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**STUDENTS THINKING, STUDENTS WRITING:
EXPLORING UNDERGRADUATES' EPISTEMOLOGICAL BELIEFS AND
RHETORICAL WRITING**

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by

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For my mom:

My first teacher

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Over the past several years, I have fantasized about this moment: My dissertation completed, defended, and all of my committee members signed their approval, I would be able to acknowledge my appreciation and love to my “real” and academic families. In the moment, however, I am overwhelmed with gratitude.

John Lennon famously sang the lyric, “Life is just what happens to you while you’re busy making other plans.” The same can be said for what happens when we undertake projects like graduate degrees and dissertations. By design, our work can take many years to complete. As we attend and teach classes, study, read, write, learn statistics, and collect data, our lives unfold, perhaps in the backdrop, with events to celebrate and losses to mourn.

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This Rumi poem, translated by Coleman Barks (1997), touches on the limits of language and my feelings of true connection with all of those who have helped me complete my degree. It also seems a fitting start to a story about epistemological beliefs and relativism:

*Out beyond ideas of wrongdoing and rightdoing,
there is a field. I'll meet you there.*

*When the soul lies down in that grass,
the world is too full to talk about.
Ideas, language, even the phrase "each other"
doesn't make any sense.*

**STUDENTS THINKING, STUDENTS WRITING:
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The University of Texas at Austin, 2009

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The purpose of this study was to gain a better understanding of undergraduates' metacognitive beliefs about writing and knowledge, ways that those beliefs may change during the semester, and the relationship of beliefs to their persuasive writing. Scales assessing epistemological and writing beliefs were given to students in lower-division rhetoric and writing courses (N=241). Generally, students experienced significant changes in their beliefs about knowledge, learning, and writing across the semester, as assessed by the Epistemological Beliefs Questionnaire (Schommer, 1993) and writing beliefs scales (White & Bruning, 2002). Thus, students at the end of the semester reported beliefs that learning was a slow process and that knowledge was contingent.. Although regressions predicting quality of students' persuasive writing from the belief scales were not significant, qualitative analyses revealed interesting trends in papers from students with different epistemological stances and beliefs about writing, particularly with regard to their use of sources.

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CHAPTER ONE

INTRODUCTION

When undergraduates take their initial steps into college classrooms, they begin an acculturative process that spans the course of their degree programs and, their instructors hope, into their lives as professionals and citizens. Critical components that are descriptive of academic literacy (Fox, 1999) include learning to read critically and reflectively, compose well-supported assertions, and consider views that may conflict with their own. These characteristics are predictive of their success in school, and acquisition of academic literacy involves students' learning both content and discursive knowledge (Bereiter & Scardamalia, 1987), recognizing texts as context-bound, authored assertions (Geisler, 1994), and negotiating meaning among competing viewpoints (Flower, 1990).

Theoretical Orientation

For decades, researchers who studied students' transition to college and those interested in undergraduates' academic writing have described college students' enculturation processes. Perhaps most representative of a socio-cultural perspective was Bartholomae's (1985) assertion almost twenty-five years ago that students "invent" the university each time they engage in academic writing, as they "appropriate, or [are] appropriated by" (p. 136) the discourse(s) of the academy in general and their selected major in particular. In short, beginning college students are learning both *what* to say, in terms of content knowledge, and *how* to say it, the discursive conventions of academia.

This performance, likened to that of theatre by Fishman, Lunsford, McGregor, and Otuteye (2005), is enacted when students construct written and oral texts for listeners and speakers on academic stages. To continue their metaphor, undergraduates' roles parallel those of understudies in a musical theatre company as they learn to dance the correct rhetorical "moves" in proper costumes (vocabulary), sing the content of their disciplines, and appeal to different audiences. We expect students to do this while, at the same time, managing the affective and self-regulatory challenges inherent in beginning something new (Neely, Schallert, Mohammed, Roberts, & Chen, 2009)

Researchers of college student development, as well as those who study students' academic writing, have described the challenging process of students' development of academic literacy. New undergraduates have been called newcomers to the academy, where they "cultivate competence" (Fox, 1999) as "cognitive apprentices" in a "community of practitioners" (Lave & Wenger, 1991). For Graff (1990) and others, development of academic literacy is inextricably linked with issues of access (e.g., Rose, 1985), power and emancipation (e.g., Hardin, 2001), as well as identity (e.g., Rodriguez, 1982).

Sociolinguists such as Gee (2004) described linguistic features that signify membership in discourse communities like academia. To signify the linguistic multidimensionality of enculturation, Gee distinguished "Discourse" from discourse, with the capitalized term referring to the ways people use language to portray social practices such as beliefs, values, perspectives, and ways of thinking within a discourse community. Thus, like any other novice, college students gradually adopt the vocabulary (discourse) and the beliefs, values, and perspectives emphasized within class discussions, assigned

reading, and writing activities. As part of the Discourse of college, students are expected to think critically and originally, write clearly, and consider multiple perspectives within the landscape of cultural “conversations” taking place within discipline-specific fields and those of the broader culture (Gee, 2004). In adopting the values and beliefs of this new community, students constitute, and are constituted by, their membership.

Values of thinking critically and constructively, writing clearly and persuasively, and navigating competing ideas constitute development of academic literacy and membership within the academic community. And, acquiring discourses and Discourses within this realm is critical to college students’ success. Given the importance of undergraduates’ gaining membership in college Discourse communities, particularly as they relate to academic activities, how might we understand undergraduates’ acculturative processes? In the study reported here, I offer that students’ beliefs about the nature of knowledge and knowing, referred to as “epistemological beliefs,” as well as the enactment of these views through rhetorical writing, may be indicators of students’ acquisition of the values emphasized in college. Prior work has linked beliefs in constructed, uncertain, and contingent knowledge and learning with actual academic performance (Hofer & Pintrich, 1997; King & Kitchener, 1994; Schommer, 2004) and reading comprehension (Schommer-Aikins & Easter, 2006). Other studies have demonstrated the connections between epistemological beliefs and correlates of academic success, including goal orientation (Phan, 2009) and domain-specific beliefs (Buhel, Alexander, & Murphy, 2002). However, questions remain about the extent to which these beliefs inform, and/or are informed by, academic assignments.

Just as epistemological researchers have identified developmental trends in college students, that is, moving from a more absolutist epistemology toward one that is more critical and relativistic, composition researchers have studied the ways that students' writing develops in beginning-level writing courses as well as those specifically within their majors. Longitudinal accounts of college students' writing (Berkenkotter, Huckin, & Ackerman, 1991; Curtis & Herrington, 2003; Haas, 1994; Haswell, 2000) identified developmental trajectories similar to those explained in the epistemological beliefs literature. Studies of students' compositions have illustrated a trend toward more rhetorical, critical, and contextualized writing as well as a view of texts as authored assertions as opposed to unassailable truths. Also, similar to the epistemological theorists, researchers of rhetorical reasoning have noted that levels of education were positively correlated to individuals' reasoning about complex issues, with higher education predicting a better coordination of theories with evidence (Kuhn, 1999) and consideration of alternative perspectives (Kuhn & Weinstock, 2002). Thus, as students progress through college, their changing beliefs and values, identified by epistemological theorists, may be reified (Wenger, 1998) through rhetorical reasoning in academic writing.

In addition to students' general epistemological beliefs possibly manifesting in academic tasks like persuasive writing, their beliefs about the nature and purpose of writing may inform their writing as well. Scales assessing college students' writing processes, particularly beliefs about the function of writing and self-efficacy while writing, have been linked to the quality of compositions (Lavelle & Zuercher, 2001). Others have identified factors that constitute students' writing beliefs and have used them to predict students' writing performance (White & Bruning, 2005). Finally, in a more

qualitative realm, college writing instructors have described the task-specific beliefs of basic writers, including those of self-efficacy described by Bizzell's (1986) student who lamented, "I just can't talk right!," or the student from Street's (2006) basic writing course who explained of drafting, "once the words are down, the race is over" (p. 639). Some students in Lavelle and Zuercher's interviews (2001) described their writing processes as providing opportunities to build a clear understanding of a topic and spark ideas for other papers. These statements reveal students' beliefs about writing processes, their self-efficacy when writing, and the purpose of writing, all of which likely inform students' written academic artifacts.

Impetus for the Study

My understanding of potential relationships between students' metacognitive beliefs (Alexander, Schallert, & Hare, 1991) and their academic practices served as the impetus for my dissertation study. As an educational psychologist and writing researcher, I wanted to build a stronger conceptualization of general epistemological beliefs, those related to the specific task of writing, and students' course-related persuasive writing. As a composition instructor, I understood ways that Rhetoric and Writing curricula were informed by both process and post-process philosophies of writing, emphasizing rhetorical components such as audience, contingency, and uncertainty (Faigley, 1986). Further, lower-division rhetorical writing instruction, as I experienced it in roles as a student, writing tutor, and teacher, promoted views of writing as "socio-cognitive phenomenon dependent upon historical and cultural context" (Petraglia, 1999, p. 55). Thus, my interests included potential shifts in students' epistemological and/or writing beliefs over the course of a semester-long, required lower-division Rhetoric and Writing

course (which I refer to as “RW 101”). Additionally, I wanted to know whether their beliefs about knowledge, learning, and writing were predictive of the final papers they wrote for the course.

Privileging Academic “Ways of Knowing”

Before I tell the story of my dissertation study, I have a caveat regarding the language that I use to describe my participants’ thinking and writing. In line with researchers who study students’ epistemologies, and those who analyze students writing, I used terms such as epistemologically “sophisticated” and “advanced” to describe students whose scores on measures of epistemological beliefs measures reflect a view of constructed, unstable knowledge and a view of learning as a slow progression. Similarly, in my analyses and descriptions of students’ writing, I reinforce the values of RW 101, and of academic discourse communities in general, which include supporting reasons with credible evidence, considering competing viewpoints via counterarguments, and leveraging information and authority from source articles to create a “strong” argument. In this study, as well as in the RW 101 course, and others like it, papers that contained these elements were considered of “higher quality” compared to the essays of students who did not consider these rhetorical components. Recognizing that language is never value-neutral, my interpretations and descriptions of the participants’ writing and thinking are laden with my own understanding of the purpose of college, the nature of academic writing, and what “counts” as effective argumentation.

Finally, my focus on this single RW 101 course at one institution may imply that I believed this type of writing instruction—or its general pedagogy —promoted a type of privileged epistemological growth. Although philosophically I find rhetoric a useful

heuristic for teaching students' critical thinking and writing, I recognized that it is neither a "transcendental" (Berlin 1988) nor a "magical" (Neely, Little, & Hardy, 2008) language that provides a value-free view on Truth and knowledge. Instead, as Berlin described, "A rhetoric can never be innocent, can never be a disinterested arbiter of the ideological claims of others because it is always already serving certain ideological claims." Even with New Rhetoric and its emphasis on context, interpretation, and the writer as the constructor of meaning (Berlin, 1982), rhetoric and writing are not value-free, and as such are not without their own interpretations of what it means to "know." Thus, understanding that the epistemological and discursive trends I explored in this study illustrated students' enactment of thinking valued by academic Discourse communities, I recognized that these ways of thinking did not—and do not— represent a single apex of knowing and understanding the world.

Research Questions

In an effort to connect the constructs of epistemological beliefs, writing beliefs, and rhetorical writing, the following questions informed my dissertation study:

1. Do undergraduates' beliefs about knowledge, learning, and writing change over the course of a semester-long Rhetoric and Composition course (RW 101)?
2. In what ways are students' beliefs about knowledge in general, their epistemological beliefs, related to their beliefs about the task of writing?
3. Are beliefs about knowledge, learning, and writing predictive of the quality of students' rhetorical writing?
4. What types of rhetorical trends can be identified in students' persuasive papers written for their RW 101 classes?

Organization of the Dissertation

In the following chapter, I present conceptualizations and key research findings from previous studies of students' epistemologies and their beliefs about writing, along with studies of argumentative reasoning and writing. In Chapter 3, I describe my methodological approach to addressing the research questions outlined above, including measures that were used and data collection procedures. Chapter 4 presents analyses of both the epistemological and writing belief measures, as well as significance tests comparing students' early scores to those collected at the end of the semester. Then, in Chapter 5, I explore whether the epistemological and writing beliefs measures are predictive of students' rhetorical writing quality. In the second part of Chapter 5, I approach the students' papers with a more qualitative look at how features of their rhetorical writing are or are not aligned with their individual scores on the beliefs scales. Chapter 6 provides a discussion of my findings relative to the existing literature and the research questions that guided my dissertation. In this final chapter, I also discuss the limitations of my work, in addition to its implications for future work and instruction.

CHAPTER 2

LITERATURE REVIEW

In this chapter I provide an overview of salient work on epistemological beliefs and the theories and empirical work that has addressed how researchers think about knowledge and learning. While most of the authors that I mention identify themselves as epistemological theorists, or at least link their work with that of epistemological theorists, their terminology, proposed constructs, and the scope of their investigations differ, sometimes radically. In the first part of this chapter, I present the terminology and findings of traditional epistemological researchers, identifying points of contention and agreement among them. The focus of this section is to understand what is meant by the term *epistemological beliefs* and the research findings that have made use of this construct. Also in this section, I review work about students' disciplinary and academic enculturation, linking these processes with the types of development described by epistemological theorists. In the second part of the chapter, I review types of thinking that are likely informed by individuals' epistemological beliefs. Finally, I present research about argumentative reasoning and rhetorical writing.

Developmental Approaches to Epistemological Beliefs

Perry's Scheme of College Student Development. Most discussions of epistemological development begin with an account of William Perry's study of college students at Harvard during the 1950's. In a review of epistemological theories, it makes sense to explore Perry's work as so many subsequent theorists have conducted research that has built upon his ideas. Across almost a decade, Perry conducted interviews at

Harvard, and a few at Radcliff, in an effort to explain the different ways students respond to a liberal arts education (Perry, 1968). Initially, he expected that personality differences, including obedience to authority, would serve to explain the different ways students view knowledge and truth, but instead he identified developmental trends in the ways college students think (Hofer, 2002). He found that more dualistic views of knowledge, often held by first-year students, were transformed as they proceeded through coursework. This transition included the evolution to a more “sophisticated” way of viewing knowledge, a more constructed view of truth, and a movement toward what Perry called “relativism” (1968; 1999 version reprinted). As he conducted these open-ended interviews with students, he charted an “intellectual Pilgrim’s Progress” (1999, p.3) as students began to recognize the decentralization of authority and truth and the constructed nature of knowledge. Moore (2002) explained this progression as one that “traces a fall from a world of Absolutes and Truth into a world of contexts and Commitments in which one must take stands and choose as a way of making meaning in one’s life through identity choices” (p. 19). Perry’s Scheme of Intellectual and Ethical Development, as it is officially called, is comprised of nine “positions,” within 4 stages that chart students’ movement away from dualistic thinking, the belief that all knowledge is simply a collection of information and that all knowledge is known.

Perry’s landmark book explicated each stage of his model. The earliest positions in his scheme include “basic duality,” characterized by a black-and-white view of right and wrong and intellectual submission to the knowledge of experts and authorities; gray areas and issues of contextuality are not part of a dualistic thinker’s beliefs. Although Perry did not directly observe many students in this particular stage—about this he said,

“its [this stage’s] assumptions are so incompatible with the culture of a pluralistic university that none of these few could have maintained his innocence and survived to speak to us directly from it in the spring of his freshman year” (p. 67, 1968)—he identified it through students’ retrospective accounts of earlier beliefs. Perhaps the most salient aspect of the dualistic thinkers is their inability to consider alternative perspectives, which implies that they may have not yet developed the metacognitive capacity to consider conflicting points of view. Instead, they judge information from a dichotomous us-right versus them-wrong mentality. Perry wrote that “detachment is impossible” in this stage (p. 69), and that these students often view authorities, such as professors, as the holders of Truth and purveyors of knowledge.

Movement toward a more relativistic outlook occurs in the middle positions of the scheme, Perry explained, as students begin to realize that there is really no certain knowledge. Early in this stage, students identify legitimate uncertainty in the world and often categorize uncertainties as “not yet known.” So, in addition to the dualistic categories of right and wrong, there is a “to be determined” option that becomes evident in stages of multiplicity. Later in this stage, as the student moves toward the position of “Multiplicity Correlate,” the “not yet known” category for information becomes the “we’ll never know for sure” (Moore, 1999). Perry himself described relativism as a sort of “intellectual purgatory” (p. 197, 1968) as multiple perspectives and greater awareness of the world virtually overwhelm the mind.

The later stages of Perry’s scheme represent movement toward a worldview that is context-bound and that has few clearly delineated right/wrong propositions. This progression is characterized by the type of self-consciousness that comes with relativism,

as well as meta-type awareness of one's own perspectives. As learners move through these developmental stages, Perry explained, they make commitments through which they identify their own values and identities. These commitments are carefully chosen, carefully considered conclusions that the learner reaches only after exploration of alternatives and after "considering genuine doubt." These later stages of "commitment to relativism" were rarely seen in the undergraduate populations that Perry interviewed, nor have more contemporary researchers utilizing this scheme found undergraduates at these higher stages.

Perry's interviewees were predominately male, upper-middle class, and of high levels of education, a relatively homogenous, affluent sample. Subsequent researchers have addressed these limitations with more gender-inclusive studies involving students of various socioeconomic and educational backgrounds. In addition, although most post-Perry epistemological research has utilized some form of interview, they are usually semi-structured and more standardized, as opposed to the fairly open-ended, unstructured discussions Perry utilized in his study.

Notwithstanding their limitations, Perry's ideas about college students' intellectual development have been expanded by many other researchers who have built upon, critiqued, and further investigated his proposed developmental stages. His scheme, according to Knepfelkamp (1999), "became the grand metaphor that allowed us [professors, researchers, higher education administrators, counselors] to listen to students with a sense of obligation to be responsive... It provided a context for listening to students and a context for learning about students through the perspectives of others" (p. xii). Perry's model emphasized a perspective-taking, or positionality, of the sort that

constructivist theory embraces. This theoretical movement stressed that we build meaning and personal theories from our daily “lived lives,” ideas that resonate across the fields of philosophy, psychology, sociology, rhetoric and composition, and educational psychology. This “grand metaphor” has been part of epistemological conversations for half of a century.

Kitchener and King’s Reflective Judgment. Kitchener and King also conducted interviews with college students to create a model of intellectual development. These researchers identified a construct similar to Perry’s, what they called *reflective judgment* (Kitchener & King, 1981), comprised of seven stages of post-adolescent reasoning, tracing the development of students’ ideas regarding the nature of knowledge and the justification of claims. These researchers, like Perry, identified a developmental trend away from “unexamined reliance on the word of an authority figure” (Kitchener & King, 1981, p. 92) and movement toward developing the skills of critical, thoughtful examination and evaluation of evidence in making reasoned judgments. The final stages of the reflective judgment model illustrate an active, critical thinker who engages in reflective reasoning. At these ultimate developmental stages, knowledge is gleaned through a process of critical inquiry and synthesis of differing perspectives and personal experiences (Mines, King, Hood, & Wood, 1990).

Whereas Perry used open-ended interviews to deduce the various developmental positions of students, Kitchener and King developed the Reflective Judgment Interview (RJI), a semi-structured series of questions and probes designed to elicit participants’ opinions and judgments regarding controversial issues. After the participant is introduced to the issue-at-hand, she is asked to respond to the issue and provide her own point-of-

view. By providing a personal opinion and justification regarding these intellectual quandaries, participants are prompted to explain insight as to their reasoning styles and the way they view knowledge and reality.

Empirical inquiry has demonstrated a positive correlation between level of education and level of reflective judgment. These studies support the notion that formal educational environments provide unique opportunities for students' epistemological development. In a 1981 cross-sectional study, Kitchener and King found significant differences among the RJI scores of high school, college, and graduate students. These differences remained significant even after verbal ability, level of formal operations, socioeconomic status, and verbal fluency were taken into account. In addition, the researchers matched the high school and college students on gender and academic aptitude to account for these potentially confounding variables. Of the original participants in this cross-sectional study, 66% participated in a 10-year follow up over the years of 1977-1987. Kitchener and King continued to use the Reflective Judgment Interview (RJI) in a longitudinal study of these high school juniors, college juniors, and graduate students (1981, also in Wood, 1997). Results of this study indicated that higher-stage RJI scores become evident over time, supporting the sequential, developmental aspects of the RJI model.

Since the RJI was created and standardized, it has been used in numerous other cross-sectional and longitudinal investigations involving traditional-aged college students. Wood (1994) conducted a meta-analysis of 20 cross-sectional studies that utilized the RJI. He found that, generally speaking, the studies identified freshmen as making reflective judgments consistent with Stages 2 and 3 of the model. When

presented with the ill-structured problems of the RJI, these underclassmen articulated the notion that absolute truth is only temporarily inaccessible, though still somehow knowable, indicating that the majority of freshmen from this meta-analysis were not multiplistic thinkers. Also, he found significant differences in RJI scores of freshmen when compared to seniors and noted that there was little difference in RJI scores of older versus younger students once classification was taken into account. More recent studies involving 11th and 12th grade science students indicated that teaching methods, group problem solving versus traditional lectures, were related to different levels of reflective judgment growth (Zeidler, Sadler, Applebaum, & Callahan, 2009). In addition to underscoring the relationship between instructional mode and cognitive development, Zeidler and colleague's work suggested that Reflective Judgment may be domain specific. Thus, students' critical reflection in the realm of science may not predict a similar level of reflective judgment in other domains, a notion supported by Muis, Bendixen, and Harerle's (2006) discussion of epistemological thinking in specific disciplines.

Glatfelter (1982) also used the RJI to identify differences between traditionally aged and older students and found that first year re-entry women (freshmen) scored significantly higher on their Reflective Judgment Interviews than the first-year traditional-college-aged women, findings that challenged those of Wood (1997). The total group of re-entry women (both 1st and 4th year) scored higher on the RJI than the total group of younger students. These nontraditional students had not attended college previously, so these results supported the notion that adults may enjoy epistemological development even in nonacademic settings.

Schommer's Epistemological Beliefs Questionnaire. Other key contributors to the field of epistemological development include Marlene Schommer (now Schommer-Aikins), who created the paper-and-pencil "Epistemological Beliefs Questionnaire" (EBQ), an assessment tool aimed at measuring this kind of thinking. Whereas earlier epistemological researchers generally relied on interview processes to assess students' beliefs, Schommer's questionnaire represented a more quantitative and efficient approach, though the measure is not without its critiques, as explained later in later chapters. Using exploratory factor analysis, between four and five components of epistemological beliefs have been identified (Schommer, 1990; Schommer, Crouse, & Rodes, 1992; Schommer 1993; Schommer-Aikins 1998; 2004; Schommer-Aikins & Easter, 2006; Wood & Kardash, 2002). The four-factor solution is the most prominent, and it is comprised of "more or less independent beliefs" (p. 104) of the EBQ assessing individuals' beliefs about: (1) the structure of knowledge, answering the question: Is knowledge viewed as isolated bits of facts or as integrated into context?; (2) the stability of knowledge: Is knowledge seen as tentative or unchanging?; (3) the speed of knowledge acquisition: Is learning a quick process?; and (4) one's control over knowledge acquisition: Is the ability to learn fixed?

Work with the EBQ has suggested that students' year in college is more predictive of their epistemological sophistication than their age. The goal of Schommer-Aikins' (1998) investigation was to account separately for the influences of age and education on epistemological beliefs, two variables often confounded in other epistemological research. In this study, she administered her EBQ to a stratified random sample of 418 adults across three levels of education: participants with only high school

degrees, those with some undergraduate education, and those with graduate school experience. She found that level of education predicted two components of epistemological beliefs: beliefs about the structure of knowledge and beliefs about the stability of knowledge. That is, when each epistemological factor was regressed first on age, then education, the level of education predicted belief in the (1) complexity of knowledge and (2) the tentative nature of knowledge. Put simply, the more education a participant had experienced, the less likely she was to believe in simple or certain knowledge. Schommer also found that age predicted beliefs about the ability to learn, with younger participants believing more that the ability to learn is fixed. This particular study did not account for the participants' nonacademic experiences, which would have been helpful in contextualizing and accounting for their epistemological levels. Also, because the study involved a cross-sectional analysis of EBQ scores, it did not provide information about participants' development over time. Despite these limitations, findings from this investigation were fairly consistent with other research using the EBQ as well as other epistemological measures; level of education, more so than age, correlated with epistemological sophistication.

Epistemological Beliefs and Academic Success

Schommer, and other researchers using her questionnaire, have found links between epistemological beliefs and academic functioning. One such study (Schommer, 1990) identified a relationship between college students' beliefs about knowledge and their performance on comprehension tasks involving writing a summary paragraph and completing a mastery test. Results of this investigation indicated that students' beliefs in quick learning, as assessed by that dimension of the questionnaire, predicted

oversimplified conclusions, overconfident self-reports regarding understanding of the material, and poorer performance on the mastery test. Students who viewed knowledge as more certain also performed more poorly on the paragraph-writing task, creating paragraphs with inappropriate conclusions and oversimplified claims. Other investigations of epistemological development and academic performance have studied the belief in quick learning as it relates to high school (Schommer, 1993a; Schommer & Dunnell, 1994) and college (Schommer, 2002; Schommer, Crouse, & Rhodes, 1992) performance; students who believed that learning happens fast tended to have lower grades.

In addition to exploring the relationships among EBQ scores and academic factors, Schommer (1993b) has also investigated the ways in which students' varied backgrounds, including demographic and familial experiences, relate to their epistemological sophistication. This study involved a two-by-two comparison of: (a) community college students to university students, and (b) technical science majors to social science majors. University students were significantly more likely to believe that the ability to learn is innate, and junior college students were more likely to believe in simple, certain knowledge and that learning happens quickly. These differences were accounted for when familial backgrounds and demographic-type information were considered, indicating that nonacademic environments, including familial background, can play a part in shaping one's epistemological beliefs. Differences in EBQ scores between social science and physical science majors were also eliminated when background factors, including parental education and attitude toward education, were considered. These results speak to the strong impact that nonacademic factors, including

upbringing and environment, have on later epistemological thinking. In addition, these findings suggest that epistemological beliefs may not be as domain-specific as some theorists, reviewed later, may claim.

Another line of work that used the EBQ did so to explore potential relationships between epistemological beliefs and other constructs associated with academic success. These studies focused on aspects of self-regulation, motivation, and achievement approach as they related to students' epistemological beliefs. For example, among a group of sixth-graders, Kizilgunes, Tekkaya, and Sungur (2009) found that the relationship between science students' epistemological beliefs and their grades were mediated by their achievement motivation, self-efficacy, and approaches to learning. Students who viewed knowledge as contingent had high mastery- and performance-oriented goals, whereas students who understood knowledge as certain scored low on both mastery and performance goal orientations. These findings suggested a significant relationship between students' beliefs about knowledge, their motivation, and their academic performance that echoed findings by Neber and Schommer-Aikins (2002), who found science students' beliefs in fixed learning ability predicted low mastery goals. Similarly, Paulsen and Feldman (2005), in a study of college students, found that belief in certain, stable knowledge predicted performance-oriented approaches to learning and, interestingly, high self-efficacy. Taken together, these findings suggested that epistemological beliefs may inform other metacognitive components of students' goal regulation and approaches to learning.

Numerous other scholars have contributed to the conversation about epistemological beliefs by exploring different populations, creating measures, and

building upon (or critiquing) Perry's work so as to better understand the role of epistemology in learning and development. For example, Baxter Magolda (1990) conducted longitudinal interviews of students as they progressed through college, graduated, and began working. She sought to develop a gender-inclusive model of epistemological development, and, like other models, found that young adults, throughout their college years, move from dependence on authority for knowledge toward a view of knowledge as constructed as self-authored (Baxter Magolda, 2004). Other researchers have developed paper-and-pencil measures of epistemological development. Ryan (1984) developed one such measure based upon Perry's scheme, which he used to link epistemology to performance on academic tasks. Newman (1993) developed a measure of epistemological style that has been used by Charney, Palmquist, and Newman (1995) to investigate undergraduates' attitudes towards writing, finding that students with more absolutist views of knowledge and writing processes also tended to have lower verbal aptitude and writing grades. Students whose scores reflected a more evaluative approach to knowledge also reported greater enjoyment of writing and higher assessments of themselves as writers. Each of these researchers worked to build a greater understanding of students' beliefs about knowledge and the relationship between those beliefs and academic performance.

Epistemological beliefs as politically powerful and culturally constructed. A tacit assumption that runs common in the aforementioned research on epistemological beliefs, reviewed in Chapter 1, is that we, as college educators, privilege a specific way of thinking about the world. These epistemological values, which we label as "sophisticated," "mature," and "advanced" include students' beliefs that knowledge is

constructed and contingent, learning is a gradual process, and authority is both assailable and flawed. Thus, this construct is value-laden and, by studying, defining, and assessing epistemological beliefs we consequentially exclude alternative ways of knowing and conceptualizations of individuals' world views. For example, to Perry (1968/1999), King and Kitchener (1994), and even the recent work of Schommer (2002; 2004), the tendency and willingness to question authority is a key component of epistemological sophistication. However, for some groups this particular readiness/propensity may not be a value, or the cultural distribution of power may preclude the development of such beliefs and types of thinking.

Women's Ways of Knowing. Recognizing this power differential, particularly in relation to gender, Belenky, Clinchy, Goldberger, and Tarule (1986/1997) conducted extensive longitudinal interviews of 135 women across various life situations. From these interviews, they identified five epistemological perspectives and were careful to note that these were not necessarily to be interpreted as developmental stages. These five perspectives are: Silence, Received Knowledge, Subjective Knowledge, Procedural Knowledge, and Constructed Knowledge. The first one, Silence, is not so much an epistemological stance as it is a denial of self and of one's own voice, characterized by dependence on external authority for direction. Interestingly, but not particularly surprising, is that Perry's work does not represent such a stage in his account of the development of upper-middle class, predominately male college students in the 1950's, perhaps because his participants came from positions of privilege and had confidence in their own voices.

The book reporting these findings, *Women's Ways of Knowing*, represented an attempt to build a more inclusive model of the way individuals view knowledge and knowing. Their work was “sensitive” in that it represented an important step in cultural and gender issues as they relate to individuals’ epistemic stances by recognizing the experiences of groups of people historically marginalized and disempowered. Also, the actual five-position framework itself represents a more sensitive model because it accounts for a broader range of epistemologies. For instance, Perry’s model, as well as Kitchener and King’s, may not be precise enough when studying those at the lower-levels of epistemological development. Their models did not account for the “silence” epistemological stance, which is an important and fundamentally different epistemological outlook than Perry’s lowest stage of “absolutist.” In his writings, Perry had stated that absolutism was the most naïve stage of epistemology with regard to adults—anything less sophisticated would only be found in children. However, he, and other researchers, did not acknowledge the cultural and political components that inform epistemological beliefs and the consequences that these components had on disempowered individuals.

Women's Ways of Knowing was an important and somewhat controversial step in the study of epistemological beliefs. Whereas Perry’s earlier work included almost exclusively male college students, Belenky and colleagues’ study included only women; thus it is difficult to make clear comparisons between the theorists’ epistemological models. The authors set out to specifically explore women’s experiences, as Goldberger (1996), one of the original authors, later explained that the main goal of the *Women's Ways of Knowing* investigation was to address the ways “Western social constructions of

gender and authority affect women's sense of self, voice and mind"(p. 5), and how two key socializing institutions identified in the study—family and school—contributed differently to the participants' ways of knowing. By looking closely at environmental and contextual factors that influenced individual's epistemological beliefs, aside from traditional college institutions, the WWK authors provided vivid examples of the social construction of knowledge and truth across situational and life circumstances. Additionally, their work provided a broad illustration of the way women interact with various academic and non-academic environments and how their beliefs about knowledge and knowing are shaped by these interactions.

Epistemological development as product of academic enculturation. These findings mentioned in the above section, taken together, suggest that college is an important developmental venue, and it is probably the case that college has something of a monopoly on the development of a so-called "sophisticated" epistemology. Studies controlling for age and comparing college and noncollege adults indicate that those who attended college score higher on measures of epistemological beliefs, whether the assessment is via pencil-and-paper (Schommer-Aikins 2004) or semi-structured interviews (Kitchener and King, Baxter Magolda, Kuhn, etc.) These findings indicate that college may be a unique setting when it comes to fostering the advanced and valued views about the nature of knowledge and knowing. Although there are other environments that may promote epistemological growth, as illustrated in *Women's Ways of Knowing*, individuals who view knowledge as constructed tend also to have higher levels of education. Traditionally, when students attend college they often "go away to school" and live in a new place, e.g. dormitories or co-op housing, surrounded by

different people. As Perry (1968) described, it is likely the sociocultural experience of college—beyond lecture halls and course content—that promotes individuals’ consideration of multiple perspectives and jumpstarts epistemic growth.

Students Reading and Writing in their Disciplines

Given the overwhelming number of studies that illustrate developmental belief trends in undergraduates of various ages, it seems that the college experience itself, more than just growing up and getting older, fosters “advanced” epistemological beliefs. This might be due to the fact that this approach to knowledge and thinking is valued more in college than, arguably, anywhere else in the “real world,” and a mature epistemology may be the product of, or even synonymous with, academic enculturation. Recognizing this trend, both compositionists and educational psychologists have studied the students’ acquisition of rhetorical and domain knowledge and have provided illustrations of the way students come to recognize and situate knowledge rhetorically. Samples from this body of literature are reviewed in the following section.

Student enculturation. Haas (1994) conducted research on one undergraduate’s academic enculturation as it related specifically to reading processes in the student’s major, biology. In a longitudinal investigation of this student, Eliza, reading in her major, biology, Haas traced the different, changing ways that Eliza interacted with texts as she acquired greater background knowledge and gathered academic experiences. She identified changes in both Eliza’s representations of the texts she was assigned as well as shifts in her conceptualization of the written discourse in her discipline. Over the course of her academic career, Eliza increasingly viewed texts as authored assertions, part of a greater conversation taking place in biology. This represents the sort of growth that

epistemological theorists identified through their own longitudinal observations, as reviewed earlier in this chapter. Haas explained, “Entering college students may hold an arhetorical or asituational theory of written discourse, a representation or model of discourse that *precludes* seeing texts as motivated activity and authors as purposeful agents” [emphasis added] (p.46). Most notably, Haas’ assertions about this kind of academic development parallel those descriptions of Perry’s intellectual development, Kitchener and King’s reflective judgment, and Schommer’s epistemological beliefs. The early stages of rhetorical development, described by Haas, as well as earlier stages of epistemological development are characterized by a view of knowledge as an absolute collection of facts handed down by omniscient authorities.

Eliza’s freshman year interviews illustrated her arhetorical stance toward the information she was studying. Haas noted that a key goal of the student was to understand, and be able to repeat, what “the book says,” a characteristic similar to that described by compositionists Bereiter and Scardamailia (1985) as “knowledge-telling.” She viewed her role as a learner as one of extracting and retaining information from the text—a strategy “not unsavvy, given the ways that she was held accountable for the reading” (pop quizzes, comprehension-monitoring exercises, etc.) (Haas, p. 60). The claims that she made in her writing assignments, too, were best supported by references to the book; “I can prove it by writing from the book” (p. 61), Eliza explained. Based on this comment, we might speculate that her approach, at least to biology, aligns with the dualistic stages of Perry’s scheme, though Haas did not provide an explicit measure of epistemology in the study.

Following a pattern that Perry, Kitchener and King, and other epistemological theorists have recognized, Eliza's growth as a critical, rhetorical thinker seemed to surge during her junior year. Her logs and interviews indicated a more constructed view of learning and knowledge in her field, and her comments regarding her assignments reflected this more sophisticated epistemology. As she read during her junior year, her think-aloud protocols revealed a more active construction of the authors. For instance, she actively built context as she read; "so *they're* using this as a prototype for the manipulation," she says, or "*they* don't know too much about the actual microbiology of the virus," she speculated about authors, humanizing the texts. Also during this time Eliza's tests and course assessments moved away from multiple-choice exams toward more interactive, lab-based activities. This trend in her growth and coursework continued through her senior year, during which time she continued to read with an understanding of texts as manifestations of scientific action and human choices, written by authors with their own motivations, interpretations, and experiences. As she built meaning from these texts as an upperclassman, her reading goals were no longer merely retention of facts; instead, she worked to create her own meaning from the texts. These accounts described a process of "knowledge transforming" (Bereiter & Scardamalia, 1985) that is epistemologically different from a "knowledge telling" way of knowing, which characterized her freshman year.

This process of simultaneously building domain and rhetorical knowledge, or academic enculturation, is also illustrated in Penrose and Geisler's (1994) account of two students reading and writing within their majors of philosophy. This study contrasted the reading and composing processes of Janet, freshman with those of Roger, a graduate

student. Findings underscored the role of both discursive and content knowledge—understanding both *what* to say and *how* to say it—and the ways in which this knowledge put Roger at a distinct advantage while reading to write. The comparison showed that the development of academic expertise involves both rhetorical and epistemological savvy. As both students researched and wrote papers for the purpose of the study, their different epistemological views became evident in their compositions, think-aloud protocols, and interviews with the researchers. Roger, the graduate student, made significantly more explicit mentions of authors, indicating that he viewed texts as created by authors who are participating in an academic knowledge-building conversation about paternalism. As he researched and wrote, he seemed aware of the conflicting nature of different knowledge claims, engaging in an active process of identifying, sorting, and evaluating the claims made by different authors. This approach illustrated his epistemological view of the truth as multivariate and constructed. The undergraduate student, Janet, did not mention authors as frequently, nor did her paper, think aloud protocol, or interview responses indicate her view of texts as tentative and negotiable. Janet’s think-aloud transcripts did provide evidence of critical thinking and analysis, but these elements were not expressed in her final composition, which “not only stripped away any evidence of the role of other authors in constructing the domain knowledge of ethics, it also eliminated any evidence of her own role” (p. 512). According to Penrose and Geisler, Janet’s responses indicated her view of the texts as more “definitive and unassailable” (p. 507).

Perhaps by virtue of his academic experiences, domain knowledge, age, or greater epistemological sophistication, Roger viewed the philosophy research texts as

arguments rather than facts, whereas the undergraduate's interpretation of the task was to report on the texts, on the "truth" and "facts" surrounding the issue. Penrose and Geisler suggested that students' "contrasting theories of knowledge and their corresponding assumptions about individual authority shape the way [they] approach intellectual tasks...students who see all texts as containing 'the truth...' will of course see the objective report as the only conceivable response to a reading-writing assignment" (p.515).

Similar to Eliza (in Haas' 1994 study), Janet's think-alouds revealed her view of "the books" (texts) as sources to be reported and understood, instead of assertions to be critically evaluated. Roger's view represented a different epistemological stance, shown by his creation of anecdotes in his essay to illustrate the authors' competing views and to position them against one another. The differences between Janet and Roger's composing processes appear to run deeper than their amount of domain-knowledge in the field of philosophy. Instead, their negotiations of meaning and of the research and writing assignment seemed to represent their different epistemological views of authority, the texts, and knowledge. Though the researchers did not utilize an epistemological measure in this study, we might speculate that such a measure would reveal that Roger is further along on the Perry scheme, or scores higher on the RJI or the EBQ compared to Janet, based on his approach to this research process.

Herrington (1992) also explored the research and composing processes of college students and traced their "academic enculturation" in an upper-division anthropology class. She found that, as students entered what anthropologist Clifford Geertz (as cited in Herrington) referred to as the "intellectual village" of their disciplines, they have to

balance two crucial tasks. She wrote, “To enter the village, students are trying to learn not only its ways of speaking but also its ways of thinking so that those ways become their own, so that they can feel that they are speaking in their own voices and making their own knowledge claims in ways effective within the community” (p.92). In this statement, Herrington identified an epistemic shift and acquisition of disciplinary conventions that are necessary for students to succeed in upper-division coursework. Her ethnographic accounts of the two anthropology majors revealed the struggles the students underwent as they approached their written assignments, illustrating the dual-tasks of mastering disciplinary, domain-type knowledge while simultaneously experiencing fundamental changes in the ways they view knowledge. Similarly, Berkenkotter, Huckin, and Ackerman (1988) explained the negotiations of a first-year graduate student as he worked to learn the conventions of his discipline. As he strove to gather both domain and rhetorical knowledge, he underwent some rhetorical struggles similar to those of the aforementioned undergraduates. Likewise, Curtis and Herrington (2000) found freshmen composition students faced similar struggles in learning academic Discourse.

Domain-specific epistemologies. So far, I have presented findings that suggest that epistemological beliefs are: (a) a cognitive developmental phenomenon, (b) politically and culturally constructed, (c) a marker of general academic enculturation, and (d) may be the result of the simultaneous accretion of content and/or discursive knowledge in a given (specific) field. Although some findings supported the domain-specificity of epistemological beliefs in fields such as history and math (Buehl, Alexander, & Murphy, 2002), these same researchers found that discipline-specific beliefs are moderately related to more general epistemological beliefs.

Other work has suggested that students maintain epistemological-type beliefs about specific academic tasks. One such study, conducted by Schraw (2000), used his Reading Beliefs Inventory (RBI) to understand students' beliefs about reading. Findings confirmed a two-factor structure, as measured by the RBI, that included the belief that reading is either primarily a transmissional activity or a transactional activity. Individuals high on the transmission subscale of the RBI, held beliefs that emphasized comprehension and accessing of the author's intended meaning, whereas transaction beliefs referred to those that stress the building of meaning from text. According to Schraw (2000), "transmission reading is reconstructive rather than constructive because meaning flows directly from author to reader without changes in meaning" (p. 96). Alternatively, transactional reading beliefs maintain that texts can have a variety of meanings to different readers, regardless of authorial intention. Although Schraw did not implement a traditional, general measure of epistemological beliefs in the design, there is likely a correlation between students' views of reading as a constructive process and a more advanced epistemology.

Schraw (2000) did, however, find that the type of reading beliefs undergraduates held were related to the quality of their written responses to the text. Readers with high transactional and low transmissional beliefs tended to write significantly longer and more critical responses to the reading passage they were given. Interestingly, both transmissional and transactional readers performed equally well on a reading comprehension measure, with insignificant variance between the two groups. Methodologically speaking, these results suggested that investigating college students' written artifacts, more than their performance on a standard study-related writing prompt

and multiple choice comprehension measure, may provide a broader and more comprehensive account of the way task-specific epistemological beliefs play out in academic tasks.

Similar findings by White and Bruning (2005) illustrated that writing beliefs, in addition to reading beliefs, contributed significantly to the quality of students' writing as well as their level engagement in the task. Participants who held highly transactional views of writing, reflecting a view of writing as a communicative versus demonstrative act, also reported feeling higher levels of efficacy regarding writing (Shell, Colvin, & Bruning, 1995). Their analyses also indicated that students may simultaneously hold high transmissional and high transactional beliefs about writing, but those that hold only high transmissional beliefs (and low transactional ones) "may approach writing tasks in ways that circumvent integration of critical content and personal ideas when generating text." (p.182).

Generally, results across these studies demonstrated the impact that reading and writing beliefs had on task performance and comprehension outcomes, which represented an important step in researchers' understanding of the role of such beliefs. However, neither Schraw (2000) nor White and Bruning (2005) related these task-specific beliefs to more general epistemological beliefs. Investigating the way task beliefs are related to, or predicted by, general epistemological beliefs may help us build a model of these different types of beliefs as they relate to task performance. Specifically, an illustration of the way these beliefs inform performance on academic tasks, like writing an essay for a course, may provide greater understanding as to the relationships between beliefs, thinking, and task performance. Even though the studies utilized writing samples from students as a

means of assessing the impact of reading and writing beliefs on quality of writing, there were some specific limitations to this design. First, the way that they scored students' brief writing samples did not allow for raters to assess students' discursive knowledge. The rubric for assessing the writing samples involved a more traditional measure that accounted for grammar, clarity, and organization issues, key components in any writing task. However, the rating scheme did not account for more complex aspects of writing, including students' providing evidence to support their claims, presenting counterarguments, and making audience appeals. Scoring these essays for such aspects of rhetorical knowledge may have further illustrated the way that epistemological beliefs, revealed through persuasive aspects of the students' essays, related to scores on the RBI and WBI.

Rhetorical Thinking and Writing

Epistemological beliefs, as described and reviewed in the previous section, are an integral part of discursive and content knowledge acquisition. The goal of this section is to review types of thinking in light of our understanding of epistemological beliefs. These beliefs about knowledge and learning seem to lurk behind the scenes, informing knowledge-building in a pervasive way. Therefore, examining argumentative thinking and reasoning tasks may provide an illustration of epistemological beliefs in action. In this section I will review some conceptualizations of types of thinking that may be linked to and informed by epistemological beliefs.

Rhetorical reasoning. One way to describe the instantiation of epistemological beliefs is to consider that they may inform rhetorical and argumentative thinking, with argument defined as “a piece of discourse or writing in which someone tries to convince

others (or himself) of the truth of a claim by citing reasons on its behalf.” (Govier,1987, p.4). In order to investigate instances of argument and the reasoning behind individual’s opinions, Kuhn (1991) conducted semi-structured interviews with adults from a variety of backgrounds, asking them to explain their thinking about general-interest topics like unemployment, criminal recidivism, and student failure. She asserted that, “reasoning involved in rhetorical argument is of paramount interest in its own right...the reasoning involved in rhetorical argument is at the heart of what we mean (or should mean) when we talk about thinking well” (p.13). In her work, Kuhn studied argumentative reasoning, as elicited through interviews, to determine ways that participants used evidence to support theories, generated and/or recognized competing theories, and offered counterarguments and rebuttals to both their claims and the interviewer’s questions about their responses.

In describing and studying individuals’ reasoning, Kuhn (1991) acknowledged the metacognitive and epistemological factors that influence argumentative thinking, and she asserted that fundamental to each type of thinking was “the ability to think about one’s own thought” (p.14). In order to address epistemological beliefs and their relationship to the types of argumentative thinking she investigated, she coded the interview transcripts, evaluating individuals’ ability to generate counterarguments and their responses to questions as to whether experts could ever know for certain what caused the problem (criminal recidivism, school failure, and unemployment). Qualitative evaluation of these transcripts indicated different paths in individuals’ reasoning, and their metacommentary suggested that that epistemological beliefs are closely linked to the argumentative task of considering alternative perspectives and recognizing uncertainty in knowledge. In

keeping with the epistemological belief research presented earlier in this chapter, her analyses revealed that both level of education and quality of argument were positively related to sophisticated epistemology. Additionally, she found that the quality of each individual's argument was relatively constant across the three interview topics, lending support to the idea that rhetorical skills can be transferred across topic domains.

As one of the few researchers to address directly the role of epistemological beliefs in thinking, Kuhn's (1991) work provided an important contextualization of the relationship between beliefs about knowledge and reasoning skills, but her methodology confounds these two phenomena. She used the same data set, participants' transcripts, to code for both counterargument response and epistemological stance, which she later correlated. Thus, in her design the epistemological and counterargument assessments were confounded. Accounting for these beliefs via a separate epistemological measure, like the Epistemological Beliefs Questionnaire (Schommer, 2004), or even additional qualitative data would offer a more persuasive link between argumentative thinking and epistemological beliefs. In addition, while she did ask participants about real-world issues in the interviews, the study design did not control for individuals' levels of prior knowledge about the topics. For example, someone who is familiar with the issue of criminal recidivism, by virtue of having read, discussed, or working directly with the problem, may have responses that reflect greater epistemological sophistication.

Rhetorical writing. While the aforementioned studies described individuals' reasoning as it related to complex issues, their focus was on the spoken, verbal process of supporting claims with evidence and recognizing competing views. College composition instructors whose teaching is informed by rhetorical theory similarly work to develop

their students' use of supporting evidence, audience-awareness, and recognition of counterarguments in persuasive writing. Thus, whereas the data sources for studies of argumentative reasoning and reflective judgment included transcripts of individuals' spoken reasoning processes, college composition curriculum often calls for students to engage in these processes via writing. In the paragraphs that follow, I present a brief, somewhat reductive description of composition pedagogy's evolution and how these trends informed the curriculum of the Rhetoric and Writing class involved in my study.

The value of rhetorical thinking has not always been explicit in college writing courses. Instead, from the 1870s to the 1950s, writing instruction focused on error correction, approaching error as "pathology" (Santa, 2008, p.13). To extend the medical metaphor, writing instruction during this time generally involved diagnosing, prescribing, and treating problems in students' writing. The goal of this method was for students to produce formal, correct, "grammatically pure" (p.23) essays free of error. Not coincidentally, positivism dominated approaches to understanding physical, biological, and social sciences during this time (Phillips & Burbules, 2000) guided by the assumption of a stable reality that was accessible through rigorous research. This epistemology likely informed a more reductive approach writing instruction, focused on error and remediation.

Movement away from this prescribed, mechanistic view of teaching writing toward an approach to writing as a process of constructing began when the post-World War II baby boomers entered college. The sharp rise in college populations, coupled with social activism of the 1960s and Cold War educational objectives, fostered a re-examination of writing instruction (Bizzell, 2000). Compositionists reacted against

current-traditional approaches, with their emphasis on correction, by focusing on individual students expressing themselves through writing in their authentic voices (Elbow; Rose). This focus on personal narrative and self-expression paralleled psychotherapeutic theories of that time (e.g. Carl Rogers and Karen Horney). Cognitive studies of composing processes followed this emphasis on individual expression and, like earlier approaches, represented a scientific approach to inter-individual processes of the writer (Bereiter & Scardamalia, 1985 ; Emig, 1971; Flower & Hayes, 1981). Fundamental to this approach was Flower and Hayes' cognitive model of writing, with its explication of the simultaneous, recursive cognitive demands of balancing domain and discourse knowledge while composing.

A goal of the New Rhetoricians was to construct a cognitive model of writing that would inform writing instruction. This approach was in sharp contrast with Traditional Rhetoric, who understood creativity as a gift that cannot be taught and, thus, emphasized writing as a mechanism by which to express preconceived arguments (Young, 1980). This epistemological approach explained the relationship between thinking and writing as a one-way street: creativity, as a gift, informed our thinking, and then the mechanics of writing helped express these points of view. In contrast, New Rhetoric, armed with empirical descriptions of writing processes provided by composition researchers, emphasized the recursive processes between writing and thinking. For example, Flower and Hayes' (1980) model of composing was based upon protocol analyses of students as they wrote. This schematic described interactions between the writing task environment, the writer's long- term memory, and the process of planning, translating, and reviewing in composing. A revised model, proposed by Hayes (1996), also accounted for affective

dimensions in students' writing processes, including motivation, beliefs, and goals that they hold regarding the purpose of writing and their writing abilities. This type of work demystified composing processes and suggested potential areas of instruction. The approach to the teachability of all aspects of composing—including those of invention and idea generation—contrasted more traditional rhetoric and writing instruction. The assumptions of the traditionalists included the notion that creativity could not be taught (and that doing so would amount to a waste of time); thus writing instruction focused on grammar and mechanical correctness. The pedagogy of New Rhetoric allowed for explicit support, and modeling, of creative processes, and the notion that writing itself could generate new ideas and inform subsequent composing.

As the focus on individual students' voices and composing processes evolved to include a more socially constructed view of writing, composition theorists and practitioners began to understand writing as inextricably linked to context. This led to recognition of the exponential variables and considerations that come into play during writing. Berlin (1983) identified this as a social-epistemic rhetorical approach to composition instruction, which views writing as a sociopolitical act that involves, and is contingent upon, "the dialectical interaction engaging the material, the social, and the individual writer, with language as the agency of mediation." (p.488). Petragalia (1999) similarly described post-process writing instruction as that which continues the post-positivistic trends of contextualizing, describing, and theorizing writing. Thus, examining students' beliefs about knowledge, and about writing processes, would contribute to a richer, "New Social Science" approach (Berlin p.55) to understanding the complexity of composition. The field of composition studies itself, parallel to trends in the social

sciences, experienced its own epistemological shifts from a focus on describing and prescribing cures for writing difficulties, to understanding writing as representation of self-expression, to the current understanding of writing (and writers) as socially constructed.

Writing as thinking. As new modes of writing instruction developed, compositionists looked to student writing as illustration of their thinking and reasoning processes. For instance, Cooper et al. (1984) studied the written products of undergraduate students' thinking about the controversial issue of affirmative action. In evaluating students' essays, the researchers accounted separately for mechanical, grammatical, and rhetorical quality. They found that errors in spelling, grammar, and mechanics were about equal across a range of argumentative-quality scores. This indicated that it was not students' *writing* per se, but rather their *thinking* as represented in writing, that accounted for differences in overall score. So, when instructors lament that "students can't write," they are not necessarily referring to simple grammar and mechanics, but rather the fundamental thoughts represented in the students' compositions. Additionally, these researchers found that more competent writers, who had higher holistic essay scores, used about the same number of arguments as the less competent ones. The two groups also used the same types of arguments, but the degree to which they elaborated and supported their claims varied greatly; argument quality, not quantity, accounted for the difference in holistic scores. Further, students' use of evidence, and acknowledgement of reservation (uncertainty), correlated positively with their holistic scores. Very few papers directly acknowledged counterarguments (only 16%), suggesting that student writers, perhaps more epistemologically naïve, value

certitude, whereas their evaluators valued the acknowledgement and articulation of complexity.

Similar to the Deanna Kuhn's work explained earlier in this chapter, domain knowledge may have been a factor in these studies of persuasive writing. For example, students in Cooper and colleague's investigation may have had varying amounts of domain knowledge about the essay topic, affirmative action. One way to address this limitation would be to allow students to do some reading/research on the topic and then ask them to write the essay. Providing access to this background knowledge (via independent research) may allow greater control for degrees of prior topic knowledge and would also allow the essay writing to more closely mimic an authentic academic task.

Persuasive writing as an epistemological artifact. In recent work, epistemological researchers Schommer-Aikins and Hutter (2002) identified links between individuals' beliefs about the nature of knowledge and learning and their reasoning about controversial issues. To illustrate this potential relationship between beliefs and reasoning, adults of various ages and education levels were asked to respond to the Epistemological Beliefs Questionnaire (EBQ) and read a newspaper article about a controversial issue. By linking epistemological beliefs to authentic tasks, like reading and composing an opinion about a topic, this particular investigation provided important contextualization and description of epistemological beliefs in action. Results showed that participants with stronger beliefs in complex and tentative knowledge were more likely to acknowledge the multiple perspectives comprising the controversial issue, were less prone to certitude, and had higher levels of education. Put another way, perspective-taking negatively correlated with a belief in simple, certain knowledge, reflective

thinking, and the belief that knowledge is static and unchanging. And, in keeping with other studies of epistemological beliefs, adults with higher levels of education were more likely to engage in these more “sophisticated” types of thought.

Charney, Newman, and Palmquist (1995) also provided an important account of the way epistemological beliefs related to students’ attitudes toward writing and writing grades. These researchers found that epistemological styles correlated with students’ writing grades, their enjoyment of writing, semester in school, and SAT-verbal scores. Findings also supported Newman’s (1993) assertion that epistemological development is less of a stage model, as suggested by Perry and subsequent theorists, and instead a multidimensional model, allowing for students to hold multiple epistemological stances within any given context. Additionally, the researchers noted a difference in epistemological styles by disciplines, with humanities majors having the least dualistic, reductionistic views of knowledge. Charney and colleague’s study represents an important step in relating epistemological beliefs to academic writing because the authors included separate measures of each in their research design. Whereas these authors provided a detailed illustration of the way writing attitudes and beliefs about knowledge vary across groups of students, they did not examine specific features of the students’ writing as they related to their writing and epistemological beliefs.

Also recognizing the links between epistemology, rhetorical writing, and audience awareness, Hays, Brandt, and Chantry (1988) (as well as Hays, 1988; Hays & Brandt, 1992) explicitly studied undergraduates’ awareness of audience and related it to holistic essay scores and epistemological development. Argumentative, or rhetorical, writing, they claimed, provided a rich artifact of students’ social and cognitive processes. In an

analysis of high school and college students' persuasive essays, they found that the Perry rating (determined by analysis of the essays) predicted overall writing performance (holistic essay score) and certain types of audience appeals, with more advanced Perry rating papers also making more complex audience moves, including anticipating rebuttals. Also, they found that audience activity predicted the overall essay scores; students who made more frequent and complex audience appeals received higher scores on their essays. This investigation was a follow-up and summary of the Hays, et al. study that began in 1983 and was subsequently published in *Research in the Teaching of English* (Hays, et al., 1988). Discussion of this study also took place in the *Journal of Basic Writing* (Hays, 1988) where its report sparked response articles about the role of domain knowledge, as opposed to cognitive development, in college students' development of more sophisticated ways of thinking, reading, and writing.

My dissertation study was strongly informed by the work done by Charney and colleagues as well as the controversy surrounding that of Hays, Brandt, and Chantry. For example, linking students' beliefs to specific writing outcomes was beyond the scope of the former. Thus, one of the goals of my study was to understand whether specific rhetorical "moves," evidenced in students' papers, were related to students' beliefs. In my design, I also worked to address methodological critiques of Hays et al., by assessing students' epistemological beliefs separate from their rhetorical writing, modeling the design of Charney and colleagues. In Hays, Brandt, and Chantry's study, they asked groups of high school and college students writing argumentative essays about drunk driving laws: one for a hostile audience, who, they were told, held views in opposition to their own, and another to a more friendly audience who was amenable to their views.

After the high school and college students wrote the two essays, the researchers then collected and analyzed them in several different ways. They had independent raters holistically score each student's pair of essays, a process similar to that which an instructor would use to assign a grade to an essay. They also submitted the essays written for a hostile audience to the Syracuse Rating Group, an independent research organization, which assigned them a Perry position score based upon "over 40 cues dealing with overall protocol style, with ways of knowing, ways of reasoning, and ways of perceiving and relating to the environment" (p. 396). Perry ratings were assigned based on the Syracuse group's working cue sheets. The authors then analyzed the essays for indications of the writer's audience awareness, which they call "audience activity." This textual analysis included identifying different ways that the students responded to and acknowledged their readers, from simply naming them to more complex appeals to their views and anticipating their rebuttals. They found that Perry rating predicted overall writing performance (holistic essay score) and certain types of audience appeals, with students whose papers received higher Perry rating also making more complex audience moves, including anticipating rebuttals. However, the researchers' measurement of epistemological beliefs was confounded with their assessment of rhetorical writing.

Impetus for Study

As explained throughout this chapter, beliefs about learning and the nature of knowledge, known as "epistemological beliefs," inform students' learning at fundamental levels. Researchers since Perry (1968) have noted that college students undergo a transformation from an "absolutist" to a "multiplicity" worldview, which involves moving away from a dichotomous view of knowledge (right vs. wrong) toward a

consideration of multiple perspectives. Since Perry, many educational psychologists have investigated the nature of this transformation using structured, open-ended interviews with students over multiple semesters (Baxter Magolda, 2001; King & Kitchener, 1994). At the same time, researchers in composition studies have studied the process by which students learn to write arguments that navigate conflicting claims, accommodate opposing views, and appeal to the values of an intended audience (Hays et al., 1988; Hays & Brandt, 1992; Herrington, 1992.) However, compositionists generally have not studied the epistemological beliefs of student writers (with the exception of Charney, et al., 1995 and Hays, et al. 1988 a), and educational psychologists have not examined college students' persuasive writing as an illustration of these beliefs. Thus, the goal of this project was to strengthen and continue an interdisciplinary conversation about rhetorical writing and epistemological beliefs. I proposed that argumentative writing, whose study is within the purview of composition scholars, is closely linked to epistemological beliefs, which is in the domain of educational psychology, because persuasive writing requires the author to consider alternative perspectives, including that of the audience and opposing viewpoints, key aspects of epistemological “sophistication.”

CHAPTER 3

METHOD

I investigated students' epistemological and writing beliefs and their writing performance within the context of a semester-long, lower-division undergraduate rhetoric and writing course. The methodological approach for this study included quantitative assessments of students' beliefs about the nature of knowledge and their beliefs about the practice of writing. These survey data allowed me to compare students' beliefs at the beginning to those at the end of the semester. In addition, I collected the final papers that the students wrote for the course and analyzed them according to prefigured codes (Charney, 2002) but also open to other trends in the papers. Finally, I rated students' papers across the categories and used scores on the knowledge and writing beliefs scales as predictors of rhetorical writing performance.

The methodological approach for this study allowed me to assess a relatively large number of students' beliefs about knowledge through the widely used Epistemological Beliefs Questionnaire. In terms of assessing writing beliefs, I used the Writing Beliefs Scale (White & Bruning, 2005), which I modified based on the results of my pilot testing of the scale. Finally, by collecting an authentic academic argument—the papers that students wrote for the course—I was able to compare scores on these metacognitive measures to actual academic performance.

The goal of this investigation was to construct a model of how beliefs about learning and knowledge in general, as well as task-specific beliefs about writing, are

related to students' writing. The study is designed to address the general research questions listed below:

1. Do undergraduates' epistemological beliefs and writing beliefs change over the course of a semester in a persuasive writing course? If so, what is the nature of that change?
2. How are undergraduates' epistemological beliefs related to their beliefs about writing?
3. How do epistemological beliefs and writing beliefs relate to (predict) students' performance on an authentic academic task, namely writing a persuasive essay?

Participants

Participants included 273 undergraduate students enrolled across 13 sections of a course entitled "Rhetoric and Writing 101," taught by faculty and graduate students in the Rhetoric and Writing department. Of the students enrolled in the course during this particular fall semester, 47% were female, 53% were male, and 88% reported ages between 18-20 years. The ethnic breakdown across the sections was as follows: 9% African-American or Black, 15% Asian or Asian-American, 22% Lation/a or Mexican-American, 45% White or Caucasian, and 2% Middle Eastern. Seven percent of students did not respond to the question about ethnicity.

In terms of academic classification, 65% were freshman, 21% sophomores, 9% juniors, and 4% seniors. Approximately three students, or 1%, were non-degree seekers. In terms of academic college/major 27% of the students were Liberal Arts majors, with

19% majoring in Natural Sciences, 18% in Engineering, 12% in Business, 11% in Fine Arts, 9% in Education, and 4% in Communications.

Most of the students, about 78%, were native English speakers, and 80% reported living in the U.S. for their entire lives, with another 14% having lived in the U.S. for more than 4 years. In order to gain admission to the class, international students whose native language was not English were required to pass the TOEFL exam, which ensured a level of English language proficiency among all students.

Design of the Course

The course, Rhetoric and Writing 101, was a semester-long course required of all undergraduates at the University of Texas. All of the participants in this investigation were University of Texas at Austin undergraduates and, as such, they met the admission standards for the university. In general, the students who take RW 101 do so because they did not place out of the class via SAT II or Advanced Placement scores. Thus, although they had gained admission to UT, their placement test scores did not give them credit for this particular lower-division course.

General instructional goals of the course included teaching students to analyze, evaluate, and compose arguments, as well as to conduct library research. Additionally, assignments required multiple drafts of each of three papers, with students turning in at least one early draft for instructor comments as well as reading their classmates' papers in writing workshops. This enforced writing process was intended to allow students time to compose and recompose their writing while receiving feedback from a variety of sources, including their instructor and peers. As an introductory course on writing and argumentation, course instructors, assignments, and text emphasized the rhetorical nature

of communication, especially writing, and the contingent, contextual nature of knowing. Although most lower-division courses at the university have more than 50 students in each section, this class was capped at 23 students, allowing for more intimate class discussions.

Each semester, The Department of Rhetoric and Writing had offered approximately 30 sections of RW 101, most of which were taught by trained graduate students who had experience as Teaching Assistants and held Master's degrees. The department had standardized the syllabus and textbooks for the course each year, resulting in continuity across the sections. In selecting the particular sections of the course to include in the study, I only included those taught by more experienced graduate student instructors who had at least one year of experience teaching RW 101 specifically. I then sent each of them a request for their classes' participation. All instructors whom I invited responded and agreed to allow me to survey their classes, for a total of 13 participating class sections.

Procedure

During weeks 3-5 in the semester, I visited each of the participating sections of RHE 306, explained the study procedures, reviewed informed consent, and administered the initial survey. These visits took place during class time, but the instructors left the room so they would not know which students had agreed to participate. The survey included the following assessments:

Epistemological Beliefs Questionnaire (EBQ) (Schommer 1993; 2001). This 63-item measure was developed by Schommer (1993; 2001) as a measure of students' beliefs about knowledge and learning. Students responded on 5-point Likert-type scales from

strongly disagree (1) to strongly agree (5) to statements such as “You never know what a book means unless you know the intent of the author,” and “It’s a waste of time to work on problems that have no possibility of coming out with clear-cut and unambiguous answers.” In terms of the psychometric properties of the Epistemological Beliefs Questionnaire, coefficient alpha was .81 for the early-semester administration of the scale and .78 for its later-semester administration. Exploratory factor analysis revealed a four-factor structure, further described in Chapter 4 and detailed in Appendix A.

Writing Beliefs Inventory. (White & Bruning, 2005) This 15-item questionnaire was constructed to gauge individuals’ beliefs and ideas about the purpose of writing. The 5-point Likert-type scale measures responses based on level of agreement, with 1= strongly disagree and 5= strongly agree. Initial reliability analyses of the early and late semester administrations revealed unacceptably low coefficient alphas, ranging from .40-.45. After dropping 4 items (detailed in Appendix B), the coefficient alpha was still unacceptably low, at .54 for the early administration and .53 for the late. Low reliability suggested that the items from the Writing Beliefs Inventory were not working together to assess a single construct. This problem is addressed in the next chapter via exploratory factor analysis.

Final Class Essay. Part of the standardized curriculum for the RW 101 included a final paper, which was a proposal argument. Students were given at least two weeks to compose and subsequently revise this assignment, and it was considered a culmination of all the rhetorical skills that they had learned in the class. The assignment prompt directed students to research a specific problem, salient to their own lives, and to write a proposal

addressing the issue and offering a plan for change. Because the issue of audience is particularly important in this assignment, instructors often suggest that students write their proposals in a letter format, addressed to an authentic, named audience. (Sample prompt provided in Appendix C).

The students in the participating sections of RW 101 were asked to turn in a second copy of their final paper at the end of the course, which I collected from their instructors. All students were asked to submit this additional copy so that the instructors would not know which particular students were participating, and I then destroyed papers from students who had not consented to take part in the study. On the early and late semester surveys, as well as the final course paper, I also collected participants' alpha numeric student identifiers so as to match their responses across the data sources. Once I had done so, I removed all identifying information from the data and assigned each student's materials a unique identifier.

Analyses of Quantitative Data

Epistemological Beliefs Questionnaire. In order to determine whether students' scores on the epistemological beliefs scale had changed over the course of the semester, I ran a repeated measures 2x2 MANOVA on the scores from the EBQ and each of the writing beliefs scales. In addition to time as a within-subjects variable, the between-subjects factor was academic classification, with two groupings of students: one that just included freshmen, and the other group containing all other students. As the EBQ scores changed significantly from early to late in the semester ($p < .01$), I followed up by running individual ANOVAs, setting the p-value to .0125 (Bonferroni) on the four subscales of the measure. These steps addressed the following hypotheses:

- Undergraduates' epistemological beliefs from early to late in the semester will be significantly different, with their later-semester scores reflecting a more “sophisticated” epistemology.
- First-year students will have a significantly greater shift in scores compared to their sophomore, junior, and senior RW 101 classmates.

Writing Belief Scales. I then analyzed the scales of students' writing beliefs as I had the Epistemological Beliefs Questionnaire. In order to determine whether students' scores on the writing beliefs scale had changed over the course of the semester, I ran a repeated measures MANOVA, with the within-subjects factor as time, and the between-subjects factor academic classification, and each of the writing scales as dependent variables. I did not compare total means for this set of items because of their overall low reliability as a whole. These steps addressed the following hypotheses:

- Undergraduates' beliefs about the writing process, purpose of writing, and the role of disagreement in writing will vary significantly from early to late in the semester. At the end of the semester, students will have more process-oriented and knowledge-transforming beliefs about writing. In addition, they will report that persuasive writing presents alternative viewpoints, or disagreement.
- Sophomore, junior, and senior RC 101 students will, as a group, have a significantly greater shift in scores compared to their freshmen classmates. Most interview-based studies of epistemological growth (King & Kitchener; Perry, 1968) and academic enculturation indicated a strong epistemic “growth

spurt” during students’ junior years. (Perhaps due to taking courses in their majors starting around their junior year).

Analyses of Qualitative Data

At the end of the semester I collected copies of papers from instructors, for a total of 185 papers. I was not able to get a paper from every student in every class due to students not handing in extra copies, students who were granted extensions, and an instructor who had an emergency and was away during the last week of classes. However, student writing from each section of the course was represented, and I did get papers from at least half of the students enrolled in the 13 sections. Once I had gathered these papers, I made sure that I had late-semester scale scores for each student’s proposal argument. If I did not have late-semester EBQ and Writing Beliefs scores for a student, I did not score that student’s paper. Next, I read through the papers to determine whether they were all proposal arguments. As the instructors for this class had taught it for at least 3 semesters prior, some had offered customized versions, which resulted in variations and options to the proposal argument. For example, two instructors assigned a rhetorical analysis for the final paper assignment, so I was unable to assess those papers as part of this study. Another instructor offered her students the option to create a multi-media proposal. Although interesting, I opted to exclude these projects from my analysis because they introduced variation due to different presentation media. After eliminating papers that were not in line with the more traditional proposal argument assignment, and those that did not have corresponding late-semester scale scores, I scanned the remaining 90 papers into digital files. I then proceeded to analyze them in the Mac software program Preview, which offered options to color-code and annotate text.

I first scored 25 papers, then reconsidered my coding rubric and adjusted it according to the notes I listed in my research log. Once I had revised the scoring rubric, I scored all of the papers in batches of 15, returning to score two random papers from an earlier batch so as to stay calibrated. Each paper component was scored on a 1-5 scale, with 5 representing an exemplar paper. Once I scored all 90 papers, I distributed batches of 10 papers to each of 4 independent raters who had taught RW 101. Inter-rater reliability among 4 former RW 101 instructors, including myself, indicated that the scoring was reliable within one point. Exact rater agreement for each component ranged from 43-62%. Detail of rater reliability is presented in the table below:

TABLE 1 | PERCENT AGREEMENT BETWEEN RATERS WITHIN ONE POINT

Paper Component	Agreement \pm 1 point
Exigency	90%
Audience Awareness & Appropriateness	85%
Logos	89%
Avoid Certitude & Generalizations	83%
Counterargument	96%
Rebuttal	96%
Organization	92%
Source Quality	97%
Clarity & Word Choice	93%

As I scored the papers, I kept a log of conceptual issues and personal reflection, as Straus and Corbin (1998) suggested. Although their methodologies for qualitative research are mainly for those working through the process of open and axial coding, allowing for themes to emerge from the data, the memos were still useful in my scoring of the papers. In addition to rating the papers across the ten categories explained below, I was open to trends and insights as I read the proposal arguments. I made note of these in the memos and annotated on the papers. These trends are presented in Chapter 5.

Scoring the papers. The list below explains the scoring categories I used to assess the students' proposal papers. This is a revised version of the scoring guide used by Charney (2005; 2008) in department-wide assessments of student writing and was based on primary-trait scoring:

- *Exigency**
- Audience Awareness and Appropriateness
- Logos
- *Avoid Certitude and Generalizations**
- *Source Integration and Appropriation**
- *Counterargument**
- Rebuttal
- Organization
- *Source Quality**
- *Number of Sources**
- Clarity and Word Choice

**Revised or new category*

In Chapter 5, I provide a more detailed explanation of the revision of the scoring guide. In brief, the changes I made to Charney's original document centered around orthogonality; as I reconsidered the categories, I revised their descriptions so that categories overlapped as little as possible. Scoring discrete categories and working to ensure that components are not conflated is difficult when assessing student writing, particularly rhetorical writing. The curriculum for this class specifically and for rhetorical writing instruction in general emphasizes the systemic nature of any text, encouraging students to pay careful attention to the way that different persuasive appeals may inform one another. For instance, the clarity and precision of language may help or hinder the reader's ability to follow the author's claim and supporting reasons.

I made efforts to distinguish these components both in my own scoring and in the guidance I provided my raters. As a result, I added categories to account for writers' use

of certain language, the number and quality of sources, and the way that the writers worked to motivate readers through exigency. A key difference between my scoring guide and that used in writing program evaluation (Charney, 2004; 2008) is that I created a separate category called “source integration and appropriation.” Whereas the original guide accounted for integration of research sources in the “clarity and mechanics” section, I chose to assess it as its own category. This is an important difference informed by my hypothesis that the way students use sources—quotes, paraphrases, etc.—in their papers is related to their beliefs about authority and the purpose of writing (and that grammar and mechanics are not). Thus, I believed that papers could be scored low on word choice and clarity and high on source appropriation and integration, or vice-versa. This separation is important because it illustrates different assumptions about how students learn to use sources. Do they learn to leverage sources and weave them in with their own writing as they learn to write clearer sentences? Or, is source integration a skill more closely related to rhetorical thinking, one that may actually lead to sentences that are unclear since students are just learning to speak “the language of the academy”(Bartholomae, 1985) than it is to mechanics and grammatical correctness? (I emphasize this now because it became a key issue, further discussed in Chapter 5.)

Descriptions of the paper categories, as well as characteristics of high and low scoring arguments, are listed below. I provided greater detail about paper scoring in Part 1 of Chapter 5.

TABLE 2| PAPER CATEGORIES AND CHARACTERISTICS

Category	High Score	Low Score
<i>Exigency and Problem Statement</i>	Writer establishes the scope of the problem and provides sources, anecdotes, and/or examples to	The writer presents the issue in a simplistically or superficial way. The writer does not

	illustrate its extent. Writer motivates reader to keep reading by illustrating salience and urgency of issue.	attempt to persuade reader to keep reading or demonstrate the problem.
<i>Audience Awareness</i>	The paper is directed at a specific and appropriate audience identified in the text via direct reference. The writer engages the interest and support of the stated audience through appropriate content and phrasing. The writer uses rhetorical questions, etc.	Paper addresses a “vague public,” and while the writer may ask rhetorical questions or use pronouns that suggest an audience, these are not specifically geared toward a particular audience.
<i>Avoiding Certitude and Generalizations</i>	Writer explains the issue using language in ways that recognize contingency and support statements (besides the central enthymeme) with evidence.	Writer explains the controversy in ways that appears dogmatic, making blanket generalizations that may ring true, but are not grounded in evidence.
<i>Logos</i>	The writer’s main claim and reasons (enthymeme) are generously supported with varied and effective appeals; claims are developed with reasons and with solid evidence of some kind (note that this does not include an evaluation of the quality of the evidence source).	The writer offers little evidence to ground its reasons, but it does not line up to support the reasons. Writer does not give evidence to illustrate reasons, assuming reader will accept claim on faith.
<i>Counterargument</i>	Writer thoroughly and fairly explains the view of the opposition by referencing a source or expert representative that hold competing views. Demonstrates a thorough understanding of this audience’s values, positions, and previous actions.	Writer does not mention alternative views, or mentions them without explication.
<i>Rebuttal</i>	Writer provides reasoned response to the opposition.	Writer does not provide a rebuttal to opposing arguments, or provides only a brief response without explaining common ground.
<i>Source</i>	Writer leverages sources to support	Writer strings together quotes

<i>Integration and Appropriation</i>	key reasons in the argument. Integrates sources alongside each other, doesn't hand over control of the argument to the sources.	to serve as sentences in the paper, allowing them to stand without explanation or integration. And/or allows large blocked quotations to stand in place of writer's narration of his/her argument.
<i>Organization</i>	Writer presents ideas in a way that is easy to follow, creates paragraphs that align behind a main point.	Writer provides no discernable organizational structure; paragraphs present ideas that have not been grouped, more like stream-of-consciousness.
<i>Clarity, Word Choice, Grammar</i>	Writer uses language that is grammatically sound, clear, free of mechanical errors, and appropriate.	Writer's language impairs the reader's understanding of his/her ideas. Mechanical and word choice errors obfuscate meaning. Language is inappropriate for college-level paper.
<i>Source Quality</i>	Sources generally come from reputable news outlets and library databases.	Sources include those from general web searches, websites of questionable credibility (e.g. Wikipedia.)
<i>Number of sources</i>	Count of cited sources, regardless of quality	

Linking scales to writing performance. Once I scored all 90 papers across each of the above components, I collapsed the essay components, identified in the table above, into 4 categories using factor analysis to reduce the data. Then I calculated correlations between students' paper scores across these 4 categories and their scores on the Epistemological Belief Questionnaire and the writing belief scales. Following the correlations, I ran hierarchical linear regressions to determine whether students' epistemological and writing beliefs were predictors of scores on their papers. In

particular, I was interested to understand whether the more rhetorical-type categories, such as audience awareness, avoiding certainty, exigency, and source appropriation could be predicted by students' beliefs about knowledge and writing. I hypothesized that the papers' rhetorical components would be significantly predicted by the Writing Beliefs Scales and subscales of the Epistemological Beliefs Questionnaire that assess views of certainty and reverence for authority. These hypotheses were based on studies of rhetorical writing and epistemological thinking (Charney, Newman, & Palmquist, 1995; Hays, Brandt, & Chantry, 1993) that suggested a link between students' epistemological stances and their writing attitudes and performance.

CHAPTER 4

RESULTS: KNOWLEDGE AND WRITING BELIEFS

This chapter explains my analysis of the scales used to assess students' beliefs about knowledge and writing. First, I present results of factor analysis for both scales, and then I explain how epistemological belief scores changed from the beginning to the end of the semester and by academic classification. Finally, I discuss whether students' scores on the writing belief scales changed across the semester.

Factor Analysis

Schommer's Epistemological Beliefs Questionnaire. Schommer's instrument has been critiqued for its psychometric properties and for the analyses she used in order to identify subscales. When she first created the questionnaire, she gave its 63 items to a group of educational psychologists and asked them to categorize each item into subsets. The result was twelve categories ranging from 2-8 items each. Once she calculated means of each of these categories, factor analysis of the 12 subsets yielded four orthogonal epistemological factors, a structure that has been replicated across multiple studies (Hofer & Pintrich, 1997; Jehng, Johnson, & Anderson 1991; Schommer, 1990, 1993; Schommer & Dunnell, 1992; Schommer, Crouse, & Rhodes, 1992). The categorization of items prior to conducting factor analysis has resulted in critique from other researchers (DeBacker, Crowson, Beesley, Thoma, & Hestevold, 2008; Wood & Kardash, 2002; Wood, Kitchener, & Jensen, 2002), who claim that this step jeopardizes the validity of

the scale, adding another layer of interpretation, which introduces additional potential for error. Subsequent researchers who have used the EBQ and Schommer's 12 *a priori* item categories have found similar 4- or 5-factor solutions in their analyses, all using principal axis factoring with Varimax rotation. However, no researcher has replicated the initial step of item categorization by experts.

Initially, I included all of the items in the factor analysis with hope that I could avoid the methodological critiques that resulted from Schommer's sub-categorization step. This was perhaps an overly optimistic attempt to follow Wood and Kardash's (2002) analyses of the actual items. Following their procedures, I conducted Exploratory Factor analyses on all of the individual items on the scale, using principal axis factoring, with a Promax rotation to allow factors to correlate. The resulting four-factor solution consisted of 23 items, accounting for 37% of variance in the sample. The items together, in addition to each subscale, had unacceptably low reliability with Coefficient alphas for the overall scale at .62, and the subscales ranging from .25 to .58. An analysis using a Varimax rotation, which allowed the factors to correlate, yielded similar results. The differences in my results versus those of Wood and Kardash (2002) are likely due to their modification of the EQB to drop items representing clichés (e.g., "There is nothing certain but death and taxes"), and the addition of 25 items. In addition, their sample of 793 students was over three times the size of mine and included a different population, such as medical and graduate students, as well as a disproportionate number of women.

As a result of the issues described above, I decided to follow the widely used analysis that involved examining the factor structure of the 12 subcategories. The result was a 4-factor structure for both early and late administrations of the scale, which

accounted for 55% of early and 53% of the variance late in the semester, and yielded loading patterns similar for both administrations as well as other studies using the EBQ. Reliabilities for each of the four subscales in the late semester EBQ administration ranged from coefficient alpha .65 to .74. Overall reliabilities for the measure were .85 on the early administration and .81 for later in the semester. All subsequent analyses included the 12 subcategories and 4 factors. No additional analyses were performed on the 63 items.

TABLE 3| EBQ FACTOR LOADINGS

Subcategory	Early Late	Quick learning	Omniscient authority and Truth	Simple, Attainable Knowledge	Impatience with Ambiguity
Can't learn how to learn	Early Late	.65 .64	-.11 .05	.08 -.09	.00 .07
Success is unrelated to hard work	Early Late	.69 .72	.24 .00	.05 .27	-.26 -.28
Learning happens the first time	Early Late	.60 .58	.04 -.07	-.11 .01	.24 .34
Learning is quick	Early Late	.68 .62	.07 .29	.14 -.01	.15 .17
Don't criticize authority	Early Late	.17 .16	.69 .70	.19 .25	.21 .09
Knowledge is certain	Early Late	.00 .04	.80 .82	-.05 -.08	.02 -.03
Seek single answers	Early Late	-.06 -.10	.35 .27	.48 .63	.28 .07
Depend on authority	Early Late	-.06 -.08	-.07 -.04	.80 .65	.12 .20
Ability to learn is innate	Early Late	.28 .34	.15 .01	.74 .66	.06 .20
Avoid ambiguity	Early Late	-.03 -.06	.34 .41	.24 .33	.68 .58
Avoid integration	Early Late	.00 -.03	.26 .28	.21 .27	.43 .39
Concentrated effort is a waste of time	Early Late	.43 .39	-.20 -.13	-.05 .01	.68 .71

Writing Beliefs Inventory. To assess students' beliefs about writing, I used White and Bruning's (2005) Writing Beliefs Inventory. Unlike the Epistemological Beliefs Questionnaire, this scale had only been used in one prior study. However, its psychometric properties seemed strong, and it contained only 15 items, which was a consideration given that the EBQ was rather long at 63 items. After pilot testing the original WBI on my own students, and enlisting colleagues to administer the scale in their classes, I found that the initial results had unacceptably low reliability and did not replicate the two-factor structure presented in White and Bruning's original study. This failure to replicate the prior factor structure will be discussed further in Chapter 6 but, generally, the measure had only been used in one study prior to mine, and it was created with a different population of college students compared to the current study.

To address the low reliability and lack of consistent factor loadings, I modified the scale to include items that assessed beliefs relevant to rhetorical writing, as the classes in my study were rhetoric and writing courses. I wrote these items based on a class discussion I had with my students and by consulting three veteran rhetoric and writing instructors. The original White and Bruning (2001) scale, and my revised version, are presented in Appendix B.

I approached the 12-item modified writing beliefs inventory and conducted a principal component factor analysis with an oblique rotation (Varimax). The scree plot indicated a three-factor solution, so I reran the analysis to extract three factors. I dropped one item that was cross-loading ("A primary goal of writing should be to have to make as few changes as possible"). Overall reliability of the 11-item scale was unacceptably low, coefficient alpha=.52, but reliability coefficients for the 3 extracted factors ranged from

.70 to .72. This indicated that perhaps the scale was actually operating as three separate scales with correlated factors. Factor loadings for both the early and late semester administration of the writing beliefs inventory are presented in the Table below. Due to the overall low reliability of the overall scale, subsequent analyses treated this scale as three separate measures, as explained below:

TABLE 4 | FACTOR LOADINGS FOR THREE WRITING BELIEF SCALES

Item	Time	Writing as a product	Writing is authority-based	Writing should avoid disagreement
When I write a paper, I try to imagine who will be reading it.*	Early	.63	-.24	.00
	Late	.71	-.08	-.09
Compared to other students in my year, I am a good writer.*	Early	.48	.09	-.03
	Late	.51	-.04	.06
Writing helps me better understand what I am thinking about.*	Early	.74	.09	.11
	Late	.77	.11	-.10
Writing requires going back over it to improve what's been written.*	Early	.54	.11	.07
	Late	.56	.17	.05
When I write a paper or essay, I think about readers who might disagree with my opinion.*	Early	.71	-.05	-.13
	Late	.64	-.19	.13
Good writers include a lot of quotes from authorities in their writing.	Early	-.07	.78	.07
	Late	-.16	.73	.05
The key to successful writing is accurately reporting what authorities think.	Early	.06	.81	.13
	Late	.04	.79	.14
Writing should focus around the information in books and articles.	Early	.11	.69	-.05
	Late	.09	.74	-.04
In order to persuade me, writers should stick to one side of the issue.	Early	.07	.00	.74
	Late	-.06	-.01	.77
I try to stick only to my opinion and not present too many sides of an issue when I'm writing.	Early	.07	-.04	.82
	Late	.14	-.03	.74
Writers who include opinions that disagree with their own weaken argument.	Early	.07	.21	.75
	Late	.13	.23	.72

**These items were reverse-scored to align with the directionality of other scales.*

Once I determined that the factor loadings on the Writing Beliefs Scales were similar across the semester, I reviewed the item groupings and named each (sub)scale after considering the phenomenon common across all items in that grouping. The resulting scales are presented below:

TABLE 5 | WRITING BELIEF SCALES DESCRIPTION

Scale Name	Sample Item	High Score Interpretation
Writing as Product	<i>Writing requires going back over it to improve what's been written. (Reverse-Scored)</i>	Views writing as task unrelated to learning, does not consider audience when writing
Writing as Authority-Based	<i>The key to successful writing is accurately reporting what authorities think.</i>	Views writing as mainly reporting on authorities' views
Writing as Avoiding disagreement	<i>Writers who include opinions that disagree with their own weaken their argument.</i>	Views persuasive writing as presenting certain view without considering counterarguments; avoiding disagreement

Change in Epistemological Beliefs across the Semester

Analyses of the Epistemological Beliefs Questionnaire addressed the following research questions:

- Did students' epistemological beliefs change over the course of the semester?
- Did freshmen students experience changes in their epistemological beliefs different from their classmates?

In order to determine whether students' scores on the epistemological beliefs scale had changed over the course of the semester, I ran a 2x2 repeated-measures ANOVA on students' early- and late-semester scores on the overall EBQ. In addition to time as a within-subjects factor (early vs. late semester), academic classification was a

between-subjects factor, with two groupings of students: one that just included freshmen (n=165), and the other group containing all other students (n=79).

TABLE 6| REPEATED MEASURES ANOVA ON OVERALL EBQ: EARLY TO LATE IN THE SEMESTER AND BY ACADEMIC YEAR

	df	Mean Square	F	Sig.
<i>Between-Subject Effects</i>				
<i>Intercept</i>	1	4690.13	88957.18	.00*
<i>Freshmen vs. Others</i>	1	.121	2.30	.13
<i>Error</i>	242	.05		
<i>Within-Subjects Effects</i>				
<i>Time</i>	1	13.04	138.09	.00*
<i>Time*Freshmen or Others</i>	1	.33	3.47	.06
<i>Error</i>	242	.09		

*p<.01

Results indicated a significant main effect for early-semester versus late-semester EBQ scores $F(1,242)=138, p<.01$. There was not a significant interaction effect between academic classification and students' scores on the EBQ.

It is helpful to know that students' scores changed significantly from early to late in the semester, which indicated a movement toward a more constructed, contingent view of knowledge and learning. However, I also wanted to understand whether the individual subscales about learning, authority, certainty, and ambiguity changed from the early to late administrations of the scale. I followed up by running a repeated-measures MANOVA on the four subscales of the EQB with the same factors of time and academic classification. These steps addressed the following hypotheses:

- Undergraduates' epistemological beliefs from early to late in the semester will be significantly different, with their later-semester scores reflecting a more sophisticated epistemology.

- First-year students will have a significantly greater shift in scores compared to their more advanced (sophomore, junior, and senior) RHE 306 classmates.

TABLE 7| REPEATED MEASURES MANOVA ON EBQ SUBSCALES:
EARLY TO LATE IN SEMESTER, ACADEMIC YEAR

Source	Measure	df	Mean Square	F	Sig.
<i>Between-Subjects</i>					
<i>Intercept</i>	Fast learning	1	5516.78	37081.33	.00
	Authority	1	3942.46	57342.09	.00
	Certain Knowledge	1	4824.10	28318.59	.00
	Impatience with Ambiguity	1	4498.15	42615.04	.00
<i>Freshmen vs. Others</i>	Fast Learning	1	.01	.09	.77
	Authority	1	.22	3.19	.08
	Certain Knowledge	1	.49	2.90	.09
	Impatience with Ambiguity	1	.03	.33	.57
<i>Error</i>	Fast Learning	241	.15		
	Authority	241	.07		
	Certain Knowledge	241	.17		
	Impatience with Ambiguity	241	.11		
<i>Within-Subjects</i>					
<i>Time</i>	Fast Learning	1	35.29	294.53	.00*
	Authority	1	.82	3.42	.07
	Certain Knowledge	1	31.52	219.92	.00*
	Impatience with Ambiguity	1	4.43	21.60	.00*
<i>Time*Freshmen or Others</i>	Fast Learning	1	.05	.38	.54
	Authority	1	.36	1.50	.22
	Certain Knowledge	1	.00	.03	.87
	Impatience with Ambiguity	1	1.63	7.95	.00*
<i>Error (time)</i>	Fast Learning	241	.12		
	Authority	241	.24		
	Certain Knowledge	241	.14		
	Impatience with Ambiguity	241	.21		

*p<.01

Results indicated a significant decrease from early- to late-semester in beliefs about Fast Learning, Certain Knowledge, and Impatience for Ambiguity. Means and standard deviations for time and academic classification are reported in the tables below. Recall that high scores reflect a more absolutist epistemology, whereas a low score indicates a view of contingent knowledge, questioning authority, and learning as flexible.

TABLE 8| EPISTEMOLOGICAL BELIEF QUESTIONNAIRE SCORES: EARLY AND LATE SEMESTER

Time	Measure	Mean (SD)	Sum of Squares	df	F	Sig.
Pre	Fast Learning	3.88 (.39)	35.29	1	294.53	.00*
Post	Fast Learning	3.31 (.34)				
Pre	Authority	3.07 (.40)	.82	1	3.42	.07
Post	Authority	2.99 (.38)				
Pre	Certain Knowledge	3.62 (.42)	31.52	1	219.92	.00*
Post	Certain Knowledge	3.08 (.37)				
Pre	Impatience	3.32 (.40)	4.43	1	21.59	.00*
Post	Impatience	3.16 (.40)				

*Significant at p<.01

TABLE 9| EPISTEMOLOGICAL BELIEFS QUESTIONNAIRE SUBSCALES INTERACTION: TIME BY ACADEMIC CLASSIFICATION

Subscale	Academic Year	Pre mean (SD)	Post mean (SD)	Sum of Squares	DF	F	Sig.
Fast Learning	Freshmen	3.87 (.40)	3.31 (.34)	.05	1	.38	.54
	Others	3.90 (.38)	3.30 (.34)				
Authority	Freshmen	3.03 (.39)	3.00 (.70)				

	Others	3.14 (.40)	2.99 (.45)	.36	1	1.50	.22
Certainty	Freshmen	3.60 (.42)	3.01 (.37)				
	Others	3.67 (.43)	3.12 (.35)	.01	1	.03	.87
Impatience	Freshmen	3.27 (.39)	3.20 (.41)				
	Others	3.42 (.39)	3.09 (.37)	1.63	1	7.95	.01*

*p<.01

Next, I conducted post hoc tests to understand the nature of the significant interaction between time and academic classification on the Impatience subscale. These paired-sample t-tests are reported in the table below:

TABLE 10 | POST HOC TEST OF IMPATIENCE SUBSCALE

Class	Time	Mean (SD)	Standard Error Mean	N	Sig.
<i>Freshmen</i>	Pre	3.28 (.39)	.03		
	Post	3.20 (.42)	.03	165	.15
<i>All others</i>	Pre	3.42 (.39)	.04		
	Post	3.09 (.37)	.04	79	.00*

*p<.01

As illustrated in the table above, results indicated that the group of non-freshmen experienced a significant shift in their Impatience scores from early to late in the semester. The freshmen did not experience a significant change on their Impatience scores. At pre-test, the freshmen were significantly less impatient than their sophomore, junior, and senior classmates, $t(315)=2.85, p<.05$. However, at post-test, the freshmen

were more impatient than their classmates, $t(242)=2.02$, $p<.05$, as detailed in the table below:

TABLE 11| IMPATIENCE SCALE DESCRIPTIVE STATISTICS

Time in Semester	Academic Year	N	Mean (SD)	Standard Error of the Mean
<i>Early Impatience</i>	Freshmen	207	3.27 (.39)	.03
	Others	110	3.40 (.40)	.04
<i>Late Impatience</i>	Freshmen	165	3.20 (.42)	.03
	Others	79	3.09 (.37)	.04

Change in Writing Beliefs across the Semester

The research questions guiding analyses of the writing belief scales included:

- Did students' writing beliefs change over the course of the semester?
- Did freshmen students experience changes in their writing beliefs different from their classmates?

In order to determine whether students' writing beliefs had changed over the course of the semester, I conducted a 2x2 repeated-measures MANOVA. The independent variables included time and academic classification, and the dependent variables were each of the three writing beliefs scales. I chose to treat the assessment of writing beliefs as three separate scales because the reliability of the measure overall was low, indicating that each scale was assessing a different type of writing belief. Recall that I pilot-tested White and Bruning's (2005) Writing Beliefs Inventory and found that it did not have a good factor structure or reliability among rhetoric and writing students (Appendix B). Therefore, I deleted some items and added new ones. In doing so, I may have altered

White and Bruning’s scale to the point that I created three new ones with better reliability than the scale as a whole for the population of RW 101 students ($\alpha = .50$ to $.55$ for entire scale; $\alpha = .64$ to $.75$ for each factor). Instead of assessing general beliefs about writing, the new scale assessed students’ beliefs about *rhetorical* writing. As a result, I chose to treat these three “subscales” as individual scales.

TABLE 12| WRITING SCALES DESCRIPTIVE STATISTICS:
TIME AND ACADEMIC YEAR

Scale	Academic Year	Early Mean (SD)	Late Mean (SD)
<i>Writing as a product</i>	Freshmen (n=164)	1.50 (.62)	1.38 (.67)
	Others (n=78)	1.41 (.57)	1.23 (.55)
	Total (n=242)	1.47 (.61)	1.33 (.64)
<i>Writing as authority-based</i>	Freshmen	2.65 (.82)	2.64 (.76)
	Others	2.62 (.70)	2.52 (.76)
	Total	2.63 (.78)	2.60 (.76)
<i>Writing should avoid disagreement</i>	Freshmen	2.62 (.86)	2.43 (.90)
	Others	2.39 (.79)	2.28 (.80)
	Total	2.55 (.84)	2.38 (.86)

TABLE 13| MANOVA RESULTS FOR WRITING BELIEF SCALES:
TIME, ACADEMIC YEAR, AND INTERACTION

Source	Measure	df	Mean Square	F	Sig.
<i>Between-Subjects</i>					
<i>Intercept</i>	Product	1	806.18	1281.49	.00*
	Authority-based	1	2873.05	3232.93	.00*
	Avoid Disagreement	1	2502.71	2279.60	.00*
<i>Freshmen vs. Others</i>	Product	1	1.59	2.52	.11
	Authority-based	1	.69	.77	.38

	Avoid Disagreement	1	3.79	3.45	.06
<i>Error</i>	Product	240	.62		
	Authority-based	240	.89		
	Avoid Disagreement	240	1.10		
<i>Within-Subjects</i>					
<i>Time</i>	Product	1	2.16	14.89	.00*
	Authority-based	1	.31	1.02	.07
	Avoid Disagreement	1	2.40	6.79	.01*
<i>Time*Freshmen or Others</i>	Product	1	.08	.57	.45
	Authority-based	1	.25	.84	.36
	Avoid Disagreement	1	.17	.47	.50
<i>Error (time)</i>	Product	240	.15		
	Authority-based	240	.30		
	Avoid Disagreement	240	.35		

*p<.05

Results indicated a significant main effect for the early vs. late semester administrations of two out of the three writing belief scales. Students' beliefs of the product-based nature of writing did change over the semester, with post-test scores indicating a view of writing as a communication to an audience and accepting revision as an integral part of the process. Also significant was the change in students' beliefs about disagreement and the value of acknowledging multiple perspectives in their writing. Late in the semester, students were more likely to report appreciating disagreements and multiple perspectives. There was not a significant main effect for academic classification, and the interaction of early versus late semester with academic classification did not yield significant effects across any of the three scales.

Scores reflecting students' ideas about the role of using authorities' views in their writing did not change significantly across the course of the semester. The three items on the "Report Authority" scale assessed the extent to which students believe that good

writing involves accurately reporting authorities' views and including direct quotations in their papers. Although RW 101 emphasizes students' ownership of knowledge, there was a strong emphasis on source use, correct citation format, and avoiding misrepresenting sources through fallacies like creating a straw man. It might be the case that stressing citation formats and source use, while important, impinged on the students' sense of ownership and appropriation of their writing.

CHAPTER 5

RESULTS: ANALYSES OF STUDENT ESSAYS

This chapter presents my analyses of students' final papers for the RW 101 course. Part One presents the scoring procedures of the papers and analyses regarding the relationships between the quality of students' papers and their beliefs about writing and knowledge. Part Two provides "mini-portraits" of individual students that include information about their majors, year in school, scale scores, and excerpts from their papers.

Part One: Quantitative Analysis of Students' Papers

My goal in this stage of the analyses was guided by the following research questions:

- As a group, how did students' papers score across rhetorical and non-rhetorical components?
- To what extent were the writing and knowledge belief scales predictive of the paper scores?
- Did students with a more relativistic view of knowledge have fluency difficulties and thus score lower on the word choice component of their papers?
- Were there any trends in the papers that were successful? Unsuccessful? What was the nature of these trends?
- To what extent were paper categories related to one another?

Once I had analyzed students' scores on the epistemological beliefs and writing beliefs scales, I turned my attention to the student papers that I collected from participating classes. I first went through the papers and retained only those from consenting students who had also completed the late-semester administration of the

scales. I reviewed the papers again, setting aside those that were responses to a non-proposal argument assignment prompt. This was necessary because two of the instructors had given students the choice to write either a proposal argument or a rhetorical analysis for their final paper. Another one offered students the option to create a multimedia project (website) as their final paper. I decided not to analyze these projects alongside the traditional proposal argument papers because doing so would contribute additional error variance into my analyses. My focus for the analyses described in this chapter include the 90 proposal arguments that, once matched to each student's corresponding late semester scale scores, were de-identified.

Modifying a rubric to score the papers. As described in Chapter 3, I used the Primary Trait Scoring guide that had been used in prior research and program evaluations (Charney, 2008). I chose this rubric because it contained categories for multiple components of the paper, as well as rich descriptions of exemplars in each category. Additionally, this scoring system had been used in the most recent evaluation of the RW 101 course, at which time it was presented to faculty members in the Rhetoric and Writing department for their feedback regarding the validity of the categories. Also, in my work with the department's most recent program assessment, I had trained raters to score papers using these components. Thus, I was familiar with the scoring guide and it aligned with my own understanding of the goals of the proposal argument assignment. Charney's (2008) original paper categories are listed in the table below:

TABLE 14| ORIGINAL PAPER SCORING CATEGORIES AND DESCRIPTIONS

Category	To what extent does the writer:
Statement of Problem	Demonstrate the scope and context of the problem? Take on a clear and arguable position about the position/controversy?
Solution	Describe the feasibility of the solution proposed in the paper?
Evidence	Use reasons and evidence to support claims?
Rebuttal	Acknowledge and consider, and fairly represent the opposition?
Structure	Present the argument in a format that follows and discernable and persuasive plan or pattern?
Source Integration	Maintain control of the argument while leveraging sources to support it?
Audience Awareness and Appropriateness	Address a specific audience in an appropriate, persuasive way?
Mechanics, usage, and documentation	Is the language clear, precise, and easy to follow? Does the writer properly document the sources she used in the paper?

I scored 25 papers across the categories mentioned above, maintaining a log of insights and issues I experienced during the process (Strauss & Corbin, 1990). After scoring these initial 25 papers, I studied my log and reconsidered the scoring system. One of the most challenging components of the scoring process was maintaining orthogonality among the categories; it was difficult for me to separate the writers' use of evidence from their source appropriation and their use of certain language. This is likely due to the natural interaction among all of these components to create an overall argument and my experience responding to student writing as an instructor via comments, student conferences, and writing center sessions. In terms of confounding categories, some writers presented claims and reasons that were well supported, but would make generalizations in other components of their papers or use certain language to contextualize the topic of controversy. Further, I found myself with questions for each

writer, as I would for students in office hours or writing center consultations, and as a result I sometimes struggled in scoring each component and moving on.

In an effort to lessen these difficulties, I modified the original scoring guide to account for additional categories and maintain a clearer distinction among them. Specifically, I added assessments of writers' sense of urgency, approach to rebuttal, and use of certain language, as well as the number and quality of sources used in the proposal arguments. I omitted the "solution" category because almost all of the papers responded to assignments that encouraged them to explore the controversy and explain the problem—only one of the initial 25 papers explained feasibility, and these papers came from one specific instructor who emphasized this aspect of the assignment. I also omitted the "source documentation, mechanics, and usage" category and replaced it with categories to account for the quality and number of sources that the students used in the arguments. In the initial scoring I noticed that writers varied on the quality of sources and the number that they integrated in the paper, likely due to ways that their instructors had customized the assignment for their classes. I was curious to understand whether the requirement of more sources, or higher quality sources, may relate to performance in the other components of the papers. Finally, unlike the program evaluation on which this rubric was based, I was not interested in whether the students followed traditional citation conventions, so the categories of "source use and integration" and "clarity and word choice" replaced the broad "source documentation, mechanics, and usage" category. "Structure" was renamed "organization" to distinguish it from the coordination of claims and evidence assessed in "logos." The final categories, means, and standard deviations are listed in the table below:

TABLE 15 | REVISED SCORING GUIDE FOR PAPER ASSESSMENT

Category	Description <i>To what extent does the writer:</i>	Mean (SD)
Exigency	Motivate the reader to keep reading? Demonstrate the scope and context of the problem? Take on a clear and arguable position about the position/controversy?	3.68 (1.08)
Audience Awareness and Appropriateness	Address a specific audience in an appropriate, persuasive way? Aware of an audience or readers?	2.33 (1.08)
Logos	Make a clear claim and use reasons and evidence to support claims?	3.51 (.97)
Avoid Certitude and Generalizations	Does the writer come across as fair-minded? Does the writer qualify statements and acknowledge uncertainty in the proposal, or come across as narrow-minded?	3.22 (1.24)
Source Integration	Maintain control of the argument while leveraging sources to support it?	3.22 (1.24)
Counterargument	State, acknowledge, consider, and fairly represent the opposition?	2.91 (1.26)
Rebuttal	Respond to opposing arguments in a clear, reasonable way that demonstrates understanding?	2.93 (1.25)
Organization	Are paragraphs organized and organized in a readable, follow-able, consistent way that is free of tangents?	3.56 (1.03)
Source Quality	Are references selected from reputable sources such as the library databases and news sources? (versus general web searches and Wiki)	3.97 (1.08)
Number of Sources	Count of sources cited in paper and/or listed on works cited page.	6.51* (2.8)
Paper length	Number of pages not including works cited	6.78* (.83)
Clarity and Word Choice	Is the language appropriate and clear in a way that makes it easy to follow the writer's ideas?	4.00 (.85)
Paper Mean	Excludes the "number of sources" category	3.32 (.68)

**Number of sources and pages were count scores standardized for subsequent analyses*

As illustrated in the table above, the students' papers were generally clear and readable, with few mechanical, grammatical, or word choice errors that obscured their arguments. Scoring within this clarity component was somewhat restricted because all of

the papers were from students who gained admission into the university, thus they all had good high school GPAs, with the majority from Texas graduating in the top 10% of their classes high school, and solid test scores. The skill of writing a readable sentence was a prerequisite for acceptance to the university. Additionally, the narrow range of scores within the clarity category may be due to these papers representing students' second submissions of their arguments. RW 101 emphasizes multi-drafting, so students had already turned in, and received instructor feedback on, first submissions prior to turning in their final papers.

Other components with relatively large variation included the quality of students' counterarguments and rebuttals. Reflecting on my own experiences with students' rhetorical writing in my writing center work as well as in my own classes, I remembered that instructors' emphasis and instruction on counterarguments and rebuttals is often highly variable. Some instructors, for instance, are satisfied with students simply acknowledging that a counterargument exists. Others push students to articulate the oppositions' viewpoints and provide a meaningful rebuttal, which can often span multiple pages in their proposal arguments.

In addition to accounting for variation in students' counterargument and rebuttal scores, instructors likely influenced the number and quality of sources. Although the assignment stated a minimum number of references that students should use, some instructors chose to increase the quantity of required sources to as high as 10. Similarly, instructors likely held different standards regarding the quality of sources that students were permitted to use in their papers. In my work with this course and its instructors, I have noticed that some assignments allow students to use sources from general web

searches and sites like Wikipedia, whereas other instructors restrict students to use only sources through the library databases and/or .edu or .gov sites. Thus, instructors' standards as stated in the assignment prompt and through feedback on the students' initial (first) paper submissions likely contributed to variance on number and quality of sources.

In my analyses, presented in the following section, I sought quantitative trends in component scores, as well as potential links between these scores and students' epistemological and writing beliefs.

Relationships between paper components. My focus during these steps of the analyses was to establish a qualitative understanding of rhetorical and clarity components of the students' proposal arguments. However, as I coded and re-coded the papers, I noticed relationships between the paper categories, which prompted me to consider collapsing the 11 categories. Therefore, in order to organize my analyses of the paper categories, I first present a correlation table to demonstrate the way components of the papers may be related:

TABLE 16 | CORRELATIONS BETWEEN PAPER COMPONENTS

	Aud Exig	Aud Aware	Logos	Avoid Cert.	Source Integ.	Count Arg	Re- but	Org	Source Quality	Clarity
Exigency and Problem Statement	-									
Audience Awareness	.45**	-								
Logos	.41**	.46**	-							
Avoid Certitude	.34**	.34**	.61**	-						
Source Integration and Approp- riation	.30**	.30**	.42**	.43**	-					
Counter- argument	.26*	.34**	.41**	.43**	.33**	-				
Rebuttal	.29**	.31**	.42**	.46**	.36**	.96**	-			
Organization	.37**	.14	.44**	.36**	.40**	.27**	.26*	-		
Source Quality	.03	.14	.23*	.26*	.15	.05	-.01	.21*	-	
Word Choice and Clarity	.21*	.09	.48**	.34**	.29**	.26*	.27*	.47**	-.13	-
Number of Sources	-.05	-.01	-.08	-.01	.09	-.10	-.10	-.01	.45**	-.28*

*p<.05; **p<.01

Prior to calculating correlations between the paper elements, I first standardized their scores in order to allow for comparison of the “number of sources” component, which was not scored on a 1-5 scale. As indicated in the correlation table, many components of the paper were significantly related to others. For instance, papers that were more exigent also tended to be more audience aware and have a clear statement of

thesis (logos). The quality of source integration was also related to the logos component in addition to the writers' tendencies to avoid certainty and broad generalizations. Also notable is the negative relationship between the quantity of sources students included in their papers and the clarity of the paper. Thus, the more sources that students referenced in their papers, the less likely their paper scored high on word choice and readability.

Data reduction procedures for paper components. In the following step, I worked to reduce the 11 paper components into several broad categories to facilitate subsequent analyses. To do this, I conducted exploratory factor analysis on the 11 paper components. The categories of source quality, counterargument, and rebuttal were interfering with a clean grouping of factors, thus I removed “source quality” and re-ran the analysis. Then, as the counterargument and rebuttal categories continued to disrupt a clean factor structure, I removed them from the analysis and opted to include them as a category on their own. The resulting scree plot suggested a three-factor solution, so I confined the results to three factors which, taken together, accounted for 72% of the variance in scores across these components (Principal Component Analysis; Varimax rotation). Factor loadings are listed in the table below:

TABLE 17| FACTOR LOADINGS FOR PAPER COMPONENTS

Component	Factor		
	1	2	3
Exigence	.11	.31	.87
Audience Awareness	.49	-.21	.70
Logos	.74	.33	.28
Avoid Certainty	.84	.18	.11
Source Integration and Appropriation	.60	.29	.18

Organization	.18	.82	.26
Word Choice Clarity	.35	.75	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization

Based on these groupings, along with my own understanding of the paper components and feedback from the four raters who scored the papers to establish inter-rater reliability, I named each of the factors. Grouping names, along with their means and standard deviations, are reported in the table below:

TABLE 18 | PAPER COMPONENTS GROUPED INTO CATEGORIES

Broad Category	Components	Mean (SD)
Clarity	Organization	3.72
	Word Choice	(.85)
Opposition	Counterargument	2.92
	Rebuttal	(1.24)
Motivation	Exigence	3.02
	Audience awareness and appropriateness	(.91)
Support	Source integration	3.32
	Avoiding certitude	(1.01)
	Supporting claim with reasons	

Once the categories were established, I calculated correlations to understand their relationships to one another and to prepare for the regression calculations. These results are presented in the table below:

TABLE 19 | CORRELATIONS BETWEEN PAPER CATEGORIES

Broad Category	Clarity	Opposition	Motivation	Support
Clarity	-			
Opposition	.30**	-		
Motivation	.29**	.35**	-	
Support	.52**	.42**	.45**	-

**p<.01

As indicated in the chart above, each of the paper categories was significantly correlated with the others, $r=.29-.52$. The correlations were not so high as to indicate issues of multicollinearity. Thus, the four general category scores were used in the following analyses to determine the relationship between students' knowledge and writing beliefs and their rhetorical writing.

Relationships between proposal argument papers, beliefs about writing, and beliefs about knowledge. My goal at this final stage of the quantitative analysis was to explore the nature of the relationship between students' self-reported beliefs about knowledge and writing and the quality of their proposal arguments. I started by calculating correlations between the 4 paper categories, 4 EBQ subscales, and 3 writing beliefs scales. The results are presented in the following chart:

TABLE 20 | CORRELATIONS BETWEEN LATE-SEMESTER SCALE SCORES AND PAPER COMPONENTS

	Paper Clar	Paper Opp.	Paper Aud	Paper Supp	EBQ Fast	EBQ Om Aut	EBQ Imp	EBQ Cert	WB Aut	WB Dis
Paper Clarity	-									
Paper Opposition	.30*	-								
Paper Audience	.36*	.40*	-							
Paper Support	.51*	.50*	.45*	-						
EBQ Fast Learn	-.02	.15	-.06	.09	-					
EBQ Omniscient Auth	-.04	-.08	-.14	-.04	.40*	-				
EBQ Impatience	-.10	.14	-.02	-.01	.69*	.50*	-			
EBQ Certain Knowledge	-.03	.10	-.05	.02	.31*	.30*	.26*	-		
WB Auth Based	-.08	-.01	-.06	-.02	.11	.30*	.24*	.15*	-	
WB Avoid Disagreement	-.17	-.15	-.16	-.23*	.14*	.20*	.23*	.03	-.15*	-
WB Product	.03	-.10	.10	.15	.30	.06	.09	-.09	-.02	.15*

*p<.05

The four paper categories were positively correlated with one another, with coefficients ranging from .30-.51. Relationships between the category assessing support (providing reasons and evidence in support of one’s argument) and the other categories seemed particularly high. The paper scores were not significantly correlated with any of the Epistemological Beliefs Questionnaire subscales. Only one of the writing belief scales was significantly correlated with a paper category, and the coefficient was small.

Students who reported avoiding disagreement and competing views in their writing tended to have proposal arguments that lacked supporting evidence.

Although the correlations between the paper scores and scale responses were generally not significant, I proceeded to create regression equations predicting paper performance from students' beliefs about knowledge and writing. My hope was that the scale components would function together to account for variance in the paper scores. Thus, I calculated three regression equations, with scale scores as independent variables and paper quality as the dependent, predicted variable.

How did scores on the overall EBQ and each of the three writing beliefs scales predict overall paper quality? The result of this regression was not significant, indicating that the writing and knowledge belief scales were not working to account for a significant amount of variance in the overall paper scores ($R^2=.05$).

TABLE 21 | REGRESSION PREDICTING PAPER SCORES FROM BELIEF SCALES

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.17	.87		3.63	.00
	EQB Mean	.22	.26	.10	.83	.41
	WB Authority-Based	-.02	.10	-.01	-.16	.87
	WB Avoid Disagreement	-.18	.10	-.22	-1.84	.07
	WB Product	-.03	.12	-.03	-.25	.80

How were students' beliefs about authority and certain knowledge, along with their avoiding disagreement when writing, predictive of their paper opposition scores?

None of the three scales included in this equation was a significant predictor of scores on students' management of opposition in their papers ($R^2=.04$).

TABLE 22 | REGRESSION PREDICTING PAPER MANAGEMENT OF OPPOSITION FROM SELECTED SCALES

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.94	1.22		2.40	.02
	WB Avoid Disagreement	-.18	.17	-.12	-1.06	.29
	Omniscient Authority	-.32	.38	-.10	-.84	.40
	Certain Knowledge	.44	.36	.14	1.21	.23

How did beliefs in certain knowledge, product-focused writing, and the tendency to avoid disagreement while writing predict paper clarity and organization?

The purpose of this regression was to determine whether students' beliefs may predict paper clarity, perhaps even in a negative direction. Prior studies of academic enculturation have suggested that there are clarity consequences to epistemological growth, resulting in stages where writers are less fluent with their new, more complex thoughts (Berkenkotter et al, 1991; Curtis & Herrington, 2008 ; Penrose & Geisler, 1994).

The resulting R^2 was .03, and none of the three predictors were significant, as illustrated in the table below:

TABLE 23 | PREDICTING PAPER CLARITY FROM WRITING BELIEF SCALES AND BELIEF IN CERTAIN KNOWLEDGE

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.73	.90		5.27	.00
	Writing should Avoid Disagreement	-.14	.12	-.14	-1.24	.22
	Certain Knowledge	-.19	.25	-.09	-.75	.46
	Writing is a Product	-.01	.14	-.01	-.09	.93

Part Two: Contextualizing Students' Beliefs and Academic Writing

In this section I present mini-portraits of individual students, their knowledge and writing beliefs, and excerpts from their papers. Although quantitative analyses did not support a consistent relationship between belief scale scores and students' proposal argument papers on a group level, a qualitative approach suggested ways that, at the individual level, students' beliefs may have related to their persuasive writing. In the sections that follow, I present passages from students' papers to illustrate writing performance across scoring categories.

Recognizing and motivating the audience. Recall that this category assessed the extent to which students demonstrated the context and importance of their chosen controversy in their essays. In addition to a thorough explanation of what was at stake, papers were also scored on whether they adequately motivated their readers. The course

curriculum emphasized that readers were not guaranteed, and that it was the writer's responsibility to lure them to continue reading by explaining how the chosen issue affects them, or is at least worth reading about. The following student, freshman economics major "Alan," wrote a proposal in favor of physician-assisted suicide, with the caveat that the practice should be highly regulated. This was his introduction:

Life. It is such a precious and delicate thing that we possess. The creation of life, in the physical sense has always seemed more captivating and less understood than the end of life. Although humans don't know what lies on either side of life, it is an obvious understanding that since humans, to the best of our knowledge, here in this existence can only experience life, it is a gift and one that should not be weighted and judged lightly. The business of maintaining life has always been a profession needing little justification. Today medicine has advanced and many new technologies postpone human mortality.

The vague, roundabout introduction continued for the entire first page, which made it difficult to understand his argument's purpose. As a result, his paper scored a 2 in the problem statement and exigency category. Alan did eventually explain the problem two pages later, but he did not do it in a way that animated the issue for the audience.

Notably, Alan scored very well on the components of logos, avoiding certainty, counterargument, and source quality (received a 4 out of 5). Components on which he scored lower included audience awareness and counterargument, indicating that he may have approached this paper as a traditional research assignment, assuming that the audience, the teacher, would continue to read regardless of appeals. Although Alan did use personal pronouns (we, our), the paper did not address or even suggest a specific audience.

In terms of his score on the writing and knowledge beliefs scales, Alan's responses indicated that he viewed writing as a process, and he viewed authorities as

resources in addition to appreciating multiple perspectives and disagreement. His scores on all four scales indicated a view of contingent knowledge (2.89) and appreciation of multiple perspectives in writing (1.02) at least one standard deviation more “sophisticated” compared to the other students.

“Larry,” a freshman liberal arts major, submitted a paper about children forced to fight in Uganda that contained a similarly vague introduction that lacked exigency and reader motivation:

There are many external factors in the world today that people claim are hindering children. Some believe issues such as world hunger, poverty, and disease seem to be the only problems associated with children today. The media shows daily events that affect us in our everyday life, but fail to portray the full scope of what is going on around the world. The removal of certain stories has caused a naïve society in which members of the society only give notice to issues which involve them.

Similar to Alan, Larry eventually stated a claim and supported his ideas with reasons and grounds (scoring a 3 on supporting his ideas with evidence). Both writers seemed to struggle to situate their arguments and contextualize the issue during their introductions. However, unlike Alan, Larry’s scale responses indicated a more simple, absolutist view of knowledge and writing to report authorities’ ideas, both one standard deviation higher than the means.

These “funnel introductions” (Holding, 2005) have been a common theme among students’ personal essays and research writing (Larson, 1982). A funnel introduction refers to the student approaching the topic, and attempting to lure in a reader, with an excessively broad contextualization of the essay topic. In this way, funnel introductions often have a “since the dawn of time” message, and do little to focus the writer and reader

on the issue at hand. In the case of Alan and Larry, both students initially presented vague, broad explanations of the issues on which they wrote. For Alan, his paper about physician-assisted euthanasia began with a paragraph about the mystery and sanctity of life. Larry introduced his topic from a similarly expansive perspective, using a full page to discuss world hunger and lack of media coverage before presenting the problem of children forced to fight in Uganda as “soldiers.” This is not to say that Larry and Alan were bringing in issues unrelated to their topics; instead, they began at such a broad level that it may have been difficult to get to their main proposals within the span of the short paper.

This opening paragraph from Eric, a freshman computer science major, attempted to situate the problem of overworked (and gruff) parking employees by historicizing campus parking problems. In doing so, he opened with an overly broad generalization about the cause of parking problems on campus, though it only lasted for one sentence:

Once, the HU campus had more than enough parking spaces, but then Henry Ford invented the automobile and the problem of parking shifted into high gear. Year after year the number of parking spaces on the campus streets has decreased while the number of students has increased. For example, last year the parking on 23rd Street, which runs along the north side of the stadium, lost over fifty parking spots to improve traffic flow. Recently the building of the art museum was responsible for the loss of another three hundred parking spots.

While he stretched to try to introduce his argument in a relevant way, Eric’s initial opening fell short of being exigent or contextualizing the issue (beyond being humorous, which was perhaps a rhetorical strategy). Other components of his argument received average scores, and his beliefs about knowledge and writing were close to the group

means. Eric's opening attempt at audience motivation may not have been successful, but the other elements of his paper were.

Students with successful problem statements and exigency established the scope and importance of the controversy early in their papers. To illustrate, consider how "Caroline," a sophomore art major, introduced her proposal about obesity:

Approximately 400,000 people die each year in the United States of poor diet and inactivity (Source 1). If current trends continue, obesity will soon replace smoking as the leading cause of preventable death in our nation. A number of steps should be taken to emphasize the importance of nutritional adequacy and reduce the appeal of fast food in response to the obesity epidemic sweeping the nation.

Although Caroline's paper was not audience-aware, and was scored as a 1 in that component, she did use the introduction to explain the issue at hand in a focused, motivating way. Her scores on the epistemological beliefs scale indicated a more relativistic view of knowledge and learning. However, her scores on the authority-based and avoid-disagreement writing beliefs scales were about average.

Some papers that received higher scores on exigency and problem statements presented situations highly familiar to the student writer. For instance, Lindsay, a freshman political science major, wrote a proposal about the power of prayer and meditation and revealed a personal family struggle as her introduction:

It wasn't until my little brother was diagnosed with cancer when he was three years old that I actively started praying. With several relapses, a less than 10% survival rate, and multiplying tumors that made many of his organs collapse, it did not seem possible for him to pull through. The chemotherapy and radiation treatments were no longer beneficial, the only thing left to do was to be in deep prayer for the survival of my once red-haired (now bald) little brother...A survey released in May of 2004 by the National Center for Complementary and Alternative Medicine, part of the National Institute of Health in the United States,

found that in 2002, 43% of Americans pray for their own health, 24% pray for the health of another, and 10% participate in prayer groups.

Unlike the non-motivating, vague introductions presented earlier in this chapter, Lindsay explained the impetus for her own research by relaying this personal story with statistics about health and prayer. It might be the case that the level of familiarity that Lindsay had with her topic—she had lived it—resulted in a clearer explanation of the issue and its importance to the audience. In terms of topic familiarity, Sarah’s (freshman, liberal arts) introduction was both exigent and to-the-point. Like Lindsay, she used a personal anecdote to introduce her paper, though on a more topical level, and her scores on the writing and knowledge belief scales indicated a less absolutist, certain view of knowledge and writing:

Not able to breathe fresh air on your way to Court Hall or passing the Student Union? I feel that I am not alone when I say this is a problem and anyone disagreeing shouldn’t for much longer. Smoking on campus should be banned because: way too many smokers cause densely polluted air, everyone is exposed to the same harm and risks; smokers are not caring for or respecting the campus or those they share it with; and prohibition will encourage smokers to quit indefinitely reducing lung cancer and health risks on a much larger scale.

These few examples demonstrated anecdotal evidence of relationships between belief and proposal argument scores. Another trend indicated in these examples was that students who were more familiar or “expert” on their topics, either via personal experience or prior knowledge, may have been better able to craft clear, motivating introductions of their chosen topics.

Audience awareness and appropriateness. In this category, I assessed the extent to which students directed their papers toward the interests and concerns of a target audience. With a mean of 2.33(SD 1.08), many of the papers addressed a vague, general

audience despite the departmental explanation of the assignment that emphasized selecting, and appealing to, a specific target audience. As with the other components, the instructor's customizing of the assignment and degree of emphasis on the components may have resulted in papers that did not address a specific reader(s). A likely contributor to this lack of audience-awareness is the genre of essays that students are asked to write in high school and, frequently, in college. Research papers dominate both high school and college writing curricula, and the students in the current study likely fell back on composing strategies that had helped them to succeed in their earlier writing classes.

The research paper paradigm for writing instruction continues despite criticism from composition teachers and researchers. Over 25 years ago, Richard Larson (1982) decried research papers as a “non-form of writing” and called for assignments that encouraged students' agency and ownership in their own research processes. Later, Davis and Shadle (2000) explained research paper assignments as a sort of academic hazing for new undergraduates, as “freshman research writing was not only to introduce students to the already known, it also sought to enforce a set of rules about the ownership of the known” (p.425). Research papers can serve as an ultimate example of decontextualized writing, and they do little to prepare students for active, critical civic engagement. Instead, such writing assignments subjugate them to the voices of “authorities” and “experts,” perhaps even shortchanging students out of opportunities for epistemological growth.

Although the majority of the students' proposals were audienceless, with only about 14% of writers received a “4” or “5” in this category, some students did target a reader or audience group. For instance Ben, a fine arts junior, wrote a letter to his public school's superintendent to argue against steroid testing for high school athletes. I scored

the audience awareness category of Ben's paper as a "5" because he named a specific audience, referenced this audience's interests of feasibility and cost, and referred to shared town knowledge of prior championships and elections. In doing so, Ben also built rapport and strong ethos with the superintendent and school board:

Dear Superintendent Webber and School Board members:

I must confess that I had an addiction in high school. I was addicted to extracurricular activities and excelling in all areas of academia. In my four years at Laughton High School, I participated in one-act play, UIL number sense, chemistry, and team math, tennis, soccer, track, cross country, and band! I am very proud to mention that we were 2-time state champions in cross country and runner-up the other 2 years alternating. That's quite a feat! We had a team of 20 guys and none of us used steroids. If we needed more muscle we were in the weight room. Why would we use drugs to jeopardize our chance of a state title? ...I ask you, Dr. Webber, what is the probable cause for testing students in Central Independent School District?...I only ask that you, and the Board Members, look before you leap...steroid testing costs \$100 per test (Source 1). I find this quite interesting if we turn to our own school district. Where are we going to find the money to fund this program? We are already struggling with the budget due to a brand new elementary school we built last year. Don't expect the town to fund the drug tests, either. Where is that brand new performance art center? Oh, yeah. The town voted against it even though the government was paying for it!

However, even when students addressed an audience and topic familiar to their own background, it was not necessarily rhetorically effective. For instance Gabe, a freshman engineering student, also wrote to his superintendent. Although his paper rated high on audience awareness (earning a 4), the certitude and forcefulness with which he argued against implementation of a dress code led to low scores in the "avoiding certitude" category.

To: Superintendent Herrington

From: Gabe Smith, former Graff High School student

Cause: To address opinions on the dress code that may not be getting the attention they deserve

2nd Paragraph You, Dr. Herrington, the Superintendent, have the power to shape the school district the way you want; however, I feel this authority is gradually being used to limit students more and more. As a result, students are unable to express themselves freely, and it needs to be brought to your and the school board's attention that our students need to be given more credit and responsibility for themselves. Although somewhat biased on this topic, I am writing you all this letter to invite and provoke change... You all must realize that forcing students to wear different colors at school will not effectively change their ideas about their personal life. This effort to stop gang violence only stops it at school, not anywhere else.

Writing the essay in a letter format did not guarantee that the argument itself would be more audience aware, though if the audience and topic were highly familiar (one's high school administration policies), then it may have helped the student contextualize the assignment and create appropriate appeals. In the example below, the student wrote to a vague, likely unfamiliar, audience. The writer, Steve, was a freshman biology major. His scale scores indicated more relativistic stance toward knowledge, but a view of writing that was product- and certainty-based. In his proposal, he wanted the government to impose stricter regulations on bioengineered crops. However, his stated audience and the content of his paper belied a more general, research-paper type approach. In this way, his "Dear Organization" seemed an after-thought, tacked on perhaps to fulfill the assignment's requirement to address an audience:

Dear Biotechnology Industry Organization:

The development of biotechnology has become a revolutionary way of producing products more efficiently and at greater numbers than what previous methods have given. Yet, a major concern in biotechnology is its application in agriculture. Many question whether or not it is truly safe to eat since they were in a way artificially created by man. It can be, but more research and time must be devoted

to this project...As of now, the U.S leads the world in acreage of land that is devoted to bioengineered agriculture, which is 72% whereas other countries use less than 18%.

Steve goes on to provide information his audience, the “Biotechnology Organization,” will likely already know, defining and explaining the genetic engineering of crops. There are two interesting points to make about Steve’s paper, and they can be applied to most of the papers with lower audience awareness scores. First, by addressing a nameless, faceless organization, as opposed to a person, writers likely found it difficult to visualize and appeal to their readers. Second, though audience awareness problems may arise simply because they target an overly general audience, students may also misunderstand their audience’s interests and prior knowledge, thus resulting in fewer, or inappropriate, appeals. Had Steve reassessed his choice of reader, and revised it to include a group of concerned citizens or a Congressional representative with an interest in farming technology, then the level of prior knowledge he assumed of his reader may have been more accurate.

Finally, one student responded somewhat subversively to the task of addressing an audience. John was a freshman pre-medicine major who scored about average on the knowledge beliefs scale and whose writing beliefs indicated an authority-based, single sided approach. In his paper, he seemed to address his true audience, the instructor, through parenthetical comments. Although John’s audience appeal strategy was an outlier in the paper sample, his approach reminded me that, when we ask students to invoke an audience for their writing, we are in a sense asking them to suspend reality and fictionalize a reader(s) (Ede & Lunsford, 1984; Ong 1997). John addressed his “real” audience in his proposal to lower the legal drinking age to 18:

...It is all these opinions and questions that leave this argument un-answered for there are many ways one could go about trying to satisfy it. Yet it is my duty that I can produce my own opinion on what I feel needs to be done and why. Just keep on reading to discover the mind of John P!

John went on to include meta-commentary later in his paper as well. For instance, he wrote parenthetical comments like “Hard to argue with that!” in reference to evidence supporting his points, “how low can they go?” when summarizing his opposition, and “Just you wait!” as he previewed the solution section of his paper. Finally, at the top of his paper in bold black marker he wrote “B Please! Or Higher!” I interpreted these comments as John writing directly to his instructor, the true audience of his paper. In making these side-notes, he may have been appealing to a sense of familiarity with the instructor, humanizing himself a student and not simply a paper-writer.

Stating claims and supporting reasons. In addition to understanding how authors appeal to their audiences, and how to compose persuasive arguments, the RW 101 curriculum emphasized strong logical argument structure as a rhetorical strategy. As a result, throughout the semester students were asked to evaluate the claims, reasons, and evidence of authors as well as to compose arguments that had well-supported claims, reasons, and grounds. For the proposal assignment, students were to state main claim(s) and supporting reason(s) as well as provide support, via sources or personal commentary, to ground their argument in evidence. Before the students began composing their papers, they all submitted “Topic Proposals,” that included a statement of their enthymeme (claim+reason/s) and the problem that their argument was to address. Thus, creating a well-supported thesis was a value emphasized not only throughout the semester, but also during the final unit of the class.

The mean score on argument structure (logos) was 3.51, with a standard deviation of .97. Many students scored either a 4 or a 5 on this component, indicating that they presented papers with discernable central claims, supporting reasons, and valid evidence. For high-scoring papers, the enthymeme served as a central focus, a thesis, around which the writer constructed the proposal. For example, in her proposal to classify emergency contraception as an over-the-counter drug, Beth presented a clear claim and supporting reasons to the Director of the Center for Drug Evaluation and Research:

Claim: I believe the FDA should make a decision favoring the morning-after pill, or Plan B, to be made over the counter, so that women can have greater access to this drug

Reasons: in order to (*Reason 1*) prevent unwanted pregnancies and (*Reason 2*) [prevent] abortions. (*Reason 3*) Also, the medicine is safe and does not harm women's health.

Beth then went on to support each of these three reasons, providing evidence from sources to ground her points throughout the paper. For example, she provided personal anecdotes, expert commentary, and an explanation about how the drug works to ground Reason 1 and show that easier, quicker access to emergency contraception would prevent unwanted pregnancies. She also grounded the second and third reasons with good examples and evidence from her work as an employee of Planned Parenthood.

Like Beth, Curtis also presented a clear enthymeme and went on to provide evidence to support his proposal to reduce the importance of SAT scores in college admissions. Throughout his paper he provided evidence to illustrate how the SAT

stresses out students, statistics to argue that it is not the best indicator of college performance, and examples of the “make-or-break” nature of the test.

Using tests like the SAT as a major criteria for admissions needs to be evaluated by college admissions officers around the country...(*Reason 1*)these tests put high stress on students...(*Reason 2*)the SAT is not a good indicator of college success...(*Reason 3*)the tests are unfair to students who are bad test-takers.

In contrast, students with lower logos scores generally presented a central claim, and sometimes one or two reasons, but they did not address or illustrate their reasons in a way that gave credibility to their proposal. Or, more frequently, students identified their main claim and reason(s) early in the paper, but then went on to reference sources that did not align with their reasons. It was not the case that their evidence opposed their enthymeme, but instead the evidence was unrelated to the main reasons. This was the case in Leigh’s proposal to increase legislation to ban the advertising of tobacco products. She offered three reasons to support her claim, presenting them early in the paper. These include: (1) “Smoking is a problem that is steadily increasing,” (2), “Smoking age groups are getting younger,” and (3) “The problem will get worse if Congress does not prohibit tobacco ads.” In this statement, Leigh made a valid claim and presented acceptable supporting reasons, but she did not go on to ground these reasons in evidence, instead assuming that the audience will accept her generalizations. Instead, to meet the source requirement, she cited the history of legislation about tobacco. In this way, she did not provide evidence to show that more people were smoking at younger ages, nor did she explain whether prior legislation was effective in lowering smoking rates. Thus, while she referenced three sources in her paper, none of them grounded the reasons supporting her main claim.

Avoiding certitude and generalizations. In this category I assessed the extent to which writers used certain, foreclosing language in their proposals. Capturing this aspect of the student papers seemed particularly important because the Epistemological Beliefs Questionnaire (Schommer, 1993) contained a subscale to assess whether individuals view knowledge as certain or as contingent. Also, many students made certain, general statements that were not directly related to the logical structure of their argument. I accounted for the non-logos generalizations and certain statements in this category.

An example of a proposal scoring well on logos (4), source integration (5), and counterargument (5) sections was a proposal to legalize marijuana. Gary, a sophomore history major, gave specific reasons to support legalization: Doing so will increase tax revenue and provide important medical advances. He went on to support these reasons with ample evidence. However, in the middle of his paper, Gary made generalizations about those who are arrested for marijuana possession and presented a slippery-slope argument about the consequences of these arrests.

NORML also found, according to FBI statistics, that one marijuana smoker is arrested every 45 seconds in the United States. **Generalization:** The people getting arrested for these marijuana laws are usually not horrible people. These are everyday people who work and have families; they do not kill people, harm people physically or mentally or steal. When they are punished for this self-inflicted act, their families suffer. If the provider of the family is unable to provide then that can hurt social and economical life for the citizens in this country. **Slippery slope:** More welfare would be needed, and the government already does not have enough, thus creating more poverty.

Note that these claims are each supportable, but Gary failed to provide explanations to illustrate and/or verify his statements, which resulted in a lower rating on this category.

Like Gary, Cassie's paper was also low-scoring in this category. However, the effect of her generalizations may have a more severe reaction from her audience. In her proposal that college admissions officers should lighten their consideration of SAT scores in admission decisions, she made some generalizations that border on offensive. Unlike Gary, however, Cassie's paper scored low on the logos component, but their scores were similarly high on the counterargument and source integration categories. Cassie seemed to struggle to build her own argument by referencing her sources as she presented conclusions that did not necessarily follow from the evidence she cited:

The types of people against the SAT are those of the lower class, usually minorities. Statistics by the National Center for Education Statistics shows that in 2001, sixty-four percent of black children in their early childhood, the highest out of any race, needed a childcare and educational program because they were so poor (Source 1). They are unfortunate and underprivileged at a young age and are not given a proper education in high school to even prepare for such a test. The reason minorities are underrepresented in many colleges throughout the country is because many of them cannot afford to pay twenty-six dollars to take a college entrance exam (Source 1)...The SAT hurts minorities because the material in the tests is unfairly too advanced and the overall cost for a minority in America to complete an admissions application is too much.

As she worked to explain the relationships between race, poverty, and educational opportunity, Cassie inappropriately interpreted some of her sources, presenting conclusions that seemed oversimplified and over-generalized.

Students who were successful in this category presented their ideas, and those of their sources, as likely but not certain. Rachel did so as she integrated evidence from authority (a scientific study) to support her argument to limit food advertising during children's programming:

Initially we need to pinpoint the problems with the present-day marketing system in order to resolve the problem in sending out messages to children. The first instance observed is children having too much leisure time when they come home

from school. A case study of 700 kids between the ages of 10-15 years old were constructed in order to prove that there is an intense relationship between the amount of TV they watch and the impulse to eat. The results were unanimous stating that the children's weight were selectively high to their food intake while engaging their TV show. *Even though nothing is for certain with statistics, the probable link with TV and food consumption is the food promotions or food advertisements being shown on a children's TV channel* (Source 1)

The tone of Rachel's paper is a sharp contrast from David's, who wrote with more certain language in favor of funding stem-cell research: "It is obvious that federal funding for biomedical cloning is critical. Without it, I do not believe that science will ever progress. This is the simple fact of the government supporting scientists in their pursuit of cures." Although both students' scores on the EBQ suggested that they held a more certain view of knowledge and belief in quick learning, their scores differed by two standard deviations on the "writing as authority-based" scale. David scored higher on this writing scale, indicating a stronger belief in writing to report experts' views.

Source integration, appropriation, and leveraging. This category proved to be one of the more difficult ones to assess because very few proposals introduced, and integrated, sources effectively. Instead, most students quoted directly from their sources when paraphrasing would have been more appropriate, failed to establish the credibility of their sources, and strung quotes together within paragraphs (source use mean=3.22, standard deviation=1.24). Also frequent was the use of several blocked quotations throughout a single 6-10 page paper. For example Sally, a freshman political science major, relied on a single source (a health textbook) and quoted extensively from that source to support her proposal: the university should enact a smoking ban because secondhand smoke is dangerous. Her paper was entitled "College Campus: An

Institution of Education or Lung Cancer?” and the paragraph presented below was representative of others in this paper in terms of the strings of quotes. I have underlined the quoted text so as to note the quantity of lines devoted to sources: (Out of 262 words, 134 are direct quotes)

I, like many, work hard to maintain a healthy lifestyle and knowing that the “platelets and endothelial functions of my cardiovascular system are very sensitive to low doses of smoke nonsmokers inhale through secondhand smoke [will give] comparable effects of smoking in smokers” (Source 1) is downright despicable. The fact that “the effects of the toxins in the smoke saturate at relatively low exposures” (Source 1) is not too comforting when I’m gulping up someone else’s smoke while heading to the track, walking to class, or passing someone seated on a bench. And if this isn’t enough, secondhand smoke also includes “an increase in oxidized low-density lipoprotein cholesterol, increase platelet adherence, mitochondrial damage, and oxidative damage” (Source 1)! Nonsmokers are often oblivious to the fact that “cardiovascular effects occur very quickly, some within minutes...after 30 minutes of breathing secondhand smoke, the endothelial function of coronary arteries of nonsmokers is compromised to a level similar to what is observed in a regular smoker” (Source 1). As if my health won’t be deteriorated enough, “heart rate variability in healthy people has been shown to decrease by 12% after 2 hours of breathing secondhand smoke in an airport lounge” (Source 1). Yet another most common place that is impossible to avoid. Not to be outdone by the “[t]hree hours of secondhand smoke exposure [which] leads to significant increases in the circulating white blood cell counts” (Source 1). This is just a portion of the evidence containing the harmful effects of secondhand smoke and is more than enough credibility to understand and support prohibition of smoking.

Also, Sally did not establish the credibility of the source as she cited it. So, not only did she hand much of her argument over to the source, she did not explain to the reader why this source was indeed an authority to be trusted. These rhetorical choices somewhat aligned with her scores on the knowledge and writing beliefs scales; her responses indicated her view of knowledge as contingent and of learning as a slow process (EBQ=3.22). Additionally, her scores reflected a process-view of writing that was also open to exploring disagreement (2.20; 2.01). However, in terms of the belief that writing

was authority-based, her score (2.00) was almost a full standard deviation above the mean, indicating a view that good writing reports authorities' ideas.

Abby's paper was also representative of a lower-scoring "Source Integration and Appropriation" proposal; like Sally she also presented series of quotations from sources, allowing the referenced work to speak for her. As the freshman natural sciences student argued in support of mandatory minimum sentencing laws (known as "three strikes" legislation), she cited a variety of credible sources about the issue, unlike Sally's paragraph above that focused on a single source. In doing this, however, she injected long strings of direct quotations from these sources. This is evident in the following paragraph from her paper, similar in volume of quoted material when compared to other sections of the paper (122 of 165 words from direct quotes):

Think about the "three strikes as sorting the wheat from the chaff. Those who can get their lives turned around... will. Those who can't have two choices- leave the state they live in or go to prison. The one thing we cannot allow is another victim to be a part of their criminal therapy" (Source 1). While contemplating the definition of deterrence and how innocent families should not be victims any longer one could still argue "the American prison population would reach two million in 2000" (Source 2). Although this is an educated assumption it has been proven otherwise. Source 3 discovered "five years after the passage of three strikes, no new prisons have been built. Our actual prison population has held steady at roughly 160,0000 inmates. This is not only fewer inmates than predicted during the fight to pass three strikes, it is lower than projections of prison population growth prior to three strikes. In fact, the prison population is actually going down!" (Source 3).

Abby created paragraph "frames" in which to present the authorities' views to her reader. By giving over the bulk of her paper to quotes from sources, the writer allowed the experts to speak for her. Although this feature of this paper is undesirable to composition instructors (Ede & Lunsford, 1984; Elbow, 1991) and likely earned her a lower grade, the

writer was strategic in the way she crafted sentences and paragraphs to present the information to readers. Even though she was not integrating her sources into her own arguments, she did make grammatical effort to get the quotes into sentences and to introduce all of them, something that was likely rather difficult to do. Abby's scores on the epistemological beliefs scale indicated a belief in certain knowledge and simple learning a full standard deviation above the mean. Her scores on the writing beliefs scales were closer to her classmates, but still slightly higher.

Bart, a freshman liberal arts major, also wrote a proposal that scored low on the source integration component. He struggled similarly with integrating sources in support of his argument. His proposal was in support of athletic teams retaining Native American names and mascots (e.g., Atlanta Braves, Florida State's Seminoles, Washington Redskins). Instead of weaving sentence-length quotes into his argument, he pasted large blocked quotes from sources once he had introduced them, requiring his audience to make connections for themselves. For example, the second paragraph of his eight-page paper begins:

In this paragraph I will give you some testimony by sports analysis and sports columnists along with other experts who support the issue. First off I will give you some direct excerpts from a sports columnist Coy Slavik who lives in Victoria, Texas and writes for the Victoria Advocate. He gives some very good examples of what he thinks about political correctness. **I'm going to give you the whole article because I believe it is very compelling. Here is the article that he wrote:**

So, the NCAA has decided to crack down on "hostile" and abusive nicknames? Well, it's about time. In fact, let's not stop at the collegiate level. I think it's high time we started eliminating offensive mascots in high school sports as well... The Palacios Sharks and Calhoun Sandcrabs must change mascots because the movie 'Jaws' gave me nightmares for weeks and once I got sick after eating some bad crab meat...

After devoting 507 words of his paper to presenting this entire article, the student presented two sentences of commentary, then went on to give another block quote, this time from another newspaper, that was approximately 175 words long. Each page of the 8-page paper, with the exception of page 1, included a blocked quote of at least 170 words. The quality of sources that the student used was reasonable (mostly from newspapers, none from scholarly papers) and the number of sources used was low (4 sources when the average was 6.51). As a result, it is difficult to attribute this students' poor appropriation of sources to his being overwhelmed by the number or complexity of sources. Instead, he seemed to fall into the "why should I say it if the source says it better?" trap. Bart's scores on the epistemological and writing beliefs scales were above average (more absolutist), with his view of writing as authority-based a full standard deviation above the mean.

Other ways of coping with the difficulty of source integration included outright plagiarism, copying text verbatim from sources without quoting and/or citing it. I was able to identify four papers that contained plagiarized passages. When I initially noticed a disruption in the students' tone, vocabulary, or writing style, I typed suspicious sentences into Google and, in these four cases, found the exact source and sentence(s). Although this copying constituted scholastic dishonesty, I understood it as more of an issue of a frustrated student unable to summarize and synthesize another writer's ideas. The example below is from Mary's proposal to provide obesity warnings within fast food commercials. A studio art sophomore, Mary presented eight high quality sources in her six-and-a-half page paper, but her proposal seemed to stretch to include as many sources as possible as she worked to mention ideas that did not clearly align with her main

argument. This may have been due to a large number of sources required by the instructor or the students' sense that if she used more sources, the instructor would reward the sheer quantity of research. Here is her proposal to provide obesity warnings in fast food commercials, with the plagiarized sections underlined:

Before assessing the appropriate plan of action in response to America's increasingly obese population, it is important to fully understand the source and criteria associated with obesity. Obesity is defined as an overweight condition in which an individual's body mass index exceeds 30 with the excess consisting of fat (Source 1). The basic underlying cause of obesity is a persistent long-term state of positive energy balance in the body. Two types of obesity exist: hypertrophic and hyperplastic. Hypertrophy refers to a state of obesity due to an increase in the size of fat cells, while hyperplasty refers to obesity caused by an increase in the number of fat cells (Source 1). In order to achieve a loss of body fat, negative energy balance must be produced where energy expenditure must be greater than energy intake... Excess body fat sustains serious consequences for the body's metabolism including high cholesterol, coronary disease, increased blood pressure, and many forms of cancer.

In terms of Mary's scores on the writing beliefs scales, her responses indicated that she did not view writing as a single, static product, scoring one-standard deviation below the "Writing as a Product" scale. Her writing belief scores reflected a view of good writing as authority-based (3.00), and a preference to avoid disagreement as she wrote (2.25). Her epistemological belief score was also high (3.28), indicating a view of certain knowledge and fast learning. The three other students whose papers included instances of plagiarism similar to Mary's example scored high on the epistemological and writing beliefs scales, indicating a product, authority-based, single-sided view of writing as well as a simple, certain view of knowledge and learning.

Students whose papers scored higher on the source integration and appropriation component presented their arguments with integrated references. For example Maggie, a junior communications major, argued for more parental involvement in school smoking

prevention programs, and constructed her own claim from experts' findings, pitting the experts against one another:

Currently, Texas anti-smoking programs focus on helping adolescents through building peer networks and listening to other adults rather than parental influence. For example, the Adolescent Tobaccos Cessation Awareness Classes are for minors found in possession of tobacco (Source 1). In addition, peer education curriculum and youth tobacco coalitions were created in several Texas high schools to spread health awareness (Source 2). Although the programs seem to encourage minors not to smoke, family interaction is still absent, making the programs less effective. Figure two (Source 3) illustrates how family involvement was an important part...

This student leveraged and critiqued sources to explain controversies within tobacco-awareness education. As she presented the points from her research, she remained in control of her own argument. Her knowledge and belief scores indicated more complex views about writing, but a stronger belief in fixed knowledge and quick learning.

Other writers followed this trend of source integration by bringing in references to back their claims, synthesizing and integrating their research to support their points. For example Lisa, a freshman liberal arts major, making an argument for more affordable college tuition, referenced three high-quality sources to back her point that college costs were becoming prohibitive for many. Her scale scores reflected above-average beliefs about the nature of knowledge and learning as well as a view of writing as a process not overly reliant on authorities. She pulled from newspaper articles as well as government reports to illustrate the way students from lower-income families are given the message that, in her words, "college is for rich people." Early in the paper she explained:

Even though federally backed aid programs, such as the Free Application for Federal Student Aid or FAFSA, have increased the amount of money available for students to receive, it has not kept up with rising tuition rates (Source 1). Also, federal grants and loans are being granted to fewer and fewer students. Because federal funds are aimed at the goals of increasing national security, the education

budget was 56 million dollars less this year than it was last year (Source 2). As a result of rising tuition many college students may have delayed graduation or may even have to drop out due to lack of funds to pay for their education.

As I will discuss further in Chapter 6, the quality of students' source integration was generally low, with many students including large blocked quotes and/or paragraphs woven with quoted words from "authorities." These results suggested that strategic and persuasive source use is a critical component that is lacking in students' rhetorical writing, one that will likely need to be addressed via direct instruction and support.

Counterargument and rebuttal. Scores in the category of counterargument and rebuttal were highly correlated (.96), indicating that students who articulated opposing viewpoints also provided rebuttals of similar quality. The mean was 2.91 on counterarguments and 2.93 on rebuttals, both with a standard deviation of 1.25. Approximately 15% of the students did not present opposing views, and thus the same percent failed to provide rebuttals. Negotiating counterarguments is an important rhetorical skill because it enhances writers' credibility, portraying them as fair-minded and reasonable. In terms of the assignment, including counterarguments and rebuttals encouraged students to consider multiple perspectives on their controversy. Andrew, a freshman majoring in journalism, wrote a paper that scored 4 out of 5 on both components. Counterarguments, with his rebuttals are presented below:

Mr. Hatch and opponents of flag burning need to realize that in nearly all cases, people simply don't burn the American flag for sport. Most often, it's a statement made in great strife, particularly when the protestor in question feels his or her rights have been infringed on and is in need of some sort of public forum... Personally, I have no reason to burn the American flag and God willing, never will feel the need to. But there are those who are often in such dire situations that no other form of expression seems fitting...Some will argue that

the causes fought for in the 18th century were monumentally more important—no one denies that. But it's *because* we protested the practices of Imperial England that we are now able to dissent against our own government on important matters.

In his rebuttal, Andrew conceded that flag burning is an extreme, and arguably offensive, form of protest. He revealed his own disdain for the practice, aligning himself with possible opposition while also explaining the context in which citizens may protest in this way, emphasizing citizens' freedom of expression. The result is a reasonable, credible response to alternative viewpoints. Andrew's scores on the writing beliefs scale regarding the role of disagreement in writing indicated that he valued multiple, often competing, perspectives in his own composition and the writing of others

Organization and clarity. As I mentioned earlier in this chapter, paper scores on the organization of ideas (mean=3.56) and clarity (mean=4.00) were among the highest scoring of all the components. This was likely due to the intensive feedback that students received on all of their writing for RW 101. In particular, students turned in a first draft, received instructor feedback, revised, then often participated in peer reviews of classmates' papers. Each of these elements likely improved the clarity of students' ideas. Moreover, each student in the class had gained admission to the university, which meant that they were either in the Top 10% of their graduating high school class or had submitted written essays as part of their application procedures. So, whereas an open-admission college composition class would likely have greater variability due to different backgrounds and abilities, these students were relatively high performing in terms of constructing clear, understandable sentences. In the following chapter I will present ideas like this, regarding restricted range of paper scores and sources of variability, in a discussion of the study's results.

CHAPTER 6

DISCUSSION

The purpose of this study was to gain a better understanding of undergraduates' metacognitive beliefs about writing and knowledge, ways that those beliefs may change during the semester, and the relationship of beliefs to their persuasive writing. Before I provide a detailed examination of and commentary about the study results, I will present a short summary of findings. Then, I will discuss my preliminary claims about the relationships between general and task-specific epistemological beliefs as well as rhetorical writing. My discussion of the cross-semester changes and relationships among constructs is organized around my four research questions:

1. Did undergraduates' *epistemological* beliefs change over the course of a semester in a persuasive writing course? If so, what was the nature of that change?
2. Did undergraduates' *writing* beliefs change over the course of the semester?
3. How are undergraduates' epistemological beliefs related to their beliefs about writing? Do these sets of beliefs predict students' performance on an authentic academic task, namely writing an argumentative essay?
4. What rhetorical trends can be identified in the students' argumentative writing?

Summary of Findings

In general, students in RW 101 experienced significant changes in their beliefs about knowledge, learning, and writing over the course of the semester, as assessed by the Epistemological Beliefs Questionnaire (Schommer, 1993) and the writing beliefs scales.

Thus, students at the end of the semester had moved away from beliefs in fast learning and certain knowledge, as well as an impatience they may have held toward class discussions and learning processes. Notably, the group of non-freshmen entered RW 101 with higher scores on the Impatience subscale of the EBQ, indicating greater degrees of impatience, but finished the semester scoring significantly lower than their freshmen classmates. With regard to the writing belief scales, the students' views about writing as a product and the notion of good writing as avoiding disagreement also shifted across the semester. That is, by the end of the semester, both freshmen and non-freshmen groups reported views of writing as a process and that persuasive writing involves including multiple, often competing, views. In this way, students' self-reports reflected values of the RW 101 course, which they may have internalized.

Interestingly, there were two scales whose scores did not change significantly across the course of the semester. These included the EBQ subscale assessing a belief in omniscient, stable human authority (books, experts, etc.) as well as a view of the purpose of writing to report authorities' ideas. The correlation between these two scales was significant but moderate ($r=.30$), low enough to suggest that they were assessing different constructs. I will provide further discussion of these unchanged scores later in this chapter.

Correlations between the paper category ratings and the scales were low, with the only significant relationship between the degree of audience awareness in the essays and students' view of authority, with more audience-aware papers tending to come from students who viewed authority as assailable. These low correlations forecasted regression models predicting paper categories from scale scores that were not significant. However,

qualitative analyses revealed interesting trends in papers from students with different epistemological stances and beliefs about writing, particularly with regard to their use of sources.

The study had several key challenges, including inherent limitations with self-report measures, psychometric problems with the both the Writing Beliefs Scale (White & Bruning, 2005) and the Epistemological Beliefs Questionnaire (Schommer, 1993), as well as issues involving collecting the heavily revised final paper. After discussing findings relative to each research questions, I address these limitations and explain the results relative to further study and informing instructional practices.

Research Question One: *Did undergraduates' epistemological beliefs change over the course of a semester in a persuasive writing course? If so, what is the nature of that change?*

Epistemological Beliefs. In order to respond to this question, I assessed the epistemological and writing beliefs of 273 undergraduates enrolled across 13 sections of a lower-division, required, rhetoric and writing course (RW 101). I collected their responses to the Epistemological Beliefs Questionnaire (Schommer, 1993) and a modified version of the Writing Beliefs Inventory (White & Bruning, 2005) once early and then close to the end of the semester. Once these data were collected, I conducted exploratory factor analysis on each of the scales to reveal subscales and then ran Repeated-Measures MANOVAs to determine whether scores changed significantly.

With regard to participants' epistemological beliefs, results supported my initial hypothesis that beliefs would change from early to late in the semester, with

undergraduates' ideas about knowledge reflecting a more "sophisticated" epistemic stance. Specifically, results of the MANOVA indicated significant changes in students' beliefs about the nature of learning and certain knowledge, as well as their patience with contingent/unstable knowledge. Thus, students came to view learning as a slow process and knowledge as relativistic and subject to revision. The subscale assessing students' ideas about a general, unassailable authority did not change over the course of the semester, which indicated that they generally retained a belief in experts as holding stable, privileged knowledge. I will discuss this non-significant finding later in this chapter.

In terms of epistemological change over time, my findings echoed those of earlier research that reported significant changes across college semesters. The evolution of college students' epistemologies from a more absolutist, dualistic, right vs. wrong view of knowledge to a recognition of uncertain, conditional knowledge is a trend that has been recognized since Perry's original (1968) inquiry into college students' beliefs. Whereas Perry originally began his work with the hypothesis that beliefs about knowledge and learning were stable and personality-based, he recognized shifts in these beliefs over the course of students' college years. These findings, while noteworthy in terms of building a theory of metacognitive beliefs, also presented challenges to theories about personality-stable characteristics. Although Perry conducted his research prior to the translation of Vygotsky's (1932) *Thought and Language* from Russian to English (first version by Kozulin in 1962, second in 1986), it foreshadowed shifts in education and psychology that would later be understood as constructivism (Schallert & Martin, 2003). Thus, Perry's results, which suggested that environments could foster changes

within individuals' beliefs, highlighted one of the core values of the socio-constructivist movement to take place decades after his study. The results of my dissertation study, which illustrated belief change, aligns with earlier work about the trajectory of epistemological development.

Unlike other work, the significant shift in epistemological beliefs across a college semester, as reported in my study, are somewhat anomalous in terms of the brief span of time under which the changes took place. King and Kitchener (1994), for example, noted shifts in students' epistemological stances over the course of multiple semesters, not necessarily a single semester. Other longitudinal work, such as that by Baxter Magolda (1992), underscored the slow nature of college students' shifts in beliefs across multiple semesters and academic years. Cross-sectional studies have noted similar trends across different educational levels, with significant epistemological differences among college students of different academic years (Schommer, 1990; Schommer, Crouse, & Rodes, 1992; Schommer 1993; Schommer 1998; 2004; Schommer-Aikins & Easter, 2006). King and Kitchener's (1994) cross-sectional study of over 1,000 non-college, junior college, and university students showed differences between entire academic years, not necessarily academic semesters. Taken together, these researchers emphasized the slow evolution of undergraduate students' beliefs.

Although there was not a control group in the design of my study, and as such I cannot imply that the rhetoric and writing course fostered the rather quick change in beliefs across the semester, other research has linked epistemological growth with particular instructional strategies. For instance, Kienhues, Bromme, and Stahl (2008) found that German university students who received "refutational epistemological

instruction” experienced larger shifts toward advanced epistemological beliefs compared to those who received instruction that was simply informational. Controlling for students’ background knowledge about the instruction content (DNA fingerprinting), results indicated that the epistemologically “naïve” students whose instruction involved reading texts that were presented as two competing arguments experienced a shift in epistemology greater than their peers who read textbook passages (informational instruction) about the same issue. Similarly, the curriculum of RW 101 instructed students to consider a variety of different perspectives about controversial issues, which included reading from multiple, often competing perspectives about salient issues (e.g. environmental conservation, the fast food industry, standardized testing, the US role abroad). In addition to analyzing arguments presenting opposing viewpoints, students were also instructed to write papers in which they clearly addressed audience members who may or may not agree with their viewpoint. As a result, the RW 101 coursework may parallel cognitive work similar to Kienhues and colleagues’ (2008) “refutational instruction,” which in their study related students’ beliefs shifting toward a more constructed, unstable view of knowledge.

Initially impatient upperclassmen. The significant interaction effect between time and academic classification on students’ EBQ scores was somewhat puzzling. Post hoc testing showed that the group of non-freshman students began the semester as more impatient than the freshmen, assessed by the impatience with ambiguity subscale, but ended the semester as much more patient than their freshmen counterparts. In my research of the literature on epistemological beliefs, I was unable to find a compelling explanation for the non-freshmen students’ high impatience at the beginning of the

semester. Recall that high scores on the impatience subscale represent a tendency to avoid ambiguity, failure to integrate ideas across classes, and to agree that it is “annoying to listen to a lecturer who cannot seem to make up his mind about what he really believes” (EBQ item 9), and “a waste of time to work on problems that don’t have clear-cut answers” (EBQ item 44). The construct of Tolerance of Ambiguity (Budner, 1962; McClain, 1993) is frequently studied by psychologists interested in correlates to anxiety and depression and is described as assessing dogmatism, resistance to change, and preference for certainty (McClain, 1993). DeRoma, Martin, and Kessler (2003) looked at the possible academic consequences for students with low tolerance for ambiguity and were interested in whether the intolerance was related to students’ responses of course structure. These researchers reported a significant negative correlation between students’ tolerance for ambiguity and need for course structure in terms of explicit deadlines for readings. Additionally, students who were uncomfortable with ambiguity also reported greater anxiety when the exam dates were changed or listed as “to be announced” on the syllabus.

Although there have not been studies linking Tolerance for Ambiguity with the EBQ subscale of Impatience with Ambiguity, the descriptions and assessments do appear related. Although Tolerance for Ambiguity is rarely studied in non-clinical contexts, it is likely that the construct is similar, or at least correlates, with impatience. Based on that assumption, it might be that the non-freshmen students were reacting to tentative syllabi, the holistic nature of RW 101 course grading, having to write papers versus exams, or other elements. Thus, like the sample in DeRoma and colleagues study, which consisted of students who had generally completed 50 semester hours or more, the sophomores,

juniors, and seniors from my sample had developed responses based on their experiences with syllabi from other classes. Anecdotally, I will say that as an instructor I have noticed that non-freshmen students in RW 101 are generally more anxious about taking the class. Many of the participants were science, engineering, business, or math majors (49% of my sample) who may have delayed taking this rhetoric and writing course until their junior or senior year because writing classes seemed formidable. For example, students in required composition courses sometimes describe themselves as being “bad writers” (Charney, Newman, & Palmquist 1995) and have a sense of dread coming into the course. This anxiety may explain their initial impatience with the class and its somewhat ambiguous structure of class discussions, reflective and persuasive writing, and reading articles and popular press books as opposed to traditional textbooks. Alternatively, or additionally, these non-freshmen may have entered the class somewhat annoyed with taking a freshman-level course.

Research Question Two: *Did students’ beliefs about writing change over the course of the semester?*

Writing beliefs scales As I did with the Epistemological Beliefs Questionnaire, I conducted a Repeated-Measures MANOVA on the three writing belief scales. Recall that there were psychometric issues that necessitated splitting White and Bruning’s (2005) Writing Beliefs Inventory into three separate scales. Results of the significance testing indicated differences between early- and late-semester administrations of two of the writing belief scales. Compared with their earlier scores, students viewed writing as more of a process, as opposed to a product, at the end of the semester. They also came to

understand the purpose of writing as reflecting multiple, even competing, perspectives about issues, compared with early scores indicating that writing should avoid disagreement or differing opinions and overall valuing certainty in writing. There was not a significant interaction effect between academic classification and time of administration.

These results align with the course goals of RW 101 that included an emphasis on writing as a process. Students submitted at least one early draft of each paper for instructor feedback, and frequently engage in peer reviews. As a result, students' revision is "enforced" by the curriculum. I want to emphasize that I am not suggesting a causal relationship between the course and students' shift in writing beliefs. As my design did not include a group of non- Rhetoric and Writing 101 students, I am unable to make that claim. However, the instructional implications for this particular finding indicate that process-based writing instruction may shift students' views of writing, at least temporarily. Further research would be needed to explore this relationship more thoroughly.

The other writing belief scale that changed significantly over the course of the semester included the belief that good writers should avoid presenting views that disagree with their own. With the same caveat as above regarding my research design and lack of a control group, I want to explain that this change in writing beliefs aligned with another core value of the RW 101 class. In the second paper particularly, students were instructed to synthesize multiple viewpoints in support of their own claim about an issue. In addition, they were told to include counterarguments and fair rebuttals, presenting opposing views in a reasonable, fair-minded ways. The change in this view of addressing

opposition in writing may also be related to college students' involvement in other courses. Undergraduate level courses often present competing views about issues in their respective fields as a way to historicize and contextualize the content. Such instruction and readings may also relate to shifts in beliefs about good writing.

Beliefs that writing and knowing are authority-based. Just as the EBQ Omniscient Authority subscale did not change significantly over the semester, neither did students' beliefs that writing should report the ideas of experts and authorities ("Writing as Authority-Based"). Although the curriculum for RW 101 instructed students to leverage authorities' testimonies to support their own claims and ideas as writers, the writing assignments themselves were graded on the number of sources that students use and the quality of evidence that they used from these sources to support their own claims and reasons. Although composition instructors, and the programs that they represent, may emphasize the goal of students finding their own voice (Faigley, 1986), students in composition courses may find these values contradicted by an emphasis on library research (Larson, 1982), and composing arguments with the necessary "parts," including claims, supporting reasons, grounds, warrants, and backing (Harrison, 1999). Learning to compose well-supported claims backed by credible research findings is certainly a value of academic literacy (Weese, 1999) critical to students entering the general academic Discourse community as well as those in their majors (Curtis & Herrington, 2003, Haas, 1994; Penrose & Geisler, 1994). And, arguably, emphasizing a more expressivist, reflective model of writing would do a disservice to freshman composition students in terms of preparing them to write in upper-division courses. As composition instructors, we aim to "empower" our students by teaching them academic ways to argue, read

analytically and contextually, and consider alternative viewpoints. However emancipatory our intentions, rhetorical writing instruction still underscores the value of expert knowledge and conforming to assignment requirements. This is likely the experience of undergraduate courses across disciplines; departments, and their professors, want students to think critically and independently, but students may lack the content/disciplinary knowledge to do so. As a result, students may feel a greater reverence for authority in their lower-division courses as they acquire content knowledge through reading textbooks, listening to lectures, and writing from sources.

Thus, students' views of authority may not change until they have acquired enough content and discursive knowledge so as to think critically about the content they face in their classes (Penrose & Geisler, 1994). This relates to the idea of epistemological beliefs as both domain general *and* specific (Muis, Bendixen, & Haerle, 2006) and suggests that as students learn more about their research topic, or more about their chosen major, their views of knowledge and truth as it relates to that specific domain may change independently of their general epistemic beliefs and/or those in other domains. Thus, although students' views of authority in general and those specifically related writing did not change in my study, perhaps their epistemological beliefs in other domains already have, or will, shift as they take major-specific classes.

Research Question Three: *How are undergraduates' epistemological beliefs related to their beliefs about writing? Do these sets of beliefs predict the quality of students' rhetorical essays?*

Correlations between the four subscales of Schommer's Epistemological Beliefs Questionnaire and the three writing belief scales were significant, but not particularly high. In students' late-semester questionnaire responses, there was a significant relationship between all of the EBQ subscales, with correlations ranging from .26-.69. The writing belief scale, as explained in Chapter Four, consisted of items that did not function reliably and thus was treated as three separate scales. The only significant correlation within the late-semester writing belief scores was between the view of writing as authority-based and the belief that writing should avoid disagreement ($r = .24$). These preferences for one-sided, certain information in writing were significantly correlated with students' general epistemological beliefs regarding omniscient authority, impatience with ambiguity, and belief in certain knowledge (see Table 20, Ch. 5). This indicated that beliefs about knowledge in general may inform, or be informed by, students' views of the purpose of writing (to "report authorities' ideas" or "avoid including other viewpoints.")

Notably, in the analyses of the early-semester scale administration, the view of writing as product-based was significantly correlated with the writing to avoid disagreement as well as all three of the EBQ subscales. However, later in the semester, beliefs in writing as product-based did not correlate significantly with any EBQ subscale or writing beliefs scale. This can be explained by the dramatic shift in students' beliefs about product-focused writing from early to late in the semester.

As I report in Chapter Five, I conducted qualitative analyses of the undergraduates' Proposal Argument papers, their final writing assignment for RW 101. In assessing the papers, I used *a priori* traits identified by Charney (2008) as part of an outcomes-based assessment of RW 101 classes. Recall that the components were created

to align with the values and curriculum of the course on this specific campus, and Charney validated the assessment components via review by experienced Rhetoric and Writing faculty members. Once scored, I reduced the paper components into four broad categories via factor analysis. I then calculated correlations between the epistemological and writing beliefs scales and scores on the four paper categories.

In terms of students' proposal arguments, the only significant correlation between scores on the scales and paper quality was that between the belief that writing should avoid disagreement and students' scores on the "Support with Evidence" component of the paper. The negative correlation ($r = -.23$) suggested that students who believe that good writing "sticks to one side of the issue" tended to write proposal arguments containing generalizations and claims that lacked supporting reasons and evidence. Though low, this significant relationship illustrated a possible link between students' writing beliefs and rhetorical components of their writing. These findings align with those of Charney and colleagues (1995), who found absolutist views of knowledge predicted lower writing quality in undergraduates. White and Bruing (2005) also found results specific to writing beliefs that suggested a relationship between the quality of students' writing and their belief in writing as a communicative act, as opposed to mere transmission of information.

Low correlations between the scales and the paper components foretold regressions that failed to indicate a significant contribution of either writing or epistemological beliefs to the dependent variable of paper component score. At first glance, these results indicated neither task-specific nor general epistemological beliefs, as independent variables, predicted writing performance. Thus, despite my hypothesis that

knowledge and writing beliefs would contribute significantly to variance in proposal argument quality, the regression equations revealed otherwise. However, this outcome may be the consequence of high error variance in the scales and the proposal papers, in addition to my study design, which only collected student data for the two scales and single writing sample, in addition to students' self-reported academic classification and majors. Prior work on epistemological beliefs collected measures of students' verbal and/or academic aptitude as well as parental education levels, as reviewed in Chapter Two. A recent study by Buehl and Alexander (2005) accounted for students' academic motivation and attitudes as well. Had I assessed these components, I may have accounted for enough variance in the scores so as to find epistemological and writing beliefs significant predictors of rhetorical writing.

In addition to shortcomings in my study design, the measurements that I used had psychometric deficits. For instance, the EBQ has been the subject of criticism about its factor structure, and the structure of White and Brunig's Writing Belief Scale was not replicated in my sample. Finally, the proposal arguments that I collected and been subjected to early-draft review by instructors and classmates, which introduced additional variance into the quality of these final papers. The scales' psychometric issues, as well as relatively high variability among the quality of written arguments, are discussed later in the limitations section later in this chapter.

Research Question Four: *What are the rhetorical features of students' proposal essays?*

Although the regressions showed that rhetorical and clarity components of students' papers were not predicted by the writing and knowledge belief scales,

qualitative analyses identified some surprising trends in students' rhetorical writing. For instance, many of the essays scored low on components of rhetorical quality, including the extent to which students appealed to an audience, integrated sources, and addressed counterarguments. These aspects of the assignment are emphasized in the RW 101 curriculum and to the instructors during their training to teach the course. However, based on characteristics identified through my scoring of the papers, these course goals were not necessarily actualized in students' writing.

Rhetorical quality as related to paper clarity and fluency Students' scores across the rhetorical components were highly variable, with standard deviations ranging from .83-1.26 on a five-point scale. In general, papers were written in clear language, well organized, and referenced high quality sources (from library database searches as opposed to general web searches). Further, most students presented a clear explanation of the problem they addressed in their proposals and made explicit claims about what should be done to address the problems they identified. Of all the elements, this explicit statement of a claim and supporting reasons correlated consistently with other essay elements, including avoiding certainty, source integration, counterargument, and rebuttal quality. The correlation between clarity and the number of sources was negative, which indicated that the more sources students worked to include in their papers the more likely their ideas were stated unclearly or through strange word choices.

This negative relationship between source number and clear prose, though low, suggested possible cognitive consequences to source integration. That is, it might be the case that the more sources a student integrates into a 6-10 page paper, the more that students' fluency may suffer. This relationship is only correlational, not causal, and as

such I cannot make conclusive statements about these components may have influenced one another. However, this negative relationship is supported by qualitative findings by Flower and Hayes (1981), Berkenkotter, and colleagues (1988), and Fox (1999), who explained the complex cognitive tasks regarding students' negotiations of content and discursive knowledge as they write. Adding more sources to synthesize into one's argument may be cognitively taxing to the point of impairing clarity. This hypothesis requires further testing and may have instructional implications for the number of sources, or amount of content, students are asked to synthesize in their writing.

Acknowledging, and addressing, an audience. As I explained in previous chapters, RW 101 emphasized a model of persuasive writing that is audience-bound. Students read the arguments of others and analyzed them relative to different audiences, and students were instructed to compose papers that addressed a named, target audience. However, few papers in the study gave any hint at an audience (beyond the use of personal pronouns), and of those who did name an audience, few actually worked to appeal to that audience in their proposal argument. While this might be attributed to instructors' level of emphasis regarding addressing an audience, that hypothesis was not testable given that the study involved analysis of 90 papers across 13 different instructors, each of whom had widely varying numbers of students participating in my study. Further research is needed to better understand instructors' emphasis of certain rhetorical components, both in class and on first draft feedback, and its impact the quality of paper components like audience awareness. It might be that the instruction given to the graduate student RW 101 instructors is misinterpreted or disregarded in terms of audience awareness and, thus, is not transferred into their teaching of the course. Or, the instructors

may have given feedback related to audience awareness, and even graded essays on the component, but the students either misunderstood or overlooked revising for audience.

With the recognition that the lack of consistent audience awareness across the 90 papers was likely due to a combination of factors, including both students' and instructors' interpretations of the assignment, I want to acknowledge the phoniness inherent in asking students to select, and write to, an audience who will never actually read their arguments. While it is the case that fiction and non-fiction writers at all levels invent audiences as they compose (Butcher & Kintch, 2001; Carvalho, 2002; Ede & Lunsford, 1984; Ong, 1975), naming and addressing an audience who will not ever actually read their paper often resonates as particularly artificial with students. Recall the case of John reported in Chapter 3, whose argument seemed to directly address his true audience, the instructor, with witty side-notes and encouragement to “read on to discover the mind of John P.!” While probably interpreted as somewhat immature, John's comments were also subversive in the sense that he acknowledged what was *really* happening with his paper—it was being graded—and the person doing this was its true audience: his instructor.

In my hypothesis, I anticipated that audience awareness would correlate strongly with students' writing and knowledge beliefs. Prior work (Hays, et al., 1988) reported significant relationships between audience activity and epistemological beliefs. The relatively wide variation in audience aware scores in my study, with a standard deviation of over 1 point, made clear interpretation of the results difficult. The proposal argument task in my study differed from those used by Hays and colleagues, whose design instructed students to address a hostile audience in their papers, which may have provided

a clearer, more extreme audience context when compared to the proposal argument assignment for RW 101. Finally, the correlations between audience awareness and the quality of other essay components were all significant in a positive direction. These findings aligned with studies of audience in students' compositions that emphasized the correlation between audience-aware moves and holistic essay scores (Roen & Willey, 1988).

Free-standing sources: Problems with integration. The manner in which students used sources in their proposal arguments was the most surprising, and challenging, aspect of the qualitative analyses. In general, students did not maintain control of their arguments by leveraging their sources to support their claim and reasons. Thus, instead of synthesizing the salient information from texts, students would quote directly from all of their sources frequently throughout their papers. Recall the example of Bart (Ch. 5), who quoted an entire 507 word editorial in his paper, then went on to include a 175 word block quotation from another source. While it is possible to attribute this extreme example to Bart's desperation to fill space and get to the minimum number of pages required by his instructor, I do not believe that we can connect the lack of integrated sources to students' general task avoidance or shirking of rhetorical responsibility. On a basic level, students may have been preoccupied about citing sources correctly and avoiding plagiarism, resulting in over-quoting as opposed to integrating, appropriating, and synthesizing the articles they found. As with each semester, the instructors discussed plagiarism with students as part of the policy statement early in the class and then again later when they began library research. Some instructors told stories about prior experiences with students who plagiarized and the dire

consequences of this type of behavior (i.e. course failure and/or scholastic dishonesty case). Hyperawareness of plagiarism as “cheating,” along with the advanced cognitive task of synthesizing numerous sources (perhaps to meet requirements regarding a minimum number of sources) may have overwhelmed students, who then fell back on simply dropping in strings of quotations from their sources, allowing the “experts” to do the talking for them. Students may have also felt that the source conveyed the point in a clearer way, as many have explained to me “they [the author] said it better than I could” and that including direct quotes “proved” to the teacher that the student read the articles. This trend aligns with earlier findings about “source borrowing” and the nature of a writing task. Shi (2004) found that college students who were given sources and asked to write a summary were more likely to use the exact words of the source than those asked to write an opinion essay. Thus, it may be that the RW 101 students were still grappling with the task of synthesizing and, as a result, telling as opposed to transforming the ideas found in their sources (Bereiter & Scardamalia, 1985).

Other researchers have related the skill of combining ideas across multiple sources and writing synopses to individuals’ levels of writing expertise, with college composition students scoring higher on the synthesis of sources than high school students and those in junior college (Brown & Day, 1983). Future studies to explore the nature of source integration, perhaps from a developmental perspective, may help to explain this phenomenon. And, as with the other paper components, collecting instructors’ first draft comments, as well as their grading of the final drafts, may reveal varying levels of instruction on source integration.

Representing and addressing opposition. Another important rhetorical factor in my original hypotheses included the quality of students' counterarguments and rebuttals in their proposal papers. Given that one of the features of epistemological growth includes recognizing competing viewpoints, I predicted that the quality of counterarguments and rebuttals would be related to students' beliefs about the nature and certainty of knowledge. Thus, I scored the elements of counterargument and rebuttal separately then, given the .96 correlation between the two components, I combined them both under the broad category of "managing opposition." The high correlation between these two variables is in keeping with the relatedness of explaining, and then addressing, views that may challenge one's own. For instance, papers that lacked counterarguments could not have rebuttals, as the student had not presented an opposing view to refute. Conversely, students who provided counterarguments were likely to also include rebuttals, usually immediately after presenting the opposing view(s).

Similar to the other paper components, there was large variation in the quality of students' opposition management in their proposal papers. The mean score was 2.92, with a standard deviation of 1.24, illustrating wide variability across the papers. And, as with paper components reviewed earlier, it is difficult to account for this variability because I did not collect students' first drafts, review their instructors' feedback, or account for the instructors' emphasis (or lack thereof) on this particular rhetorical element. Despite these problems, my results were similar with those of earlier studies of counterarguments and rebuttals in student writing. For example, Crammond (1998) reported that undergraduates across majors and academic years struggled with crafting effective responses to alternative viewpoints in their writing. Negotiating among

competing perspectives is rhetorically, and epistemologically, important, and interventional studies have shown that management of opposition may be topic-dependent. Stanovich and West (2008) found that the strength of students' prior opinions on controversial issues predicted their bias in reading about that issue and their rejection of views that opposed their own. This "myside bias" may have manifested in students in my sample who chose topics about which they held strong convictions and, as a result, it was difficult them to acknowledge views that competed with their own. Additionally, work by Nussbaum and Kardash (2005) showed that undergraduates who received explicit instructions about writing counterarguments and rebuttals produced essays with higher quality "opposition management" compared with other groups that received different instructional interventions, provided that their views about the issue were not extreme prior to the study. This suggests that in my study, the type of guidance students received, e.g. explicit instruction, modeling, peer review, teacher feedback, may have influenced the quality of their counterarguments and rebuttals in the final draft of their proposal papers.

Limitations and Research Implications

The epistemological and writing belief scales, as well as factors relating to students' argumentative essays, were prone to error on multiple levels. In this section I explain potential sources for this variance as well as how these issues could be addressed in future work.

In terms of the questionnaires, self-report measures are generally subjected to measurement error concerns regarding subjectivity and interpretation. Thus, it is critical to consider response error when interpreting survey data. One source of error results from

the items comprising the scales. As communicative acts, each item is subject to the participants' interpretation of it and, as Willis (2004) explained, precludes a negotiated understanding, or "grounding," between the survey author and the participant. Given that participants could not interpret the scale items within the context of a conversation, additional error was introduced when participants inferred each item and response choice (in this study, it was level of agreement from 1-5). Other issues include the degree to which students reported on their actual beliefs as opposed to those they considered socially desirable. For example, in rating their levels of agreement with each of the items, students may have recognized items as values articulated by their teachers, peers, and broader Discourse communities. Thus, they may have responded to items in a socially desirable way as opposed to responding in a way that reveals their beliefs and practices. A more direct way to assess the way students' beliefs manifest in academic tasks would be to conduct protocol analyses of students composing, planning, and/or reading critically. However, scales allow research designs that include more members due to their ease of use and efficiency.

Critiques of Schommer Epistemological Beliefs Questionnaire. In general, most criticism of Schommer's measure of epistemological beliefs centered on issues of internal consistency. Her reduction of 63 items into 12 *a priori* categories prior to conducting factor analysis introduced variance by adding an additional layer of interpretation onto the factor analysis itself (Hofer & Pintrich, 1997). Wood and Kardash (2002) explicated issues regarding the replicability of the 12 item groupings from the overall 63 items, and questioned whether these groupings would be confirmed by other groups of educational psychologists. DeBacker and colleagues (2008) explained the factor groupings of the 12

subcategories have not been consistent across studies, although most work with the EBQ in college populations has revealed generally comparable subcategory loadings. These issues, along with those regarding power, item quality, and variation due to personality characteristics such as need for cognition (DeBacker et. al., 2008), and academic aptitude and motivation, represent methodological concerns voiced by researchers across two decades.

Writing beliefs scales and content reliability. As detailed in Chapter 4, the results of my analyses of the Writing Belief Inventory (WBI) were not consistent with those of White and Bruning (2005). In selecting this scale, I was interested in its measurement of “transmissional” and “transactional” writing beliefs and its reported correlates with the quality of academic writing. Earlier work with the measure consisted of two studies, each including approximately 170 undergraduates. In hindsight, the decision to include this scale in my dissertation study was premature; although I did include the WBI in pilot tests, and had difficulty interpreting the factor analysis, I decided to retain it with some revisions and additions to White and Bruning’s original items. Despite my effort to salvage the scale by adding additional items, I struggled with the resulting scale’s factor structure and was thus left with few (4-5) items composing each scale. My decision to keep the measure in the study was due to the dearth of scales that assess students’ beliefs about academic writing. Lavelle and Zuercher (2001) created a scale to measure students’ composing processes and, while it does relate to college students’ writing, its items center on students’ writing processes. Thus, use of their measure did not align with my research questions about writing beliefs. Future work, perhaps utilizing the writing

attitudes measure from Charney, Newman, and Palmquist's (1995) study, may provide more stability in assessing students' ideas about writing.

Proposal argument final drafts. Although the proposal argument prompt was standardized across the thirteen sections of RW 101 included in this study, it likely varied by section based on elements emphasized by the instructor. I did not observe the instructors assigning and reviewing the paper prompt, but doing so might have helped to explain some of the variance across different sections. Additionally, I did not interview the instructors about their approaches to this paper, nor did I confirm that their assignment sheet aligned with that of the department's. Accounting for this variability across the thirteen instructors in the regression equations may have addressed this issue, but the number of participants from each RW 101 section varied between 3-16. Thus, there was not equitable representation of students for each instructor. Future research designs should include identical assignments across sections of RW 101, comparable numbers of student participants from each class, and teacher interviews or class observations to address issues of instructional variance. Given the scope of such a project, an ethnographic approach following a specific class might yield rich descriptions of students' acculturation to academic writing and thinking.

In addition to the assignment itself and its presentation to the students, variability due to instructors may have increased error in other ways. For example, the students had submitted an early draft of their papers prior to the final submission that I collected. Instructors carefully reviewed students' first submissions and provided comments for revision. Further, the course emphasized students' revision as a re-seeing and re-thinking process, as opposed to sentence-level editing of their drafts. The instructor comments on

students' early drafts, as well as instruction on the revisions in class meetings, was likely an important variable in terms of differences in students' papers. In truth, although the proposal arguments were individually authored, they represent collaborative efforts in terms of the instructor's comments, those of classmates via peer review sessions, and guidance provided by student services like the writing center and/or informal feedback from friends. As a result, the final submission of the paper may be more of an assessment of the writing components emphasized by their instructors, peers, and tutors, than an earlier draft or an in-class writing assignment. This point about whose ideas, and skills, are represented in the paper touches on notions of knowledge, learning, collaboration, and ownership of ideas, and in general we understand writing as a collaborative process, as opposed to a solitary one. Future research that follows the evolution of students' rhetorical writing across the semester and within the context of interactions with their instructor, classmates, and support from the writing center, would be useful to illustrate the variation, interaction, and trajectory of rhetorical change.

Instructional Implications

Given the tentative nature of these findings, and lack of an experimental design, I present instructional suggestions cautiously. One of the most basic recommendations is that instructors make explicit their expectations of rhetorical components such as counterarguments, source integration, and audience awareness when discussing, and assigning, persuasive writing. Although my study design did not involve instructional intervention, the qualitative features of students' papers suggested consistent areas of weakness in students' persuasive strategies. Also, prior work suggested that instructional interventions supporting counterargument development helped students compose better

quality persuasive essays (Nussbaum & Kardash, 2005) highlighting the teach-ability of these rhetorical writing features

As presented in Chapter Two, prior studies of students' epistemological beliefs suggested strong correlations between more "sophisticated" views of knowledge and measures of academic performance such as GPA and reading comprehension (Schommer, 2001; Schommer, Crouse, & Rhodes, 1992; Schommer-Aikins & Easter, 2006). The nature of this relationship deserves further exploration so that we learn how students' academic tasks, such as writing, are shaped by their epistemological beliefs and ways that specific tasks, like persuasive writing, may promote epistemological change. For example, recent work by Kienhues, Bromme, and Stahl (2008) found that college students who received debate-style instruction had a greater change in their epistemological beliefs than students who received a lecture-style presentation of content.

The general "audiencelessness" of students' proposal papers, and their epistemological beliefs in stable, omniscient authority, suggests that college curricula should work to decentralize the ownership of knowledge. Fostering students' ownership of their ideas and appropriation of texts (versus being appropriated by them) is the impetus behind pedagogical approaches such as approaching the classroom as "protopublic space," whose reach, and audiences, extends beyond the walls of the classroom (Eberly, 1999). Authentic assignments, including those that promote engagement in real organizations and issues outside of the classroom, may provide a level of meaning and authenticity, as well opportunities for epistemic growth, beyond those represented by more traditional assignments.

APPENDIX A

DETAILS OF SCHOMMER'S FACTOR STRUCTURE AND THAT OF THE CURRENT STUDY

1 = I disagree a lot

5 = I agree a lot

Schommer's original grouping of items across 12 categories:

1) Quick

- a. If you are ever going to be able to understand something, it will make sense to you the first time you hear it.
- b. Successful students understand things quickly.
- c. If a person can't understand something within a short amount of time, then they should keep on trying.
- d. Working hard on a difficult problem for an extended period of time only pays off for really smart students.
- e. Learning is a slow process of building up knowledge.*

2) Certain

- a. If scientists try hard enough, they can find the truth to almost anything.
- b. Scientists can ultimately get to the truth.
- c. Truth is unchanging.
- d. Today's facts may be tomorrow's fiction.*

Items removed after pilot testing due to their clichéd nature:

Nothing is certain but death and taxes.

The only thing certain is uncertainty itself.*

3) Criticize authority

- a. For success in school, it's best not to ask too many questions.
- b. You can believe almost everything you read.
- c. I often wonder how much my teachers really know.*
- d. People who challenge authority are over-confident.
- e. You should evaluate the accuracy of information in a textbook, if you are familiar with the topic.*
- f. Often, even advice from experts should be questioned.*

4) Can't learn how to learn

- a. A course in study skills would probably be valuable.*

- b. The most successful people have discovered how to improve their ability to learn.*
- c. Students have a lot of control over how much they can get out of a textbook.*
- d. Self-help books are not much help.*

5) Depend on authority

- a. How much a person gets out of school mostly depends on the quality of the teacher.
- b. When you first encounter a difficult concept in a textbook, it's best to work it out on your own.*
- c. Whenever I encounter a difficult problem in life, I consult with my parents.
- d. Sometimes you just have to accept answers from a teacher even though you don't understand them.

6) Innate

- a. The potential to learn is established at birth.
- b. Some people are born good learners, others are just stuck with limited ability.
- c. Students who are "average" in school will remain "average" for the rest of their lives.
- d. An expert is someone who has a special gift in some area.

7) Single answer

- a. A good teacher's job is to keep his students from wandering from the right track.
- b. Things are simpler than most professors would have you believe.
- c. The most important aspect of scientific work is precise measurement and careful work.
- d. Educators should know by now which is the best method, lectures or small group discussions.
- e. You never know what a book means unless you know the intent of the author.*
- f. The most important part of scientific work is original thinking.*
- g. A single sentence has little meaning unless you know the situation in which it is spoken.*
- h. Most words have one clear meaning.
- i. A tidy mind is an empty mind.*
- j. I really appreciate instructors who organize their lectures meticulously and then stick to their plan.
- k. The best thing about science courses is that most problems have only one right answer.

8) Ambiguity

- a. It is annoying to listen to a lecturer who cannot seem to make up his mind about what he really believes.
- b. I find it refreshing to think about issues that authorities can't agree on.*

- c. If professors would stick to more facts and do less theorizing, one could get more out of college.
- d. I prefer movies that offer a neatly resolved ending.
- e. It's a waste of time to work on problems which have no possibility of coming out with a clear-cut answer.

8) Integration

- a. I try my best to combine information across chapters or even across classes.*
- b. To me studying means getting the big ideas from the text, rather than the details.*
- c. Being a good student generally involves memorizing facts.
- d. If a person forgot details, and yet was able to come up with new ideas from a text, I would think they were bright.
- e. Learning definitions word-for-word is often necessary to do well on tests.
- f. When I study, I look for specific facts.
- g. A really good way to understand a textbook is to re-organize the information according to your own personal scheme.*
- h. You will just get confused if you try to integrate new ideas in a textbook with knowledge you already have about a topic.

9) First

- a. Going over and over a difficult chapter usually won't help you understand it.
- b. If I find the time to re-read a textbook chapter, I get a lot more out of it the second time.
- c. Almost all the information you can learn from a textbook you will get during the first reading.

10) Work

- a. Genius is 10% ability and 90% hard work*.
- b. Wisdom is not knowing the answers, but knowing how to find the answers.*
- c. Getting ahead takes a lot of work.*
- d. The really smart students don't have to work hard to do well in school.

11) Concentration

- a. If a person tries too hard to understand a problem, they will most likely just end up being confused.
- b. Usually you can figure out difficult concepts if you eliminate all outside distractions and really concentrate.*

Factor Analysis results from current study

Subscale 1: Learning is quick, can't learn to Learn, Success, First, Quick

- a. If you are ever going to be able to understand something, it will make sense to you the first time you hear it. [Quick]
- b. Successful students understand things quickly. [Quick]
- c. If a person can't understand something within a short amount of time, then they should keep on trying. [Quick]
- d. Working hard on a difficult problem for an extended period of time only pays off for really smart students. [Quick]
- e. Learning is a slow process of building up knowledge.*[Quick]
- e. A course in study skills would probably be valuable.*[Learn]
- f. The most successful people have discovered how to improve their ability to learn.*[Learn]
- g. Students have a lot of control over how much they can get out of a textbook.*[Learn]
- h. Self-help books are not much help.* [Learn]
- i. Genius is 10% ability and 90% hard work*. [Work]
- j. Wisdom is not knowing the answers, but knowing how to find the answers.*[Work]
- k. Getting ahead takes a lot of work.*[Work]
- l. The really smart students don't have to work hard to do well in school. [Work]
- m. Going over and over a difficult chapter usually won't help you understand it. [First]
- n. If I find the time to re-read a textbook chapter, I get a lot more out of it the second time. [First]
- o. Almost all the information you can learn from a textbook you will get during the first reading. [First]

Omniscient Authority/ Single Truth

- a. For success in school, it's best not to ask too many questions. [Authority]
- b. You can believe almost everything you read.[Authority]
- c. I often wonder how much my teachers really know.* [Authority]
- d. People who challenge authority are over-confident.[Authority]
- e. You should evaluate the accuracy of information in a textbook, if you are familiar with the topic.*[Authority]
- f. Often, even advice from experts should be questioned.*[Authority]
- g. If scientists try hard enough, they can find the truth to almost anything. [Certainty]
- h. Scientists can ultimately get to the truth.[Certainty]
- i. Truth is unchanging.[Certainty]
- j. Today's facts may be tomorrow's fiction.*[Certainty]

Simple knowledge structure/ Structure of Knowledge/ Nature of expertise (un-attainability of knowledge)

- a. A good teacher's job is to keep his students from wandering from the right track. [Single]
- b. Things are simpler than most professors would have you believe. [Single]
- c. The most important aspect of scientific work is precise measurement and careful work. [Single]
- d. Educators should know by now which is the best method, lectures or small group discussions. [Single]
- e. You never know what a book means unless you know the intent of the author. * [Single]
- f. The most important part of scientific work is original thinking. * [Single]
- g. A single sentence has little meaning unless you know the situation in which it is spoken. * [Single]
- h. Most words have one clear meaning. [Single]
- i. A tidy mind is an empty mind. * [Single]
- j. I really appreciate instructors who organize their lectures meticulously and then stick to their plan. [Single]
- k. The best thing about science courses is that most problems have only one right answer. [Single]
- l. How much a person gets out of school mostly depends on the quality of the teacher. [Depend]
- m. When you first encounter a difficult concept in a textbook, it's best to work it out on your own. * [Depend]
- n. Whenever I encounter a difficult problem in life, I consult with my parents. [Depend]
- o. Sometimes you just have to accept answers from a teacher even though you don't understand them. [Depend]
- p. The potential to learn is established at birth. [Innate]
- q. Some people are born good learners, others are just stuck with limited ability. [Innate]
- r. Students who are "average" in school will remain "average" for the rest of their lives. [Innate]
- s. An expert is someone who has a special gift in some area. [Innate]

Impatience with Ambiguity and Integration

- a. I try my best to combine information across chapters or even across classes. *
- b. To me studying means getting the big ideas from the text, rather than the details. *
- c. Being a good student generally involves memorizing facts.
- d. If a person forgot details, and yet was able to come up with new ideas from a text, I would think they were bright.
- e. Learning definitions word-for-word is often necessary to do well on tests.

- f. When I study, I look for specific facts.
- g. A really good way to understand a textbook is to re-organize the information according to your own personal scheme.*
- h. You will just get confused if you try to integrate new ideas in a textbook with knowledge you already have about a topic.
- i. If a person tries too hard to understand a problem, they will most likely just end up being confused.
- j. Usually you can figure out difficult concepts if you eliminate all outside distractions and really concentrate.*It is annoying to listen to a lecturer who cannot seem to make up his mind about what he really believes.
- k. I find it refreshing to think about issues that authorities can't agree on.*
- l. If professors would stick to more facts and do less theorizing, one could get more out of college.
- m. I prefer movies that offer a neatly resolved ending.
- n. It's a waste of time to work on problems which have no possibility of coming out with a clear-cut answer.

APPENDIX B

MODIFICATION OF THE WRITING BELIEF SCALE

Original Measure (White and Bruning, 2005) that used in my pilot study:

1. Good writers include a lot of quotes from authorities in their writing.
2. Writing's main purpose is to give other people information.
3. A primary goal of writing should be to have to make as few changes as possible.
4. Writing should focus around the information in books and articles.
5. The key to successful writing is accurately reporting what authorities think.
6. Writing's main purpose is getting information across to readers.
7. Writing is a process that involves a lot of emotion.
8. It's important to develop a distinctive writing style.
9. Good writers stick closely to the information they have about a topic.
10. Good writing involves editing many times.
11. Writing often involves peak experiences.
12. Writing helps me better understand what I'm thinking about.
13. I always feel that just one more revision will improve my writing.

Revised Items: Results of Factor Analysis into 3 Independent Scales

Scale 1

Writing as Audienceless Product

- a. When I write a paper, I try to imagine who will be reading it.*
- b. Compared to other students in my year, I'm a good writer.*
- c. Writing helps me better understand what I'm thinking about.*
- d. Writing requires going back over it to improve what has been written.*
- e. When I write a paper or essay, I think about readers who might disagree with my opinion.*

Scale 2

Writing's Purpose is to Report Authority/ Knowledge-telling

- a. Good writers include a lot of quotes from authorities in their writing.
- b. The key to successful writing is accurately reporting what authorities think.
- c. Writing should focus on the information in books and articles.

Scale 3

Writing Should Avoid Disagreement

- a. In order to persuade me, writers should stick to one side of the issue.
- b. A primary goal of writing should be to have to make as few changes as possible.
- c. I try to stick only to my opinion and not present too many sides when I'm writing.
- d. Writers who include opinions that disagree with their own weaken their argument

APPENDIX C

SAMPLE FINAL ESSAY PROMPT

Argument of Proposal The Rhetorical Situation

For your third paper, I want you to write an argument of proposal (*Writing Arguments*, Ch. 15) that you could (and I hope will) submit to an audience who can take action on a problem that bothers you. If you write a “practical” proposal (*WA*, p. 320), you will be writing to an individual or a committee; if you write a “policy” proposal (*WA*, p. 320), you will be writing to an organization or a publication. Practical proposals address narrow, local, immediate problems and require a higher level of detail. Policy proposals address broad, wide-ranging, long-term problems and require handling of more complex issues.

Invention

I. After settling on an issue, you must first think of ways to convince your audience that a problem does in fact exist. The best way to go about this is to describe a goal, value, desired state or expectation that you and your audience share and then demonstrate that its realization is being prevented by the condition you want to change.

This section of your paper constitutes your warrants and backing. Thinking back to Quindlen, one of her enthymemes was, “same-sex couples should be allowed to marry because it will make it easier for them to have families,” which rested on the assumption that we should take actions that make things easier on families. The first few paragraphs of her argument, then, served to assert that a value we all share (family) was being prevented by a condition that should be changed (bans on same-sex marriage).

II. Once you’ve gathered the materials necessary to prove that a problem exists, you must think of a solution. Anyone can imagine a solution to any problem; the challenge lies in describing a solution that is *feasible*, reasonably capable of being enacted.

This section of your paper, of course, contains your central claim. Notice the subtle way in which Quindlen argues for the feasibility of her solution: “there is no secular reason that we should take a patchwork approach of corporate, governmental, and legal steps to guarantee what can be done simply, economically, conclusively, and inclusively with the words ‘I do.’” Quindlen does not dream up some elaborate new plan for ensuring familial rights for same-sex couples; rather, she proposes the much simpler solution of simply extending the purview of an existing institution: marriage.

III. Finally you must produce justifications for enacting your solution. The key here is to prove beyond reasonable doubt that your proposal will solve the problems described in the first section of your argument.

This section of your paper constitutes your reasons and grounds. When Quindlen points out “the automatic rights, privileges, and responsibilities society attaches to a marriage contract,” she justifies her proposal by demonstrating that it will make it easier for same-sex couples to have a family.

IV. Make sure that, when appropriate, you limit the force of all your claims with the judicious use of qualifiers. If you sense a potential objection to some part of your argument, make sure you tactfully handle conditions of rebuttal.

V. You should establish *ethos* by demonstrating to your audience that you are responsible, fair-minded, and know what you’re talking about. This means you will need to adopt a reasonable tone, treat all sides of an issue fairly, and conduct sufficient research.

VI. When possible, appeal to *pathos* by using concrete language, vivid examples, and stirring your readers’ emotions and values while not making them feel manipulated.

Arrangement

If you write a practical proposal, you should begin with a metadiscursive summary that (1) identifies your audience, (2) asserts the importance of the issue and the need to address it right now, (3) clearly states your proposal, and (4) lists the benefits of enacting your proposal.

If you write a policy proposal, you have more leeway with your introduction. You can begin with the sort of traditional academic introduction that you’ve written for your first two papers, or you can try your hand at a more dramatic arrangement like Quindlen’s.

As you should know by now, your primary goal is to arrange the parts of your argument in the order you think will prove most persuasive with your audience. Make sure you end with a conclusion that sums up your argument and ties up any loose ends.

Style

Your most important stylistic concern should be with crafting unified paragraphs, which consist of two things: (1) a topic sentence that clearly states the main idea of the paragraph (2) supporting sentences that cluster around the main idea without detours. Your paper should adhere to the conventions of academic/professional writing, and you should attempt to avoid errors in grammar, spelling, punctuation, and mechanics. Consult your *Scott, Foresman Handbook* for questions you have regarding style.

Your second most important stylistic concern should be with adhering to MLA guidelines for the documentation of sources. Chapter 53 in your *Scott, Foresman Handbook* covers MLA, and chapter 57 covers COS, which works within MLA to document electronic sources.

Other Requirements

You must use outside sources to help support your argument. If you write a practical proposal, many (perhaps all) of your research will be primary: interviews, surveys, questionnaires, etc. If you write a policy proposal, you may still conduct primary research, but you will need to use secondary sources as well. As with your last paper, secondary sources must be accessed through Library Online in order to ensure that they are appropriate. If you find a source elsewhere or want to use a website not accessed through the library, you **must** clear it with me first or risk failing the assignment.

With your final draft, you must turn in a copy of one page you have cited from each source you use. In other words, if you use ten sources, you should turn in ten sample pages. If you conduct primary research, I want transcripts of interviews and copies of surveys or questionnaires.

Begin with a word limit of 1000 words, or about four pages. If you find that the argument you want to make can't possibly fit within that space, you may request more length. I'll expect a good reason for the request, however, and we'll negotiate a new word limit.

The paper should be typed, double-spaced, with 12 point character size and one inch margins all the way around.

Rough drafts must meet **all** the requirements of the assignment or risk being returned. You should aim for a draft that you are convinced is final; only then will your paper reach its full potential. Both the rough draft and final draft must be turned in on time; you will be docked a full letter grade for each day **either** draft is late.

REFERENCES

- Ackerman, J. M. (1993). The promise of writing to learn. *Written Communication, 10*(3), 334-370.
- Alexander, P. A., Schallert, D. L., & Hare, V. C. (1991). Coming to terms: How researchers in learning and literacy talk about knowledge. *Review of Educational Research, 61*(3), 315-343.
- Amsel, E., Langer, R., & Loutzenhiser, L. (1991). Do lawyers reason differently from psychologists? A comparative design for studying expertise. In R. J. Sternberg & P. A. Frensch (Eds.), *Complex problem solving* (pp. 223-252). Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Anderson, J. R., Reder, L. M., & Simon, H. A. (1996). Situated learning and education. *Educational Researcher, 25*(4), 5-11.
- Ashley, H. (2001). Playing the game: Proficient working-class student writers' second voices. *Research in the Teaching of English, 35*, 493-524.
- Bartholomae, D. (1985). Inventing the university. In M. Rose (Ed.), *When a writer can't write: Studies in writer's block and other composing-process problems* (pp. 134-165). New York: Guilford.
- Baxter Magolda, M. (1992). Gender differences in epistemological development. *Journal of College Student Development, 31*, 555-561.
- Baxter Magolda, M. (2004). *Making their own way: Narratives for transforming higher education to promote self-development*. Virginia: Stylus.
- Belenky, M., Clinchy, B., Goldberger, N., & Tarule, J. (1986/1997). *Women's ways of knowing: The development of self, voice, and mind*. New York: Basic Books.
- Bereiter, C., & Scardamalia, M. (1987). *The psychology of written composition*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Berkenkotter, C., Huckin, T. N., & Ackerman, J. (1991). Conventions, conversations, and the writer: Case study of a student in a rhetoric Ph.D. program. *Research in the Teaching of English, 22*, 9-44.
- Berlin, J. (1988). Rhetoric and ideology in the writing class. *College English, 50*(5), 477-494.
- Bizzell, P. (2000). Writing as a means of social change. In L. Shamoan, S. Jamieson, R. Howard, & R. Schwegler (Eds.), *Coming of age: The advanced writing curriculum*. Portsmouth, NH: Heinemann-Boynton/Cook.
- Bizzell, P. (1986). What is a discourse community? In P. Bizzell (Ed.), *Academic discourse and critical consciousness* (pp. 222-227). Pittsburgh, PA: University of Pittsburgh.
- Bloom, B. (1956). *Taxonomy of educational objectives*. New York: Susan Fauer Company.
- Brabeck, M. M. (1984). Longitudinal studies of intellectual development during adulthood: Theoretical and research models. *Journal of Research and Development in Education, 17*(3), 12-27.

- Brown, A.L., & Day, J. D. (1983). Macrorules for summarizing texts: The development of expertise. *Journal of Verbal Learning and Verbal Behavior*, 22, 1-14.
- Bruning, R., & Horn, C. (2000). Developing motivation to write. *Educational Psychologist*, 35(1), 25-37.
- Bryson, M., Bereiter, C., Scardamalia, M., & Joram, E. (1991). Going beyond the problem as given: Problem solving in expert and novice writers. In R. J. Sternberg & P. A. Frensch (Eds.), *Complex problem solving* (pp. 61-84). Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Buehl, M. M., & Alexander, P. M. (2001). Beliefs about academic knowledge. *Educational Psychology Review*, 13(4), 385-418.
- Buehl, M. M., & Alexander, P. M. (2005). Motivation and performance differences in students' domain-specific epistemological belief profiles. *American Educational Research Journal*, 42, 697-726
- Buehl, M. M., Alexander, P. M., & Murphy, P. K. (2002). Beliefs about schooled knowledge: Domain specific or domain general? *Contemporary Educational Psychology*, 27, 415-449.
- Butcher, K. R., & Kintsch, W. (2001). Support of content and rhetorical processes of writing: Effects on the writing process and the written product. *Cognition and Instruction*, 19(3), 277-322.
- Budner, S. (1962). Intolerance of ambiguity as a personality variable. *Journal of Personality*, 30, 29-50.
- Carvalho, J. B. (2002). Developing audience awareness in writing. *Journal of Research in Reading*, 25(3), 271-282.
- Chambliss, M. J., & Garner, R. (1996). Do adults change their minds after reading persuasive text? *Written Communication*, 13(3), 291-313.
- Charney, D. (2008). *Department of rhetoric and composition: Report on writing assessment*. Austin, TX: University of Texas.
- Charney, D., Newman, J. H., & Palmquist, M. (1995). I'm just no good at writing-epistemological style and attitudes toward writing. *Written Communication*, 12(3), 298-329.
- Cohen, M., & Reiel, M. (1989). The effect of distant audience on students' writing. *American Educational Research Journal*, 26(2), 143-159.
- Cooper, C. R., Cherry, R., Copley, B., Fleischer, S., Pollard, R., & Sartisky, M. (1984). Studying the writing abilities of a university freshman class: Strategies from a case study. In R. Beach & L. Bridwell (Eds.), *New directions in composition research* (pp. 19-52). New York: Guilford.
- Crammond, J. (1998). The uses and complexity of argument structures in student persuasive writing. *Written Communication*, 15, 230-268
- Curtis, M., & Herrington, A. (2003). Writing development in the college years: By whose definition? *College Composition and Communication*, 55(1), 69-90.
- Davis, R., & Shadle, M. (2000). "Building a mystery:" Alternative research writing and the academic art of seeking. *College Composition and Communication*, 51(3), 417-446.

- DeBacker, T. K., Crowson, H. M., Beesley, A. D., Thoma, S. J., & Hestevold, N. (2008). The challenge of measuring epistemological beliefs: An analysis of three self-report instruments. *Journal of Experimental Education*, 76(3), 281-312.
- DeRoma, V. M., Martin, K. M., & Kessler, M. L. (2003). The relationship between tolerance for ambiguity and need for course structure. *Journal of Instructional Psychology*, 13(2), 104-109.
- Duell, O. K., & Schommer-Aikins, M. (2001). Measures of people's beliefs about knowledge and learning. *Educational Psychology Review*, 13(4), 419-449.
- Eberly, R. (1999). From writers, audiences, and communities to publics: Writing classrooms as protopublic spaces. *Rhetoric Review*, 18(1), 165-178.
- Ede, L., & Lunsford, A. (1984). Audience addressed/Audience invoked: The role of audience in composition theory and pedagogy. *College Composition and Communication*, 35(2), 155-171.
- Elbow, P. (1991). Reflections on academic discourse: How it relates to freshmen and colleagues. *College English*, 53(2), 135-155.
- Emig, J. (1971). *The composing processes of twelfth graders*. Urbana, IL: National Council of Teachers of English.
- Ellis, V., Fox, C., & Street, B. (2008). *Rethinking English in schools: A new and constructive stage*. Brighton: Continuum Books.
- Ennis, R. (1987). A taxonomy of critical thinking dispositions and abilities. In J. Baron & R. Sternberg (Eds.), *Teaching thinking skills: Theory and practice* (pp. 127-148). New York: W.H Freeman.
- Ewald, H. R. (1993). Waiting for answerability: Bakhtin and composition studies. *College Composition and Communication*, 44(3), 331-348.
- Faigley, L. (1986). Competing theories of process: A critique and proposal. *College Composition and Communication*, 48(6), 527-542.
- Fishman, J., Lunsford, A., McGregor, B., & Otuteye, M. (2005). Performing writing, performing literacy. *College Composition and Communication*, 57(2), 244-252.
- Ferris, D. R. (1994). Rhetorical strategies in student persuasive writing: Differences between native and non-native English speakers. *Research in the Teaching of English*, 28(1), 45-65.
- Flower, L. (1990). Introduction: Studying cognition in context. In L. Flower, V. Stein, J. Ackerman, M. J. Kantz, K. McCormick, & W.C. Peck (Eds.), *Reading to write: Exploring a cognitive and social process*. New York: Oxford University Press.
- Flower, L., & Hayes, J. R. (1981). A cognitive process theory of writing. *College Composition and Communication*, 32(4), 365-387.
- Fox, H. (1999). *Listening to the world: Cultural issues in academic writing*. Urbana, IL: National Council of Teachers of English.
- Gee, J. P. (2004). *Situated language and learning: A critique of traditional schooling*. New York: Routledge.
- Geisler, C. (1994). *Academic literacy and the nature of expertise*. New Jersey: Lawrence Erlbaum Associates.
- Giancarlo, C. A., Facione, P. A. (2001). A four-year look at the disposition toward critical thinking among undergraduate students. *The Journal of General Education*, 50(1), 29-55.

- Gillam, A. M. (1991). Returning students' ways of writing: Implications for first-year college composition. *Journal of Teaching Writing*, 10(1), 1-20.
- Giroux, H. (1992). *Border crossings: Cultural workers and the politics of education*. New York: Routledge.
- Glatfelter, M. (1982). Identity development, intellectual development, and their relationship in reentry women students. (Doctoral dissertation, University of Minnesota). *Dissertation Abstracts International*, 43, 354a.
- Govier, T. (1987). *Problems in argument analysis and evaluation*. Dordrecht, Holland/Providence, RI: Foris Publications.
- Graff, G. (1990). Determinacy/Indeterminacy. In F. Lentricchia & T. McLaughlin (Eds.), *Critical terms for literary study* (pp. 163-176). Chicago, IL: University of Chicago Press.
- Goldberger, N., Tarule, J., Clinchy, B., & Belenky, M. (Eds.). (1998). *Knowledge, difference, and power: Essays inspired by women's ways of knowing*. New York: Basic Books.
- Haas, C. (1994). Learning to read biology. *Written Communication*, 11, 43-84.
- Hall, V. C., Chiarello, K. S., & Edmondson, B. (1996). Deciding where knowledge comes from depends on where you look. *Journal of Educational Psychology*, 88(2), 305-313.
- Hayes, J. R. (1996). A new framework for understanding cognition and affect in writing. In C. M. Levy & S. Ransdell (Eds.), *The science of writing* (pp. 1-27). Mahwah, NJ: Erlbaum.
- Hays, J. N. (1988). Socio-cognitive development and argumentative writing: Issues and implications from one research project. *Journal of Basic Writing*, 7(2), 42-67.
- Hays, J. N., & Brandt, K. S. (1992). Socio-cognitive development and students' performance on audience-centered argumentative writing. In M. Secor & D. Charney (Eds.), *Constructing rhetorical education* (pp. 202-229). Carbondale, IL: Southern Illinois University Press.
- Hays, J. N., Brandt, K. M., & Chantry, K. H. (1988). The impact of friendly and hostile audiences on the argumentative writing of high school and college students. *Research in the Teaching of English*, 22(4), 391-416.
- Hardin, J. M. (2001). *Opening spaces: Critical pedagogy and resistance theory in composition*. New York: State University of New York Press.
- Haswell, R. H. (2000). Documenting improvement in college writing: A longitudinal approach. *Written Communication*, 17(3), 307-352.
- Herrington, A. J. (1992). Composing one's self in a discipline: Students' and teachers' negotiations. In M. Secor & D. Charney (Eds.), *Constructing rhetorical education* (pp. 91-115). Carbondale, IL: Southern Illinois University Press.
- Herrington, A., & Curtis, M. (2000) *Persons in process: Four stories of writing and personal development in college*. Urbana, IL: NCTE.
- Hofer, B. K. (2002). Personal epistemology as a psychological and educational construct: An introduction. In B. K. Hofer & P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 3-14). Mahwah, NJ: Erlbaum.

- Hofer, B. K., & Pintrich, P. R. (1997). The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. *Review of Educational Research, 67*(1), 88-140.
- Holding, M. (2005). Liberating the student's voice: A teacher's story of the college essay. *English Journal, 94*(4), 76-82.
- Hilgers, T. L., Hussey, E. L., & Stitt-Bergh, M. (1999). "As you're writing you have these epiphanies:" What college students say about writing and learning in their majors. *Written Communication, 16*(3), 317-353.
- Jehng, J. J., Johnson, S. D., & Anderson, R. C. (1993). Schooling and students' epistemological beliefs. *Contemporary Educational Psychology, 18*, 23-35.
- Kienhues, D., Bromme, R., & Stahl, E. (2008). Changing epistemological beliefs: The unexpected impact of a short-term intervention. *British Journal of Educational Psychology, 78*(4), 545-565.
- King, P. M., & Kitchener, K. S. (1994). *Developing reflective judgment*. San Francisco, CA: Jossey-Bass.
- Kitchener, K. S. (2002). Skills, tasks, and definitions: Discrepancies in the understanding and data on the development of folk epistemology. *New Ideas in Psychology, 20*(2-3), 309-328.
- Kitchener, K. S., & King, P. M. (1981). Reflective judgment: Concepts of justification and their relationship to age and education. *Journal of Applied Developmental Psychology, 2*, 89-116.
- Kizilgunes, B., Tekkaya, C., & Sungur, S. (2009). Modeling the relations among students' epistemological beliefs, motivation, learning approach, and achievement. *Journal of Educational Research, 102*(4), 243-256.
- Klaczynski, P. A., & Robinson, B. (2000). Personal theories, intellectual ability, and epistemological beliefs: Adult age differences in everyday reasoning biases. *Psychology and Aging, 15*(3), 400-416.
- Knefelkamp, L. L. (1999). Introduction and theory update. In W. G. Perry (Eds.), *Form of intellectual and ethical development in the college years* (pp. xi-xxxviii). San Francisco, CA: Jossey-Bass.
- Kuhn, D. (1991). *The skills of argument*. New York: Cambridge Press.
- Kuhn, D. (1999). A developmental model of critical thinking. *Educational Researcher, 28*(2), 16-25.
- Kuhn, D., & Weinstock, M. What is epistemological thinking and why does it matter? In B. K. Hofer & P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 121-144). Mahwah, NJ: Erlbaum.
- Langer, E. J. (1989). *Mindfulness*. Reading, MA: Addison-Wesley.
- Larson, R. L. (1982). The "research paper" in the writing course: A non-form of writing. *College English, 44*(8), 811-816.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.
- Lavelle, E., & Zuercher, N. (2001). The writing approaches of university students. *Higher Education, 43*, 373-391.
- McAlexander, P. J. (1994). Ideas in practice: Audience awareness in developmental composition. *Journal of Developmental Education, 20*(1), 28-34.

- McClain, D. L. (1993). The MSTAT-1: A new measure of an individual's tolerance for ambiguity. *Educational and Psychological Measurement*, 53, 183-189.
- Mines, R. A., King, P. M., Hood, A. B., & Wood, P. K. (1990). Stages of intellectual development and associated critical thinking skills in college students. *Journal of College Student Development*, 31, 538-547.
- Moore, W. S. (2002). Understanding learning in a postmodern world: Reconsidering the Perry Scheme of ethical and intellectual development. In B. K. Hofer & P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 17-36). Mahwah, NJ: Erlbaum.
- Muis, R. K., Bendixen L. D., & Haerle F. C. (2006). Domain-general and domain-specificity in personal epistemology research: Philosophical and empirical reflections in the development of a theoretical framework. *Educational Psychology Review*, 18(1), 3-54.
- Neber, H., & Schommer-Aikins, M. (2002). Self-regulated science learning with highly gifted students: The role of cognitive, motivational, epistemological, and environmental variables. *Higher Ability Studies*, 13, 59-74.
- Neely, M. E., Schallert, D. L., Mohammed, S. S., Roberts, R. M., & Chen, Y. (2009). Self-kindness when facing stress: The role of self-compassion, goal regulation, and support in college students' well-being. *Motivation and Emotion*, 33, 88-97.
- Neely, M. E., Little, M., & Hardy, M. O. (2008). Ambassadors of rhetoric: High school and college students in an online community of practice. Paper presented at meeting of the Rhetorical Society of America, Seattle, WA.
- Newman, J. H. (1993). A structural investigation of intellectual development and epistemological style in young adults (Doctoral dissertation, Pennsylvania State University). *Dissertation Abstracts International*, 54, 2786B.
- Nussbaum, M. E., & Kardash, A. M. (2005). The effects of goal instructions and text on the generation of counterarguments during writing. *Journal of Educational Psychology*, 97(2), 157-169.
- Nystrand, M., Greene, S., & Wiemelt, J. (1993). Where did composition studies come from? An intellectual history. *Written Communication*, 10(3), 267-333.
- Ong, W. (1975). The writer's audience is always a fiction. *PMLA*, 90, 9-21.
- Paulsen, M. B., & Feldman, K. A. (2005). The conditional and interaction effects of epistemological beliefs on the self-regulated learning of college students: Motivational strategies. *Research in Higher Education*, 46(7), 731-768.
- Penrose, A. M., & Geisler, C. (1994). Reading and writing without authority. *College Composition and Communication*, 45(4), 505-520.
- Perry, W. (1968/1999). *Forms of ethical and intellectual development in the college years: A scheme*. San Francisco, CA: Jossey-Bass.
- Petraglia, J. (1999). Is there life after process? The role of social scientism in a changing discipline. In T. Kent (Ed.). *Post process theory: Beyond the writing-process paradigms* (pp. 7-15). Carbondale, IL: Southern Illinois University Press.
- Phan, H. P. (2009). Multiple regression analyses of epistemological beliefs, learning approaches, and self-regulated learning. *Electronic Journal of Research in Educational Psychology*, 14(6), 157-184.

- Phillips, D. C., & Burbules, N. C. (2000). *Postpositivism and educational research*. Lanham, MD: Rowman & Littlefield.
- Rodriguez, R. (1982). *The hunger of memory: The education of Richard Rodriguez*. London: Bantam Press.
- Rohen, D. H., & Willey, R. J. (1988). The effect of audience awareness on drafting and revising. *Research in the Teaching of English*, 22(1), 75-88.
- Rose, M. (1985). The language of exclusion: Writing instruction at the university. *College English*, 47, 341-359.
- Ryan, M. P. (1984) Monitoring text comprehension: Individual differences in epistemological standards. *Journal of Educational Psychology*, 76, 248-258.
- Santa, T. (2008). *Dead letters: Error in composition, 1873-2004*. Cresskill, NJ: Hampton Press.
- Santos, C. M. M., & Santos, S. L. (Eds.). (1999). *Good argument, content and contextual dimensions*. Amsterdam: Amsterdam University Press.
- Schallert, D. L., & Martin, D. B. (2003). A psychological analysis of what teachers and students do in the language arts classroom. In J. Flood, D. Lapp, J. R. Squire, & J. M. Jensen (Eds.), *Handbook of research on teaching the English language arts* (2nd ed., pp. 31-45). New York: Macmillan.
- Schommer, M. (1990). Effects of beliefs about the nature of knowledge on comprehension. *Journal of Educational Psychology*, 82, 498-504.
- Schommer, M. (1993a). Comparisons of beliefs about the nature of knowledge and learning among postsecondary students. *Research in Higher Education*, 34(3), 355-370.
- Schommer, M. (1993b). Epistemological development and academic performance among secondary students. *Journal of Educational Psychology*, 85, 1-6.
- Schommer, M. (1998). The influence of age and education on epistemological beliefs. *British Journal of Educational Psychology*, 68, 551-562.
- Schommer-Aikins, M. (2002). An evolving theoretical framework for an epistemological belief system. In B. K. Hofer & P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp.). Mahwah, NJ: Erlbaum.
- Schommer-Aikins, M. (2004). Explaining the epistemological belief system: Introducing the embedded systemic model and coordinated research approach. *Educational Psychologist*, 39(1), 19-29.
- Schommer-Aikins, M. & Easter, M. (2009). Ways of knowing and willingness to argue. *The Journal of Psychology: Interdisciplinary and Applied*, 143(2), 117-132.
- Schommer-Aikins, M. & Hutter, R. (2002). Epistemological beliefs and thinking about everyday controversial issues. *The Journal of Psychology*, 136(1), 5-20.
- Schommer, M., Crouse, A., & Rhodes, N. (1992). Epistemological beliefs and mathematical text comprehension: Believing it's simple doesn't make it so. *Journal of Educational Psychology*, 84, 435-443.
- Schommer, M., & Walker, K. (1997). Epistemological beliefs and valuing school: Considerations for college admissions and retention. *Research in Higher Education*, 38(2), 173-186.

- Schraw, G. (2000). Reader beliefs and meaning construction in narrative text. *Journal of Educational Psychology, 92*(1), 96-106.
- Shaughnessy, M. E. (2004). An interview with Deanna Kuhn. *Educational Psychology Review, 16*(3), 267-282.
- Shell, D., Colvin, C., & Bruning, R. (1995). Developmental and ability differences in self-efficacy, causal attribution, and outcome expectancy mechanisms in reading and writing achievement. *Journal of Educational Psychology, 87*, 386-398.
- Smagorinsky, P. (1997). Personal growth in a social context. *Written Communication, 14*(1), 63-105.
- Stanovich, K. E., & Cunningham, A. E. (1993). Where does knowledge come from? Specific associations between print exposure and information acquisition. *Journal of Educational Psychology, 85*(2), 211-229.
- Stanovich, K. E., & West, R. F. (1997). Reasoning independently of prior belief and individual differences in actively open-minded thinking. *Journal of Educational Psychology, 89*(2), 342-357.
- Sternglass, M. S. (1993). Writing development as seen through longitudinal research. *Written Communication, 10*(2), 235-261.
- Sternglass, M. S., & Pugh, S. L. (1986). Retrospective accounts of language and learning processes. *Written Communication, 3*(3), 297-323.
- Straus, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.
- Toplak, M. E., & Stanovich, K. E. (2002). The domain specificity and generality of disjunctive reasoning: Searching for a generalizable critical thinking skill. *Journal of Educational Psychology, 94*(1), 197-209.
- Uehling, K. (1996). Older and younger adults writing together: A rich learning community. *The Writing Instructor, 15*(2), 61-69.
- Van Dijk, T. A., & Kintsch, W. (1983). *Strategies of discourse comprehension*. New York: Academic Press.
- Willis, G. (2004). *Cognitive interviewing: A tool for improving questionnaire design*. Thousand Oaks, CA: Sage.
- Weese, K. L. (1999). Learning from students: An approach to teaching beginning college writers. In K. L. Weese, S. L. Fox, & S. Greene (Eds.) *Academic literacy* (pp. 3-20). Mahwah, NJ: Erlbaum.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge, UK: Cambridge University Press.
- White, M. J., & Bruning, R. (2005). Implicit writing beliefs and their relationship to writing quality. *Contemporary Educational Psychology, 30*(2), 166-190.
- Wood, P. (1997). A secondary analysis of claims regarding the Reflective Judgment interview: Internal consistency, sequentiality, and intra-individual differences in ill-structured problem solving. In J. C. Smart (Ed.), *Higher Education: Handbook of theory and research* (Vol. 22, pp. 245-314). Edison, NJ: Agathon.
- Wood, P., & Kardash, C. A. (2002). Critical elements in the design and analysis of studies of epistemology. In B. K. Hofer & P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 231-260). Mahwah, NJ: Erlbaum.

- Wood, P., Kitchener, K., & Jensen, L. (2002). Considerations in the design and evaluation of a paper-and-pencil measure of epistemic cognition. In B. K. Hofer & P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 277-294). Mahwah, NJ: Erlbaum.
- Zeidler, D. L., Sadler, T. D., Applebaum, S., & Callahan, B. E. (2009). Advancing reflective judgment through socioscientific issues. *Journal of Research in Science Teaching*, *46*(1), 74-101.
- Zhang, L.-F. (2003). Contributions of thinking styles to critical thinking dispositions. *The Journal of Psychology*, *137*(6), 517-544.

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