</td>
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<td>pacing is awkward</td>
<td>pacing is well-controlled</td>
<td>pacing is well-controlled</td>
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<td>transitions are missing; connections are unclear</td>
<td>transitions clearly show how ideas connect</td>
<td>transitions clearly show how ideas connect</td>
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<td>conveys no sense of the person behind the words</td>
<td>conveys a limited sense of the person behind the words</td>
<td>conveys a strong sense of the person behind the words</td>
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<td>tone is not appropriate for purpose and audience</td>
<td>tone is sometimes not appropriate for purpose and audience</td>
<td>tone is well-suited to the purpose and audience</td>
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<td>is lifeless and/or mechanical</td>
<td>is occasionally expressive</td>
<td>is individualistic, expressive, and engaging throughout</td>
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<td>language is neither specific nor precise</td>
<td>language is occasionally specific and precise</td>
<td>language is usually specific and precise</td>
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<td>contains numerous misused or repetitive words and phrases</td>
<td>language is occasionally forced or contrived</td>
<td>language is generally appropriate for the purpose and audience</td>
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<td>overuse of clichés and jargon</td>
<td>a few vivid words and phrases</td>
<td>some vivid words and phrases</td>
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<td>lacks vivid words or phrases</td>
<td>some overuse of clichés and jargon</td>
<td>generally avoids clichés and jargon</td>
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<td>sentences almost never vary in length or structure</td>
<td>sentences occasionally vary in length or structure</td>
<td>sentences generally vary in length and structure</td>
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<td>phrasing is choppy, incomplete, rambling, or awkward</td>
<td>phrasing occasionally sounds unnatural</td>
<td>phrasing generally sounds natural and conveys meaning</td>
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<td>fragments or run-ons confuse the reader</td>
<td>dialogue, if present, occasionally sounds unnatural</td>
<td>fragments, if present, may add style</td>
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<tr>
<td>dialogue, if present, is used inappropriately or sounds unnatural</td>
<td>dialogue, if present, generally sounds natural</td>
<td>dialogue, if present, adds style</td>
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<tbody>
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<td>paragraphing is missing</td>
<td>paragraphing, if attempted, is irregular</td>
<td>attempts at paragraphing are generally successful</td>
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<tr>
<td>errors in grammar, usage, punctuation, and spelling throughout distract the reader</td>
<td>a few errors in grammar, usage, punctuation, and spelling—especially with more sophisticated words and concepts—do not distract the reader</td>
<td>paragraphing is sound</td>
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<tr>
<td>grammar, usage, spelling and punctuation are mostly correct</td>
<td>conventions—especially grammar and spelling—may be manipulated for stylistic effect</td>
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