CRITICAL THINKING ABOUT VALUES:
THE EFFECTS OF AN INSTRUCTIONAL PROGRAM, REASONS FOR ATTENDING
COLLEGE, AND GENERAL LIFE GOALS ON THE APPLICATION OF CRITICAL
THINKING TO VALUES EXPRESSED IN AN ESSAY PROMPT

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ABSTRACT

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This is an important and exciting time for discourse and action regarding how to train people to think critically in accordance with well-understood values. This dissertation provides a discussion and analysis of these issues, contextualized empirically within an innovative program at Bowling Green State University (BGSU) designed to develop the ability of students to engage in “critical thinking about values.” Chapter 1 addresses the practical need for employees, citizens, and leaders who can think critically and make principled decisions, and how critical thinking and values are relevant to these societal needs. It also provides a theoretical treatment of critical thinking and values. Chapter 2 is a description of BGSU’s program, the Bowling Green eXperience (BGX). This chapter also provides general hypotheses related to the learning outcomes of BGX. Chapter 3 describes the quasi-experimental methodology and measures employed to test the hypotheses within the Department of Psychology. Six introductory psychology classes were targeted, three of which were part of the BGX program and three of which were otherwise equivalent. Participants were asked at the beginning and end of the Fall 2004 semester to complete a short-answer and essay test, the Critical Thinking about Values Assessment (CTVA), which required them to (1) identify the key components (KC) of an essay prompt and (2) to write a three-part response to the essay that articulated the values expressed therein (critical thinking about values; CTV). The CTV section was developed specifically to measure the BGX learning outcomes. Chapter 4 provides more specific hypotheses: that BGX program membership provides incremental validity beyond that of high school grade point average, ACT/SAT scores, reasons for attending college, and general life goals, in the prediction of participant’s responses to the CTVA. Results did not support hypotheses for the KC section of
the CTVA but they did support the hypotheses for the CTV section. Chapter 5 provides a
discussion of these results and their limitations, as well as recommendations for future
instructional programs and research on those programs to adhere more closely to established
theories, to refine the outcomes assessment, and to implement the program more systematically.
To my wife, Jennifer Zophy Gillespie,
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CHAPTER I: THEORETICAL PERSPECTIVES ON CRITICAL THINKING AND VALUES

Introduction

This is an important and exciting time for discourse and action regarding how to train people to think critically in accordance with well-understood values. Corporate scandals like those of Adelphia, Arthur Andersen, Enron, ImClone, Merrill Lynch, and WorldCom have shaken America’s trust in its corporate leaders (see Lehmann-Haupt & St. John, 2002). Similarly, politics seem to be more a matter of finding the best way to spin information rather than of the best way to provide faithful information. For example, research conducted on the media coverage of the Iraqi War indicated that, in contrast to Australians and Europeans, Americans tended to recall misinformation as truthful, even though it was later retracted (Lewandowsky, Stritzke, Oberauer, & Morales, 2005). Further, claims of “reality television” and “fair and balanced” news (e.g., Fox’s Fair and Balanced) are catchy phrases without much truth (see Outfoxed: Rupert Murdoch’s War on Journalism), and even popular “documentaries” have clear persuasive purposes (e.g., compare Michael Moore’s Fahrenheit 911 to Fahrenhype 911). Additionally, we are exposed to a mind-boggling number of advertisements on a daily basis – 3,000 by some accounts (e.g., Shenk, 1997) – that embody attempts to influence our thoughts and behavior. The point is that we are presented with a lot of information from various stakeholders in society, much of which is flawed, and most of which is biased or slanted to meet the purveyor’s own goals.

Therefore, our public needs to be equipped with the knowledge and skills required to critically assess the evidence, the logic, and the values inherent in these many and varied attempts to influence our valuable attentional resources, thoughts, and emotions, as well as the
decisions we make such as which company to work for, which candidate to endorse, and the way we spend our time and money.

Learning how to think critically, and how to apply critical thinking to values, can be a powerful tool to help us process effectively all the various arguments and non-arguments we’re presented with. By some definitions, effective critical thinking training can also help us evaluate which ones are even worth our time and effort (Halpern, 1998). The integration of critical thinking and values might even help us to take advantage of exciting changes in technology, the workplace, and our society in general by increasing our facility with making values-based decisions.

For example, for over 20 years, we’ve had the technical capability to pre-screen employees for their susceptibility to toxic exposure by using genetic screening (Olian, 1984); do we value safety and associated cost savings? Or personal freedom and privacy? More recently, the capacity of fMRI brain scans to identify character traits raises broader-reaching questions regarding tradeoffs between accurate personality assessments for personnel selection/promotion versus individuals’ privacy (e.g., Hotz, 2005, February 27; Canli, Sivers, Gotlib, & Gabrieli, 2002). The impact of values-based decisions can be huge. As a case in point, values, namely “traditional moral values”, were touted as the deciding factor (Seelye, 2004) in the 2004 Presidential election!

This dissertation focuses on critical thinking and values in the context of a university curriculum. As stakeholders beyond our students and our general society gain increasing control over higher education (e.g., businesses, the media and accrediting bodies; see Trank & Rynes, 2003), it is necessary to prepare students to be active agents in their own development, to not just
look for the “correct answers”, and to learn how to learn (see interview with Russell L. Ackoff, Dedrick, 2002).

I will provide an introduction to the existing literature on the rather broad constructs of critical thinking and values. I will then examine empirically an effort undertaken by Bowling Green State University to apply critical thinking to human values within the first-year undergraduate curriculum. The empirical portion of this paper is a test of the effects of (a) an instructional program referred to as the BG eXperience, and (b) students’ ACT/SAT scores, reasons for attending college, and general life goals, on key components of critical thinking and on “critical thinking about values.”

Critical Thinking

Some support for the utility of critical thinking comes from organizational researchers who have been hailing “The Changing Nature of Work” (e.g., Ilgen & Pulakos, 1999; Howard, 1995). Organizations downsize, merge, restructure, adapt to changing technology and market conditions, and acquire and become acquired by other organizations. These changes result in a high demand for the adaptable worker, having skills, knowledge, abilities, and competencies that can be continually useful to the organization while it is continually changing. While specialized content knowledge is frequently required in order to apply critical thinking, critical thinking itself is overwhelmingly generalizable (Siegel, 1992, 1997), and should be important across all jobs. That is, employees who can think critically are more likely to be adaptable to changing environments, and understand the assumed values and logical processes that underlie the tasks and decisions that they make. This should lead to employees who are more equipped to create and accept change and innovation, which is becoming increasingly more important for today’s organizations (see the special issue in Nussbaum, 2005, August 1).
Critical thinking is also a common component of university mission statements and outcome assessments. For example, as part of a separate study (Oswald, Schmitt, Kim, Ramsay, & Gillespie, 2004), I searched the mission statements of 35 public and private universities to identify a broad set of outcomes representing college student success. Two criterion dimensions were identified (“Continuous learning, intellectual interest and curiosity” and “Knowledge, learning, mastery of general principles”) that together included concepts such as analytical-, creative-, independent-, and even “critical”-thinking, as well as a more general focus on teaching students how to obtain, evaluate, and use information. Further, with respect to the application of critical thinking to values, some of the mission statements also included an emphasis on the “values that will sustain all of us over a lifetime of learning” and cultivation of students who will be “sensitive to ethical issues and able to confront them.”

There are just about as many definitions of “critical thinking” as there are people who study it (e.g., see Browne & Keeley, 2004; Ennis, 1987; Facione, 2004; Halpern, 1997; Jegede & Noordink, June, 1993; Lipman, 1988; McPeck, 1981; Paul, 1993; Siegel, 1988; and Williams Oliver, Allin, Winn, & Booher, 2003). Rather than attempting an exhaustive treatment of all of these definitions, Halpern’s (1997) relatively broad working definition will guide the current study:

*Critical thinking is the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned, and goal directed* – the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions when the thinker is using skills that are thoughtful and effective for the particular context and type of thinking task. (p. 4)
In connection with this definition, a four-part model of teaching critical thinking skills and strategies that transfer to novel contexts is provided (Halpern, 1998). Halpern’s model synthesizes well current thinking in the domains of motivation theory, cognitive psychology, and educational psychology. The model focuses on (1) dispositions, (2) skills, (3) “structure” training, and (4) metacognitive monitoring. The first component of the four-part model, dispositions or attitudes, includes:

(a) willingness to engage in and persist at a complex task,
(b) habitual use of plans and the suppression of impulse activity,
(c) flexibility or open-mindedness,
(d) willingness to abandon nonproductive strategies in an attempt to self-correct, and
(e) an awareness of the social realities that need to be overcome so that thoughts can become actions.

Second, critical thinking training should also focus on the relevant skills, such as:

(a) verbal reasoning
(b) argument analysis
(c) thinking as hypothesis testing
(d) likelihood and uncertainty
(e) decision-making and problem-solving

Third, focusing on structural (versus surface) characteristics of arguments is an important determinant of the generalizability of critical thinking skills and dispositions (Halpern, 1998). This is because, to use critical thinking skills, one must first recognize that they are necessary. If one learns to react to surface characteristics, these become the cues that facilitate retrieval of critical thinking skills and knowledge. Thus, if the only examples used in training all have the
same surface characteristics (e.g., if they are all on the topic of abortion), then novel situations may not contain sufficient cues for students to retrieve and use their critical thinking skills and knowledge. By contrast, if one learns to react to the structural features of an argument, these can then become the retrieval cues, allowing the skills and knowledge to transfer to novel situations. Thus, students need spaced practice with examples containing different surface features, and corrective feedback, to develop the habit of “spontaneously noticing” (Halpern, 1998, see also Hakel and Halpern, 2005).

Finally, the fourth part of Halpern’s model is metacognitive monitoring. Note that this is not entirely different from dispositions and attitudes of a critical thinker, nor from critical thinking skills. Metacognition as a concept is essentially “what we know about what we know.” Critical thinking requires active mental engagement. Metacognitive monitoring is the process of monitoring one’s own mental processes and strategies while working on a problem or evaluating an argument. It guides the selection of different learning and analysis strategies and the allocation of limited cognitive resources. Halpern (1998) provides seven questions, intended to convert what is usually an implicit metacognitive process into an explicit one: (1) How much time and effort is this problem worth? (2) What do you already know about this problem or argument? (3) What is the goal or reason for engaging in extended and careful thought about this problem or argument? (4) How difficult do you think it will be to solve this problem or reach a conclusion? (5) How will you know when you have reached the goal? (6) What critical thinking skills are likely to be useful in solving this problem or analyzing this argument? (7) Are you moving toward a solution?

It is likely that following Halpern’s model would result in substantial gains in critical thinking (e.g., Nieto & Saiz, unpublished manuscript) and critical thinking about values.
However, the current study is not a test of her model, as there is not sufficient data available to claim such a test. The model is intuitively appealing though, and it provides clear, theory-based, recommendations regarding how to train critical thinking optimally. In addition, it focuses on transferring critical thinking across disciplines, which coincides with the goal of the Bowling Green eXperience (described in Chapter 2) to “critically [examine] values across the curriculum” (Katzner & Nieman, January, 2005; p.2). Further, the focus on dispositions, skills, and motivation (e.g., metacognitive monitoring) provides useful groundwork for future research and practice that could locate critical thinking and values within the larger network of sociological and psychological processes in which they operate.

Individual Difference Characteristics Antecedent to Critical Thinking Trainability

The skills, dispositions, and metacognitive components of Halpern’s (1998) model are some domain-relevant examples of more general individual trainee readiness characteristics (e.g., Colquitt, LePine, & Noe, 2000; Salas & Cannon-Bowers, 2001). But actually, the whole gamut of individual difference characteristics studied in industrial/organizational psychology is probably relevant to critical thinking training. Those characteristics that strike me as particularly relevant are general and specific abilities (e.g., deductive and inductive reasoning), skills, knowledge of how to think critically plus domain-specific knowledge, personality (e.g., conscientiousness, openness/intellectance), and motivation. Satisfactory treatment of each of these constructs and their relation to critical thinking and training critical thinking could be a dissertation (or several!) in itself. Therefore, the goal of this section is more modest – to simply provide some background information for those individual differences that can actually be measured, or at least approximated, in the empirical part of this dissertation. These are general cognitive ability and motivation.
In factor-analytic terms, general cognitive ability (g) refers to the general factor accounting for the positive correlations among measures of various mental abilities (Jensen, 1998). It has been found to relate significantly to training performance with meta-analytic path coefficients of .76 and .42 for declarative knowledge and skill acquisition, respectively (Colquitt et al., 2000). Ree and Earles (1991) have shown that specific abilities offer very little over general ability in predicting training effectiveness.

While motivation is an extraordinarily broad “characteristic”, research on the sub-topic of goal orientation provides some suggestions regarding the motivational dispositions and environmental conditions most likely to facilitate learning (and sometimes performance) as a result of training. Dweck and colleagues (e.g., Dweck & Leggett 1998; Heyman & Dweck, 1992) describe two different patterns of goal-directed behavior: mastery-oriented, which involves “the seeking of challenging tasks and the maintenance of effective striving under pressure”, and performance-oriented, which involves a focus on demonstrating one’s competence. According to Dweck, when students are presented with a challenging situation, mastery-oriented individuals are energized and see the challenge as an opportunity for development. By contrast, performance-oriented individuals see it as a threat and are more likely to become helpless, which “is characterized by an avoidance of challenge and a deterioration of performance in the presence of obstacles” (p.256). Similarly, Ames (1992) discusses the relevance of mastery and performance goals to classroom learning, noting that mastery goals are compatible with a “motivation to learn” (Brophy, 1983). While differences exist among the various conceptualizations of goal orientation, there is a very simple common theme relevant to the current study: when one adopts more of a learning (or mastery) orientation they should in fact be better learners. For example, students with a learning orientation report “valuing and using those
learning strategies that are related to attending, processing, self-monitoring, and deep processing of verbal information” (Ames, 1992, pp. 262-263). This overlaps with both Halpern’s (1998) dispositional (e.g., willingness to engage in and persist at a complex task) and meta-cognitive components of critical thinking training.

Values

Universities are in a unique position to train the leaders of the future to think critically about the values that underlie the decisions they will be faced with, and to reflect on their own values in order to make decisions based on what is truly important to them. This is well-stated by Bowling Green State University’s President Sidney A. Ribeau:

“Developing good hearts as well as able brains is a responsibility that must be assumed by universities, now more than ever…Colleges and universities must commit themselves to creating values based communities, for knowledge is merely a tool, and it is human affection that makes for the constructive.” (Bowling Green State University, 2004, p.5)

But what, conceptually, are values? Milton Rokeach (1973) provides an appealing definition that has served as the foundation for much of the current research on values in the psychological and sociological literature (e.g., see Meglino & Ravlin, 1998; Hitlin & Piliavin, 2004): “A value is an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence.” (p.5) Shalom Schwartz and Wolfgang Bilsky (1987) expand somewhat on Rokeach’s definition, writing that values “(a) are concepts or beliefs, (b) pertain to desirable end states or behaviors, (c) transcend specific situations, (d) guide selection or evaluation of behavior and events, and (e) are ordered by relative importance.” (p.878)
Schwartz’s and colleagues’ (e.g., Ros, Schwartz & Surkiss, 1999) extensive research on values suggests that there are approximately 10 universal values that roughly form a circumplex. A simplified version of the circumplex is presented in Figure 1 below. While the current discussion is not focused on these values in particular, they are good operational examples. Additionally, the circumplex illustrates a key conceptual feature of values: while all values are necessarily positive abstractions, the expression of one particular value often comes at the expense of an opposing value. Therefore, Schwartz’s circumplex stipulates a circular order of values in two-dimensional space such that opposite values are inversely related and values closer together are more positively related. In practicality, it may be more the case that values closer together tend to cluster as such, but they may not actually be inversely related to the opposite values (again, this is a simplified illustration).

Figure 1

*Simplified Illustration of the Values Circumplex Presented in Ros, Schwartz, and Surkiss (1999).*

![Circumplex Diagram](Image)

**Figure 1**

*Simplified Illustration of the Values Circumplex Presented in Ros, Schwartz, and Surkiss (1999).*
To put the concept of values in context, suppose that a professor on campus espouses that the best way to help others fulfill the “American dream” is to help oneself first, which invariably benefits others (see Perloff, 2004 [contained in Appendix A]). This is a much-abbreviated argument. However, Browne and Keeley (2004; see chapter 2) might have us notice that an assumption has been made, that the author values “fulfilling the American dream” (and thinks we should too). If there is a value that stands out as being uniquely American, it is individualism (vs. collectivism; Hofstede, 2001). Therefore, according to Ros, Schwartz, and Surkiss (1999), this assumption roughly parallels valuing the self-enhancement values of power, achievement, and hedonism (which comprise individualism). Further, while there is a dual-focus on furthering oneself and others, the ordering of these priorities is first yourself, then others. Therefore, self-enhancing values are emphasized over self-transcending values (e.g., universalism, benevolence, and tradition).

In sum, it is important that we teach students to think critically and to understand the implicit and explicit values that can be revealed as a part of this process. Halpern’s model for teaching generalizable critical thinking across disciplines is a good starting framework for this. Further, it is the application of critical thinking to the understanding of values that ensures that instruction regarding values does not lead to indoctrination. Reciprocally, the focus on values within critical thinking helps to ensure that we do not produce rational robots or walking logical algorithms, but rather thoughtful, principled humans.

An understanding of individual differences, most notably ability and motivation, contributes to our understanding of how people might be differentially affected by training programs designed to teach critical thinking about values. And at the same time, the structure
and method of the training program should have a large impact on the extent to which the training is effective.

As BGX was developed without the benefit of clear linkages to the theories described here, I do not propose an exact test of any of these theories, nor do I propose an overall model. Rather, I will specify and test those hypotheses that naturally arise from how the BGX program was actually conducted during the 2004-2005 academic year. Therefore, the following chapter is a description of the BGX program and how it relates to the preceding treatment of critical thinking, values, and individual difference characteristics. It also provides a description of some general hypotheses that emerge.
CHAPTER II: THE BOWLING GREEN EXPERIENCE – CRITICAL THINKING ABOUT VALUES

Historical Context

In April, 2000, Bowling Green State University’s (BGSU) President Ribeau appointed the University Committee on Vision and Values to examine the role that undergraduate education at BGSU might play in developing students who would graduate “with the felt responsibility for giving, serving, and succeeding within the framework of principled and ethical interaction with others” (Ribeau, as cited in BGSU Magazine, Spring 2002 [p.4]). The objective was to teach students to develop critical thinking skills and make use of these skills “to make reflective and rational decisions about difficult issues.” (Eileen G. Sullivan, as cited in BGSU Magazine, Spring 2002 [p.4]).

The research conducted by this committee eventually led to The Bowling Green eXperience (BGX), initially designed “to teach students how to recognize values and value conflicts and expand their understanding of why this is an important aspect of the learning process” (Edwards-Leeper & Keeley, 2002). A pilot study was conducted during the Fall, 2002 with 125 first-year students.

A second pilot study was conducted during the Fall semester, 2003 with 330 first-year students. This time, the focus of BGX was shifted to “promote critical thinking about values” (Unknown Author, 2003). A third pilot study was conducted in the Fall of 2004 with 1,700 students (approximately 50% of the incoming freshman class). Consistent with the Fall, 2003 pilot, BGX was designed to make “critical thinking about values [italics added] the unifying theme of students’ education” (Bowling Green State University, 2004, p. 5). The empirical
portion of this dissertation is based on outcome assessment data collected as part of the Fall, 2004 pilot, within the Department of Psychology.

Applying Critical Thinking to Values

To understand what is meant by BGX’s “critical thinking about values,” it is helpful to look at the program’s learning outcomes (Bowling Green State University, 2004). These are:

1. Recognize and describe values that arise in the methods or content of the subject area.
2. Identify ways in which these sometimes unexamined values shape or relate to academic and/or public discussion of issues relevant to today’s citizens.
3. Understand, articulate, and evaluate reasons and justifications that can support their own and others’ value choices.

Based on these learning outcomes, it can be inferred that “critical thinking about values” refers to the application of critical thinking toward these values-focused learning outcomes. This can be further understood by referring to (a) BGX’s goal in 2002, which was to teach students to recognize values and values conflicts, and (b) BGSU critical thinking scholars Neil Browne and Stuart Keeley’s approach to teaching critical thinking itself. They include the identification of value conflicts and assumptions as the fourth of 11 “critical questions” that are central to critical thinking (Browne & Keeley, 2004 [7th Edition], p. 13; emphasis mine):

1. What are the issues and the conclusions?
2. What are the reasons?
3. Which words or phrases are ambiguous?
   4. What are the value conflicts and assumptions?
5. What are the descriptive assumptions?
6. Are there any fallacies in the reasoning?
7. How good is the evidence?
8. Are there rival causes?
9. Are the statistics deceptive?
10. What significant information is omitted?
11. What reasonable conclusions are possible?”

Although Browne and Keeley’s approach to critical thinking laid early groundwork for the BGX program, no particular theory of critical thinking is related explicitly to BGX. However, a general definition of a value is provided as a reference for faculty teaching BGX classes: “a principle, standard, or quality considered worthwhile or desirable” (Bowling Green State University, 2004, p. 56). This definition is not imposed on students or faculty though. Rather, the focus on values is aimed toward encouraging students to determine what values are for themselves, as stated by Don Neiman, Dean of the College of Arts and Sciences at BGSU:

“[T]he University should aspire to help students clarify their values, examine them critically, articulate them clearly and make thoughtful, principled decisions about moral choices they will make as citizens and professionals.” (Prigge, 2002, Summer, p. 5)

Values guide our attitudes and behavior (Ball-Rokeach, Rokeach, & Grube, 1984). Equally important, they also help to determine our evaluation of behavior and events (i.e., part “d” of Schwartz & Bilsky’s [1987] definition above) as well as whether we even experience a situation as an ethical dilemma (Lefkowitz, 2003). Therefore, it is important to not only be able to identify values assumed by others, but also to clearly understand one’s own values to navigate the complexities of this value-laden world with integrity. Some scholars might note that this harkens back to the “values clarification” literature of the 1970’s, which might provide some
insight into the theoretical and practical utility of BGX’s focus on values (see Kinnier, 1995; Raths, Harmin, & Simon, 1966).

Paralleling Lefkowitz’s (2003) timely new book on *Values and Ethics in Industrial/Organizational Psychology*, the local importance of this issue was highlighted by Sky Financial Group’s gift to BGSU of $750,000 for “The Sky Bank - Edward and Linda Reiter Endowed Lectureship: Values and Ethics in the Workplace.” Part of the motivation for this generous donation was to help organizations such as Sky Bank *save money* (presumably as a function of avoiding scandals) by training BGSU graduates to be principled and to help them understand the ethical standards of their disciplines – focusing not just on what they know, but how they use that knowledge. Further, the lectureship aims to help BGSU’s graduates know where they stand on values issues that are likely to be relevant to them.

**Institutional Records as Predictors of Critical Thinking Trainability**

*General Cognitive Ability*

University records provide some data that approximate general cognitive ability and learning orientation. SAT and ACT scores are commonly taken as proxies of general ability (e.g., Brownfield, 1998; Rebhorn, 2001; Searleman, Herrmann, & Coventry, 1984; Thompson, Zamboanga, & Byron, 2004), and every student admitted to BGSU provided scores for at least one of these standardized admissions tests. Although the ACT is intended to be representative of high school curricula, and the SAT more indicative of general problem solving, these measures are highly correlated (e.g., $r = .87$, Gillespie, Kim, Oswald, Ramsay, & Schmitt, 2002). The SAT in particular is considered a measure of crystallized intelligence, highly correlated with general intelligence (Carroll, 1993, p.705).
Motivation

Whereas the proxy for $g$ is somewhat imperfect, the proxy for learning orientation is, admittedly, relatively crude. Learning orientation is not measured in its own right at a University-wide level. However, the data at hand, from the Bowling Green First Year Student Questionnaire (BYSQ; see Appendix B), are related closely enough to provide for tests of some plausible hypotheses.

The BYSQ is administered to all incoming freshman annually during their orientation (with a response rate of 64% for Fall semester, 2004). The BYSQ items were adapted from the Cooperative Institutional Research Program (CIRP) Freshman Survey, which was developed primarily as “inputs” corresponding to Astin’s (1993) Input-Environment-Output model. Their primary function is that of a pretest, where similar or identical items are administered later as a posttest. They tend to be most directly related to their commensurate posttest items, as opposed to other inputs or environmental variables, and are used primarily to assess student attrition and changes in aspirations, expectations, attitudes, and values as a result of their experiences in college (Astin, 1993). Some of these items, under the headings “reasons to attend college” and “general life goals” are of particular interest. These items are discussed in the measures section below.

The reasons to attend college items consistently produce a factor that could be described generally as intellectual development. The general life goals items consistently form three factors: social progression, achievement and power, and humanities. As the differences among conceptualizations of motivation, goals and values are often murky at best, I will not attempt to disentangle these constructs here. Rather, I simply suggest that three of these four factors in particular are most consistent with a desire to develop competence and one’s own intellectual
capital, which is similar to a learning or mastery orientation. Individuals highly endorsing these factors should therefore benefit more from a training program at college. These factors are the reasons to attend college factor of *intellectual development*, and the general life goals factors of *social progression* and *humanities*.

**General Hypotheses**

The preceding chapters have described (a) the nature of the constructs inherent in “critical thinking about values”, (b) the importance of developing this capacity, and (c) some likely antecedents. Conventionally, specific and testable hypotheses would be presented at this point. However, it is necessary to understand better the BGX manipulation and the measurement of critical thinking about values before articulating specific, testable, hypotheses. Therefore, they will follow the method section. But in an effort to guide the reader through the method section, here is a general summary of the key variables of interest and their hypothesized relationships:

There are three primary predictors or independent variables: the BGX program manipulation, general cognitive ability, and motivation to learn. The outcome of interest is “critical thinking about values.” However, the outcome is measured at two points in time – during the beginning and toward the end of the Fall, 2004 semester. Further, the outcome comprises two separate but related constructs: (a) critical thinking per se, and (b), the application of critical thinking to values expressed in an essay prompt. For the following general hypotheses, these two outcomes are treated the same, and referred to as “critical thinking about values.”

First, students in the BGX program are hypothesized to manifest greater critical thinking about values than otherwise comparable students who are not in the BGX program. Second, regardless of whether students are in the BGX program, those with greater cognitive ability and those with more of a learning orientation should score higher on critical thinking about values
assessments. Finally, it is assumed that all students’ capacity to think critically about values should increase over the course of the semester, but this increase should be more pronounced for those in the BGX program.
CHAPTER III: METHOD

Approximately 160 students at BGSU provided data relevant to the key hypotheses of this study, which was rooted in an outcomes assessment conducted as part of the BGX program. Students’ critical thinking and their “critical thinking about values” (à la the BGX learning outcomes) was assessed at the beginning and end of their first semester using a constructed response and essay test designed for this study. Approximately half of the students were in the BGX condition, and approximately half were in a comparison group that was otherwise equivalent. Selection of students into each group was essentially arbitrary (but not purely random). As this study contains treatment and comparison groups, but not random assignment, it is a quasi-experiment (Shadish, Cook, & Campbell, 2002). In order to appropriately strengthen or temper inferences drawn from any between-group differences on the dependent variables, I will examine whether group membership can be predicted from any of the relevant independent variables and demographics.

Treatment and Comparison Groups

The Bowling Green eXperience

The Bowling Green eXperience (BGX) is a program that integrates “critical thinking about values” into general education courses (e.g., Introduction to Psychology) at BGSU. It starts several days before classes begin, during an orientation session (“The BGX Introduction”) specific to the BGX program and the students in that condition. One purpose of the introduction is to get students to start developing critical thinking skills and examining the role of values in decision-making. Students are grouped according to the BGX course for which they are enrolled, which was designed to have a small enrollment. This resulted in groups of approximately 25
students, taught by the course instructor with assistance from a “peer facilitator,” an undergraduate student trained to assist BGX program instructors and students.

Only the Introduction to Psychology classes are used in this study. There were three such classes \((n’s = 28, 28, 29)\), with a total of 85 students in BGX treatment condition.

**Comparison Group**

The comparison group also contained three small-enrollment \((n’s = 26, 27, 27)\) Introduction to Psychology courses which were identical except for the actual instructors and the BGX treatment. All comparison course sections were taught by the same instructor.

**Measures**

**Critical Thinking about Values Assessment**

The Critical Thinking about Values Assessment (CTVA) is a two-part essay test of critical thinking skills developed as an assessment of BGX’s learning outcomes (see Appendix A). The CTVA was modeled generally on the International Critical Thinking Essay Test (referred to as the ICAT) and was modified to map directly onto the BGX learning outcomes as much as possible.

The first part is a test of the participants’ ability to analyze an argument (i.e., identify the purpose, conclusion, arguments, and assumptions in a particular writing prompt) – these items are identified as *Key Components* (KC) items 1 through 4. The second part builds off the same writing prompt and tests the ability to understand the values held by the author, the reasons supporting particular values, and the implications of the author’s values on discussion of the issue – these items are identified as *Critical Thinking about Values* (CTV) items 1 through 3. The CTVA was administered at two time points - during the first month of classes, and during the last week of classes before students took their final exams. 131 students participated both
times. When the CTVA was first administered, participants in five of the six classes were verbally instructed: “The purpose of this exercise is to help us evaluate your learning experiences at Bowling Green.” In one of the BGX condition sections (BGX group 3, see Table 1 below), the CTVA was administered by the sections’ instructor. The instructor administered the CTVA as an out-of-class assignment that counted toward the class grade. For all other sections, it was heavily suggested the participants that their responses would count toward their class participation grade. In actuality, it became infeasible to incorporate the students’ responses into their class grade, with the exception of the BGX group 3.

The CTVA is designed for use with any prompt that provides rich enough information regarding critical thinking about values. For the current study, two prompts were used, “The case for self-interest” (included in Appendix A), and “The political brain” (see Appendix C). Table 1 presents the treatment and comparison groups along with the corresponding CTVA prompts used. For one of the comparison groups, the same prompt was inadvertently administered at time 1 and time 2. This allows for the unfortunate, though unlikely, possibility of getting inflated scores at time 2 to the extent that participants remember the assignment and think about it over the course of the semester. This is a particularly unlikely scenario given that there is no course content in the comparison groups that focus on any of the questions asked in the CTVA. It also fortunately allows for the assessment of test-retest reliability, and for a relatively non-confounded estimate of those participants’ maturation over the course of the semester.

While the CTVA is designed to be used with any appropriate writing prompt, this does not ensure that scores obtained with one prompt are equivalent to scores obtained with another prompt. Therefore, it will be useful to assess whether the two prompts produce equivalent scores, and to the extent they don’t, to standardize the two regarding their level of difficulty. For this
Table 1

*Experimental Conditions*

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Time 1</th>
<th>Time 2</th>
</tr>
</thead>
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<td>BGX groups</td>
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<td>BGX 1</td>
<td>28</td>
<td>Self-Interest</td>
<td>Political Brain</td>
</tr>
<tr>
<td>BGX 2</td>
<td>28</td>
<td>Self-Interest</td>
<td>Political Brain</td>
</tr>
<tr>
<td>BGX 3</td>
<td>29</td>
<td>Political Brain</td>
<td>Self-Interest</td>
</tr>
<tr>
<td>Comparison groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparison 1</td>
<td>26</td>
<td>Self-Interest</td>
<td>Political Brain</td>
</tr>
<tr>
<td>Comparison 2</td>
<td>27</td>
<td>Self-Interest</td>
<td>Political Brain</td>
</tr>
<tr>
<td>Comparison 3</td>
<td>27</td>
<td>Political Brain</td>
<td>Political Brain</td>
</tr>
</tbody>
</table>

Purpose, an additional 50 participants were recruited from introductory psychology classes during the Spring, 2005 semester. They were randomly assigned to one of two conditions. In the first, they were given a CTVA with the self-interest prompt, followed by a CTVA with the political brain prompt. In the second, the order was reversed. This design allows for a within-subjects comparison of the relationship and relative difficulty between the CTVAs when using the two different prompts. The two prompts can then be equated by producing CTVA scores that are standardized according to the essay prompt used.

*Scoring the CTVA*

The scoring process for coding the open-ended and essay responses of the CTVA was developed by a team of six researchers (an Industrial/ Organizational psychology professor, three
I/O psychology graduate students, and two advanced undergraduate research assistants). We decided to develop a scoring guide, or rubric, which future undergraduate raters would use to code responses to the CTVA. It was decided to score the KC (Key Concepts) items 1 – 4 separately from the CTV (Critical Thinking about Values) items 1 – 3 to avoid biasing the CTV responses as a function of the KC responses and vice versa (e.g., eliminating potential halo/horns effects). It was initially decided that scores of 0, 1, or 2 would be assigned for each item, yielding a range of 0 – 8 and 0 – 6 for the KC and CTV sections, respectively. However, this scoring scheme was later revised to allow half-point ratings (i.e., 0, 0.5, 1, 1.5, or 2 for each item).

The initial research team randomly sampled six participants’ responses to the CTVA pretest for both the BGX and comparison conditions, for a total of 12 sets of responses. After a general discussion of what constitutes scores of 0, 1, and 2, the researchers scored the sampled CTVAs. The ratings were visually inspected (along with means and SDs of ratings) in an attempt to identify example responses where there was a reasonable amount of agreement as to the rating (e.g., if most raters rated a particular answer a 2, it was considered to be an example of a 2 rating). A scoring rubric for the self-interest writing prompt was developed on the basis of these example responses. For each KC and CTV item, example responses were provided indicative of a score of 0, 1, and 2. However, some cells in this 7 X 3 rubric were unfilled, as suitable examples did not yet exist. Following two pilot studies of the rating process, a scoring rubric was developed for the self-interest writing prompt, and the five-option response scale was then used. Two more pilots were conducted using the new scoring rubric and revised scoring scheme, in order to refine further the rubrics and ensure the raters were ready to provide the actual ratings used in the primary data analyses (the self-interest and political brain scoring rubrics are presented in Appendices D and E, respectively). Additionally, a set of scoring guidelines was
developed (see Appendix F) to assist raters in understanding the rationale for the ratings, as a supplement to the scoring rubrics. During the rater training and rubric development process, efforts were made to minimize exposure to the actual CTVA responses used in the study. Therefore, much of the training was conducted on a separate sample of responses obtained from psychology classes that were not part of either the BGX or comparison groups.

**CTVA reliability**

Reliability of the CTVA will be discussed in terms of (1) rater agreement and reliability at the item-level, (2) internal consistency at the scale level, and (3) test-retest reliability at the scale level. First, the CTVA is scored on a continuous (ordinal) 5-point rating scale. Scores for each item (e.g., KC 1) were obtained by calculating the mean rating of all raters who rated that item. Therefore, similar to a Likert-type scale, it is the consistency, or reliability, of ratings that is primarily of interest. However, each item was not rated by every rater. Therefore, rater agreement is also important (statistically, disagreement is considered to be error in the score). Shrout & Fleiss’s (1979) one-way intraclass correlation (ICC[1]) measures both the reliability and the agreement (LeBreton, 2005), making it the most appropriate choice for assessing the degree of variance in raters’ scores that is not considered error.

For the KC items, most items were rated by three raters (n ≈ 260 for time 1 and time 1; two-rater n ≈ 27; one-rater n ≈ 6). ICC(1) values for KC items 1 through 4 are .58, .50, .71, and .49, respectively. Most of the CTV items were rated by four raters (n ≈ 178) although a sizeable portion had three raters (n ≈ 85; two-rater n ≈ 18; one-rater n ≈ 11). ICC(1) values for CTV items 1 through 3 are .70, .64, and .60, respectively, for four raters. The corresponding values for three raters are .69, .57, and .48. These ICC values are generally lower than what is typically accepted, indicating a need for greater refinement in the items and/or rating process.
Second, coefficient alpha reliabilities are .67 for the KC scale (items 1 through 4), and .81 for the CTV scale (items 1 through 3). While the KC scale reliability is just below the generally acceptable .70 guideline, the CTV scale demonstrates acceptable reliability. Third, the comparison group 3 permitted calculation of test-retest reliability. The correlation between time 1 and time 2 scores (the lag was approximately 3 months) was .36 ($p<.10$) for the KC scale and .46 ($p<.05$) for the CTV scale. It is difficult to say definitively what acceptable test-retest reliability ought to be, as it depends greatly on the type of measure and amount of time between measurements. However, these relatively low correlations suggest the presence of considerable error variance in the scale scores, which is likely to make it more difficult to detect effects on these outcomes.

**Demographics**

Participants’ demographic information (i.e. ACT/SAT scores, high school grade point average, gender, age, and ethnicity) was obtained from the Office of Institutional Research. A standardized ACT/SAT variable was computed to represent general cognitive ability. Both ACT and SAT scores were standardized using data from test year 2003 – 2004. For each score, the mean (e.g., 20.9 for ACT) was subtracted from the raw score, and the resulting value was divided by the standard deviation (e.g., 4.83). The mean of the standard scores was used for participants who had data for both ACT and SAT.

**The Bowling Green First Year Student Questionnaire**

The Bowling Green First Year Student Questionnaire (BFYSQ) was administered to all incoming freshman during their sixth week of classes in the Fall semester, 2004, with a 64% response rate. Again, two sets of items are of primary interest, “reasons to attend college” and “general life goals.”
*Reasons to attend college.* Participants were asked “How important were each of the following in your decision to attend college in general?” (3-point response options were: Very Important, Somewhat Important, or Not Important.) One scale, “Intellectual Development”, was created that demonstrated near-satisfactory internal consistency and relatively low correlations with other items in both (1) a separate dataset obtained from the University from 2003 (N=1163), and (2) the 2004 data used in the current study. Coefficient alpha reliability for this scale is .61. The five items are provided in Appendix G.

*General life goals.* Participants were asked “How important are each of the following to you?” (4-point response options were: Essential, Very Important, Somewhat Important, or Not Important.) 2003 BFYSQ data roughly formed three factors (in both the 2003 data used to generate the initial structure and the 2004 data used in the current study): (1) social progression, (2) achievement and power, and (3) humanities. Two of the general life goals items were dropped due to a low loading (raising a family) and high cross-loadings (developing a meaningful philosophy of life) in both datasets. Coefficient alpha reliabilities for the three scales, based on the 2004 data used in the current study, are .84 (9 items), .62 (6 items), and .76 (2 items). The actual items corresponding with each scale are provided in Appendix G.
CHAPTER IV: HYPOTHESES AND RESULTS

Hypotheses

Chapter 2 ended with a statement of the general hypotheses. Simply, BGX, high school GPA, ACT/SAT scores, and the BFYSQ-derived scales are all hypothesized to predict key components of critical thinking and critical thinking about values. Additionally, scores on the CTVA are hypothesized to increase over the semester, with participants in the BGX condition manifesting the greater increase.

However, from the perspective of a program evaluation, the primary question is this: What does BGX add in the prediction of critical thinking/critical thinking about values beyond that of the other predictors? In other words, this is a question of incremental validity: Does knowing whether a participant is in the BGX condition versus the Comparison condition improve our prediction of how well they perform on the CTVA beyond what we would already predict on the basis of high school GPA, ACT/SAT, and the BYSQ scales? Hierarchical multiple regression is one way to test the hypothesis that BGX does provide incremental validity. First, the dependent variable is specified (e.g., Time 1 CTV scores). Second, one multiple regression equation is constructed that predicts that dependent variable from a set of independent variables used to obtain a baseline estimate of how much criterion variance can be explained (e.g., high school GPA [HSGPA] and ACT/SAT scores), as in,

\[
Time 1 \text{ CTV} = HSGPA + ACT/SAT.
\]

Third, a second prediction equation is constructed that also includes whether a participant is in the BGX or Comparison condition, as in,

\[
Time 1 \text{ CTV} = HSGPA + ACT/SAT + BGX.
\]
Then the percent of the criterion variance explained (i.e., the $R^2$, or the multiple correlation squared) by the first equation is subtracted by the percent of the criterion variance explained by this second equation in order to obtain an estimate of how much additional criterion variance ($\Delta R^2$) the BGX condition explains. The magnitude and significance of this incremental variance explained will indicate whether, for each hypothesis, the null can be rejected. The specific hypotheses follow:

**Hypothesis 1:** The main interest is whether the BGX program predicts critical thinking skills (operationalized by four *key components* [KC]), and *critical thinking about values* (operationalized by three items, abbreviated as CTV), in the Critical Thinking about Values Assessment (CTVA). For H1, I hypothesize that the BGX program will provide incremental validity in the prediction of time 1 KC and CTV (as a function of the BGX orientation session) beyond high school grade point average (HSGPA), and ACT/SAT scores. The analysis takes the form of:

- **DV:** Time 1 KC (and separately, CTV)
- **IVs Step 1:** Age, gender, race, HS GPA, SAT/ACT
- **IVs Step 2:** Age, gender, race, HS GPA, SAT/ACT, BGX

**Hypothesis 2:** I hypothesize that the BGX program will provide incremental validity in the prediction of time 2 KC (and separately, CTV) scores, over the corresponding time 1 KC (and separately, CTV) scores. As in,

- **DV:** Time 2 KC (and separately, CTV)
- **IV Step 1:** Time 1KC (and separately, CTV)
- **IVs Step 2:** Time 1KC (and separately, CTV), BGX
Hypothesis 3: This is an extension of Hypothesis 2. In addition to including time 1 scores, HSGPA and ACT/SAT scores will also be included. The analysis is:

DV: Time 2 KC (and separately, CTV)

IV Step 1: Time 1KC (and separately, CTV), HSGPA, ACT/SAT

IVs Step 2: Time 1KC (and separately, CTV), HSGPA, ACT/SAT, BGX

Hypothesis 4: H4 extends H1, adding the BYSQ scales (Intellectual Development, Social Progression, Achievement and Power, and Humanities) to Step 1. BGX is hypothesized to provide incremental prediction of Time 1 scores beyond HSGPA, ACT/SAT scores, and the BYSQ scales, as in:

DV: Time 1 KC (and separately, CTV)

IVs Step 1: Age, gender, race, HS GPA, SAT/ACT, BYSQ scales (4)

IVs Step 2: Age, gender, race, HS GPA, SAT/ACT, BYSQ scales (4), BGX

Hypothesis 5: H5 extends H3, adding the BYSQ scales (Intellectual Development, Social Progression, Achievement and Power, and Humanities) to Step 1. BGX is hypothesized to provide incremental prediction of Time 2 scores beyond Time 1 scores, HSGPA, ACT/SAT scores, and the BYSQ scales.

DV: Time 2 KC (and separately, CTV)

IV Step 1: Time 1KC (and CTV), HSGPA, ACT/SAT, BYSQ scales

IVs Step 2: Time 1KC (and CTV), HSGPA, ACT/SAT, BYSQ scales (4), BGX

Exploratory Analyses

In addition to the hypotheses above, it would be interesting to determine whether some students are more responsive to the BGX manipulation than others. In general, I propose that
students who are more able, interested, and motivated will benefit more from BGX. More specifically, I extend the previous hypotheses to include interactions consistent with an aptitude × treatment interaction effect, as follow:

**Exploratory Hypothesis 6:** EH₆ builds from H₃: I hypothesize that, controlling for time 1 scores, the relationship between BGX and Time 2 scores will vary as a function of HSGPA and ACT/SAT. That is, HSGPA and ACT/SAT are hypothesized to moderate the relationship between BGX and Time 2 scores, such that the BGX program is more effective for those with higher scores on these two variables. The analysis is:

DV: Time 2 KC (and separately, CTV)  
IV Step 1₁: Time 1KC (and separately, CTV), HSGPA, BGX  
IVs Step 2₁: All Step 1 variables + (HSGPA × BGX)  
IV Step 1₂: Time 1KC (and separately, CTV), ACT/SAT, BGX  
IVs Step 2₂: All Step 1 variables + (ACT/SAT¹ × BGX)

**Exploratory Hypothesis 7:** Building from H₅, I hypothesize that, controlling for Time 1, the relationship between BGX and Time 2 scores will vary as a function the Intellectual Development, Social Progression, and Humanities variables. Those variables should moderate the relationship between BGX and Time 2 such that participants scoring higher on those scales are more responsive to the BGX manipulation. I do not expect this trend to exist for the Achievement and Power scale. The analysis will take the form of:

DV: Time 2 KC (and separately, CTV)  
IV Step 1₁: Time 1KC (and separately, CTV), Intellectual Development, BGX  
IVs Step 2₁: All Step 1 variables + (BGX × Intellectual Development)  
IV Step 1₂: Time 1KC (and separately, CTV), Social Progression, BGX

¹ The forward-slash “/” in “ACT/SAT” is not meant to be a division symbol.
IVs Step 2: All Step 1 variables + (BGX × Social Progression)

IV Step 13: Time 1KC (and separately, CTV), Achievement & Power, BGX

IVs Step 2: All Step 1 variables + (BGX × Achievement & Power)

IV Step 14: Time 1KC (and separately, CTV), Humanities, BGX

IVs Step 2: All Step 1 variables + (BGX × Humanities)

Results

Preliminary Analyses

Test for BGX condition versus comparison group differences

Participants in the BGX condition were compared against those in the comparison group in order to determine whether significant differences existed on the demographic variables (ACT/SAT scores, high school grade point average, gender, age, and ethnicity [black vs. rest]). There were no significant differences ($p$s > .05; two-tailed; $n$ ≈ 162). There were also no significant differences for ACT/SAT, high school GPA, or the BFYSQ scales of achievement and power and humanities. However, the BFYSQ scales of intellectual development and social progression did significantly relate to group membership, correlating -.27 and -.25, respectively, with BGX condition membership (BGX condition coded 1, Comparison condition coded 0; $p$s < .05; two-tailed).

Standardize CTVA Scores Across the Two Writing Prompts

As mentioned previously, both versions of the CTVA (i.e., the self-interest and the political brain prompt) were administered to approximately 50 second-semester freshman in psychology courses who had not participated in any portion of this study. The CTVA scores for the primary study were standardized to adjust mean and standard deviation differences between
the two prompts. The standardization formula was patterned after the formula for a z-score. KC and CTV sums were standardized separately, by prompt and point in time. For example, the standard score for prompt 1 at time 1 was computed using the corresponding mean and standard deviation obtained from the separate prompt standardization sample. This computation may be expressed as,

$$z_{KC_{time1}^1_{sample1}} = \frac{KC_{time1}^1_{sample1} - \bar{KC}_{time1}^1_{sample2}}{\sigma_{KC_{time1}^1_{sample2}}}$$,

where sample1 = the main sample of interest that is used for hypothesis testing and sample2 = the separate prompt standardization sample.
Hypothesis Tests

A series of hierarchical regression analyses tested each of the hypotheses provided earlier in this Chapter. Results are presented first for hypotheses 1-5 for KC, then H1-5 for CTV. Next results that provide more direct tests of the general hypotheses made in chapter 2 are presented. Finally, the results of analyses testing the interaction hypotheses (H6-7) for both KC and CTV are discussed. Means, standard deviations, scale reliabilities, and intercorrelations of all major study variables are provided in Table 2 below.

Results of analyses testing the main effect hypotheses for KC are shown in Table 3 below. For hypothesis 1, only ACT/SAT scores significantly related to time 1 KC scores in step 1 ($\beta = .29, p < .05$), and significant incremental variance was not explained by including the BGX condition in step 2 of the equation (Step 1 $R^2 = .149, p < .001$; Step 2 $\Delta R^2 = .005, ns$). Similarly, for hypothesis 2, the BGX program did not predict time 2 KC beyond that of time 1KC (Step 1 $R^2 = .025, ns$; Step 2 $\Delta R^2 = .016, ns$). Hypothesis 3 extended H2 by adding HSGPA and ACT/SAT in step 1. Again, ACT/SAT was the only significant predictor ($\beta = .23, p < .05$), and BGX did not provide significant incremental variance in the prediction of time 2 KC scores (step 1 $R^2 = .132, p < .001$; step 2 $\Delta R^2 = .017, ns$). Thus, BGX provided incremental prediction of KC scores at time 2 only when HSGPA and ACT/SAT were included as covariates. Hypothesis 4 was not supported: the BGX program did not explain additional variance in KC time 1 scores over all other major variables (i.e., HSGPA, ACT/SAT, Intellectual Development, Social Progression, Achievement and Power, and Humanities; Step 1 $R^2 = .327, p < .001$; Step 2 $\Delta R^2 = .004, ns$). Hypothesis 5 was similar to H4, except for the dependent variable of KC time 2 was used instead of time 1, and time 1 was included as a predictor. Hypothesis 5 also was not supported (Step 1 $R^2 = .226, p < .001$; Step 2 $\Delta R^2 = .005, ns$).
<table>
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<th>(\bar{X})</th>
<th>SD</th>
<th>n</th>
<th>1</th>
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<td>0.10</td>
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<td>0.05</td>
<td>0.08</td>
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<td>162</td>
<td>-0.12</td>
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Note. Coefficient alpha reliabilities are presented in parentheses along the diagonal; BGX = the Bowling Green eXperience condition (coded 1; comparison coded 0); ACT/SAT = standardized ability measure based on ACT and SAT scores, Int. Dev = intellectual development, Soc. Pro. = social progression, Ach. Pow. = achievement and power, Human = humanities; *\(p<.05\), **\(p<.01\).
Table 3

*Hierarchical Regression Results for Hypotheses 1 - 5: Key Components*

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<td></td>
</tr>
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</table>

*Note. DV = dependent variable, IVs = independent variables, KC = key component scale, HSPA = high school grade point average, ACT/SAT = standardized ability measure based on ACT and SAT scores, Int. Dev = intellectual development, Soc. Pro. = social progression, Ach. Pow. = achievement and power, Human = humanities; *p<.05, **p<.01.*
The CTV results for were fully consistent with the hypothesized main effect relationships (see Table 4). For hypothesis 1, HSGPA and ACT/SAT in combination predicted a significant amount of variance in time 1 CTV scores \((R^2=.086, p<.001)\), with HSGPA carrying most of the effect \((\beta=.29, p<.05)\). BGX explained a significant amount of additional variance in step 2 \((\Delta R^2=.084, p<.001)\). Interestingly, while ACT/SAT (and not HSGPA) significantly related to the KC items, HSGPA (and not ACT/SAT) significantly predicted CTV scores.

Hypothesis 2 specified that BGX would predict CTV time 2 scores beyond what CTV time 1 scores could predict. This hypothesis was supported (step 1 \(R^2=.181, p<.001\); step 2 \(\Delta R^2=.035, p<.05\)). Hypothesis 3 built on hypothesis 2, adding HSGPA and ACT/SAT to the equation in step 1. In step 1, only time 1 CTV produced a significant beta-weight, and the total \(R^2\) was .219 \((p<.001)\). In step 2, time 1 CTV, ACT/SAT and BGX were significant (respective \(\beta\)s = .18 and .25, \(p\)s<.05), yielding significant incremental variance in the prediction of time 2 CTV scores \((\Delta R^2=.052, p<.05)\). Alternatively stated, BGX accounted for an additional prediction of 5% of time 2 CTV scores, beyond that of CTV time 1, HSGPA, ACT/SAT. The total explained variance in time 2 CTV scores was approximately 27%.

Hypothesis 4 predicted that BGX would provide incremental validity in the prediction of CTV time 1 scores, beyond all other major study variables (i.e., HSGPA, ACT/SAT, Intellectual Development, Social Progression, Achievement and Power, and Humanities). This hypothesis was supported (step 1 \(R^2=.138, ns\); step 2 \(\Delta R^2=.107, p<.05\)). Hypothesis 5 was similar except it substituted CTV time 2 for time 1 as the dependent variable, and time 1 was added as a predictor. This hypothesis was supported (step 1 \(R^2=.199, ns\); step 2 \(\Delta R^2=.061, p<.05\)).
Table 4

Hierarchical Regression Results for Hypotheses 1 - 5: Critical Thinking about Values

<table>
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<tr>
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*Note.* DV = dependent variable, IVs = independent variables, CTV = critical thinking about values scale, HSPA = high school grade point average, ACT/SAT = standardized ability measure based on ACT and SAT scores, Int. Dev = intellectual development, Soc. Pro = social progression, Ach. Pow. = achievement and power, Human = humanities; *p<.05, **p<.01.
In general, the hierarchical regression results focusing on the main effect of the BGX program support the underlying hypothesis that it positively influences students’ critical thinking about values. Further, the bivariate correlation between the BGX program (where 0 = non-BGX and 1 = BGX) and the average of time 1 and time 2 CTV scores is .35 ($p < .001$), reflecting 12% shared variance between BGX and CTV. Alternatively conceptualized, this represents a difference of about three-quarters of a standard deviation (Cohen’s $d = .73$) between the two groups. The correlation between BGX and KC (Time 1 and 2) is nonsignificant ($r = -.02$, ns; $d = -.04$) The standardized effect-sizes ($d$) representing the difference between the BGX condition and the comparison group were -.23 (ns) for the KC pretest, .20 (ns) for the KC posttest, .53 ($p < .001$) for the CTV pretest, and .62 ($p < .001$) for the CTV posttest. In Cohen’s (1988) interpretative framework, there are no effects of the BGX program on KC and medium effects on CTV.

General cognitive ability (i.e., ACT/SAT scores) did relate to critical thinking as operationalized by KC, but it did not relate significantly to CTV, suggesting that KC performance depends in part on one’s general ability (or more conservatively stated, it relates to scholastic aptitude and knowledge). Conversely, HSGPA related more to CTV than KC, suggesting that more motivated students evidenced greater CTV. Additionally, the only BFYSQ-derived scale that predicted either KC or CTV was Achievement and Power, which was negatively related to CTV (the correlation between the Achievement and Power scale and the average of time 1 and time 2 CTV scores is -.24, $p < .05$).

Finally, KC and CTV scores declined from Time 1 to Time 2 for both the BGX and non-BGX conditions, disconfirming the assumption made previously that scores would increase. Table 5 shows item and scale means by time and condition. The omnibus $F$ tests from a
Table 5,

*Means and Standard Deviations of CTVA items and scales by Condition (non-BGX vs. BGX)*

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</table>

*Note.* Means and SDs are adjusted for the differences across writing prompts used; "KC'' refers to the key component items; "CTV'' refers to critical thinking about values items; "Overall'' is the unweighted mean of Time 1 and Time 2 scores; *p<.05; **p<.001.
multivariate 2 × 2 mixed ANOVA (two dependent variables [KC and CTV] with one repeated measures variable [time] and one between-subjects variable [BGX]) were significant for both BGX ($F=11.24 \ [df=2,128], \ p<.001$) and time ($F=26.82 \ [df=2,128], \ p<.001$). Both the KC and CTV scale scores were significantly lower at time 2 than at time 1 (respective $F$s = 11.67 [1,29] and 48.78 [1,129]; $p$s < .001). The multivariate (i.e., for both outcomes, KC and CTV) interaction term was marginally significant ($F=2.48[2,128], \ p=.08$), tentatively suggesting that the decline in scores was less pronounced for the BGX condition. Followup tests focusing on KC and CTV separately show that the interaction (i.e., the mitigating effect of BGX on the score decline) is significant for KC ($F=4.98 \ [df=1,129], \ p<.05$) but not for CTV ($F=0.43 \ [df=1,129], \ ns$). More specifically, for the BGX condition, the time 1 – time 2 difference was not significant for the dependent variable KC ($t=.90, \ df=63, \ ns$). The difference was significant for CTV ($t=4.73, \ df=63, \ p<.001$).

*Exploratory Hypothesis Testing*

The interaction tests (EH6,7) comprised 12 separate hierarchical regression equations: for both KC and CTV there was a separate equation for HSGPA, ACT/SAT, and the BYSQ scales measuring Intellectual Development, Social Progression, Achievement and Power, and Humanities. Results of all the interaction tests are provided in Appendix H. All variables were centered prior to conducting the hierarchical regression equations (Aiken & West, 1991). Only one interaction was significant at the $\alpha = .05$ level (two-tailed). HSGPA moderated the relationship between BGX and CTV scores at time 2 (controlling for CTV time 1), such that participants with a higher high school GPA were more responsive to the BGX manipulation than those with a lower high school GPA. The interaction term explained an additional 3.6% of the variance in CTV scores at time 2, controlling for time 1 scores (Step 1 $R^2 = .246$). This result
also suggests a motivational component regarding how responsive participants were to the BGX condition: those evidencing greater academic motivation (in terms of their HSGPA) responded better to the program.

**Follow-up Analyses**

Data were unavailable for approximately half of the study’s participants for the BFYSQ-produced variables. To test whether these and the other predictors were missing at random, I correlated the missingness of each (0 = missing, 1 = not missing) with BGX\(^2\) and all KC and CTV scale scores. None of these correlations were significant (ps >.05; two-tailed).

Recall that the KC and CTV scale scores actually decreased from time 1 to time 2. These results are challenging to interpret, however, as they rest on the assumption that the true difference between time 1 and time 2 scores was revealed by using the prompt-standardized scores (using the unadjusted scores would certainly be confounded by the difference between the two writing prompts). Therefore, I examined the mean differences between time 1 and time 2 scores for those participants in comparison group 3 only, as they received the same prompt during both administrations. Unadjusted KC scores at time 1 (\(\bar{X} = 4.28\); SD = .96; \(n = 23\)) were higher than those at time 2 (\(\bar{X} = 3.84\); SD = 1.27; \(n = 23\)) but the mean difference (0.44; \(d=.70\)) was not significant. CTV scores at time 1 (\(\bar{X} = 1.50\); SD = .74; \(n = 22\)) were significantly higher than those at time 2 (\(\bar{X} = 1.05\); SD = .78; \(n = 22\)), with a mean difference of 0.45 (\(d=1.16, p<.05\), two-tailed).

As mentioned previously, for one of the BGX condition classes, the CTVA was administered by the instructor (BGX group 3) and the responses were graded. Therefore, the hypothesis-testing analyses were conducted again without including BGX group 3. Identical to

\(^2\) BGX is technically a predictor here. However, all participants have data on this variable and it was necessary to determine whether missingness on the other predictors correlated with BGX condition membership.
the first set of results, none of the hypotheses pertaining to KC were supported. Somewhat in contrast to the first set of results, only two hypotheses were supported for CTV (the first set of results supported all five hypotheses). The two that were supported were H1, that BGX would incrementally predict time 1 scores over what high school GPA and ACT/SAT scores predicted, and H4, which extended H1 to include the BFYSQ-derived scales in step 1.

So far, three sets of results in combination tell what appears to be a complicated story: first, the BGX program has an effect on CTV but not KC; second, CTV is more reliable than KC; and third, less support is found for the hypotheses when BGX group 3 was removed. In order to approach a cleaner estimation of the true underlying relationships between BGX and KC and CTV, it may be helpful to correct some of these relationships for criterion unreliability both with and without the inclusion of BGX group 3.

The KC and CTV scale scores are calculated using the sum of their constituent items. Therefore, the scale reliabilities (coefficient alphas = .62 for KC and .84 for CTV) are the analogue to this calculation and they are used to correct for unreliability. The observed bivariate correlation between BGX and KC scores at time 1 is -.12 \((ns)\), and at time 2 \(r = .10 (ns)\). For CTV, these correlations are .26 \((p<.01)\) and .30 \((p<.01)\), respectively. The respective dissatenuated (i.e., corrected for criterion unreliability) correlations are -.16, .12, .29, and .33. Excluding BGX group 3, the respective correlations are -.07 \((ns)\), .13 \((ns)\), .25 \((p<.001)\), and .17 \((ns)\). The dissatenuated correlations are -.09, .16, .27, and .18, respectively.

While hypotheses for KC were generally not supported and those for CTV generally were, this does not mean that BGX predicts CTV performance more strongly than KC performance in a statistically significant sense. Therefore, the bivariate correlations with BGX for KC and CTV were compared using Cohen & Cohen’s (1983) test of the significance of the
difference between two dependent correlations (formula 2.8.8; p. 57). For the observed correlations, this test was significant for both time 1 ($p<.01$; two-tailed) and time 2 ($p<.05$; two-tailed). With BGX group 3 removed, this test was significant for time 1 ($p<.01$; two-tailed) but not for time 2. When dissatenuated correlations were used\(^3\), the same pattern of significance was found. Thus, BGX relates more strongly to CTV than KC at both times when all BGX and comparison groups are included, and it relates more strongly to CTV than KC for time 1 only when the BGX group 3 is omitted from the analyses.

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\(^3\) For Cohen & Cohen’s formula 2.8.8, the intercorrelation of the two variables is required; for consistency, this intercorrelation was corrected for unreliability on the predictor and criterion.
CHAPTER V: DISCUSSION

This study was a quasi-experimental validation of an instructional program at Bowling Green State University (the Bowling Green eXperience, or BGX) that was designed to train students regarding “critical thinking about values.” Despite some theoretical and methodological limitations, the results strongly suggest that the BGX program does positively influence students’ critical thinking about values during the duration of the program.

Limitations

The limitations are somewhat expected given that the program was not developed or administered with explicit adherence to the theories described here, and the study was more of a shoot-on-the run attempt to capture the key constructs than a pre-planned, administration-sponsored evaluation that was closely integrated with the BGX program. Some manifestations of this challenge are (a) the concepts of critical thinking used within the BGX program were not derived from established theory or practice, nor was it systematically practiced across instructors within the BGX program – and the same is true for the equally complex and abstract notion of values; (b) the time 1 CTVA (Critical Thinking about Values Assessment) measure was administered after the first BGX orientation session, rendering it most appropriately considered a time 1 evaluation of the BGX manipulation as opposed to a pre-test; and (c) it is difficult to clearly identify students’ motivation for exerting effort on the CTVA measure – this complicates the interpretation of the change in scores from time 1 to time 2.

An additional limitation is the low reliability of several of the key measures. The intraclass correlation coefficients representing rater agreement and reliability for the items comprising the two primary dependent variables (key concepts and critical thinking about values) indicate that considerable error is contained in the scores as they are used. This was
washed-out to some extent when items were summed to scales for the critical thinking about values scale, which demonstrated acceptable scale reliability. The results were corrected for criterion unreliability in an effort to determine whether the substantive conclusions drawn would be different had the scales been perfectly reliable. These results showed a very similar trend of findings. Therefore, while the results must be interpreted with some caution due to the unreliability of most predictor and criterion variables, it is likely that the main consequence is an underestimate of the true relationship between (a) the unreliable predictors (i.e., the BFYSQ scales) and the criteria (key components of critical thinking and critical thinking about values), (b) those predictors and the BGX program, and (c) the BGX program and the criteria (KC and CTV scales). In addition to refining the scales and improving the rating process, the rater agreement/reliability could be improved if each rater were to rate every single response. This was not feasible for the current study. However, were it the case, the items scores would model any rater effects systematically, improving the stability of the ratings and allowing ICC[2] instead of ICC[1] to be used to assess the extent of agreement/reliability. ICC[2] models the rater effects, so it is not simply left as error in the computation of the correlation. It is also possible that more sophisticated techniques could be employed to obtain item scores and reliability estimates that model effects due to the rater even with incomplete data (e.g., Enders, 2003).

The potentially most problematic limitation, however, is the possible differential motivation for students in the BGX 3 group, whose instructor administered the CTVA and counted the scores toward a class grade. On the one hand, the fact that there was less support for CTV-related hypotheses when that group was removed may cause one to speculate whether the current study’s findings are largely attributable to a motivational difference caused by one group of the six studied. However, two findings disconfirm this speculation. First, even without that
group’s inclusion, BGX predicted significant incremental variance in time 1 CTV scores. Recall that the general approach to critical thinking about values was presented to BGX-condition students at their orientation session prior to taking the CTVA at time 1. Second, BGX correlated significantly greater with CTV than with KC, whether BGX group 3 was included or not (although it did not correlate with CTV time 2 with BGX 3 excluded). The BGX program focused specifically on CTV, not critical thinking in general as was measured by KC. If the effects were solely due to increased motivation in BGX group 3, this trend would not be observed: the contamination would effect both KC and CTV equally. Therefore, it is more appropriate to consider BGX 3 to be a more extreme version of the BGX manipulation than BGX 1 or 2, rather than as a confound.

Another challenge to interpreting these results is that with a small number of exceptions ($n=27$), different writing prompts were necessarily administered at time 1 and time 2. Therefore, while a decrease in scores was observed from time 1 to time 2, it is difficult to tell whether the decrease was due to (a) the participants actually getting worse over time, (b) differences in the difficulty of the two writing prompts, or (c) differential motivation at time 1 and time 2 (e.g., the students might have realized the second time that the assignment didn’t really count toward their course grade [except BGX 3], so they didn’t exert as much effort – or they might have been mentally fatigued at the end of the semester). I speculate that the cause was differential motivation. It would be tragic indeed if freshmen actually become worse critical thinkers during their first semester. Additionally, the decline was also observed for Comparison group 3, which received the same prompt on both occasions.

A final limitation concerns the generalizability of these results. The results here are from the Department of Psychology at Bowling Green State University. The Psychology Department
received the same instructions, incentives, and training as did the rest of the University. While this study was only conducted within the Department, and not the University as a whole, all Departments were required to fulfill one of three outcomes assessment options, which were very similar to the method and assessment used in the current study. Therefore, the program should have been very similar on average across the University, even though informal reports suggest that there was considerable variability in how BGX was implemented across the different Departments. In sum, I argue that these results are relatively generalizable to the University as a whole. The results should generalizable to other Universities and contexts to the extent that the program implemented is similar.

Summary and Interpretation of Findings

In general, participants’ ability to identify key components (KC) of an argument was not predicted by whether participants were in the BGX or comparison condition. To the extent that the KC portion of the CTVA is a valid measure of basic critical thinking skills, this suggests that the program did not focus on critical thinking per se. However, the hypothesized main effects for the outcome “critical thinking about values” were fully supported: BGX related positively to critical thinking about values, above and beyond the other relevant study variables. When predicting time 2 CTV scores, BGX explained an additional 3.5% of the variance beyond time 1 scores, and an additional 6.1% when controlling for all other relevant variables. BGX explained 12.3% of the variance in the average of time 1 and time 2 CTV scores. As shown in Table 5, each of the CTV items had higher means in the BGX condition than in the non-BGX condition. CTV scale scores differed by nearly three-quarters of a standard deviation between the two groups. Interestingly, participants’ responses to KC item 1 (averaging time 1 and time 2 scores) were significantly higher in the non-BGX condition than the BGX condition even though the KC
scale scores were barely different between the groups (standardized KC scale means = 0.01 and -0.05, respectively)

An assumption was stated in Chapter 2 – that CTVA scores would increase from time 1 to time 2. Results of analyses addressing this hypothesis indicated that scores actually decreased from time 1 to time 2. The most probably cause of this decline in scores is differential motivation at time 2, specifically that the students understood the assignment would not count toward their grade and therefore did not try as hard as they did at time 1, when it was unclear how the assignment would factor into their class grade. The exception to this finding is KC scores for the BGX condition, which did not decrease from time 1 to time 2. This finding is somewhat consistent with the hypothesis that scores should increase more dramatically in the CTV condition.

There are at least three interesting observations in addition to these primary findings. First, time 1 KC scores were predicted best by ACT/SAT, which is treated here as a proxy for general cognitive ability. Conversely, time 1 CTV scores were predicted better by HSGPA, suggesting an effort-based or motivational component. This trend disappeared for time 2 scores. For time 2 scores, ACT/SAT – and not HSGPA – was the better predictor for both KC and CTV. I speculate that this result, combined with the decline in both sets of scores at time 2, suggests that students in general were less motivated to perform well at time 2 (i.e., the effect was due to training and ability, not effort/motivation).

Second, while none of the hypothesized BFYSQ scale relationships with the CTVA were supported, the Achievement and Power (as a general life goal) scale exhibited a significant negative correlation with time 1 CTV scores ($r=-.22, p<.05$, two-tailed). The correlation was nearly the same for time 2 CTV scores, but there were fewer $n$ at time 2 and the correlation was
only marginally significant ($r = -0.23$, $p < 0.10$). This result curiously suggests that individuals with a higher need for achievement demonstrate worse critical thinking about values.

Third, time 1 KC scores were the worst predictor of time 2 KC scores when HSGPA and ACT/SAT scores were included in the regression equation (hypothesis 3, the third set of results in Table 2). In step 2 of this equation, BGX was also a significant predictor ($\beta = 0.17$, $p < 0.05$), while time 1 KC was not ($\beta = 0.04$, $ns$). This suggests a BGX-induced content effect more than a method effect (recall that most participants received different writing prompts at time 1 and time 2). The interesting finding is that BGX therefore generalized across the two different types of content to a greater extent than did the method of assessment (when accounting for HSGPA and ACT/SAT). The CTV results could be interpreted similarly, although the method (i.e., the CTV measure) predicted time 2 scores about as well as BGX did.

Conclusion and Recommendations

To conclude, the results offer strong support for the validity of the BGX program to train students to “critically think about values”. The program does not appear to train students on the key components of critical thinking itself. Support was generally not found for the hypotheses involving BGX interacting with cognitive and motivational variables, although participants with high higher school GPAs responded better to the BGX treatment. There is some modest support that the BGX program teaches skills and/or knowledge that transfers across different content.

The effectiveness of a program like BGX could probably be increased by adhering to established theories of critical thinking (e.g., Halpern, 1998) and values (e.g., Meglino & Ravlin, 1998; Rokeach, 1973; Schwartz & Bilsky, 1987), such as those described here. Further, the core instruction should be applied systematically across BGX classes. In this regard, University initiatives focusing on critical thinking about values would also benefit from a review of the
strengths and limitations of the older notion of values clarification. In particular, Kinnier (1995) outlines some of these limitations, as well as ways to overcome them. It is my opinion that the BGX program has inherited some very similar challenges such as political conservatism (e.g., that a focus on values is superfluous to education) and a lack of specific criteria and clear guidelines. In light of these challenges, three of Kinnier’s recommendations seem particularly relevant. First, he suggests focusing on values conflicts instead of on “abstract value labels”. I agree that it would be helpful to include emphasis on values conflicts; however, it may be useful to focus instruction first on the identification of values as abstract concepts and then to supplement this emphasis with additional training on “values conflict resolution” (Kinner, 1995).

The second recommendation is to focus on a clear, specific, goal (or goals) in order to enhance the development and evaluation of the intervention. Third, and last, Kinnier states that it would be helpful to integrate the related literatures of values clarification (or maybe even just values in general), decision making, and problem solving. In addition to these, the literature on critical thinking is highly relevant (especially that of Browne and Keeley [2004], Halpern [1997; 1998] and Paul [1993]). It seems to me that critical thinking and values – independently and in combination – manifest themselves through the processes of problem-solving and decision-making.

Future research on this topic would be stronger if a true pre-test is employed, and if the effects of content and method can be separated better. Additionally, the scoring of the subjective, open-ended responses was an arduous task. Advances in technology that enable reliable and valid scoring of subjective data would be welcomed – particularly if they could be made accessible to low-budget researchers. Hopefully, more research and practice on this topic can
produce employees and citizens who are able to think critically in accordance with well-understood values, becoming principled leaders in our communities and organizations.
REFERENCES


Bowling Green State University (2004). *BGeXperience Faculty Workshop Guide*.


APPENDIX A

Critical Thinking about Values Assessment with “The case for self-interest” writing prompt
Critical Thinking about Values Assignment

Part 1: Identify key components

Instructions: Read the accompanying article. You may continually refer back to the essay and you may take any notes you wish. Complete the sentences in the template below using whatever elaboration you think is necessary to make your meaning clear. Your answers should demonstrate your ability to recognize important key components in the thinking of the author.

1. The main purpose of this article is ____________________________________________
   ____________________________________________
   ____________________________________________

2. The main conclusion(s) in this article is/are _______________________________________
   ____________________________________________
   ____________________________________________

3. The author uses the following information or arguments to reach his/her conclusion: __________
   ____________________________________________
   ____________________________________________

4. The main assumption(s) underlying the author's thinking is (are) __________________________
   ____________________________________________
   ____________________________________________

Part 2: Write an essay about the values inherent in the article

Instructions: Using the blank pages provided, construct an essay in response to the article you read that discusses the values inherent in the author’s argument. Values are abstractions that refer to a person’s sense of what is good and right. Some common values include autonomy, justice, individual responsibility, safety, and compassion. In writing your essay, use your answers to the above questions to help you uncover the author’s values. Your essay should demonstrate your ability to identify, understand, and evaluate the implications of values. Use the following questions to provide the structure of your essay:

1. What values does the author hold? Write a short paragraph about each value, defining it and explaining why you believe the author holds the value (you may want to include quotations from the article as evidence).

2. What reasons or justifications does the author give to support the values identified? The reasons or justifications may be implicit and you may or may not agree with them. Write this section as a separate paragraph (or paragraphs).

3. How might the author’s values affect the way people discuss and create policy with regard to this issue?
The case for self-interest

Robert Perloff delivers the graduation speech you won't hear, but should

In years past, the majority of college commencement speakers and honorary degree awardees have been of one mind: Commencement addresses should be brief, the briefer the better. These speakers say that they cannot re-member what their commencement orators sermonized over, and they congratulate the graduates' parents whose kids are now on their own financially. All this is well and good, but what got my dander up was their fervent counsel, delivered with avuncular authority, that the graduates should lead their lives in the service of others, an exhortation with which I am in passionate disagreement. Live their lives in the service of others? I dissent vigorously.

The surest lodestar for pursuing success, happiness, the good life, the respect of friends and neighbors, a virtuous and rewarding existence, self-fulfillment, and for basking in the American dream is unalloyed self-interest. Self interest, for good measure, will be, more often than not, efficacious for serving others as well, giving the graduate a bigger bang for his or her buck.

Serve yourself first, then others. This is metaphorically reinforced by the thousands of flights daily whence passengers are instructed, when necessary, to adjust their own oxygen masks first, and then, next, to help accompanying children or elderly parents with theirs.

Encyclopedist Emil G. Hirsch declared that "Weakness is not a virtue. The stronger the man the better able he is to render service." The shrewd maxim of Hillel, the Jewish sage and authority on biblical law, that "If I am not for myself who will be? If I am only for myself, what am I?" efficaciously subordinates others to self.

In the annals of human experience, self-interest is a powerful model for guiding behavior, an imperfect model but a model, nonetheless, that works. Adam Smith, the paragon of economics, wrote: "It is not from the benevolence of the butcher, the brewer or the baker that we expect our dinner, but from their regard to their own interest."

Self-interest, as we struggle to survive in hostile environments, is freedom of choice. Self-interest is democratic. Self-interest respects individual differences. Self-interest is enlightened and if it is imperfect, so too is altruism. I would predict that the results from a scientific study examining systems or procedures or societies using self-interest as a guiding principle versus procedures or societies using altruism would show self-interest winning hands down. It would simply be no contest.

This is neither to derogate nor to abandon altruism, only to suggest that self-interest works and is more effective for and appealing to human beings and their institutions than the altruistic instincts trumpeted by commencement speakers.

When we advance our own interests first, we also help others. Taxi drivers who hustle for a buck by learning about shortcuts and efficient thoroughfares will, at the same time, get us to our destinations safely and quickly. Auto mechanics, plumbers and handypersons, by practicing and perfecting their crafts, will enhance the lives of people who drive cars, want their sinks and toilets to work, or see to it that their homes and offices are up to speed.
College professors striving onward and upward for their books to be published and their articles accepted by learned journals will, at the same time, benefit society at large by disseminating useful knowledge and technology for making people's lives better and more pleasant.

Butchers, bakers and candlestick makers who work their fingers to the bone on their jobs day in, day out, thus enable ordinary citizens to savor tastier meats and baked goods and to have light when electric power is stymied by summer storms or excessively operated air conditioners.

A businessperson or corporate executive driven to create, maintain or expand a profitable business is, at the same time, providing jobs, useful products and services and wealth for stockholders, many of whom are Joe Six-packs and soccer moms, or widows dependent on robust retirement funds.

A novelist, poet, musician or painter galvanized by the quest for fame and fortune will, at the same time, enable people everywhere and under widely differing circumstances to find comfort, relaxation and inspiration from the words, music and brushes of self-interested scribblers, composers, painters, and performing artists. Doctors, lawyers, engineers and architects who endeavor arduously to burnish their professional capabilities and thus to afford luxurious BMWs, exotic vacations abroad and pricey private schools for their children will, at the same time, enhance the health, wealth and the nation's infrastructures and, as a consequence, do good and serve others.

Managers, politicians, administrators and other bureaucrats — even obsequious apparatchiks — who scratch and claw for power and influence serve others by creating benevolent policies and opportunities for each of us and by making the trains run on time.

So all this is to affirm the truth that by helping one's self first, one inevitably goes on to help others realize the American dream.

Those of us who do not explicitly seek to serve others and who do not ask what we can do for our country are not slouches, nor are we unpatriotic self-indulgent hedonists. While toiling unabashedly in our self-Interested vineyards, we need not wallow in guilt over our explicit disregard for doing good.

Three cheers for self-interest as a force for making the world a better place for the high and mighty, the lowly and the rest of us mediocrities in between.

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Adapted from Pages B-1 and B-2, Pittsburgh Post-Gazette, Sunday, May 30, 2004
APPENDIX B

The Bowling Green First Year Student Questionnaire (2004)
How many miles from BGSU is your permanent home? (10 miles or Less, 11 to 50 miles, 51 to 100 miles, 101 to 500 miles, Over 500 miles)

How many hours per week during the school year do you plan to be employed? (None, 1 to 9, 10 to 19, 20 to 39, 40 or More)

Do you feel that you will need any special tutoring or remedial work in any of the following subjects? (indicate if yes)
- Mathematics
- English
- Foreign Language
- Science
- Reading
- Social Studies

What is the highest degree you plan to obtain anywhere? At BGSU? (Bachelor's; Master's; Ph.D. or Ed.D.; M.D., D.D.S., D.M.V.; LL.B or J.D.; Other)

Is English your native language? (Yes, No)

Are your parents: (Both alive and living with each other; Both alive, divorced or living apart; One or both deceased)

What is the highest level of formal education obtained by your Father? Mother?
- Some high school or less
- High school graduate
- Postsecondary school other than college
- Some college
- College degree
- Some graduate school
- Graduate degree

What is your best estimate of your parents' income? (Less than $30,000; $30,000-$49,999; $50,000-$74,999; $75,000-$99,999; $100,000 or More)

How much of your first year's educational expenses do you expect to cover from each of the sources listed below? (None, $1-499, $500-1499, $1500-3000, over $3000)
- Parents, relatives, friends
- Other College Grant/Scholarship
- Other College Loan
- Stafford/Guaranteed Student Loan
- Ford Direct Subsidized Loan
- Other Loan
- Savings From Summer Work
- Other Savings
- College Work Study
- Pell Grant
- Part-Time Job On Campus
- Perkins Loan
- Other Source
- Ohio Instructional Grant
- Other Private Grant
- Part-Time Job Off Campus

Please indicate… Your Probably Occupation, Your Father’s Occupation, Your Mother’s Occupation:
- Accountant
- Actor, Artist, or Musician
- Architect or urban planner
- Business (clerical)
- Business executive
- Business owner
- Business (other)
- Business salesperson or buyer
- Clinical psychologist
- Computer programmer or analyst
- Engineer
- Farmer or Forester
- Homemaker (full-time)
- Laborer (unskilled)
- Law enforcement officer
- Lawyer (attorney) or judge
- Nurse
- Physician
- Scientific researcher
- Semi-skilled worker
- Skilled trades
- Social, welfare, or recreation worker
- Therapist (physical, occ., speech)
- Teacher or administrator (elementary)
- Teacher or administrator (secondary)
- Teacher or administrator (college)
- Writer or journalist
- Other
- Undecided
- Unemployed
How many other colleges besides BGSU did you apply to? (None, 1, 2, Three or More)

How important were each of the following in your decision to attend college in general? (Very Important, Somewhat Important, Not Important)
- To Prepare for a Professional Career
- To Be Able to Get a Better Job
- To Learn More about Things That Interest me
- To Be Able to Make More Money
- To Gain a General Education and Appreciation of Ideas
- To Learn More About Other People
- To Make Me a More Cultured Person
- I Wanted to Get Away from Home
- To Improve My Reading and Study Skills
- My Parents Wanted Me to Go
- A Mentor/Role Model Encouraged Me to Go

How many other colleges besides BGSU admitted you this year? (None, One, Two, Three or More)

Among colleges to attend, was BGSU your . . . (First Choice, Second Choice, Less Than Second Choice)

What is your estimate of the chance that you will . . . (Very Good, Some, Very Little, None)
- get a Bachelor's Degree
- find a job in my major after graduation
- be satisfied with BGSU
- get a job to help pay for college expenses
- make at least a "B" average
- join a social club, fraternity, or sorority
- participate in volunteer or community service work
- change your major
- graduate with honors
- play varsity intercollegiate athletics
- change your career choice
- join a student professional/government organization
- be elected to an academic honor society
- participate in student protests/demonstrations
- need extra time to complete your degree
- work full time while attending college
- transfer to another college before graduation
- get married while in college
- be elected to a student office
- fail one or more courses
- drop out of college permanently
- drop out of college temporarily

How important are each of the following to you? (Essential, Very Important, Somewhat Important, Not Important)
- being very well off financially
- raising a family
- helping others who are in difficulty
- becoming an authority in my field
- obtaining recognition from my colleagues for my contributions
- influencing social values
- developing a meaningful philosophy of life
- becoming successful in a business of my own
- having administrative responsibility for the work of others
- helping to promote racial understanding
- keeping up to date with political affairs
- becoming a community leader
- participating in a community action program
- becoming involved in programs to clean up the environment
- influencing the political structure
- creating artistic works
- becoming accomplished in the performing arts
- writing original works (poems, novels, etc.)
- making a contribution to science
APPENDIX C

“The political brain” writing prompt
A few months before retiring from public office in 2002, the House majority leader Dick Armey caused a mini-scandal when he announced during a speech in Florida, "Liberals are, in my estimation, just not bright people." The former economics professor went on to clarify that liberals were drawn to "occupations of the heart," while conservatives favored "occupations of the brain," like economics or engineering.

The odd thing about Armey's statement was that it displayed a fuzzy, unscientific understanding of the brain itself: our most compassionate (or cowardly) feelings are as much a product of the brain as "rational choice" economic theory is. They just emanate from a different part of the brain -- most notably, the amygdala, the almond-shaped body that lies below the neocortex, in an older brain region sometimes called the limbic system. Studies of stroke victims, as well as scans of normal brains, have persuasively shown that the amygdala plays a key role in the creation of emotions like fear or empathy.

If amygdala activity is a reliable indication of emotional response, a fascinating possibility opens up: turning Armey's muddled poetry into a testable hypothesis. Do liberals "think" with their limbic system more than conservatives do? As it happens, some early research suggests that Armey might have been on to something after all.

As The Times reported not long ago, a team of U.C.L.A. researchers analyzed the neural activity of Republicans and Democrats as they viewed a series of images from campaign ads. And the early data suggested that the most salient predictor of a "Democrat brain" was amygdala activity responding to certain images of violence: either the Bush ads that featured shots of a smoldering ground zero or the famous "Daisy" ad from Lyndon B. Johnson's 1964 campaign that ends with a mushroom cloud. Such brain activity indicates a kind of gut response, operating below the level of conscious control.

Could the U.C.L.A. researchers be creating the political science of the future? Consider this possibility: the scientists do an exhaustive survey and it turns out that liberal brains have, on average, more active amygdalas than conservative ones. It's a plausible outcome that matches some of our stereotypes about liberal values: an aversion to human suffering, an unwillingness to rationalize capital punishment and military force, a fondness for candidates who like to feel our pain.

What would that kind of insight tell us that we didn't know already? One thing is certain: evidence of a neurological difference between liberal and conservative brains would not be another instance of genetic determinism, since patterns of brain activity are shaped by experience as much as by genes. (Those who suffer from post-traumatic stress syndrome also show unusual patterns of amygdala activity, but those patterns are almost inevitably the imprint of a specific event, and not the long arm of DNA.)

Nonetheless, opening up the brain's black box might provide new explanations for how people become Republicans or Democrats, not to mention libertarians or Maoists, in the first place. It's pretty to think that we all decide our political affiliations by methodically studying each party's positions on the issues. But a recent study by Paul Goren at Arizona State found that voters typically formed their party affiliations before developing specific political values. They become Democrats first and then decide that they, say, oppose capital punishment and support trade unions. But how do they make that initial decision to be a Democrat? The most likely indicator of political preference is your parents’ party
affiliation, but if everyone simply voted along family lines, the dominant party would simply be the one whose members had the most voting offspring. The real question is why someone would ever break from the family tradition -- without feeling strongly either way about specific issues.

Those M.R.I. scans suggest an explanation. Perhaps we form political affiliations by semiconsciously detecting commonalities with other people, commonalities that ultimately reflect a shared pattern of brain function. In the mid-1960's, the social psychologist Donn Byrne conducted a series of experiments in which the participants were given a description of several hypothetical strangers' attitudes and beliefs. They were then asked which stranger they would most enjoy having as a co-worker. The subjects consistently preferred the company of strangers with attitudes similar to their own. Opposites repel.

Say you're inclined to form strong emotional responses to images of violence or human suffering, and over the course of your formative years, most of the people you meet who respond to these images with comparable affect turn out to be Democrats. That's a commonality of experience that exists beneath conscious political affiliation -- it's closer to a gut instinct than a rational choice -- but if you meet enough Democrats who share that experience, sooner or later you start carrying the card yourself. Political identity starts with a shared temperament and only afterward deposits a layer of positions on the issues.

Seeing political identity as a reflection of common brain architecture helps explain another longstanding riddle: why do people vote against their immediate interests? Why do blue-collar Republicans and limousine liberals exist? The question becomes less puzzling if you assume that 1) people choose parties primarily because they desire the companionship of people who share their cognitive wiring, and 2) they desire that companionship so much they're willing to pay for the privilege.

These are all hypotheses now, and indeed it may turn out that some other region of the brain plays a more important role in creating political values. But if the U.C.L.A. results hold water over time, it won't justify the Armey theory that liberals are somehow less rational than conservatives. One of the most celebrated insights of the past 20 years of neuroscience is the discovery -- largely associated with the work of Antonio Damasio -- that the brain's emotional systems are critical to logical decision-making. People who suffer from damaged or impaired emotional systems can score well on logic tests but often display markedly irrational behavior in everyday life. Dustin Hoffman's autistic character in "Rain Man" was brilliant with numbers, but you wouldn't necessarily want him in the White House.

Is there something intrinsically reductive or fatalistic in connecting political values to brain functioning? No more so than ascribing them to race or economic background, which we happily do without second thought. Isn't it more dehumanizing to attribute your beliefs to economic conditions outside your control? At least your brain is inalienably yours -- it's where the whole category "you" originates. No one denies that social conditions shape political values. But the link between the brain and the polis is still uncharted terrain. Prozac showed us that the slightest tinkering with brain chemistry could have transformative effects on a person's worldview. Who is to say those effects don't travel all the way to the voting booth?

Adapted from: The New York Times; August 22, 2004; Section 6, Column 1
APPENDIX D

Scoring Rubric for the Self-Interest Writing Prompt
**KC1 The main purpose of this essay is:**

**Example(s) of O Responses**
- …to persuade.

**Example(s) of 1 Responses**
- …that every person should help themselves and others to make the world better.
- …persuade his readers that self interest is not a bad thing to be ashamed of, but rather, it is necessary to succeed and genuinely good.
- …to show how taking care of yourself first will society as what, because you will always be helping someone else, no matter what you are doing.
- …enforce the fact that self-interest can be just as useful to helping people as altruism can.

**Example(s) of 2 Responses**
- …to get across the idea that you should “serve yourself first” and that self interest is of importance.
- …to show us that by serving our own self-interest, in the end we are also serving others.
- …to prove the point that you must help yourself first, then most of the time it ends up that you help others too!
- To persuade readers that self-interest isn’t a bad virtue, but a characteristic in which it helps others and the society we live in.
- ..to convince the reader that people should first serve themselves and work in their own self-interest, and by doing this they will be serving others indirectly.
**KC2 The main conclusion(s) in this essay is/are:**

<table>
<thead>
<tr>
<th>Example(s) of 0 Responses</th>
<th>Example(s) of 1 Responses</th>
<th>Example(s) of 2 Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• …when people have self-interest they can better achieve goals. Achieving their goals may be what is driving them to help others achieve their goals.</td>
<td>• …that as we help ourselves, in turn we also help others. Like the candle maker, he makes a profit selling the lights but he also provides comfort, smells, and decoration for the customer.</td>
<td>• Self interest makes the world a better place for everyone. Also, people should not feel guilty about it because in the long run it helps everyone.</td>
</tr>
<tr>
<td></td>
<td>• …that by helping one’s self first, humans then go on to help others.</td>
<td>• …that if everyone in the world served their own self-interest we could make the world a better place.</td>
</tr>
<tr>
<td></td>
<td>• …that the world will be a better place and more effective if everybody helps themselves first to help others realize the “American Dream”.</td>
<td>• …do for yourself first! It inevitably goes on to help other people.</td>
</tr>
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<td></td>
<td>• …self-interest helps the society more than serving others does.</td>
<td>• …that through our own self-interest we are also helping others.</td>
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<td></td>
<td></td>
<td>• …there is nothing wrong with self interest and that in fact when serving yourself you are serving others.</td>
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</tbody>
</table>
KC3 The author uses the following information or arguments to reach his/her conclusion:

<table>
<thead>
<tr>
<th>Example(s) of O Responses</th>
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<th>Example(s) of 2 Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• …use people who help themselves first so they can get by and by then doing that they are helping others.</td>
<td>• …different occupations and how they work off each other.</td>
<td>• …explanation of jobs and what the outcome of these jobs are.</td>
</tr>
<tr>
<td></td>
<td>• …self-interest is a powerful model of guiding behavior.</td>
<td>• …talking about different jobs and how whatever you do benefits society or helps other people out.</td>
</tr>
<tr>
<td></td>
<td>• …taxi drivers who hustle for a buck, know short cuts, therefore getting people where they want to go faster. A businessman who creates/expands a business is providing jobs.</td>
<td>• …Automechanics, plumbers, and handypersons who try to perfect their crafts in order to make more money allow us to have working cars, sinks and toilets, homes and offices to be up to speed. The author uses many more examples of professions and how people help others by helping themselves.</td>
</tr>
<tr>
<td></td>
<td>• …references to Emil G. Hirsen, famous quote of economist Adam Smith, examples of professions and how they already serve.</td>
<td>• …shows examples from various careers and everyday situations and how they use self interest to benefit society.</td>
</tr>
<tr>
<td></td>
<td>• …that businessmen, bakers, other people help everyone else in society by utilizing their trade.</td>
<td>• …The author explores a wide variety of occupations that are beneficial to others because the person doing them is acting in self-interest. Example of this are plumbers who perfect their skill so that others sinks and toilets work.</td>
</tr>
</tbody>
</table>
KC4 The main assumption(s) underlying the author's thinking is (are):

<table>
<thead>
<tr>
<th>Example(s) of O Responses</th>
<th>Example(s) of 1 Responses</th>
<th>Example(s) of 2 Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• …that self-interest is quite frankly the way to go.</td>
<td>• …that by everyone serving themselves in the same sense they are also serving the rest of the world.</td>
<td>• …the main assumption is if you help yourself first, you will be more adequate of servicing someone else.</td>
</tr>
<tr>
<td>• …that people should think they should serve others first.</td>
<td>• …that with self-interest the world will become stronger and there will be more freedom.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• …that all of the good things that happen to others are a result of someone trying to help themselves, not purposely trying to help someone else.</td>
<td></td>
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<td></td>
<td>• …that everything one does will in one way another affect someone else in a positive way.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• …if you do not look out for yourself first, no one will</td>
<td></td>
</tr>
</tbody>
</table>
CTV Values: What values does the author hold? Write a short paragraph about each value, defining it and explaining why you believe the author holds the value (you may want to include quotations from the article as evidence).

Example(s) of O Response

1.) The author, selfish little kid that he probably was, holds that values of an idealist that doesn’t realize that are must be ‘self-less’ from time to time in order to mingle with the ladies…and occasionally some fine young chelloveck’s as well. He also gives way too many examples in his writing. A reader would be asleep with a pile of drool this big (*makes visual hand movements) running out of their mouth The author’s values might make a weak person want to go home and eat a whole container of ice-cream.

2.) The author has many great points to his argument. Until reading this I really did not think in the way he does. Saying putting people second after yourself is something that is not so common. You get taught this as a child to put others first, look out for one another. This author says you have an individual responsibility to yourself. It is your responsibility to make yourself happy. It is also your responsibility to make yourself everything you can be. The justice is your helping yourself in turn helping others by doing this. Having compassion about what you want to do with your own life is your own. Putting your compassion toward yourself and your goals should be your main focus to get somewhere in life. It has a safety to it because you cannot get depressed about not helping someone achieve what they want, only pay attention to what you want and you cannot get hurt.

The author justifies being self-interested by saying in the long run it can actually help others/ He backs this up with a deries of jobs that fulfill the person and actually help others at the same time. I agree with this. Automechanics, plumbers, and handypersons perfecting their trade helps people to have better running vehicles, better plumbing, and safer places to live.
Example(s) of 1 Response

1.) The author, Robert Perloff, seems to have many different values. He values the life of the individual before that of the neighbor. With self-interest as his core value, he shows the reader a different perspective on life.

He questions the statement “lead your life in the service of others.” In this statement he formed the basis of his entire essay. The first example that held an interesting concept was the oxygen mask example. It shows that even instructions are always for your own self-interest.

The next interesting value, which really nailed home the topic of self-interest was the examples of different occupations, and how self interest sparks society. Self-interest drove people to pursue careers and now that original self-interest is helping people everywhere with various occupations.

I think the main point of this article was that a little but of self interest isn’t a bad thing, because it goes a long way.

2.) The author holds many values. These values are pursuing success, happiness, the good life, respect, a rewarding existence, fulfillment, and the basking the American dream. These are all narrowed down to a part of one main one – self interest.

Pursuing success, in order to pursue your dreams & goals and become successful you must do what is the best of your interest. If you’re not interested in your area of study you obviously aren’t going to become successful.

Happiness is a value that everyone holds at some point in their lifetime. It may not be everyday or it might be everyday, but the things that you seek pleasure in interest you.

In order to maintain a good life you must obtain the things that come to your interest. You must help yourself first because others will do the same.

Respect, you must show respect to yourself and others. This means to use manners on an everyday basis and be kind to others. “Treat others as if you would like to be treated”.

In conclusion these are just a few values that have been explained, that the author holds. As you can see though they all focus around some sort of the same issue and in order to do one of the values and fulfill it you must do another/another one is required or involved. Mainly it all falls down to self-interest, you must obtain all of these values to acquire self-interest.
Example(s) of 2 Response

1.) The author of this essay has many values. Three of them were very evident in the reading. The first value that the author expresses is one of self-interest. He says, “…The lodestar for pursuing success, happiness…is unalloyed self-interest”. The author feels that all the basic emotional needs of a person, such as respect of neighbors, and self-fulfillment will come through the service of yourself. He says to “serve yourself then others”. With that sequence he expresses his value.

Another value the author holds is the importance of meeting people’s demands. He talks so much about self service, but always enforces the idea with a fact about how it meets another person’s demand. He discusses how the taxi driver is selfish, but as a result, people get to their destinations faster. It is obvious that the author thinks that the needs of the other people are important because it is the main way he is defending his point. He also reveals his value when he says that self-interest is efficacious for serving others. This shows that he thinks serving others is important and good, thus making it a value of his.

The last value that the author made known was individuality. The author stated that self-interest protects the individual, and looks out for their best interest. He says that self-interest is democratic. In a democratic system the rights of the individual are protected. He says that a society based on the good of the individual as opposed to one based on the whole would be more successful. The author also refers to politics. He says the fight for power put in the end make policies that help the individuals that they have power over. The author makes it clear that individuality is important to him.

The author gives a substantial amount of support for his values. Its justification for self-sacrifice, is that it eventually ends up being beneficial for others. He talks about how a doctor that wants to be the best, in order to achieve wealth will be able to give better care to patients. He also discusses how the artists and musicians strive for fame and glory and in doing so mentally free those who appreciate their craft. The author describes the taxi driver as having selfish motives to getting places faster. The conclusion is that the service of one’s self helps others in the long run.

As a result people may look better on policies that help the individual. Thy might also improve the opinions regarding selfish people.
2.) The author of this essay shows through his writing his values and beliefs. **By reading the essay you learn he has a strong belief in individual responsibility, compassion, safety, and justice.**

He shows us his strong belief in individual responsibility by giving us several examples of how people go about their everyday jobs and are helping others without even realizing it. One such example is when he states,

“Auto mechanics, plumbers, and handypersons, by practicing and performing their crafts, will enhance the lives of people who drive cars, want their sinks and toilets to work, or see to it that their homes and offices are up to speed.”

The author also demonstrates his value in compassion for other. He helps us to realize that by using our skills and abilities we are showing compassion for others.

We also know he believes strongly in safety and justice for all. He informs us that we could all be safe and have justice in the world if only everyone followed their self interest.

The author gives us many examples throughout his essay to help give justification to his reasonings. He tells us that self interest is a freedom of choice but gives us good reason to believe in it too.

Some people may not totally agree with everything given in the essay. They may not have the same beliefs, yet still believe self-interest is important. Others may totally disagree only because they have totally different values than that of the author.
CTV Reasons and Justifications: What reasons or justifications does the author give to support the values identified? The reasons or justifications may be implicit and you may or may not agree with them. Write this section as a separate paragraph (or paragraphs).

**Example(s) of O Response**

****Although the following essay was used to give an example for a 1 response to the previous question (CTV Values), it is only an example of a 0 response for this question. Although the student adequately listed and described each value, the student failed to explain how the values were justified or supported by the author.

1.) The author holds many values. These values are pursuing success, happiness, the good life, respect, a rewarding existence, fulfillment, and the basking the American dream. These are all narrowed down and a part of one main one – self interest.

Pursuing success, in order to pursue your dreams & goals and become successful you must do what is the best of your interest. If you’re not interested in your area of study you obviously aren’t going to become successful.

Happiness is a value that everyone holds at some point in their lifetime. It may not be everyday or it might be everyday, but the things that you seek pleasure in interest you.

In order to maintain a good life you must obtain the things that come to your interest. You must help yourself first because others will do the same.

Respect, you must show respect to yourself and others. This means to use manners on an everyday basis and be kind to others. “Treat others as if you would like to be treated”.

In conclusion these are just a few values that have been explained, that the author holds. As you can see though they all focus around some sort of the same issue and in order to do one of the values and fulfill it you must do another/another one is required or involved. Mainly it all falls down to self-interest, you must obtain all of these values to acquire self-interest.

2.) The author, selfish little kid that he probably was, holds that values of an idealist that doesn’t realize that are must be ‘self-less’ from time to time in order to mingle with the ladies…and occasionally some fine young chelloveck’s as well. He also gives way too many examples in his writing. A reader would be asleep with a pile of drool this big (*makes visual hand movements) running out of their mouth The author’s values might make a weak person want to go home and eat a whole container of ice-cream.
Example(s) of 1 Response

1.) I didn’t know what this article is even talking about let alone the questions the values that the author holds are that he says to do what you want to do and take care of your own self interests first. I think that the author holds this value because he truly believes that it will help the American civilization.

The author gives a lot of examples to support his reasoning. He tells about business person, poets, butchers, bakers, and doctors. I think he tends to believe that this is true because with each profession it serves the person who wants to have that job and the consumer who benefits from his or her learning.

I think that other people reading this may be persuaded to believe what one author believes because he gives such good evidence.

2.) I believe the main value that this argument is built on is trust that people will do the just thing. This of course is not always the case. The author often refers to examples where an act of self-interest generates a positive effect on the general public. For example, Auto mechanics, plumbers, and handy persons by practicing and perfecting their crafts, will enhance the lives of people who drive cars, want their sinks and toilets to work, or see to it that their homes and offices are up to speed. This assumption is based on the fact that people will do good. It is a well-known fact the auto mechanics sometimes use faulty parts in repairs, make unnecessary repairs, and charge for work that was never done just to make an extra buck. It would be hard to argue that self-interest of that resort benefits the rest of society. The example above apples for all walks of life. The recent corporate scandals that have been uncovered show that this selfish type of self-interest may occur more in white-collar America than in blue-collar America.

Self-interest in regards to self-improvement will positively affect the public. Selfish self-interest will negatively affect the public. The author does not differentiate between these two, making this essay irrelevant.
Example(s) of 2 Response

1.) In this article, the author holds strong belief that the statement “live your life in the service of others” is the opposite of how you should look at things. He believes that our country, so often insists that you help others before you help yourself, or that you help others therefore helping yourself. He believes that you need to first help yourself and then inevitably you will be helping others. He gives many examples such as managers, politicians, novelists, poets, musicians and painters all help other people because they are first helping themselves. Most of the jobs/occupations in life that affect another person are self beneficial as well. He gives another example of a doctor. A doctor at face value helps others and cures illness therefore being the kind of person “America wants you to be.” Well look into a little bit more and you see that the doctor drives a mercedes and lives in a half million dollar house. The perks of a job in medicine is not only helping people and most medical occupationists are not only in it for that reason only. Americans love money. Its just a fact that the majority does. So in regards to the author I strongly agree with his points.

Many people may view this authors ideas as very incorrect. They may say that the people who are claiming that they do their job for the warm fuzzy feeling inside and not the thick wallet are in fact telling the truth. That is where I believe they are wrong. I believe that the author is in fact right and he states an opinion that someone needed to. People may be influenced by his expressed view, however there is always going to be the small group of people who disagree and debate it until the end. However every touchy subject strikes controversy.
CTV Policy: How might the author’s values affect the way people discuss and create policy with regard to this issue?

<table>
<thead>
<tr>
<th>Example(s) of O Response</th>
</tr>
</thead>
</table>
| **1.)** The author, Robert Perloff, seems to have many different values. He values the life of the individual before that of the neighbor. With self-interest as his core value, he shows the reader a different perspective on life.  

He questions the statement “lead your life in the service of others.” In this statement he formed the basis of his entire essay. The first example that held an interesting concept was the oxygen mask example. It shows that even instructions are always for your own self-interest.

The next interesting value, which really nailed home the topic of self-interest was the examples of different occupations, and how self interest sparks society. Self-interest drove people to pursue careers and now that original self-interest is helping people everywhere with various occupations.

I think the main point of this article was that a little bit of self interest isn’t a bad thing, because it goes a long way.  

**2.)** The values that the author held throughout the articles were solely based upon self interest. He believes that self interest can bring happiness, success, the respect of friends and neighbors, and the good life. I think he believes this because he thinks that by putting his self interest first he can later in turn help others. Without the self interest that drives us all to different occupations we would not have the help of these occupations of people. |
Example(s) of 1 Response

1.) The author of this essay has many values. Three of them were very evident in the reading. The first value that the author expresses is one of self-interest. He says, “... The lodestar for pursuing success, happiness...is unalloyed self-interest”. The author feels that all the basic emotional needs of a person, such as respect of neighbors, and self-fulfillment will come through the service of yourself. He says to “serve yourself then others”. With that sequence he expresses his value.

Another value the author holds is the importants of meeting people’s demands. He talks so much about self service, but always enforces the idea with a fact about how it meets another person’s demand. He discusses how the taxi driver is selfish, but as a result, people get to their destinations faster. It is obvious that the author thinks that the needs of the other people are important because it is the main way he is defending his point. He also reveals his value when he says that self-interest is efficacious for serving others. This shows that he thinks serving others is important and good, thus making it a value of his.

The last value that the author made known was individuality. The author stated that self-interest protects the individual, and looks out for their best interest. He says that self-interest is democratic. In a democratic system the rights of the individual are protected. He says that a society based on the good of the individual as opposed to one based on the whole would be more successful. The author also refers to politics. He says the fight for power put in the end make policies that help the individuals that they have power over. The author makes it clear that individuality is important to him.

The author gives a substantial amount of support for his values. Its justification for self-sacrifice, is that it eventually ends up being beneficial for others. He talks about how a doctor that wants to be the best, in order to achieve wealth will be able to give better care to patients. He also discusses how the artists and musicians strive for fame and glory and in doing so mentally free those who appreciate their craft. The author describes the taxi driver as having selfish motives to getting places faster. The conclusion is that the service of one’s self helps others in the long run.

As a result people may look better on policies that help the individual. Thy might also improve the opinions regarding selfish people.

2.) His values probably contradict many others beliefs on the issue. But it may shape what our country is. It is true that most care about themselves. Therefore people may think its OK after reading this. But we should also focus on others after first focusing on ourselves, not focus on ourselves, hoping or assuming it will help others.
APPENDIX E
Scoring Rubric for The Political Brain Writing Prompt
**KC1 The main purpose of this essay is:**

<table>
<thead>
<tr>
<th>Example(s) of 0 Responses</th>
<th>Example(s) of .5 Responses</th>
<th>Example of 1 Responses</th>
<th>Example of 1.5 Responses</th>
<th>Example(s) of 2 Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• To show how politics and scandals are.</td>
<td>• To tell us that there is a correlation between what type of person votes for which party.</td>
<td>• Arguing which political party is genetically smarter, if that can be determined</td>
<td>• To say why people are Republican/Democrats and that it might be something to do with your amygdalas or your brain’s black box.</td>
<td>• Provoke thought about why people vote for a particular party and to suggest that the amygdale specifically or other parts of the brain plays an important role in creating particular values</td>
</tr>
</tbody>
</table>
**KC2 The main conclusion(s) in this essay is/are:**

<table>
<thead>
<tr>
<th>Example(s) of 0 or .5 Responses</th>
<th>Example of 1 Responses</th>
<th>Example of 1.5 Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• To understand why people vote the way they do, and yes, there is a connection to why they vote the way they do</td>
<td>• It’s hard to connect politics with brain functioning</td>
<td>• The brain is very likely to play a critical role in the decision pertaining to politicians and political issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• That there might just be a link between your brain and polls and this could be why we vote the way we do</td>
</tr>
</tbody>
</table>

**KC3 The author uses the following information or arguments to reach his/her conclusion:**

<table>
<thead>
<tr>
<th>Example(s) of 0 or .5 Responses</th>
<th>Example(s) of 1 Responses</th>
<th>Example(s) of 1.5 Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Armey’s scandal</td>
<td>• The author uses the argument of Dick Armey to reach one of his conclusions; he also used family tradition</td>
<td>• Examples from <em>Rain Man</em>, info from UCLA researchers, info from MRI scans.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• He uses information gathered by the UCLA researchers and MRI scans</td>
</tr>
</tbody>
</table>
**KC4 The main assumption(s) underlying the author's thinking is (are):**

<table>
<thead>
<tr>
<th>Example(s) of 0 Responses</th>
<th>Example(s) of 1 Responses</th>
<th>Example(s) of 1.5 Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Scandals are bad, politics are hard to understand</td>
<td>• The main point of the author’s thinking is that democrats and Republicans and the people who identify with them are just wired differently</td>
<td>• The liberals think with more compassion and the Republicans think more with their brains</td>
</tr>
</tbody>
</table>
CTV Values: What values does the author hold? Write a short paragraph about each value, defining it and explaining why you believe the author holds the value (you may want to include quotations from the article as evidence).

Example(s) of 0 Response

- The author holds the value that people who personally identify with a particular party will start to follow that party and repel the other party.

Example(s) of 1 Response

- Steven Johnson displays different values that he holds in his argumentative article. One is that he believes intelligence and political party affiliation are not scientifically related. He clearly believes in individual’s rights to choose a political party, but states that he understands that not all people take advantage of this right correctly.
CTV Reasons and Justifications: What reasons or justifications does the author give to support the values identified? The reasons or justifications may be implicit and you may or may not agree with them. Write this section as a separate paragraph (or paragraphs).

Example(s) of 0 Response

- The author gives quotes from Armey before he retired that proves his point.

Example(s) of 1 Response

- Some reasons that he gives to back-up his statements are scientific studies don’t [try?] to discover the relationship between political party and intelligence. One example is when he talks about the work of Antonio Damasio and how his studies done in relation to how the brain works. Another example is that he states how Paul Goren did a study to discover how people chose their political party.

Example(s) of 1.5 Response

- Johnson backs up these values with scientific research about the brain and its many functions. He also discusses data concluded by UCLA researchers and MRI scans. These justifications seem accurate and honest, making Johnson’s article more valid and his values open-minded.
CTV Policy: How might the author’s values affect the way people discuss and create policy with regard to this issue?

Example(s) of 0 Response

- I think that if people agree with Steven Johnson’s values, they will be more likely and willing to accept this ideas about this issue if they understand and value his ideas, they are more likely to understand and value Johnson’s ideas. (yes, it’s repeated like that)

Example(s) of 1 Response

- This could affect many policies because people would have to make sure that these policies aren’t being made by our emotions instead of our logic. They would have to come up with a way to make sure emotions did not affect policies
APPENDIX F

_A rater’s guide to critical thinking about values_
So what the heck are the answers to the CTVA supposed to be?

A rater’s guide to critical thinking about values

BGX’s focus on critical thinking about values is based largely on Browne & Keeley’s (2004) “Asking the right questions: A guide to critical thinking.” The following guide to scoring the CTVA is taken from Browne & Keeley’s book (B&K).

KC1, Purpose:
This is similar to “what is the main issue?” For example, an essay may be about:
- Should capital punishment be abolished?
- What ought to be done about unemployment?
- Must we outlaw SUVs or face increasing rates of asthma?

KC2, Conclusion:
The conclusion is the message that the speaker or writer wants you to accept. The conclusion is always the response to an issue. For example, if the issue is “Should capital punishment be abolished”, a conclusion could be “yes” or “no”, although it may not be that explicitly stated, and it may be left for the reader to infer.

KC3, Arguments:
An argument is represented by a conclusion and the reasons allegedly supporting that conclusion. As the conclusion is represented above, the identification of reasons should be sufficient here.

Consider the following argument (B&K, p.66):

“A rigid dress code is desirable…

Discipline is increased by a rigid dress code.”

KC4, Assumptions:
An assumption is an unstated belief that supports the explicit reasoning. These can be assumptions about the way the world is (as in a descriptive assumption) or about the way the author thinks the world should be (as in a value assumption).

To identify assumptions, look at the author’s movement from reasons to conclusions.

So, using the argument example above,
- The value assumption is educational excellence is preferred over individual self-expression.
- A descriptive assumption might be that discipline is related to educational excellence.
CTV1, Values:
Values, in B&K’s language, are ideas that someone thinks are worthwhile. The values can either be explicitly stated, or assumed, as identified in KC4. Some examples of values are (form p.58, B&K):

<table>
<thead>
<tr>
<th>Adventure</th>
<th>Ambition</th>
<th>Autonomy</th>
<th>Collective responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comfort</td>
<td>Competition</td>
<td>Cooperation</td>
<td>Courage</td>
</tr>
<tr>
<td>Creativity</td>
<td>Equality of condition</td>
<td>Equality of opportunity</td>
<td>Excellence</td>
</tr>
<tr>
<td>Flexibility</td>
<td>Freedom of speech</td>
<td>Generosity</td>
<td>Harmony</td>
</tr>
<tr>
<td>Honesty</td>
<td>Justice</td>
<td>Novelty</td>
<td>Order</td>
</tr>
<tr>
<td>Patriotism</td>
<td>Peace</td>
<td>Rationality</td>
<td>Security</td>
</tr>
<tr>
<td>Spontaneity</td>
<td>Tolerance</td>
<td>Tradition</td>
<td>Wisdom</td>
</tr>
</tbody>
</table>

The question asks for a definition of the value, which may not be incredibly important if it’s obvious.

Support for “why the author holds particular values” can be provided by simply referencing values that the author clearly endorses (e.g., they may be an explicit part of the argument).

CTV2, Reasons:
Reasons for the author’s support of particular values may be explicitly stated, or left to be assumed.
In the dress code example, the author’s main issue might be dress code policy, the main conclusion that one should exist, and the main reason that a dress code increases discipline. So discipline is the value. But what’s the reason for preferring that value? This could be expressed as:
(a) a sub-argument, where valuing discipline is the conclusion, and an argument is presented as to why we should value discipline, or
(b) it might simply be assumed (see assumptions above).

CTV3, Policy
This is currently not well-defined. It is included because one of the three BGX learning outcomes is:
Identify ways in which these sometimes unexamined values shape or relate to academic and/or public discussion of issues relevant to today’s citizens.
APPENDIX G

BFYSQ Reasons to Attend College and General Life Goals Items Grouped by Scale

How important were each of the following in your decision to attend college in general? (Very Important, Somewhat Important, or Not Important)

Intellectual Development
- To improve my reading and study skills
- To make me a more cultured person
- To learn more about things that interest me
- To learn more about other people
- To gain a general education and appreciation of ideas

How important are each of the following to you? (Essential, Very Important, Somewhat Important, or Not Important)

Social Progression
- Becoming a community leader
- Becoming involved in programs to clean up the environment
- Helping others who are in difficulty
- Helping to promote racial understanding
- Influencing the political structure
- Influencing social values
- Keeping up to date with political affairs
- Making a contribution to science
- Participating in a community action program

Achievement and Power
- Becoming an authority in my field
- Becoming successful in a business of my own
- Being very well off financially
- Having administrative responsibility for the work of others
- Obtaining recognition from my colleagues for my contributions

Humanities
- Becoming accomplished in the performing arts
- Creating artistic work (painting, etc.)
- Writing original works (poems, novels, etc.)
### APPENDIX H

**Results of Exploratory Hypotheses Testing Interactions**

Hierarchical regression results for exploratory hypotheses of interactions (EH6 and EH7): key components

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DV</strong></td>
<td><strong>IVs</strong></td>
</tr>
<tr>
<td>KC time 2</td>
<td>KC time 1</td>
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<tr>
<td></td>
<td>HSGPA</td>
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<tr>
<td></td>
<td>BGX</td>
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<td></td>
<td>HSGPA × BGX</td>
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<tr>
<td>KC time 2</td>
<td>KC time 1</td>
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<tr>
<td></td>
<td>ACT/SAT</td>
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<tr>
<td>KC time 2</td>
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<td></td>
<td>Int. Dev.</td>
</tr>
<tr>
<td></td>
<td>BGX</td>
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<td></td>
<td>Int. Dev. × BGX</td>
</tr>
<tr>
<td>KC time 2</td>
<td>KC time 1</td>
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<td></td>
<td>Soc. Pro.</td>
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<td>BGX</td>
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<td></td>
<td>Soc. Pro. × BGX</td>
</tr>
<tr>
<td>KC time 2</td>
<td>KC time 1</td>
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<td></td>
<td>Ach. Pow.</td>
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<td></td>
<td>BGX</td>
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<td></td>
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</tr>
<tr>
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<td>KC time 1</td>
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<tr>
<td></td>
<td>Human.</td>
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<td>BGX</td>
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</tr>
</tbody>
</table>

*Note.* DV = dependent variable, IVs = independent variables, KC = key component scale, HSPA = high school grade point average, ACT/SAT = standardized ability measure based on ACT and SAT scores, Int. Dev = intellectual development, Soc. Pro. = social progression, Ach. Pow. = achievement and power, Human = humanities; *p<.05, **p<.01.
Hierarchical regression results for exploratory hypotheses of interactions (EH6 and EH7): critical thinking about values

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