ADDRESSING THE WORKFORCE DEVELOPMENT GOAL OF AN ONLINE FOR-PROFIT UNIVERSITY: AN EXAMINATION OF CRITICAL THINKING SKILLS AND SELF-PERCEPTION IN DEGREE-SEEKING UNDERGRADUATE STUDENTS

by

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Abstract

Educational organizations are being scrutinized for developing accredited programs that provide students with gainful employment. As industry prepares to face the forecasted gaps of an aging workforce, educational organizations are also pressured to provide corporations with critical thinking problem solvers who can think analytically and actively participate in the global economy by producing change that will improve organizational performance. This study exposes an existing gap in literature regarding perception and its effect on adult online students' critical thinking skills as opposed to their perceived beliefs. This study's exploration is grounded on a self-perception and social-cognitive theoretical framework that supports knowledge and reality-based assumptions. This quantitative study assumes we are all works in progress; therefore, it is possible to direct learning outcomes and drive economic change with strategies that build on life's experiences for valuable contributions to society. By employing a non-experimental quantitative correlational design, this study found a cause and effect relationship between adult online students' gender and adult online students' critical thinking skills.

Dedication

This dissertation is dedicated to God, and the two individuals who gave me life (Gladys and Paul Bonomi). The belief, trust and love they instilled in me since birth helps me to recognize there is nothing I cannot do when allowed the opportunity to experience the altruism that stems from their unconditional love.

Acknowledgments

This doctoral journey has been an arduous experience that brought tears, sleepless nights, and moments of doubt . . . all of which were removed by caring individuals who always believed in me. The countless days and nights I spent in prayer for guidance, support and encouragement were not in vain. I am sending a special thanks to those who answered God's call.

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CHAPTER 1. INTRODUCTION

Introduction to the Problem

Education is big business! The education industry is a multimillion-dollar business responsible for supplying the world with a product (student) who will generate the knowledge needed to drive economic growth, increase employment, generate innovation and sustain communities (de Lange, 2013; Khan, 2015; Kuehn, 2014; "Program Integrity," 2014; Slade, 2014; Starr, 2014).

Wessels (2010) advocated that the primary challenge for higher education organizations is to seek ways to adapt their curricula (one of its products) to maximize students' learning in relation to their goals. Khan (2015) identified the challenges faced by education organizations: to develop critical thinking skills, flexibility and cooperation in its graduates and inculcate lifelong learning goals that will prepare them to meet the needs of employers for a prepared and skilled workforce.

The U.S. Department of Education's (USDE, 2014) concern that postsecondary education programs are not preparing students for gainful employment has placed for-profit educational institutions under scrutiny. The Act of 1964, originally intended to protect constitutional rights in public education, is being prepared for amendment to hold general education programs accountable for student debt, accredited programs, and students' ability to secure the skills needed to secure gainful employment (USDE, 2014).

As noted by Carlson (2011), there is scant literature available that explores perceptions of critical thinking and the impact of perceived beliefs on performance. The lack of exploration with regard to adult online students' perception of their critical thinking skills level and the impact of perception on their actual critical thinking skills is a recognized gap in extant literature. The higher education organization continues to face and address stakeholders' needs (Wessels, 2010), but takes steps to do so without thorough research of the specific characteristics of the delivery and the impact of its curricula (Harvey & Baumann, 2012). This study's goal was to address these gaps by quantitatively assessing a relationship between first-term adult online students' total critical thinking skill levels assessed by the Watson–Glaser™ II Critical Thinking Appraisal (WGCTA) and the self-perception of their critical thinking skills.

Background of the Study

Today's educational organizations are responsible for supplying the world with a product that will intensify international competition, increase national growth, and enhance our nation's ability to compete in the global marketplace with an innovative workforce (Khan, 2015; "Program Integrity," 2014; Slade, 2014; Starr, 2014). The impact of education on the global economy (Kuehn, 2014) has an essential role to facilitate global awareness within graduates by developing universal critical thinking initiatives that will produce problem-solving paradigms (Mark, 2013).

There is a consensus (Brewer & Brewer, 2010; Khan, 2015; Mansouri & Rowney, 2014; Wessels, 2010) that suggests higher education organizations will need to make adjustments in its response to stakeholders regarding hiring organizations and potential

employees (its students). Research conducted by Brewer and Brewer (2010) suggests higher education organizations face challenges of a changing environment when preparing students to assume roles as important assets in a knowledge-based economy, which speaks directly to the mission of higher education organizations. Specifically, Wessels (2010) advocated that the primary challenge for higher education organizations is to seek ways to adapt their curricula (one of its products) so that it maximizes students' learning in relation to their goals.

Professional organizations, as stated by Mansouri and Rowney (2014), are pressured to improve and increase their accountability by providing the output needed to sustain competition in a consumer-driven market. Khan (2015) identified the challenges faced by educational organizations to be the development of critical thinking skills, flexibility and cooperation in its graduates and lifelong learning goals in its graduates, thus affecting their ability to meet the needs of employers for a prepared and skilled workforce. Reported data that measures a higher education institution's critical thinking competency levels of its graduates to national tests for critical thinking reveals progress has been made; however, most of this improvement is seen in average scores of online exiting students. When targeting specific critical thinking skill areas related to evaluating arguments, evaluating hypotheses and recognizing valid inferences, all area scores were below the national average, except in the areas of "evaluating hypotheses [and] recognizing valid inferences" (Southern Association of Colleges and Schools [SACS], 2013, p. 8).

National governments and employers agree on the need for educational organizations to prepare individuals with skills to think both critically and for themselves.

(Pithers & Soden, 2010). Higher education organizations play a significant role in workforce development; however, adult students from higher education organizations are not graduating with the critical thinking skills needed by the workplace that requires individuals who can analyze, solve problems, and develop solutions (Brewer & Brewer, 2010; Slade, 2014; Snyder & Snyder, 2008; USDE, 2014). In reaction to this lack of achievement by its graduates, most educational organizations make changes to their curricula without first understanding if and how there is a disconnect between the curriculum being delivered and how it is being received (Harvey & Baumann, 2012).

Today's organizations are not just looking to survive in the global marketplace; they are continually reaching for opportunities to grow business and make contributions to society by maintaining a watchful eye on their triple bottom line—economic, environmental and social (Othman & Othman, 2014). As such, by adopting a behavior to change their carbon footprint and teach skills that are sustainable in the workplace, education organizations position themselves to influence society (de Lange, 2013; Othman & Othman, 2014). Therefore, by adopting sustainability into curricula that builds on global trends, educational organizations are expected to be leaders that create change (de Lange, 2013). Global business drives economic growth; as such, the production of global education by a for-profit business harvests a product (students) that increases employment, generates innovation, and sustains communities (de Lange, 2013; Kuehn, 2014).

The Association to Advance Collegiate Schools of Business (AACSB) instituted the assurance of learning standards that define the achievement of goals and design methods to assess student learning (AACSB International, 2009). As reported by Revere,

Decker, and Hill (2012), these standards require direct measures (e.g., tracking performance on professional licensing exams, standardized testing, course-embedded testing with exams, and capstone activities) of student learning supplemented by indirect measures (e.g., students perceptions of their learning).

Baartman and Ruijs (2011) conducted a longitudinal study of adult students enrolled in a 4-year social work bachelor's program to investigate the differential between adult students' perceived beliefs in competency-based education and their actual competence assessed by the higher education organization. Results provided evidence that competence remained constant during adult students' second and third years with a noted increase in their fourth year. They suggested additional research to investigate adult students' development and perceptions of competence in knowledge and skills to determine how they integrate with professional competence. To that end, Carlson (2011) explored perceptions of critical thinking teaching methods utilized in a business course. The author found disparity between adult students' perception by academic level. This author suggested additional research be focused on the relationship of student perception of their skills to actual student critical thinking skills to investigate the impact of perceived beliefs on performance.

Statement of the Problem

The problem that generated a response for this non-experimental, correlational quantitative research was based on gaps that defined its purpose: The primary gap existed in the lack of extant literature on adult online students' perception of their critical thinking skills and the impact of their perceived beliefs on performance (Carlson, 2011).

Additionally, there were suggested gaps in curricula and preparation of students who are preparing to enter the workforce (Benton, 2011; Brewer & Brewer, 2010; Khan, 2015; Pithers & Soden, 2010; SACS, 2013; Slade, 2014; Wessels, 2010). This study's intent was to address these gaps by quantitatively assessing a relationship between first-term adult online students' total critical thinking skill levels assessed by the WGCTA and the self-perception of their critical thinking skills.

Purpose of the Study

The intent of this study was to contribute to workforce development via management education by combining self-perception and social-cognitive theories to study first-year adult online learners at a for-profit educational organization. This work was based in part on the research conducted by Carlson (2011).

Critical thinking skills are honed in the business curricula, allowing later transfer to the workplace. Thus, this research was interested in investigating whether there is a relationship between perceived skill and actual skill level of first-term adult learners in a for-profit business curriculum. The study worked toward making contributions to management education by determining if demographic variables influence these skills.

Kuehn (2014) petitioned educational organizations for assistance with the delivery of innovation by producing critical thinking problem solvers who can think independently, understand teamwork, and appreciate the interconnectedness of our global economy to drive change. Management educators who partner with business professionals can use the findings from this study to strengthen knowledge transfer between industries. Training and development personnel, human resource professionals

and business faculty can all benefit from these findings as they integrate critical thinking as a program core competency.

Rationale

As suggested by scholars (Firestone, 1987; Nussbaum, 1989), it is important for researchers to consider their philosophical perspective. Therefore, this study's rationale was based on its research design's (a) alignment with the study's purpose, (b) ability to explore its research questions, (c) commonality with educational research, (d) juxtaposition with positivistic epistemology, and (e) objective ontology.

The methodological and workforce development from management education literature provided additional rationale for this study's design and supported alignment with its purpose and research questions (Creswell, 2009; Groves et al., 2009; Johnson, 2001; Swanson & Holton, 2005; Tabachnick & Fidell, 2007). By employing a non-experimental, correlational quantitative research approach, the researcher was able to examine how variables are associated with each other without intervention or manipulation. The research design supported the study's purpose and aligned with its research questions. Additionally, as stated by Ferritto (2013) and Muijs (2011), the most popular research design in the social sciences is survey research, as this approach allows the researcher to extrapolate findings from the sample back to the population from which the sample was drawn using inferential statistics.

The statistical technique for this research design was used to analyze how self-perception of critical thinking skills (the independent variable) impacts total critical thinking skills (the dependent variable), controlling for age, gender, major, prior

workplace experience, and prior college coursework is multiple linear regression. As Ritchey (2008) noted, the use of multiple linear regression is appropriate when investigating the impact that multiple independent variables will have on a single dependent variable. Therefore, a multiple regression approach was used to investigate the tenets of the omnibus research question. Each research subquestion was examined using the *t*-test values associated with each unstandardized coefficient produced as part of the multiple linear regression equation.

Research focused on the effect of perception on for-profit education and the impact of its curricula on workforce development (Baartman & Ruijs, 2011; Carlson, 2011; Simkin, Crews, & Groves, 2012; Teodora, Emil, & Adriana, 2013) used a correlational quantitative design to explore relationships between perception and other variables by engaging regression analysis. Therefore, researchers' support provided by methodology literature and philosophical perspectives align with studies focused on the effect of perception on for-profit education and its impact on curricula on workforce development critical thinking skills. As this study's purpose was consistent with a non-experimental correlational quantitative research design, it was appropriate for exploring this study's research questions.

Research Questions

The omnibus research question for this study was: What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' actual total critical thinking skills as measured by the Watson–

Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework?

The omnibus research question was broken down into the following subquestions:

1. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV)?
2. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's age?
3. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender?
4. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's major?
5. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior workplace experience?

6. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior college coursework?

Aligning with each respective research question, the study's null and alternate hypotheses were as follows:

Omnibus H_0: There is no significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework.

Omnibus H_a: There is a significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework.

$H_0$1: There is no significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV).

H_a1: There is a significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV).

H_02: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's age.

H_a2: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's age.

H_03: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender.

H_a3: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender.

H_04: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online

students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's major.

H_a4: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's major.

H_05: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior workplace experience.

H_a5: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior workplace experience.

H_06: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior college coursework.

H_a6: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online

students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior college coursework.

Significance of the Study

The significance of this study rested in its contribution to the emerging for-profit higher education online organization's operational processes. Since one goal of a higher educational institution is to improve its management effectiveness and efficiency through delivery of its product (education), increasing the online higher education administration and faculty's knowledge of students' perception and skills. This knowledge could affect curricula development and modification, student performance, and ultimate organizational performance and sustainability. The study's impact can help higher educational organizations address the skill gap in today's organizations by producing the human capital needed to solve problems with analytical thought (Kuehn, 2014; Mansouri & Rowney, 2014; Slade, 2014). As active partners in workforce development, the education industry must facilitate knowledge transfer from the classroom to conference rooms across the country. The training and development of personnel, human resource professionals, and business faculty who deliver management education will all benefit from the investigation of a critical core competency—critical thinking skills.

Public perception of education as a capital good has placed pressure on higher education organizations. This pressure originates from its potential for financial reward with an emphasis on creating a skilled workforce, thereby upgrading society's standard of living through its human capital (Khan, 2015). Research suggests importance is attached

to universities' ability to measure and analyze learning to maintain accreditation and further the epistemological aspect of its community (Brewer & Brewer, 2010; Wessels, 2010). According to the SACS (2012), accredited institutions are required to develop Quality Enhancement Plans that include a comprehensive institutional process for targeting key emerging issues from institutional assessment and applies focus on learning outcomes that support student learning.

The USDE's (2014) concern that postsecondary education programs does not prepare students for gainful employment has placed for-profit educational institutions under scrutiny. As a result of this concern for students' preparedness to make contributions to the economy, the Act of 1964 is being prepared for amendment to hold general education programs accountable for student debt, accredited programs, and students' ability to acquire the skills needed to secure gainful employment (USDE, 2014).

Definition of Terms

Age. When reported as a range, is considered to be a contributor to skill growth and maturity (Baartman & Ruijs, 2011; Bandura, 1986; Bem, 1967; Carlson, 2011; Esters & Retallick, 2013).

Critical thinking. A formed habit based on intellectual commitment to those skills and abilities which guide behavior (Paul, 1993).

Gender. When measured by male or female, influences academic engagement (Strauser, O'Sullivan, & Wong, 2012).

Major. When measured as either business or nonbusiness, is a controlling influence when considered as previous experience in required courses. Additionally,

undecided majors are indicators of a maturity level that grows as students' develop self-efficacy (Bandura, 1989; Bem, 1967).

Prior college coursework (academic development). Integrated with critical thinking skills and considered to be a contributor to the cognitive processes that promote self-efficacy (Bandura, 1989; Kim & Sax, 2011; White, 2013).

Prior workplace experience. Regarded as the education needed to increase human capital, cognitive skills, self-efficacy and economic growth (Bandura, 1989; Khan, 2015; Rasul, Rauf, & Mansor, 2013).

Self-perception. An awareness of self, generated by interpersonal inferences based on overt actions (Bem, 1967).

Total critical thinking skills. A complete thought process that generates and produces skills and ability (Bloom, 1956; Glaser, 1941; Paul, 1993; Watson & Glaser, 1991).

Assumptions and Limitations

Theoretical Assumptions

The theoretical assumptions for this study focused on the idea that higher educational institutions can improve management effectiveness and efficiency through delivery of its product (education). This belief is predicated in part on the understanding from social-cognitive theory that people can effect change in themselves and their situation (Bandura, 1986; Gasser, 2013; White, 2013). Therefore, simply by its connection with perceived self-efficacy and beliefs, it can be argued that the theoretical foundation for this study was strengthened with the addition of self-perception theory that

postulates student willingness to infer one's own attitude by observing behavior will change self-knowledge (Bem, 1967; Harvey, Coulson, Mackaway, & Winchester-Seeto, 2010; Hastorf, 1950; Ileris, 2004). This argument, in and of itself, positions the educational institution in a leadership capacity to guide and transform organizational performance (Khan, 2015) by increasing the outcome of its product (i.e., educated students).

Kuehn (2014) petitioned education organizations for assistance with the delivery of innovation by producing critical thinking problem solvers who can think independently and understand teamwork and the interconnectedness of global economy to drive change. It is assumed that by raising awareness of a student's ability to affect change (Bandura, 1986), change will occur. It can also be argued that perception can redirect learning outcomes by an individual's willingness to direct his/her attitude and beliefs (Bem, 1967).

Topical Assumptions

In alignment with the extant literature (Khan, 2015; Kuehn, 2014; Mark, 2013; "Program Integrity," 2014; Slade, 2014; Starr, 2014), this study has embraced the assumption that perception is a construct associated with measuring critical thinking skills. Additionally, this study aligned with the assumption that interventions developed to increase an educational organization's performance by managing its inputs and outputs increases the value of its assets and ultimately, promotes its triple bottom line (de Lange, 2013; Othman & Othman, 2014).

Methodological Assumptions

The methodological assumptions of quantitative research support research designs that are measurable, reliable, credible, verifiable, and replicable data (Creswell, 2009; Firestone, 1987; Johnson, 2001; Nussbaum, 1989; Tabachnick & Fidell, 2007). Earlier studies embraced these assumptions by employing a quantitative methodological approach which dominated earlier critical thinking studies (Andiliou & Murphy, 2010; Gadzella, Stacks, Stephens, & Masten, 2005; Hassan & Madhum, 2007; Lai, 2011; Nusbaum & Silvia, 2011; Williams, 2003; Zascavage, 2006). Additionally, quantitative research methodological assumptions align with this researcher's philosophical orientation, which is positivistic epistemology with objective ontology.

For measurable, reliable, credible, verifiable and replicable data to be collected, this study required a sample that met the aforementioned inclusion criteria from the five sections of an English Composition I course selected by University XYZ (a.k.a. this researcher's employer). As this researcher had no prior or existing relationship with any of the participants selected for this study, it was assumed any concern regarding this researcher's affiliation with the study site was minimal. Further, there was no personal or professional relationship between the researcher and any of the participants that were included in this study.

To ensure there was no selection bias, the following steps were taken:

1. University XYZ determined which five English I Composition sections would participate in this pilot;
2. The five English I Composition sections were not known to the researcher until the sections had been designated for course content;

3. Participants who met the criteria were randomly selected from those who (being mindful of students who do not want to participate) met the inclusion criteria;
4. The participants were not known to this researcher except by the pseudonym provided to each participant; and
5. There was no financial benefit to the researcher for conducting this study.

Limitations

A limitation for this study existed with the sample's ability to complete the survey within the specified time frame of three weeks. This limitation was significantly reduced with the reminders provided from course room announcements and the facilitator.

Participants might have considered completing the appraisal as added coursework without receiving credit. This limitation was met with focused communications on the importance of critical thinking skills and a frequently asked question that addresses "What's in it for me?"

There is a risk of failed communication with participants. A script was written to answer frequently asked questions to ensure all scenarios were considered. If a situation had not been forecast, each instructor had direct contact with the researcher to ensure process interruptions were limited and/or removed.

Although technology was considered a strength for this study, it was also considered as a weakness. There is no possible way to confirm the stability of an Internet connection for the sample. This consideration was met with course room access using IPhones, providing the ability to contact the instructor for alternate solutions and/or contact the researcher for assistance with pushing the survey to another location.

Wright (2005) suggested other limitations with administering online surveys. These additional limitations are sampling issues, invalid/inactive e-mail addresses, and nonresponse rate tracking. Sampling is one of the greatest issues of online surveys. There is no way to confirm the intended survey recipient is the individual who completed the survey. Some participants will respond to the invitation while others will ignore it; thus leading to bias. This limitation was averted with an open invitation for all to participate.

Theoretical Framework

This study used self-perception theory (Bem, 1967) and social-cognitive theory (Bandura, 1986) as its primary theoretical supports. Since this study was guided by the assumptions that drive self-perception theory and social-cognitive theory, it worked to associate those assumptions with degree-seeking online undergraduate students' self-perception and its impact on their critical thinking skills.

Social-cognitive theory (SCT) assumes that learning and behavior are reciprocal within the learning environment. SCT's focus is on five concepts that learning occurs through (a) observation, (b) outcome expectations, (c) perceived self-efficacy, (d) goal setting, and (e) self-regulation (Bandura, 1986). This theory postulates that people learn by observing behavior. White (2013) confirmed that student retention and persistence in science technology, engineering, and mathematics fields were strongly influenced by earlier experiences in the same subjects. In her study of first-year college students and their career self-appraisals, Gasser (2013) reported that high self-appraisals influenced educational aspirations. She recommended career interventions be used to increase self-appraisals of diverse colleges students to expand their educational and career aspirations.

Bandura (1986) recognized that people can make changes in themselves and their situation. Through perceived self-efficacy and beliefs, higher goals are achieved when individuals visualize skillful execution of activities that will enhance their performance (Bandura, 1986). Esters and Retallick (2013) conducted an experiential learning study that employed a constructivism framework with 62 participants to measure the effects of three independent variables: (a) belief in ability to make career related choices, (b) commitment to the values of a selected profession, and (c) ability to make independent career choices. The authors found significant effects with the first two variables, but no significant change was found in the third. The lack of a significant effect was attributed to the lack of career maturity by the students.

Parallel to SCT is self-perception theory (Bem, 1967). Self-perception theory postulates that an individual's internal states are inferences resulting from observation of one's own behavior (Bem, 1967; Harvey et al., 2010; Hastorf, 1950; Ileris, 2004). As articulated by Bem (1967), self-perception theory requires a willingness to infer one's attitude and belief by observing one's own behavior; as such, this willingness changes self-knowledge. There are two basic claims for self-perception. These claims are (a) people develop their own attitudes and beliefs by observing their own behavior, and (b) the external features of their behavior determine their inner characteristics. Self-perception can direct attitude and beliefs by an individual's willingness to infer the same; therefore, it is possible to redirect learning outcomes as a result of this self-realized inference.

Carlson (2011) emphasized the need for further research related to student and instructor perceptions regarding teaching activities that promote the development of

critical thinking skills. Critical thinking can transform every dimension of education since it affects and empowers adult students in practical ways (Ennis, 1985). Critical thinking formulates rules, informs adult students on how to relate to educators, informs educators on how to cultivate adult students' learning, and shows how models can be constructed to prescribe educational practices inside and outside the classroom (Facione, 2011). Ultimately, it can be said that a student's ability to think critically influences an organization's effectiveness by producing problem solving initiatives that impact its triple bottom line, while at the same time strengthens economic growth (Kuehn, 2014; Mansouri & Rowney, 2014; Slade, 2014).

Self-perception theory explores how self-knowledge develops. That said, it is important to note that Baartman and Ruijs (2011) suggested additional research is needed to investigate adult students' perceptions and development of knowledge and skill competence to determine how they might integrate with professional competence.

Critical thinking is helpful for seeking deeper meaning, validating perceptions, and setting priorities (Porter-O'Grady & Malloch, 2011). This research study's topic focused on first-term adult online students' perception of their critical thinking skills. It investigated the relationship between first term adult online students' perception of critical thinking skills and the critical thinking skills assessed by the WGCTA instrument. Several concepts within SCT align with self-perception theory. This alignment was used to support potential associations between students' critical thinking skills. That is to say, there is an overlap between critical thinking skills, SCT and self-perception theory: for example, adult students must know how to evaluate their own thinking to change their behavior as a result of thinking critically (Norris, 1985).

Today's organizations seek individuals with strong decision-making and problem-solving skills. Research suggests individuals with these skills are prepared to take leadership roles to grow the organization (Chartrand, Ishikawa, & Flander, 2013). Perry (2003) suggested perceived control is defined as an individual's belief in his or her ability to affect and forecast their environment. Therefore, it is reasonable to consider today's organization needs individuals who cannot only think critically, but do so with the ability to impact the organization's ability to grow the economy.

Based on this line of reasoning, the intent of this study was to contribute to workforce development using management education by combining self-perception and social-cognitive theories to study first-year adult online learners at a for-profit educational organization. The relevance between SCT and self-perception theory and their possible relationship to students' critical thinking skills was the foundation of this study's focus; namely, to address the workforce development goal of an online for-profit university by examining critical thinking skills and self-perception in degree-seeking undergraduate students. Figure 1 represents the relationship between self-perception and social-cognitive theories.

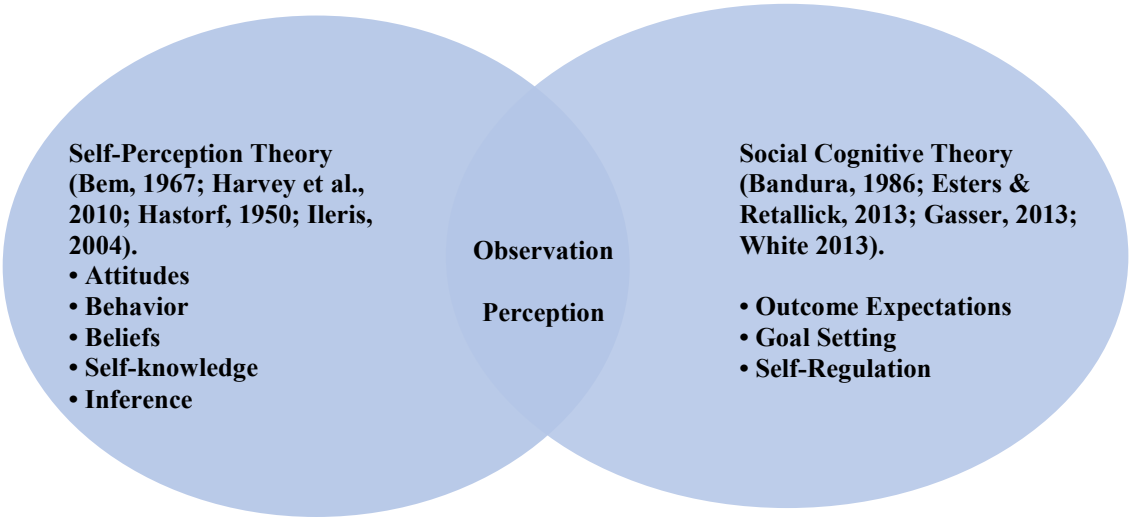

Figure 1. Venn diagram of concepts drawn from social-cognitive theory and self-perception theory.

Organization of the Remainder of the Study

This chapter provided an overview of the study's purpose, problem, rationale, significance, methodology and theoretical framework. The remainder of the study is presented in the following four chapters. Chapter 2 provides a literature review of the study's variables and organizations' need for problem solvers with the critical skill readiness to make contributions to workforce development. Additionally, Chapter 2 reviews the underpinning influence of social-cognitive and self-perception theories as a means to address the workforce development goals of an online for-profit university. Chapter 3 shares the study's research design, data collection and analyses used to support this study's methodology. Chapter 4 reports this study's data and its quantitative analyses. Chapter 5 synthesizes the study's results and culminates with recommendations for future research.

CHAPTER 2. LITERATURE REVIEW

As this study was guided by the assumptions that drive self-perception theory and SCT, it worked to associate those assumptions with degree-seeking online undergraduate students' self-perception and its impact on their critical thinking skills. This study's literature review reveals an overlap between self-perception and social-cognitive theories and discusses how this overlap can influence the critical thinking skills performance of students, thereby, affecting contributions to an organization's decision-making process and vision.

What is Critical Thinking?

Critical thinking is a thought process that has been defined by many subject matter experts. This thought-provoking process dates back to the Greek philosopher Socrates who sought truth through critical discussion. Dewey (1910) identified reflective thinking as a process used to formulate problems and develop hypotheses to solve them. Glaser (1941) is responsible for defining critical thinking as a focused composite of knowledge, attitudes, and skills. Ennis (1985) suggested critical thinking is a thought process that is both reasonable and focused on making decisions as to what should be believed or done. Paul (1992) identified critical thinking as a means for self-improvement while cognitively working through standards that assess the thought process. While Paul

(1993) considers critical thinking to include elements of thinking abilities, traits, and intellectual standards, Bloom (1956) adds a new dimension to the cognitive domain (knowledge) with affective (attitude) and psychomotor (skills) extensions. These three types of learning are the domains used by Bloom's taxonomy to enhance the students' ability to remember, understand, apply, analyze, evaluate, and create. Halpern (1989) suggested critical thinking is directed towards purposeful reasoning that includes solving problems, interpreting information and making decisions that lead to outcomes.

Critical thinking is more than just an exercise. Critical thinking is a thought process that generates well-informed decisions with skills and ability. Critical thinking as stated by Paul (1993) is a habit that is based on intellectual commitment of those skills and abilities to guide behavior.

Facione (2011) viewed critical thinking as existing within two supportive systems: the first is based on intuitive reactive thoughts and the second on a rule-governed, computational thought process. Norris (1985) viewed critical thinking as a complex assessment of others' points of view that enables an appraisal based on observations and inferences to make a rational decision as to what one should do or believe. Though there are many definitions available that define the term critical thinking (Bloom, 1956; Dewey, 1910; Ennis, 1985; Facione, 2011; Glaser, 1941; Halpern, 1989; Norris, 1985; Paul, 1992, 1993), this researcher would be remiss if she failed to offer another for consideration. Critical thinking, as defined by this researcher, is a systematic analysis of thought performed to achieve well-informed decisions.

This study recognized the critical thinking processes that generate cognitive skills and ability (Bloom, 1956; Dewey, 1910; Ennis, 1985; Facione, 2011; Glaser, 1941;

Halpern, 1989; Norris, 1985; Paul, 1992, 1993) and makes full use of the instrument developed by Watson and Glaser (1991) to assess the critical thinking skills of degree-seeking undergraduate students and provide a means for institutional effectiveness.

There is an urgency for students to acquire skills specific to the needs of organizations. These skills are not just desired, they are expected by an employer who strives to capture success in a highly competitive global economic system. Rosefsky-Saavedra and Opfer (2012) suggested that the reason students are not developing survival skills such as critical thinking and problem solving is because they are not being taught how to transfer the knowledge received and allowed the opportunity to practice it.

Educational Institutions

America's students are not prepared to compete in the knowledge-based economy, and our institutions are obligated to provide them with an education that will lead to economic and social prosperity (Kanter, 2011). Because critical thinking is considered to be a skill that assists individuals with making well-informed decisions (Bloom, 1956; Dewey, 1910; Ennis, 1985; Facione, 2011; Glaser, 1941; Halpern, 1989; Norris, 1985; Paul, 1992, 1993), it is also an invaluable component that leads to an engaged employee and global citizen (Thomas, 2011).

Education is an evolutionary business responsible for the social and economic growth that melds with sustainability in a competitive market (Othman & Othman, 2014). For-profit educational institutions are being scrutinized and held accountable for accredited programs that assist students with the abilities and skills to secure gainful employment (USDE, 2014). Organizations are seeking employees who have customer service skills and the ability to problem solve with creative and innovative thinking

(Rasul et al., 2013). Research performed to assess these employability skills reported graduates lack them (Benton, 2011; Brewer & Brewer, 2010; Khan, 2015; Pithers & Soden, 2010; Rasul et al., 2013; SACS, 2013; Slade, 2014; Wessels, 2010). Further, it was noted by these authors that as employers are asking graduates to own these skills, they also require that the organization encourages the use of these skills to enable them to compete in global markets (Rasul et al., 2013). The implications of deficiencies in the educational process can lead to an ineffective workforce that is ill-prepared to make contributions to society (Beachboard & Beachboard, 2010). Today's organization is information driven. To achieve a competitive advantage, organizations focus attention on business processes and innovative solutions. For these solutions to be found, they seek out universities for a response to this critical thinking skill challenge (Recker, 2012). In short, today's organizations have a demand for critical thinking problem solvers who have the ability to develop innovative solutions that will improve organizational performance (Hadidi, 2014; Khan, 2015; Kuehn, 2014; Mark, 2013; "Program Integrity," 2014; Slade, 2014; Starr, 2014). Additionally, organizations are calling on universities to produce graduates who can demonstrate the ability to integrate knowledge into a mastery of job related performance that benefits business and society at large (Khan, 2015). Can universities produce the product needed to fill this demand? This begs the question, can critical thinking be taught?

Can Critical Thinking Be Taught?

There are several definitions for the term critical thinking. Due to the plethora of meanings attached to this term, (Bloom, 1956; Dewey, 1910; Ennis, 1985; Facione, 2011; Glaser, 1941; Halpern, 1989; Norris, 1985; Paul, 1992, 1993) is their disagreement with

how critical thinking is delivered in the course room? Robert and Petersen (2013) consider effective teaching to be evident when instruction is consistent. Researchers (Mulnix, 2012; Robert & Petersen, 2013; Weissberg, 2011) agree, to teach critical thinking we must first begin by clarifying the concept.

Fahim and Bagheri (2012) investigated the success of teaching critical thinking using Socratic Questioning as a tool. By testing clarification of critical thinking concepts with thought-provoking questions, the authors reported the combination of discussions, reading, writing and assessments showed support for fostering critical thinking in students. Reid and Anderson (2012) presented the requirements necessary to develop and implement a course specific to critical thinking. The requirements mentioned were as follows: (a) theoretical foundation grounded in critical thinking; (b) a syllabus complete with instructions for the implementation of key concepts; (c) a credible, reliable and validated assessment; and (d) a respectable number of participants willing to participate. The authors concluded their quantitative pretest and posttest analysis which determined that a course designed with cognitive protocols could effectively teach critical skills. Additionally, when critical thinking is considered to be a self-regulated cognitive strategy galvanized by motivated participants engaged in the learning process, learning occurs and expertise in areas of professionalism is developed (Phan, 2010).

Anderson and Reid (2013) regarded critical thinking as being essential to success. These authors noted a survey response received from business managers and corporate executives revealed that graduates had not acquired problem-solving and critical thinking skills. As a result of this *unimpressed* response, the authors developed a pedagogical treatment and quantitatively tested its effect using the Critical Thinking Skills Test

instrument. The aggregate scores revealed critical thinking skills were transferred from the classroom to graduates' daily lives.

There is a recognized skills gap between the current skills of workers and skills needed for organizations to achieve their goals (Benton, 2011; Brewer & Brewer, 2010; Butler, 2012; Khan, 2015; Pithers & Soden, 2010; SACS, 2013; Slade, 2014; Starr, 2014; Wessels, 2010). A reform now requires the assessment of student learning outcomes to ensure graduates are prepared for the workplace (Association of American Colleges and Universities [AACU], 2010; SACS, 2013; USDE, 2014). A critical thinking inventory to measure critical thinking skills based on real world outcomes was completed by 137 respondents (Butler, 2012) with scenarios drawn from several disciplines. The results revealed instruction positively impacts critical thinking skills. The author also noted facilitation of critical thinking can benefit students' lives beyond the classroom (Butler, 2012).

In her quantitative study to measure the effectiveness of business students' critical thinking skills, Whitten and Brahmasrene (2011) revealed critical thinking skills improve with academic experience. Since there were no signs of collinearity with grade point average (GPA), gender, race or major, Whitten and Brahmasrene suggested co-curricular activities (e.g., time management, resume writing, interviewing skills) are beneficial to supporting real-life scenarios, and subsequently, real-life scenarios contribute to efficacy with teaching critical thinking.

By looking through multiple philosophical lenses, Raymond-Seniuk and Profetto-McGrath (2011), determined critical thinking can be learned in a practiced setting. If an individual's profession is regarded as an art, then past experiences to understand present-

day challenges can be used to draw conclusions, thereby impacting one's ability to achieve goals (Raymond-Seniuk & Profetto-McGrath, 2011).

Critical Thinking for Gainful Employment

The organization's workforce is aging and employers need talent to fill a forecasted gap in vacant positions with a workforce that is able to think, lead and visualize future needs for a continued flow of workplace productivity (Freifeld, 2013).

The world economy is facing new challenges every day, and organizations are working diligently to develop strategies to give their organizations a competitive edge that contributes to sustainability (Chambers, 2013). Additionally, due to an aging workforce, organizations will experience and apply precedence to a shift in employee development (Chambers, 2013). However, there is doubt as to whether or not the new hires brought into the organization will have the critical skills required to make contributions the organization will need (Northcentral University, 2012). Education is a business that employs millions of people responsible for satisfying the world's hunger for learning (Starr, 2014). Business education is not isolated from society; it is an integral part of a global mass-producing economy that is expected to meet workforce needs with qualified workers (Tekarslan & Erden, 2014). Graduates are asked to make contributions for the future transitions an organization will need to make for sustainability in the global marketplace. They are required to use analytical thought while at the same time critically think in an environment that advances teamwork, collaboration and decision making (Majid, Liming, Tong, & Raihana, 2012; Tekarslan & Erden, 2014).

Work experience is a key criterion for employers. As such, this experience takes precedence over graduation or the educational institution from which employees may

have graduated (Teodora et al., 2013). When an organization rests confidence in its experienced employees, it positions itself to direct energies toward building stakeholder relations. As the organization continues to monitor stakeholder expectations, benchmarks are created and measurements are reported through analyses. This process depends on the experienced employee who assists the organization with meeting expectations (Teodora et al., 2013). A shortage of skills needed for business and industry professionals exists (Benton, 2011; Brewer & Brewer, 2010; Chambers, 2013; Khan, 2015; Majid et al., 2012; Northcentral University, 2012; Pithers & Soden, 2010; SACS, 2013; Slade, 2014; Starr, 2014; Tekarslan & Erden, 2014; Wessels, 2010). There is a conspicuous gap in the product (students) received from universities, and the educational institution's ability to satisfy the increasing need for a knowledgeable workforce that is equipped with critical thinking skills, is information rich, open-minded, flexible and able to make strategic decisions with forward-thinking processes that will move organizations into the future (Hadidi, 2014; Khan, 2015). Global competition is increasing. Organizations have missions, visions and goals. They seek integrative approaches that involve faculty, students and the business community (Khan, 2015).

Learning is continuous, and does not stop when an individual graduates. Today's organizations require employees to be proactive critical thinkers who are capable of making decisions using experience, analysis and informed thought (Frisbee & Reynolds, 2014). Recently, the Secretary of Defense for Acquisition Technology and Logistics called for educators to provide a workforce that is ready to think. This call included a request to produce leaders who do not fall back on a school solution but are prepared to guide according to professional judgment (Frisbee & Reynolds, 2014).

According to Ghannadian (2013), employers are making efforts to circumnavigate the troubled global economy with new business graduates who are prepared to make contributions to their organization with little to no extensive training. An organization cannot reach its full business potential when human capital is unable to innovate (Pace, 2013). When placing precedence on an organization's skill requirement list, analytical thought and innovative thinking run parallel. Skills include the ability to embrace uncertainties and make plans to eliminate them. Additional skill set requirements include developing an understanding of all possible conclusions and move forward to achieve success; maximize time management skills and work to produce effective solutions; accept the risk and failures that are part of the knowledge economy and take the steps necessary to achieve unthinkable results (Pace, 2013). Employers are seeking business leaders who are ready to remove uncertainty by exploring risks and develop new opportunities with futuristic thought.

The AACU (2010) reported 93% of business leaders place precedent on critical thinking and communication skills. The organization's need for survival in a challenging marketplace, which demands constant innovations and continuous transformation, needs to meet stakeholder interests by exceeding customer expectations (Pace, 2013). Organizations require a workforce with technical skills and the problem solving ability to confront tomorrow's business needs (AACU, 2010; Chambers, 2013; Frisbee & Reynolds, 2014; Ghannadian, 2013; Hadidi, 2014; Khan, 2015; Pace, 2013; Starr, 2014; Teodora et al., 2013).

Chartrand et al. (2013) reported when critical thinking skills are tested and reach acceptable levels of performance, the organization's return on investment and employees'

salaries increase exponentially. For example Toyota, Whirlpool, and John Deere tested employees' critical thinking skills using the Watson–Glaser red model as a pre-employment assessment instrument and reported greater accuracy with hiring a good fit candidate for their organizations (Ejiogu, Yang, Trend, & Rose, 2012). The return on investment for improved organizational performance based on good-fit hires was estimated to yield $720,000 a year (Chartrand et al., 2013). This underscores the need for critical thinking skills in organizations where employees contribute significantly to an organization's bottom line.

This study was guided by the assumptions that drive self-perception theory and SCT. The following discussion will address organizations' need for critical thinking skills by associating these assumptions with degree-seeking online undergraduate students' self-perception and its impact on their critical thinking skills.

Self-Perception Theory

Self-perception is a concept and construct that is grounded on the ontological assumption that individuals' behavior is evidence of their established beliefs and attitudes (Bem, 1967, 1972). Based on the philosophical belief that perception is based on one's inference of mind (Bem, 1967, 1972; Harvey et al., 2010; Hastorf, 1950; Ileris, 2004), it is justifiable to consider inference is a metacognitive function that aligns with the critical thinking thought process (Bloom, 1956; Glaser, 1941; Paul, 1993; Watson & Glaser, 1991). The two basic claims for self-perception are (a) people develop their own attitudes and beliefs by observing their own behavior, and (b) the external features of their behavior determine their inner characteristics. Self-perception can direct attitude and

beliefs by an individual's willingness to interpret and observe their attitude and beliefs; therefore, it is possible to redirect learning outcomes as a result of this self-realized inference.

Anderson and Reid (2013) regard critical thinking as being essential to success. These authors noted a survey response received from business managers and corporate executives led to the understanding that graduates had not acquired problem-solving and critical thinking skills. As a result of this *unimpressed* response, the authors developed a pedagogical treatment and tested its effect using the Critical Thinking Skills Test instrument. The majority of quantitative questions confirmed graduates had applied critical thinking into their lives. A statistical difference was determined with responses received from questions regarding the application of critical thinking in daily life versus the responses received regarding interactions with others and their perception of the world. This disparity led to the conclusion that either changes occurred slowly in graduates or their perception had changed. Critical thinking formulates rules, informs adult students about how to relate to educators, informs educators about how to cultivate adult students' learning, and shows how models can be constructed to prescribe educational practices inside and outside the classroom (Facione, 2011).

Beachboard and Beachboard (2010) found that students who perceived the extent to which their universities contributed to their academic and professional development, their critical thinking skills showed marked improvement. When students' beliefs are altered based on their newly developed perception of knowledge attainment, higher levels of critical thinking skills are achieved (Muis & Duffy, 2013). By designing a climate to support experiential classroom activities, Muis and Duffy (2013) reported students'

approaches to learning and the success that stemmed from self-reports of learning and motivation elevated their degree of academic achievement. Marchigiano, Eduljee, and Harvey (2011), conducted a study to explore students' perceived levels of critical thinking confidence when working with two varieties of clinical assignments. The authors reported students indicated more confidence with a preferred journal, rather than a care plan format when analyzing information, determining significance and evaluating outcomes. Ultimately, it can be said that a student's ability to think critically influences an organization's effectiveness by producing problem solving initiatives that impact its triple bottom line and at the same time strengthens economic growth (Kuehn, 2014; Mansouri & Rowney, 2014; Slade, 2014).

Constructive comments and feedback are influential when working to achieve improvement. Murdoch-Eaton (2012) recognized the evaluative processes in higher education as quantifiable resources used to effect the competencies and objectives that influence course design. Student surveys are used by the higher education organization to improve faculty and student performance. The author reports there is a recognizable difference between the observed responses received from feedback. If the learner provides an evaluation based on perception of feedback received, the response will either generate motivation to improve performance or prompt a damaging effect for future performance. Instructors and supervisors have a responsibility to create a combination of responses to equal the scales for reception, if their goal is to achieve positive changes in individual learners for the sake of career trajectory which will eventually lead to improved working environments (Murdoch-Eaton, 2012). Additionally, Jordan and Audia (2012) reviewed feedback and its connection to performance improvement. These authors

theorized performance shows marked improvement when assessed through behavior determined and influenced by achieved goals. Further, there is evidence reported by Jacques, Garger, Thomas, and Vracheva (2012) that students' perception of college support and quality of student/instructor relations influence social integration and improved academic performance, thereby setting an indelible footprint that leads to future success in organizations. To acquire perceptions of college support and self-efficacy Jacques et al. distributed a 42-item survey to 232 undergraduate students three weeks following the start of their course. Positive correlations were achieved with social integration and academic self-concept ($\beta = 0.31$, $p < 0.01$), as well as expected academic achievement with actual performance ($\beta = 0.41$, $p < 0.01$).

If students' perceptions are misguided, their reality is affected. Evidence provided by Simkin et al. (2012) suggested that students' lack of self-awareness provides an unreliable level of confidence in ability. The authors searched for connectivity between students' self-rating of writing skills and their actual writing ability. When testing actual performance, the results showed no relationship between these variables.

Carlson (2011) emphasized the need for further research related to student and instructor perceptions regarding teaching activities that promote the development of critical thinking skills. Today's organizations seek individuals with strong decision-making and problem-solving skills. Research suggests individuals with these skills are prepared to take leadership roles to grow the organization (Chartrand et al., 2013). Perceived control is defined as an individual's belief in his or her ability to affect and forecast their environment (Perry, 2003). As a result of this perceived reality, it is reasonable to consider today's organizations need individuals who can not only think

critically, but do so with the ability to impact the organization's ability to grow the economy. Ennis (1985) stated that critical thinking can transform every dimension of education because it affects and empowers adult students in practical ways. This results in a cause and effect relationship with business. When an organization's human capital contributes to its financial growth with innovative problem solving initiatives, it can sustain growth and establish a competitive edge with better management of business processes across its enterprises (Hadidi, 2014).

Social-Cognitive Theory

SCT assumes that learning and behavior are reciprocal within the learning environment. SCT's focus is on five concepts that learning occurs through: observation, outcome expectations, perceived self-efficacy, goal setting and self-regulation (Bandura, 1986). Bandura (1986) recognized people can change themselves and their situations (1989). Through perceived self-efficacy and beliefs, higher goals are achieved when individuals visualize skillful execution of activities that will enhance their performance (Bandura, 1986).

Nine college students participated in a qualitative study conducted by Hwang et al. (2014) to identify themes related to students' academic underachievement and their ability to improve academic performance. The authors spent time in semi-structured interviews with participants and discovered that students' attitude, determination, perceived value of education (when joined with belief in their own adequacy and ability) were determinants for success. To further appreciate the effect support interventions have on underachieving students, the counseling strategies were implemented. Hwang et al.

found the support and encouragement students received from academic and career counselors improved their opinions of education and softened the effects from the barriers of past performance issues. This in turn transformed negative experiences into positive outcomes.

Ensign and Woods (2014) pointed out each student is unique; therefore, when each student is treated as an individual with goals to achieve, everyone has the potential to make a difference. Marsh and Bishop (2014) agreed that assessing students' abilities and competencies leads to the development of individualized academic and career plans. Business organizations are pulling back on dollars dedicated to training; therefore, strengthening graduates abilities to be proactive make them better prepared to enter the corporate environment with career readiness. Wang, Chen, and Chen (2011) further explored students' concept of self and the impact it has on skill development. The authors surveyed 474 business and management students to determine the effect of academic self-concept on learning. Wang et al. employed structural equation analysis as a means to measure to determine the effect self-construct has on math, language and profession. Among these three, the profession–self-concept provided the highest score showing an effect on deep learning with value 0.47 ($t = 6.62$, $p < .05$).

The theoretical assumptions for this study focused on the idea that higher education institutions can improve management effectiveness and efficiency through delivery of its product (education). This belief is predicated in part on the understanding from SCT that people can change themselves and their situations (Bandura, 1986; Gasser, 2013; White, 2013). Does our perception influence our reality? With its connection to perceived self-efficacy and beliefs, it can be argued that the theoretical foundation for this

study was strengthened with the addition of self-perception theory. This theory postulates that students' willingness to infer one's own attitude by observing behavior will change self-knowledge (Bem, 1967; Harvey et al., 2010; Hastorf, 1950; Ileris, 2004). This argument, in and of itself, positions the educational institution in a leadership capacity to guide and transform organizational performance (Khan, 2015) by its ability to effect contributions through the increased outcome of its product (i.e., educated students).

Bandura (1986) suggested when we raise awareness of a student's ability to affect change, change will occur. As a result of this awareness, it is possible to consider that perception can redirect learning outcomes by an individual's willingness to direct his/her attitudes and beliefs (Bem, 1967). We are what we believe ourselves to be; therefore, how we appraise our abilities has a direct impact on the contributions we make to every aspect of our life (Bandura, 1989). Each student is recognized as being unique (Ensign & Woods, 2014). It is from this uniqueness that learning institutions are encouraged to regard education as an individualized process that is affected by each student's unique perspective on self. These authors shared intrinsic and extrinsic factors considered to be predictors of success. Students with a heightened sense of self-efficacy and responsibility tend to engage in academic activities that promote academic success. Webber, Krylow, and Zhang (2013) quantitatively surveyed 649 first-year and 620 senior-level students to determine whether or not involvement in academic activities contributed to GPA and students' perception of their overall academic experience. The authors reported measurable GPA success with students who were more engaged in academic activities both in and outside of the course room. Student self-confidence was correlated with higher self-efficacy inside and outside the classroom. Chen (2013) used a questionnaire

to investigate quantitatively college students' entrepreneurial behavior to determine if there was a link between their expected outcomes, social influence and self-efficacy. As results confirmed self-efficacy is a key factor to entrepreneurship and career development, Chen concluded a positive relationship exists between self-efficacy, expected outcomes and social influence.

Wright, Perrone-McGovern, Boo, and White (2014) suggested confidence in ability plays an important role in success. Wright et al. conducted a quantitative study to investigate the affect self-cognition has on students' career decisions and academic self-efficacy when perceived support and perceived career barriers influence career decisions and academic effectiveness. The authors determined students who were more attached to their learning environment perceived higher levels of support and fewer barriers. These individuals also perceived higher levels of belief in their academic and career effectiveness. However, where academic and career decision self-efficacy experienced a negative impact, barriers were perceived as being higher.

Predictors

This study focused on variables that might influence the critical thinking skills of degree-seeking undergraduate students. As such, these anticipated predictors were operationalized to determine a cause and effect.

Age

Age, considered a measure for life's experiences that contributes to self-efficacy and beliefs, was considered as having a possible link to levels of successful completion of academic goals. Previous research positively linked age to successful completion of

academic goals (Esters & Retallick, 2013; Fournier & Ineson, 2014). Additionally, students considered to be mature were observed (Baartman & Ruijs, 2011; Bandura, 1986; Bem, 1967; Carlson, 2011; Esters & Retallick, 2013; Fournier & Ineson, 2014) as having a targeted focus on career aspirations. In their exploratory study to determine the effect of age on academic success, Fournier and Ineson (2014) addressed the possibility of a contingency when focusing attention on the mature student. This student might not be as engaged in curricular activities due to outside (employment) interests; however, the literature suggests overall students' maturation contributes to the experience that correlates with effective critical thinking skills (Baartman & Ruijs, 2011; Bandura, 1986; Bem, 1967; Carlson, 2011).

Gender

Gender (considered to be male or female), was measured as a variable with a possible link to critical thinking skills achievement. Several researchers have discovered correlations in student academic performance based on gender specificity (Baartman & Ruijs, 2011; Bandura, 1989; Carlson, 2011; Strauser et al., 2012). Adding to the reported literature, Ilgan (2013) noted selected predictors were responsible for 33% of students' academic achievement. Gender predictors accounted for a slight change in estimates. In their quantitative study to examine relationships among predictor variables, Raque-Bogdan, Klingaman, Martin, and Lucas (2013) reported women receive more career-related emotional support than men; this translated to a significant variance in perceptions related to educational and career barriers. As reported by scholars (Bandura, 1986; Bem, 1967) gender is a variable that should be considered when designing curricula to promote students' career development.

Major

Major was measured as either a business major or nonbusiness major. White (2013) revealed students' retention and persistence in selected majors were strongly influenced by previous experience in required courses. Additionally, undecided majors are indicators of a maturity level that grows as students' develop self-efficacy (Bandura, 1989; Bem, 1967). Malgwi, Howe, and Burnaby (2010) surveyed business students to determine factors responsible for undergraduate students' choices of major. The authors determined perceived aptitude influenced students' decision-making processes. Donnelly (2012) quantitatively surveyed 108 undergraduate students to determine the influential factors in choosing a major area of study. Results confirmed perceived opportunities following graduation, interest, experience and perceived ability accounted for the reasoning processes that influenced students' decisions. When working through a decision-making process to determine an area of study, students' perceived ability and previous experience were viewed as being key indicators (Donnelly, 2012; Malgwi et al., 2010; White, 2013).

Prior Workplace Experience

Prior workplace experience is a nominal variable that used "yes" or "no" responses to indicate if the respondent had prior workplace experience. A primary directive of organizations is to satisfy its customers and stakeholders (Teodora et al., 2013). Placing emphasis on this reality, organizations regard the efficiency and effectiveness of its employees to be paramount. As a result of this priority, work experience is a main criterion for today's employers (Teodora et al., 2013). Azevedo, Apfelthaler, and Hurst (2012) conducted 39 semi-structured interviews with 900 business

graduates and employers to qualify critical thinking skills, personal attributes and understanding as essential achievements to gain employability.

Husain, Mokhtar, Ahmad, and Mustapha (2010) conducted a quantitative study that revealed critical thinking skills are placed at a high level of importance by employers. To measure the level of importance employers place on employability skills, Husain et al. distributed 180 questionnaires to engineering-specific employers. Among the highest ranking skills required by these employers were personal quality followed by interpersonal, resource information and critical thinking. These skills, as stated by Husain et al., must be acquired by graduates to enable the organization's ability to compete in the global market.

Prior workplace experience, as discussed by Fournier and Ineson (2014), is regarded as self-motivation driven by vocational commitment. This is considered hands-on experience that aligns with the needs of industry and supports the future growth of business (Ghannadian, 2013). Workplace experience is regarded as the education needed to increase human capital, cognitive skills, self-efficacy, and economic growth (Bandura, 1989; Khan, 2015; Rasul et al., 2013).

Prior College Coursework

Prior college coursework (control variable), is a nominal variable that used "yes" or "no" responses to indicate if the respondent had prior college experience. Academic development is enmeshed with career choice (Kim & Sax, 2011). As reported by (Bandura, 1989; Kim & Sax, 2011; White, 2013), academic development achieved through prior college coursework is integrated with critical thinking skills and considered to be a contributor to the cognitive processes that promote self-efficacy. Whitten and

Brahmasrene (2011) explored differences in critical thinking skills achievement with academic experience as a control variable. The author determined students' critical thinking skills develop as students collect academic experience. Hereto, Baartman and Ruijs (2011) reported academic self-efficacy was a strong contributor to prior experience, and based on their longitudinal study found that it increases with accumulated experience. Additionally, Carlson (2011) confirmed a significant statistical difference in student perceptions when compared to grade level. As students advanced from freshmen to senior status, their critical thinking perception scores rose. The author concluded continued exposure to critical thinking in school and life, increases student awareness and perception.

How a student regards their ability to achieve success determines the choices they make in life. When students' behavior is guided by beliefs and attitudes (Bem, 1967) that stem from influential experiences, and those experiences are rewarded or punished as outcomes of their behavior (Bandura, 1989), a decision-making process is established. Making well-informed decisions is the crux of critical thinking (Bloom, 1956; Dewey, 1910; Ennis, 1985; Facione, 2011; Glaser, 1941; Halpern, 1989; Norris, 1985; Paul, 1992, 1993); therefore, self-perception and social-cognitive theories represent the source from which these decisions are made (Bandura, 1986; Bem, 1967).

CHAPTER 3. METHODOLOGY

This study's intent was to address the gap in literature between adult online students' perception of their critical thinking skills level and the impact of that perception on their actual critical thinking skills. Additionally, this study was aimed at contributing to workforce development using management education by combining self-perception and social-cognitive theories to study first-year adult online learners at a for-profit educational organization. Therefore, the omnibus question for this study was: What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework? To support this study's purpose, methodological selections were made to explore its focal question.

Research Design

Research focused on the effect of perception on for-profit education and how its curricula impacts workforce development (Baartman & Ruijs, 2011; Carlson, 2011; Simkin et al., 2012; Teodora et al., 2013). The study used a correlational quantitative design to explore relationships between perception and other variables by engaging statistical methods such as regression analysis.

The methodological and workforce development using management education literature provides an additional rationale for this study's design and supports alignment with its purpose and research questions (Creswell, 2009; Groves et al., 2009; Johnson, 2001; Swanson & Holton, 2005; Tabachnick & Fidell, 2007). By employing a non-experimental, correlational quantitative research approach, this researcher was able to examine how variables were associated with each other without intervention or manipulation.

This research design was considered to be parallel with methodology literature and philosophical perspectives and is aligned with studies focused on the effect of perception on for-profit education and its curricula impact on workforce development critical thinking skills. Therefore, a non-experimental correlational quantitative research design was considered appropriate for exploring this study's research questions.

Research Questions and Hypotheses

The omnibus research question for this study was: What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework? The statistical technique used for this research design to analyze how self-perception of critical thinking skills (the independent variable) impacts total critical thinking skills (the dependent variable), controlling for age, gender, major, prior workplace experience, and prior college coursework was multiple linear regression. As Ritchey (2008) noted, the use of multiple linear regression was appropriate when investigating the impact that multiple independent

variables will have on a single dependent variable. Therefore, a multiple regression approach was used to investigate the tenets of the omnibus research question. Each research subquestion was examined using the *t*-test values associated with each unstandardized coefficient produced as part of the multiple linear regression equation.

The omnibus research question was broken down into the following subquestions:

1. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV)?
2. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's age?
3. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender?
4. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's major?
5. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical

thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior workplace experience?

6. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior college coursework?

Aligning with each respective research question, the study's null and alternate hypotheses were as follows:

Omnibus H_0: There is no significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework.

Omnibus H_a: There is a significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework.

$H_0$1: There is no significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online

students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV).

H_a1: There is a significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV).

H_02: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's age.

H_a2: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's age.

H_03: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender.

H_a3: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender.

$H_0$4: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's major.

H_a4: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's major.

$H_0$5: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior workplace experience.

H_a5: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior workplace experience.

$H_0$6: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior college coursework.

H_a6: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior college coursework.

Variables

To investigate the relationship between first-term adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills measured by the WGCTA (DV), this non-experimental quantitative correlational study included one independent variable (perception), one dependent variable (total critical thinking skills) and five controlling variables (age, gender, major, prior workplace experience, and prior college coursework). Figure 2 depicts the relationships between the dependent variable, independent variable, and control variables of this study when directed by SCT and self-perception theory.

To investigate the relationship between adult online students' self-perception of their own critical thinking skills and adult online students' total critical thinking skills measured by the WGCTA, a non-experimental, correlational quantitative research design was used. Previous Research (Baartman & Ruijs, 2011; Carlson, 2011; Simkin et al., 2012; Teodora et al., 2013) focused on the effect of perception on for-profit education and its impact on curricula in workforce development used a correlational quantitative design to explore relationships between perception and other variables using statistical methods such as regression analysis.

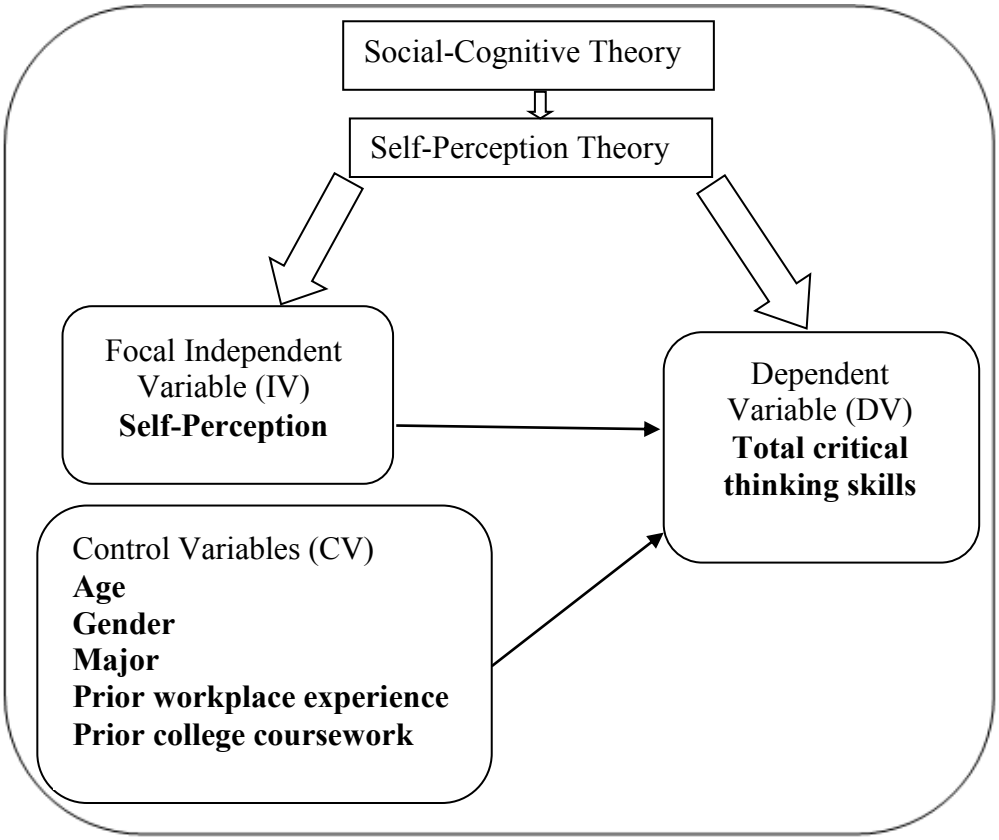

Figure 2. Representation of the relationships between the dependent variable, independent variable, and control variables of the study, which are guided by social-cognitive and self-perception theories.

The data was gathered using the online WGCTA. Scholars (Creswell, 2009; Ferritto, 2013; Groves et al., 2009; Johnson, 2001; Swanson & Holton, 2005; Tabachnick & Fidell, 2007) have suggested that a correlational quantitative approach is appropriate to measure the degree of association between variables in situations without intervention or manipulation of those variables. Therefore, a correlational quantitative approach fit the objectives of this proposed study.

Previous research has successfully used the WGCTA instrument as a way to operationalize a respondent's critical thinking skills. For example, Sanders and Conti

(2012) explored the interaction of decision-making cognitive styles, the ways of knowing approaches to learning, and learning strategy preferences of adult learners. Survey data collected from 255 adults revealed that learning strategies are learned, and knowledge builds once learners become aware of their personal learning strategy preferences and strengths via the WGCTA instrument. Another investigation by Gadzella et al. (2005) employed the WGCTA instrument to measure the total scores of students pursuing a teaching career. A correlation of .31 between total scores and course grades was reported.

Self-perception. Self-perception of critical thinking skills was this study's independent variable. Responses for this self-reported level of respondents' perception were operationalized by a single Likert-scale survey question. This question asked respondents to identify their own perception of their critical thinking skills. Possible responses for this question are *excellent*, *competent*, *average*, and *poor*.

Total critical thinking skills. Total critical thinking skills (i.e., a respondent's ability to recognize assumptions, evaluate arguments, and draw conclusions) was the dependent variable for this study and was measured using the 40 appraisal questions in the WGCTA instrument. Critical thinking skills were measured on a continuous measurement scale from 0 = *unskilled* to 40 = *skilled*. The score was identified in accordance with the *Watson–Glaser Development Report*. Carlson (2011) recommended the use of measurements such as the WGCTA instrument as a means of correlating students' perceptions to student critical thinking skills.

Age (control variable). Participants were asked to identify their age range. Age is a continuous variable that will be reported in years. Extant literature recognizes age

(Baartman & Ruijs, 2011; Bandura, 1986; Bem, 1967; Carlson, 2011; Esters & Retallick, 2013) as a contributor to skill growth and maturity.

Gender (control variable). Gender was a variable measured as either male or female. In their study to examine the effects of work personality, work engagement, and academic effort on male and female students, Strauser et al. (2012) found academic engagement strongly influenced academic effort for female students and not at all for males. Alternately, for male students, work personality more strongly influenced academic engagement. As reported by scholars (Baartman & Ruijs, 2011; Bandura, 1989; Carlson, 2011; Strauser et al., 2012), gender is a variable that should be considered when designing curricula to promote students' career development.

Major (control variable). Major was measured as either a business major or nonbusiness major. White (2013) revealed students' retention and persistence in selected majors were strongly influenced by previous experience in required courses. Additionally, undecided majors are indicators of a maturity level that grows as students develop self-efficacy (Bandura, 1989; Bem, 1967).

Prior workplace experience (control variable). Prior workplace experience used "yes" or "no" responses to indicate if the respondent had prior workplace experience. Work experience is a main criterion for today's employers (Teodora et al., 2013). Workplace experience is regarded as the education needed to increase human capital, cognitive skills, self-efficacy, and economic growth (Bandura, 1989; Khan, 2015; Rasul et al., 2013).

Prior college coursework (control variable). Prior college coursework used "yes" or "no" responses to indicate if the respondent had prior college experience.

Academic development is enmeshed with career choice (Kim & Sax, 2011). As reported by Bandura (1989), Kim and Sax (2011), and White (2013), academic development achieved through prior college coursework is integrated with critical thinking skills and considered to be a contributor to the cognitive processes that promote self-efficacy.

Contributions to the Field

This study was focused on making contributions to the field of management education based on a non-experimental, correlational quantitative online appraisal of the relationship between its independent variable, first term adult online students' self-perception of critical thinking skills, and its dependent variable, the total critical thinking skills as measured by the WGCTA. The gap in the literature was the lack of exploration of first-term adult online students' perception of their critical thinking skills level and how that perception relates to the actual critical thinking skills as measured by a nationally recognized critical thinking skills instrument (Baartman & Ruijs, 2011; Carlson, 2011; Kuehn, 2014; Mansouri & Rowney, 2014; Slade, 2014).

This study's goal was to improve the management effectiveness and efficiency of for-profit higher education operational processes. A goal of a higher education institution is to improve its management effectiveness and efficiency through delivery of its product (i.e., education). It is reasonable to consider increasing the online higher education administration and faculty's knowledge of students' perception and skills can affect student performance, organization performance, and sustainability.

Sample

There was a gap in the literature that suggested a lack of exploration regarding adult online students' perception of their critical thinking skills level and the impact of perception on their actual critical thinking skills (Benton, 2011; Brewer & Brewer, 2010; Khan, 2015; Pithers & Soden, 2010; SACS, 2013; Slade, 2014; Wessels, 2010). The study recognized undergraduate students enrolled at higher educational institutions as its population and drew a sample frame from that population.

Target Population

The population identified for this study was all undergraduate students attending proprietary higher education institutions with multistate campuses in the United States and who have been or are currently enrolled in a prerequisite course (online) with critical thinking listed as a core competency. There are persistent gaps that exist in curricula and preparation in the critical thinking skills of students who are entering the workforce (Benton, 2011; Brewer & Brewer, 2010; Khan, 2015; Pithers & Soden, 2010; SACS, 2013; Slade, 2014; Wessels, 2010). The lack of exploration with regard to adult online students' perception of their critical thinking skills level and the impact of that perception on their actual critical thinking skills was a recognized gap in extant literature. Baartman and Ruijs (2011) conducted a longitudinal study of adult students enrolled in a 4-year social work bachelor's program to investigate the differential between adult students' perceived beliefs in competency-based education and their actual competence assessed by the higher education organization. Results provided evidence that competence remained constant during adult students' second and third years with a noted increase in their fourth year. They suggested additional research to investigate adult students'

development and perceptions of competence in knowledge and skills to determine how they integrate with professional competence. Additionally, Carlson (2011) explored perceptions of critical thinking teaching methods used in a business course. The author found a disparity between adult students' perception by academic level. This author suggested additional research focused on the relationship of student perceptions of their skills to actual student critical thinking skills to investigate the impact of perceived beliefs on performance.

The higher education organization continues to face and address stakeholders' needs (Wessels, 2010), but takes steps to do so without thorough research of the specific characteristics of the delivery and impact of its curricula (Harvey & Baumann, 2012). This study worked to address these gaps by quantitatively assessing a relationship between first-term adult online students' total critical thinking skill levels assessed by the WGCTA and their self-perception of their critical thinking skills using a sampling frame extrapolated from a university's adult online program that featured critical thinking as a core competency.

Sampling Frame

To fill recognized gaps in the literature, the sampling frame for this study consisted of all adult online undergraduate students who were registered for a first-term course with critical thinking as a core competency at University XYZ (a pseudonym for the actual location where the research took place). The sample frame for this study included five course sections of an English Composition I course, suggested by the study site. As a result of this suggestion, this study included five sections of an English Composition I course at University XYZ that has critical thinking as a core competency.

The total number of students enrolled in these five sections was reported as 125 students; as such, the researcher worked to sample randomly adult online students enrolled in an English Composition I 5-week course to meet the desired sample size using the study's inclusion criteria.

Sample Method

The researcher employed a criterion-focused random sampling technique when inviting participants into the study (Merriam, 2009; Rohrer, 2014). As such, the researcher randomly selected from all students who were enrolled in the five sections of an English Composition I course at University XYZ, who had access to a computer, who understood English, who had a Student login ID, who had a reliable Internet connection, and who consented to participate.

Neuman (2011) noted how a criterion-focused sampling technique is appropriate when dealing with specific populations or specialized populations. In the case of the current project, the population in question was specifically defined (i.e., undergraduate online students who attend proprietary higher education institutions with multistate campuses in the U.S.) and specialized in nature (i.e., online students who have been or are currently enrolled in a prerequisite course with critical thinking listed as a core competency). As such, the use of a criterion-focused sampling technique was justified in the context.

Setting

A URL link to the WGCTA instrument was embedded in the course shell for five sections of the ENG1100 prerequisite course with critical thinking listed as a core

competency at University XYZ. Announcements were timed and triggered as reminders for students to understand the study's purpose, ask questions of the researcher using a satellite link, and receive directional steps to complete the appraisal. These specific steps are in compliance with the study site's Institutional Review Board (IRB) and in accordance with Capella University's IRB quality and ethical standards (Rohrer, 2014; Zelizer, 2013).

Participants were instructed to read the consent form to participate in the study. To indicate their agreement, they were instructed to click a radio button. If they did not agree to participate, they continued through the course and completed the remaining assignments. In compliance with best practice (Mann, 1994; Waggoner & Mayo, 1995), the consent form was reviewed for eighth grade level readability for the study's participants.

Instrumentation/Measures

Following participants' consent, their next step was to complete demographic information for the study's one independent variable (adult online students' self-perception of their own critical thinking skills) and five control variables (age, gender, major, prior workplace experience, and prior college coursework). The independent variable (self-perception) was measured as a continuous variable by using a Likert-scale self-appraisal question with four possible responses: *excellent*, *competent*, *average*, and *poor*.

Age (considered continuous) was measured by asking each respondent to report his or her age range. Gender (recognized as nominal) was measured by asking

respondents to indicate on the survey if they were male or female. Major (nominal) was measured by asking respondents to identify whether they were a business major or nonbusiness major. Both prior workplace experience and prior college coursework were considered (nominal) and measured with the use of a "yes" or "no" responses to indicate if the respondent had prior workplace experience and/or prior college experience.

Data Collection

Data was gathered to operationalize critical thinking skills (the study's dependent variable) using the participants' responses to the 40 critical thinking appraisal questions of the WGCTA, a nationally recognized survey instrument credited for its ability to meet internal consistency reliability, content validity, discriminate validity, and criterion-related validity. Researchers (Andiliou & Murphy, 2010; Gadzella et al., 2005; Hassan & Madhum, 2007; Lai, 2011; Nusbaum & Silvia, 2011; Williams, 2003; Zascavage, 2006) reported alpha scores yielding better than .75 with a 95% confidence interval of .69 to .80. Cronbach's alpha for WGCTA is reported as being 0.81.

The data generated for this dependent variable is continuous. The WGCTA is an instrument nationally recognized for its ability to measure three categories of critical thinking (recognize assumptions, evaluate arguments, and draw conclusions). The WGCTA was measured on a continuous measurement scale from 0 = *unskilled* to 40 = *skilled*.

Data Analysis

According to the proprietary institution's student cap size per online course, each online course registers a maximum number of 25 students. The study site at University XYZ had suggested five sections of the online English Composition I course be used for this study. The researcher randomly selected from all students who were enrolled in the five sections of an English Composition I course at University XYZ and who met the aforementioned eligibility criteria until the minimum sample size was met. A response rate could not be guaranteed; however, it was assumed that the information provided regarding career goal benefits would prompt participation.

Power calculations were performed using G*Power3 (v3.1.5; Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007). The omnibus research question was investigated using multiple linear regression analysis. The dependent variable (critical thinking skills) was measured on a continuous measurement scale from 0 = *unskilled* to 40 = *skilled*. The independent variable (self-perception) was measured as a continuous variable by using a Likert-scale self-appraisal question with four possible responses: *excellent*, *competent*, *average*, and *poor*. Although it can be argued that a single question which has four response points should be considered ordinal, Knapp (1990) noted that as long as the measurement item in question represents a theoretically driven continuum of potential responses (i.e., from a given low to a given high), it can be considered continuous for purposes of statistical analysis.

Given that both the dependent variable and independent variable were considered continuous in nature, and given that multiple control variables (i.e., gender, age, major, prior workplace experience, and prior college experience) were used, a multiple linear

regression analysis was appropriate (Ritchey, 2008). Power analysis for multiple linear regression is based on the amount of change in R^2 credited to the variables of interest (Cohen, 1988). Power analysis for multiple linear regression was also based on the total number of independent predictors used in the analysis. There were six independent categorical variables in the regression equation; thus, there were six independent predictors used for the G*Power analysis.

The following G*Power settings were used for analysis.

- Test family: *F* tests
- Statistical test: Multiple Regression: Fixed Model (R2 deviation from zero)
- Type of power analysis: A priori
- Effect size: 0.15
- Error probability: 0.05
- Power: 0.80
- Number of predictors: 6
- Sample size recommendation: 98

It should be noted again that Cohen (1988) recommends .80 as an optimal power for any statistical test and that an effect size of 0.15 is considered medium.

The sample size of 98 was recommended by the power calculation; since it allows for the detection of a medium effect size of 0.15 with a power of .80 (Cohen, 1988) in a multiple regression environment. Thus, the proposed sample size of 98 was considered to be a sufficient sample size for the investigation.

The research questions, which were in alignment with the purpose of the study, made clear that the purpose of the current work was to examine the relationship between

adult online students' self-perception of their own critical thinking skills and their total critical thinking skills when controlling for age, gender, major, prior workplace experience, and prior college coursework. The sample selection supported the research questions to obtain a sample that was specific to adults enrolled in an online undergraduate course with critical thinking as a core competency. Further, the process to assess critical thinking skills using the WGCTA online appraisal is an approach that has been used effectively in previous critical thinking studies (Rohrer, 2014; Zelizer, 2013). The rationale for the sample size was based on the power calculations provided in this document.

All statistical analyses were performed using SPSS 22.0 for Windows. Descriptive statistics, such as the mean, standard, deviation, and range for continuous variables were provided, and frequencies and percentages were provided for discrete variables. Cronbach's alpha reliability estimation was employed to measure the internal consistency and reliability of the WGCTA scale.

Missing data was handled through procedures outlined by Allison (2002). Specifically, systematic missing data would result in the deletion of a case, whereas idiosyncratic missing data for a variable would be dealt with using either multiple imputation methods or mean substitution (Allison, 2002).

The omnibus hypothesis and all subhypotheses were tested via multiple linear regression. The dependent variable was measured by the WGCTA (DV) and was regressed upon the independent variable (adult online students' self-perception of their own critical thinking skills) and the control variables (age, gender, major, prior workplace experience and prior college coursework). The R^2 for the overall regression

equation was presented and interpreted. Individual effects were assessed via unstandardized b coefficients and the accompanying *t*-test values for each unstandardized b coefficient. An alpha level of .05 was used as the critical threshold for all statistical tests (Ritchey, 2008).

The four primary assumptions of multiple linear regression outlined by Allison (1999), which include homoscedasticity, linearity, normality of errors and independence of errors, were investigated once the data was collected. Any violation of one or more of these assumptions was remediated using appropriate corrective action, such as the logarithmic transformation of variables or bootstrapping of the data (Allison, 1999; Mertler & Vannatta, 2010; Ritchey, 2008). An additional consideration tested in the multiple regression model was a check for multicollinearity among independent variables. As Allison (1999) notes, a variance inflation factor (VIF) score of 10 or more indicates problematic multicollinearity. If multicollinearity was present in the regression equation, proper corrective action (such as removing the problematic variable or variable-centering) took place (Allison, 1999).

Validity and Reliability

Data was gathered to operationalize critical thinking skills (the study's dependent variable) using the participants' responses to the 40 critical thinking appraisal questions of the WGCTA, a nationally recognized survey instrument credited for its ability to meet internal consistency reliability, content validity, discriminate validity, and criterion-related validity. Researchers (Andiliou & Murphy, 2010; Gadzella et al., 2005; Hassan & Madhum, 2007; Lai, 2011; Nusbaum & Silvia, 2011; Williams, 2003; Zascavage, 2006)

reported alpha scores yielding better than .75 with a 95% confidence interval of .69 to .80. Cronbach's alpha for WGCTA is reported as being 0.81.

The WGCTA is an instrument nationally recognized for its ability to measure three categories of critical thinking skills (recognize assumptions, evaluate arguments, and draw conclusions). The WGCTA was measured on a continuous measurement scale from 0 = *unskilled* to 40 = *skilled*.

Ethical Considerations

This study was an integral part of a WGCTA study for online courses at University XYZ. The 5-week English Composition I course planned for this study had the WGCTA built into its syllabus. The WGCTA was made available for students randomly selected from those enrolled in the 5-week English Composition I sections. Students selected completed the appraisal between Week 2 and Week 4. A welcome announcement was created and positioned on the course room's home page. A follow-up announcement was timed and triggered to launch during Week 2 of the course and again during Week 3. Two videos were shown to students, one to introduce the WGCTA and its purpose and one Corporate Executive YouTube video employed by Pearson Education to provide an understanding of how organizations value critical thinking skills in the workplace. At the point of login, students who met the criteria of the study were randomly selected to take the survey. At that time the students were provided with information regarding the study and asked for their willingness to participate. When participants provided consent, they clicked a launch button and the electronic appraisal began.

The consent form included the following information:

1. The participation was voluntary and confidential,
2. Participants could withdraw at any time without loss of benefits already afforded to them,
3. Pseudonyms were used for participant names,
4. Participants were instructed not place their names or other identifiers on the survey,
5. Participants received a login ID for survey purposes only,
6. Data was reported in summary form only, and
7. All data will be maintained for seven years in a locked file in the researcher's home, with no one else having access, and all materials will be destroyed after seven years.

All responses were placed in a data repository for coding, cleaning, and analysis.

Schirmer (2009) suggested multiple reminders have the potential of being perceived as harassment or coercion by survey recipients. However, approval of these procedures is reserved for ethics committees who decide based on the criteria that there is scientific justification, there are no acceptable alternatives, and every precaution has been taken to protect the participant's rights (Schirmer, 2009). To safeguard against the possibility of coercion, a pre-survey announcement was published on the home page for the sample participants, explaining the nature of the survey, its goals, and possible benefits for recipients to complete it.

All research needs to address issues to ensure participants are not at risk of harm (McKeown & Weed, 2004). To this end, this study included a welcome message to the

sample, ensured voluntary participation, confidentiality, privacy, and were nondiscriminatory, did not create or increase risks for participants, and did not create a burden for participants who chose to complete the survey. Participants were informed of their rights, were provided with the opportunity to opt out at any time, and were assured of confidentiality and privacy. To maintain privacy, participants' contact details were not linked to survey responses contained in a database. Ethical and moral consideration of beneficence was present in the study. The risk to participants was minimal and no greater than what they would encounter in daily life. Concerns regarding this researcher's position with the study site were mitigated with a clear statement confirming no connection with the participants and/or instructors associated with the study.

The results were presented in summary form only. Any data stored electronically on disk or tape will be erased using a program that will format and write its contents using random 0s and 1s. Immediately following this formatting procedure, disks will be broken and rendered useless. For any data stored on USB drives, the USB device will be broken in half and rendered unusable to someone who finds it in the trash.

CHAPTER 4. RESULTS

This chapter is specific to the analyses of this study's results and presents a synopsis of the study and a review of its research questions and hypotheses. Descriptive statistics for participants' perceptions (independent variable) and total critical thinking skills (dependent variable) are presented. Descriptive statistics specific to the control variables (age, gender, major, prior workplace experience and prior college coursework) are also presented. A Cronbach's alpha reliability score for the dependent variable, as is information specific to the four assumptions associated with multiple linear regression is also provided. This is followed by the regression equation results.

Overview of the Study

This study used a non-experimental quantitative correlational study research design. The purpose of this study was to investigate the relationship between adult online students' self-perception of their own critical thinking skills and adult online students' total critical thinking skills as measured by the WGCTA when controlling for age, gender, major, prior workplace experience and prior college coursework. The study had one independent variable (perception), one dependent variable (critical thinking skills) and five control variables (age, gender, major, prior workplace experience and prior college coursework). The omnibus research question was as follows: What is the

relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework? In order to investigate this research question, the following omnibus hypothesis was formulated:

Omnibus H_0: There is no significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework.

Omnibus Ha: There is a significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework.

The omnibus research question and research hypotheses were then broken down into the following subcomponents:

1. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV)?

- $H_0$1: There is no significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV).
- Ha1: There is a significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV).

2. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age?
    - $H_0$2: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's age.
    - Ha2: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's age.
3. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical

thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender?

- $H_0$3: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender.
- Ha3: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender.

4. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for major?
    - $H_0$4: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's major.
    - Ha4: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online

students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's major.

5. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for work experience?
    - $H_0$5: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior workplace experience.
    - Ha5: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior workplace experience.
6. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for prior college coursework?
    - $H_0$6: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online

students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior college coursework.

- Ha6: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior college coursework.

Sample and Data Preparation

The total number of students enrolled in the five sections of English Composition I was 98. A random sample of those who consented to participate yielded a total of 60 consenting participants. An Excel file containing the study's dataset was received from Pearson. Careful review of this dataset revealed an incomplete record. The incomplete data received from Case ID 7 resulted in its elimination from the dataset. This lowered the total sample size from 60 to 59. The remaining 59 cases had no missing data; as such, no mean substitution or other data interpolation procedures were required.

To investigate the research questions and hypotheses, a multiple linear regression equation was computed to see if scores on the WGCTA varied as a function of self-perceived critical thinking skills, age, gender, major, and prior workplace experience. Prior to this calculation, descriptive statistics and a Cronbach alpha reliability estimate was calculated. These results are presented as follows.

Perception and Total Critical Thinking Skills

A total of 59 participants responded to the self-rating perception question. A total of 23 (39%) respondents rated their critical thinking skills as *average*. Another 27 (45.8%) rated their critical thinking skills as *competent*, and 9 (15.3%) rated their critical thinking skills as *excellent*. The midpoint for self-rated perception was 2.5 on a range of 1 to 4. The mean score of 2.76 was slightly over the midpoint. This mean score suggests the average respondent perceives their critical thinking skills as being slightly higher than an answer of *above average* yet slightly below an answer of *competent*.

In contrast to participants' perception of their critical thinking skills is their actual performance as measured by the WGCTA instrument. The midpoint on the WGCTA scale is 20. The average score for critical thinking skills as measured by the WGCTA instrument was 17.8. As such participants' actual critical thinking skills measured below the 50th percentile of the scale. Table 1 provides the aforementioned descriptive statistics for participants' perceived critical thinking skills and their actual critical thinking skills as measured by the WGCTA instrument.

Table 1. *Perceived Critical Thinking Skills Versus Actual Critical Thinking Skills*

Variable	*M*	*SD*	Range
Perceived critical thinking abilities	2.76	0.70	1–4
Watson–Glaser II scale	17.80	3.96	0–40

Note. $N = 59$. M = mean, SD = standard deviation.

Participant Demographics

Age. Based on the 59 participants the following demographic information applies. Overall, the age of respondents ranged from 18 to 69 years of age. The largest percentage of respondents were between 21–24 years of age (n = 16; 27.1%). One respondent was 60–69 years of age. Table 2 on the next page summarizes the participants' age ranges.

Table 2. *Age Ranges of Respondents*

Age range	Frequency	%
18–20	4	6.8
21–24	16	27.1
25–29	12	20.3
30–34	11	18.6
35–39	4	6.8
40–49	9	15.3
50–59	2	3.4
60–69	1	1.7

Note. N = 59.

Gender. The majority of respondents (n = 48, 81.4%) were female. Table 3 provides the percentage distribution according to gender.

Table 3. *Gender of Respondents*

Gender	Frequency	%
Male	11	18.6
Female	48	81.4

Note. $N = 59$.

Major. This variable was operationalized as the participants' selection of business major or nonbusiness major. As such, four out of every 10 respondents ($n = 23$; 39%) were business administration majors. Frequency and percentage information pertaining to major is available in Table 4.

Table 4. *Major of Respondents*

Major	Frequency	%
Business administration	23	39.0
Nonbusiness major	36	61.0

Note. $N = 59$.

Prior workplace experience. This variable was operationalized by "yes" or "no" responses. Nine out of every 10 respondents ($n = 55$; 93.2%) reported having prior workplace experience (see Table 5).

Table 5. *Respondents' Prior Workplace Experience*

Prior workplace experience	Frequency	%
Yes	55	93.2
No	4	6.8

Note. $N = 59$.

Prior college coursework. All respondents reported having prior college experience. As such this variable was omitted from the regression equation, as it was a constant ($n = 59$, 100%). See Table 6 for confirming data.

Table 6. *Respondents' Prior College Coursework*

Prior college coursework	Frequency	%
Yes	59	100.0
No	0	0.0

Note. $N = 59$.

Cronbach's alpha. The test for reliability of the WGCTA with the current sample was .42. Cronbach's alpha is the optimal statistic when calculating the internal reliability of a scale (Tavakol & Dennick, 2011). Cronbach (1970) suggested that scores of .70 or higher are considered to be at an acceptable level of reliability. The alpha scores

for this study were calculated on a sample of only 59 respondents. The low alpha score was most likely due to the relatively low sample size.

Four Assumptions of Multiple Linear Regression

There are four assumptions in multiple linear regression that must be met (Allison, 1999; Ciecka, 2010). These assumptions include linearity, homoscedasticity, independence of errors, normality of errors and multicollinearity.

Linearity is the understanding that the relationships among the variables under investigation are linear in nature. The way to investigate whether this assumption holds is to check what is known as the plot of the regression standardized residuals, or the normal P-P plot. If a linear trend is evident in the normal P-P plot, then the assumption of linearity is met (Mertler & Vannatta, 2010). Figure 3 provides a visual of the normal P-P plot of regression for this study's dependent variable. The normal P-P plot shows that this assumption was met.

Homoscedasticity is the second assumption of regression. This check shows whether or not the degree of random noise (or error) in the regression remains constant or homoscedastic (Allison, 1999). The Breusch–Pagan test (Breusch & Pagan, 1979) is essentially a chi-square test for heteroscedasticity. If the value of chi-square is statistically significant, then the data are considered heteroscedastic and corrective measures are required. For this study, the Breusch–Pagan test was statistically nonsignificant ($\chi^2 = 6.799$, $df = 5$, $p = 0.236$). This assumption was met.

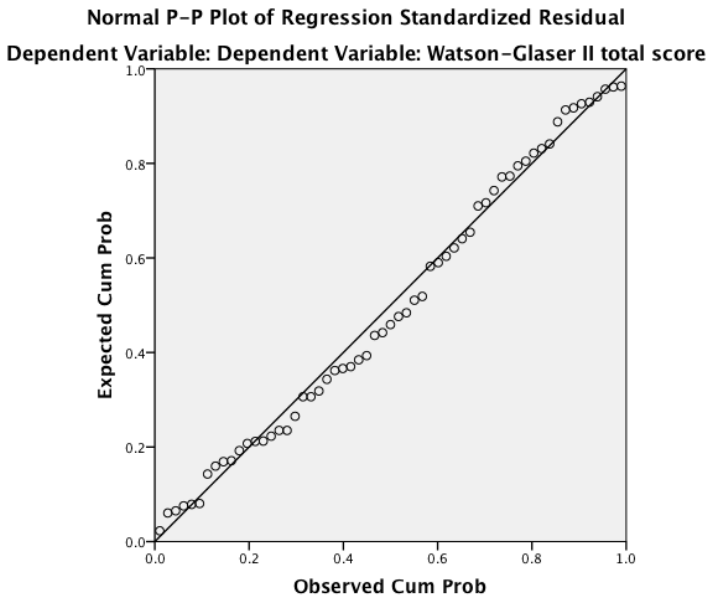

Figure 3. Normal P-P plot of regression standardized residual.

Independence of errors is the third assumption associated with regression. The check of this assumption is used to see if the disturbance terms in the regression equation are uncorrelated. This assumption was checked via the Durbin–Watson statistic. The Durbin–Watson statistic ranges from 0 to 4, with a midrange value of 2. As a general rule, when values of the Durbin–Watson statistic are reported as being closer to 2, an inference can be made that independence of errors exists; however, if values are below 1 and above 3, then a correlation of errors is determined (Gujarati, 2003). Since the Durbin–Watson statistic was 2.219, it can be concluded that this assumption was met.

The fourth and final assumption of regression is normality of errors. This assumption is dependent on the understanding that all errors are normally distributed in a regression equation. As suggested by Allison (1999), this assumption is critical when there are fewer than 100 cases in a sample. To check this assumption, the Shapiro–Wilk

test of the standardized residuals is employed (Shapiro & Wilk, 1965). Since the value of this test was statistically nonsignificant (.967, $p = .110$), it can be concluded that this assumption was met.

As reported by Allison (1999), multicollinearity is not considered to be a violation of the assumptions of regression. However, multicollinearity does make it difficult to find statistically significant coefficients within a regression mode. Multicollinearity is checked by calculating VIFs. If a VIF is 10 or greater, then the potential of multicollinearity exists (D. Anderson, Sweeney, & Williams, 2002). All VIFs were under 1.20. It can therefore be concluded that there was no multicollinearity within the model.

Since all of the assumptions of regression were met, no corrective action (i.e., bootstrapping or logarithmic transformation of the data) was needed, and an examination of the regression results can take place. Table 7 presents the results of the regression equation used to investigate this project's research questions. The ANOVA *F* test associated with the regression equation was used to investigate whether the overall regression equation is statistically significant. Each research subquestion was investigated by examining the *t* values associated with each unstandardized coefficient for the IV and all CVs. Because the omnibus *F* test was statistically significant ($F = 2.695$, $df = 5, 53$; $p = .030$), it was possible to proceed with a decomposition of granular effects within the regression model. The R^2 value (i.e., the coefficient of determination) showed that 20.3% of the variation in the WGCTA scores was explained by the five independent variables (self-perception, age, gender, major, and prior workplace experience) in the equation. It should again be noted that because prior college coursework was a constant, it could not be entered into the regression equation. As Ritchey (2008) notes, all inferential statistical

calculations (including those done in multiple linear regression) are predicated on the notion of variation within the data. By definition, a variable that has only one response has no variation, as the response is a constant. Because prior college experience was a constant, it was deleted from the regression equation.

Table 7 shows that the one variable that had a statistically significant relationship with the dependent variable was gender ($B = –2.075$, $p = 0.46$). The negative coefficient suggests that women in this sample scored lower than the men on their WGCTA scores. Respondents' perceived critical thinking skills, age, major and prior workplace experience were statistically unrelated to their WGCTA scores.

Table 7. *Multiple Linear Regression of Watson–Glaser II on the Predictors*

Variable	*B*	*SE (B)*	*p*
Constant	18.725	3.085	
Perceived critical thinking skills	1.074	0.711	
Age of respondent	–0.362	0.280	
Gender of respondent	–2.705	1.322	*
Major of respondent	–1.233	1.057	
Prior workplace experience	0.382	1.932	
N		59	
F		2.695	*
R^2		0.203	

Note. *B* = bivariate, *SE* = standard error, *p* = *p* value.
*$p < .05$; **$p < .01$; ***$p < .001$, two-tailed tests.

Summary of Results

This study used a non-experimental quantitative correlational study research design. There was no statistical evidence to suggest there was a relationship between perception, age, major, prior workplace experience, prior college course work and adult online students' critical thinking skills as it pertains to this study's sample of adult online undergraduate students enrolled in an English Composition I course. However, there was evidence that suggests there was a relationship between an adult online student's gender and an adult online student's critical thinking skills as it pertained to this study's sample of adult online undergraduate students enrolled in an English Composition I course. Table 8 summarizes the aforementioned results.

Table 8. *Summary of Hypotheses Test Results*

Null hypothesis	Determination
$H_0 1$	There is no significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV). Fail to reject null hypothesis 1
$H_0 2$	There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's age. Fail to reject null hypothesis 2

Table 8. *Summary of Hypotheses Test Results* (*continued*)

Null hypothesis	Determination
$H_0$3	There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender. Fail to reject null hypothesis 3
$H_0$4	There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's major. Fail to reject null hypothesis 4
$H_0$5	There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior workplace experience. Fail to reject null hypothesis 5
$H_0$6	There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior college coursework. Fail to reject null hypothesis 6

Summary

This study used a quantitative correlational methodological design to investigate the relationship between adult online students' self-perception of their own critical

thinking skills (IV) and adult online students' total critical thinking skills as measured by the WGCTA (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework. The researcher partnered with Pearson Education to collect and appraise the sample's responses for demographic questions and total critical thinking skills using the WGCTA.

This chapter provided a data analysis of results that started with an overview of the study, a review of its research questions and hypotheses, a synopsis of the sample, details on the data preparation, and a presentation of descriptive and inferential statistical results. Cronbach's alpha was discussed and detail was provided for the study's research questions as well as the final determination of all hypotheses. The evidence supported a relationship between gender and total critical thinking skills. Chapter 5 will provide a review of these results, while at the same time add to discussion implications in conjunction with recommendations for future research.

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

This chapter reviews the results of data collection, draws inferences, and connects a significance to the body of knowledge with the field of management education. This chapter makes recommendations for future research, and at the same time suggests interventions that target gaps that the research identified. The study's problem, research design and theoretical framework encouraged the exploration of this study and led to the creation of its omnibus research question: What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework?

To provide focus, the omnibus research question was broken down to six subquestions allocated as null (H_0) and alternative (Ha) hypotheses.

Omnibus H_0: There is no significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework.

Omnibus Ha: There is a significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age, gender, major, prior workplace experience and prior college coursework.

1. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV)?
    - $H_0$1: There is no significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV).
    - Ha1: There is a significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV).
2. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for age?

- $H_0$2: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's age.
- Ha2: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's age.

3. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender?
    - $H_0$3: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender.
    - Ha3: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's gender.

4. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for major?
    - $H_0$4: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's major.
    - Ha4: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's major.
5. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for work experience?
    - $H_0$5: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior workplace experience.

- Ha5: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior workplace experience.

6. What is the relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for prior college coursework?
    - $H_0$6: There is no significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior college coursework.
    - Ha6: There is a significant relationship between an adult online student's self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the Watson–Glaser™ II Critical Thinking Appraisal (DV) when controlling for a student's prior college coursework.

Summary of the Results

Based on this study's sample, there was no statistical significance between an adult online student's self-perception of their own critical thinking skills and adult online

students' total critical thinking skills as measured by the WGCTA. Additionally, there was no statistical significance between an adult online students' self-perception of their own critical thinking skills and adult online students' total critical thinking as measured by the WGCTA when controlling for age, major, prior workplace experience and prior collect coursework. However, there was enough of a statistical significance to suggest there is a relationship between an adult online student's gender and an adult online student's critical thinking skills as it pertained to this study's sample of adult online undergraduate students enrolled in an English Composition I course.

Statement of the Problem

Research is a key issue that dominates epistemological forces that drive economic growth. Researchers recognized a gap in the exploration of students' perceptions of their critical thinking and its impact on performance (Baartman & Ruijs, 2011; Carlson, 2011; Kuehn, 2014; Mansouri & Rowney, 2014; Slade, 2014). Organizations state their awareness of this gap and urge educational organizations to assist with creating a workforce that can strengthen knowledge transfer between industries by integrating critical thinking as a program core competency (Benton, 2011; Brewer & Brewer, 2010; Harvey & Baumann, 2012; Khan, 2015; Pithers & Soden, 2010; SACS, 2013; Slade, 2014; Wessels, 2010).

Significance of the Study

The significance of this study lays in its ability to fill gaps in the extant literature using a theoretical framework that focused on organizational performance. This study addressed a gap in extant literature as it pertains to the lack of exploration regarding the adult online students' perception of their critical thinking skills level and the impact that

perception has on their actual critical thinking skill performance. Public perception and accrediting institutions have placed pressure on higher educational organizations to identify emerging issues using assessments, and focus on student learning outcomes that address these key issues (Brewer & Brewer, 2010; USDE, 2014; SACS, 2012; Wessels, 2010). This study addressed the goal of the for-profit higher education institution to increase the administration and the faculty's knowledge of students' perceptions and skills. This study engaged an organizational perspective by providing higher education organizations with the steps for universities to measure and analyze learning, thus providing knowledge needed to address and develop critical thinking skill gaps for student career readiness. Khan (2015) and Kuehn (2014) petitioned the education organization to produce critical thinking problem solvers who can think independently. This study reviewed contributing factors influenced by self-perception and social-cognitive theories that might create a difference with the output provided by an educated human capital. Perceived control is defined as an individual's belief in his or her ability to affect and forecast their environment (Perry, 2003). The clear connections made between self-perception and SCT provided the foundation for this study's focus. By examining critical thinking skills and self-perception in undergraduate students seeking a degree, initiatives can be developed to transform students' readiness for gainful employment; thereby making it possible for an educational institution's output (student) to meet the human capital needs of today's global organizations.

Review of the Literature

Critical thinking. Critical thinking is a process that has been practiced since the early days of Socrates' Socratic teaching method. By its very nature, critical thinking is a

disciplined thought process that formulates problems and develops hypotheses to solve them (Dewey, 1910). There are several definitions of critical thinking, all of which culminate in a definition that recognizes critical thinking as a process that generates cognitive skills and the ability to achieve well-informed decisions (Bloom, 1956; Dewey, 1910; Ennis, 1985; Facione, 2011; Glaser, 1941; Halpern, 1989; Norris, 1985; Paul, 1992, 1993). The importance of critical thinking for this study was to understand the importance employers place on critical thinking skills. As offered by Rosefsky-Saavedra and Opfer (2012), students are not developing critical thinking and the problem solving skills associated with them because they are not learning how to transfer the knowledge for practical application in the workplace. As professed by today's organizations (Brewer & Brewer, 2010; Khan, 2015; Kuehn, 2014; Mansouri & Rowney, 2014; "Program Integrity," 2014; Slade, 2014; Starr, 2014; Wessels, 2010), this gap in skill achievement is conspicuous.

Educational institutions. Education is considered to be an million-dollar business responsible for the social and economic growth of our economy; it is being scrutinized and held accountable for assisting students' with the ability and skills to secure gainful employment (Kanter, 2011; Othman & Othman, 2014; USDE, 2014). Educational institutions see the need to produce a skilled workforce and are taking steps to measure its development through multiple lenses (Butler, 2012; Raymond-Seniuk & Profetto-McGrath, 2011; Whitten & Brahmasrene, 2011), but these efforts are not yielding expected results.

Organizations are increasing pressure to develop the human capital needed to assist them with competing in the global market (Beachboard & Beachboard, 2010; Kanter,

2011; Kuehn, 2014; Othman & Othman, 2014; Rasul et al., 2013; Thomas, 2011); as a result, they are seeking out universities for a response to this recognized critical thinking skill challenge (Recker, 2012). This study echoes Porter's (1979) five forces as organizations are feeling the grip of global enterprise and are hard-pressed to find resources that can assist it with maintaining a competitive edge.

There are several researchers who have made suggestions as to how this should be done, but if we are not addressing the root cause of this identified human capital gap, our economy will suffer the effects of a workforce that is ill-prepared to hit the ground running with out-of-paradigm thought processes that will not only assist organizations with maintaining a competitive edge, it will catapult them into a new century with futuristic thought performance (Hadidi, 2014; Khan, 2015; Kuehn, 2014; Mark, 2013; "Program Integrity," 2014; Slade, 2014; Starr, 2014).

Can critical thinking skills be taught? As there are several definitions for critical thinking, it is reasonable to consider there is no one ubiquitous definition that is being taught across all learning platforms. Researchers (Mulnix, 2012; Robert & Petersen, 2013; Weissberg, 2011) agree the concept of critical thinking needs to be clarified for effective and consistent instruction. Researchers have measured instruction and interventions to understand whether or not the concept itself can be taught. Resulting from a quantitative study based on pedagogical treatment, Anderson and Reid (2013) found evidence that confirmed critical thinking can be taught. Based on a critical thinking inventory distributed to assess student learning outcomes using real-life scenarios, Butler (2012) determined that critical thinking can be taught. After finding no collinearity with predictor variables, Whitten and Brahmasrene (2011) suggested by using a hands-on approach that

employs cocurricular activities such as time management, resume writing and interviewing skills, critical thinking can be taught.

Finally, when profession is equated with career, past experiences can assist students with understanding present-day challenges. This allows for teaching moments that provide effective learning events (Raymond-Seniuk & Profetto-McGrath, 2011).

Critical thinking for gainful employment. Today's graduates are asked to make contributions to organizations that need to remain competitive in the global marketplace. These future employees are required to practice analytical thought while simultaneously using critical thinking in environments that advance teamwork, collaboration and decision making (Majid et al., 2012). The importance of replacing an aging workforce is expected to continually increase; therefore, forcing organizations to employ additional resources to locate the talent needed to fill this forecasted gap (Freifeld, 2013). Education is not looked at as brick and mortar; it is regarded as a business that employs millions of people responsible for satisfying the world's hunger for learning (Starr, 2014). The skills needed by employers today mirror those that define the term critical thinking. These skills include problem solving, proactive thinking with the ability to make decisions, thinking innovatively, embracing uncertainties, creating strategic plans, embracing risk, and developing new opportunities with confidence (Frisbee & Reynolds, 2014; Ghannadian, 2013).

Organizations have opportunities for forward thinking risk takers who are prepared to embrace challenge and develop initiatives using analytical thought for out-of-paradigm solutions (AACU, 2010; Chambers, 2013; Frisbee & Reynolds, 2014;

Ghannadian, 2013; Hadidi, 2014; Khan, 2015; Pace, 2013; Starr, 2014; Teodora et al., 2013).

Self-perception theory. Self-perception is grounded on the ontological assumption that individuals' behavior is evidence of their beliefs and attitudes (Bem, 1967, 1972). Self-perception is considered to be the philosophical belief that is based on one's willingness to self-realize attitudes and beliefs (Bem, 1967, 1972; Harvey et al., 2010; Hastorf, 1950; Ileris, 2004). Inference is considered a metacognitive function (Paul, 1993), as it aligns with the critical thinking thought process (Bloom, 1956; Glaser, 1941; Paul, 1993; Watson & Glaser, 1991). According to Bem (1967), there are two basic claims for self-perception: (a) people develop their own attitudes and beliefs by observing behavior and (b) the external features of their behavior determine their inner characteristics. As such, self-perception can direct attitudes and beliefs based on a willingness to self-realize behavior. Therefore, it is possible to consider redirecting learning outcomes as a result of self-realized inference.

Scholars (Beachboard & Beachboard, 2010) experimented with the self-perception construct and found that when students perceived their universities as having contributed to their academic and professional development, they showed marked improvement with achievement of their goals. Additionally, when students' beliefs are altered based on a newly developed perception of knowledge attainment, higher level of critical thinking skills were achieved (Muis & Duffy, 2013).

Nursing students perceived levels of critical thinking confidence as being higher with a journal format versus that of a care plan format, authors (Marchigiano et al., 2011) they were better able to analyze information, determine significance and evaluate

outcomes. Murdoch-Eaton (2012) reported recognizable differences between observed responses received from student feedback. Jordan and Audia (2012) theorized performance shows marked improvement when assessed through behavior determined by achieved goals. Jacques et al. (2012) reported positive correlations with social integration and academic achievement in addition to expected academic achievement with actual performance.

Self-perception was a concept measured in this study to provide evidence of a cause and effect relationship. If an individual perceives (s)he has control, then this perception transforms into a belief of unlimited capacity to influence and predict some aspect of the environment (Perry, 2003). This cause and effect relationship affects business. As an organization's human capital contributes to its financial growth with innovative problem solving solutions, it is able to sustain growth and maintain a competitive edge (Hadidi, 2014).

Social-cognitive theory. Partnering with self-perception theory is SCT. The theoretical foundation for this study was strengthened with the addition of self-perception theory. SCT postulates that people can effect change in themselves and their situations (Bandura, 1986; Gasser, 2013; White, 2013). Additionally, Bandura (1986) suggested when awareness is raised for a student's ability to affect change, change will occur. As Bandura regards the individual as being unique, so too do Ensign and Woods (2014).

The following authors determined confidence in ability plays an important role in success. Webber et al. (2013) surveyed senior-level students and determined measurable GPA success with students who were more engaged in academic activities. Chen (2013) employed a questionnaire to quantitatively investigate college students' entrepreneurial

behavior and determined a link between their expected outcomes, social influence and self-efficacy. Wright et al. (2014) investigated the affect self-cognition has on students career decisions and academic self-efficacy when perceived support and career barriers influence career decisions.

Hwang et al. (2014) found support interventions to be influential when transforming students' negative experiences into positive outcomes. When students engaged in counseling strategies, the encouragement they received from academic and career counselors improved their opinions of education and removed barriers.

Predictors. Age, gender, major, prior workplace experience and prior college coursework were variables considered by this study to have a possible cause and effect relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the WGCTA (DV).

Age. While age was recognized by scholars to have a link with life's experiences thereby contributing to self-efficacy and beliefs (Baartman & Ruijs, 2011; Bandura, 1986; Bem, 1967; Carlson, 2011; Esters & Retallick, 2013; Fournier & Ineson, 2014), this study showed no relationship between age and its effect on adult online students' total critical thinking skills.

Gender. Several researchers discovered correlations in student academic performance based on gender specificity (Baartman & Ruijs, 2011; Bandura, 1989; Carlson, 2011; Strauser et al., 2012). While Raque-Bogdan et al. (2013) reported women received more career-related emotional support than men, resulting in the translation of a

significant variance in perception related to educational and career barriers, this study found men outperformed women in terms of total critical thinking skill achievement.

Major. Scholars (Bandura, 1989; Bem, 1967; Donnelly, 2012; Malgwi et al., 2010; White, 2013) found college major to be a determinant of maturity and a factor that contributes to decision-making processes. This predictor variable displayed no relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the WGCTA (DV).

Prior workplace experience. Researchers (Azevedo et al., 2012; Husain et al., 2010; Teodora et al., 2014) found a strong connection between prior workplace experience and its impact on organizations' need to satisfy its customers and stakeholders. In this study, no significant relationship was found between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the WGCTA (DV) when controlling for Prior workplace experience.

Prior college coursework. Several scholars explored and found connections between prior college coursework and self-perception as well as self-cognition (Baartman & Ruijs, 2011; Bandura, 1989; Carlson, 2011; Kim & Sax, 2011; White, 2013); however, this study found no significant relationship between adult online students' self-perception of their own critical thinking skills (IV) and adult online students' total critical thinking skills as measured by the WGCTA (DV).

Discussion of the Results

The sample size for this study was reduced based on low enrollment numbers. Additionally, while cleaning the dataset, it was found that Respondent 7 did not complete the survey; this reduced the total sample size to 59. Substitution of data was not required. To maintain ethical compliance, all names and e-mail addresses were removed from the data set.

All respondents reported having prior college experience. As this provided one response there was no variation; therefore, the period college experience variable was seen as a constant which resulted in its deletion from the regression equation.

Mean scores for the remaining predictors suggested respondents felt their critical thinking skills were above average when in reality the average mean score was below the scale's 50th percentile. The majority of students were 21–24 years of age with one outlier reporting a range from 60 to 69. The majority of respondents were female with prior workplace experience. Four out of every 10 respondents were reported as being business administration majors. Age, major and prior workplace experience were unrelated to critical thinking scores; however, one variable that had a statistically significant relationship with the dependent variable was gender ($B = –2.075$, $p = 0.46$). The negative coefficient suggested women in this sample scored lower than the men on their WGCTA scores.

Implications of the Study Results

This study's aim was to contribute to workforce development through management education by combining self-perception and social-cognitive theories to

study first-year adult online learners' critical thinking skills at a for-profit educational organization. Although the sample size was low, the results of this study provided factual evidence that perception is not always accurate when used as a tool to measure reality. This study provided information that can influence curriculum development by building competencies and objectives into course syllabi that encourage, support and confirm learning. The results of hypothesis 3 suggested men outperform women when testing critical thinking skills. This might be a matter of test-taking confidence levels that can be reduced by adjusting language that introduces the assessment. For example, rather than critical thinking assessment or appraisal, the process might be presented as an exploration of critical thinking skills, thereby reducing any preexisting test-taking phobias. However, this cannot be confirmed without asking a demographic question that reveals this appraisal/test/assessment idiosyncrasy.

The study was built on the study completed by Carlson (2011). This author suggested additional research focused on the relationship of student perceptions of their skills to actual student critical thinking skills to investigate the impact of perceived beliefs on performance. As Carlson employed a unidimensional scale for measurement with no prior published research to substantiate its validity and reliability, this author was specific to using the WGCTA instrument as means to correlate students' perceptions to student critical thinking skills.

Test/retest correlations for the WGCTA instrument have confirmed reliability at levels greater than .70 (Andiliou & Murphy, 2010; Gadzella et al., 2005; Hassan & Madhum, 2007; Lai, 2011; Nusbaum & Silvia, 2011; Williams, 2003; Zascavage, 2006).

Due to the sample for this study, the WGCTA instrument showed poor overall reliability ($\alpha = 0.415$).

This study contributes to the body of knowledge with findings that highlight the need for content focused on improving critical thinking skills when developing business-related curricula. This study's contribution provides data that furthers the development of students' critical thinking skills by addressing preconceived phobias hat might be viewed as possible barriers to assessment language.

By rule it is challenging to anticipate all possible experiences that might be encountered when conducting a study. This study was not an exception to that rule.

Limitations

As a responsible researcher, every effort was made to reduce limitations. Wright (2005) suggested limitations pertaining to online surveys. The list provided by Wright included sampling issues, invalid/inactive e-mail addresses, a nonresponse rate and the inability to confirm the survey recipient is the individual who completed the survey.

The enrollment numbers were lower than expected. This affected the study's sample. Due to the small sample size, Cronbach's alpha was not met. Additionally, this study was limited to five sections of the English Composition I course.

Since one respondent did not complete all 40 appraisal questions, the data set was removed from analysis, this further reduced the sample size. Prior college experience was deleted from the regression equation because of it did not comply with inferential statistical calculations (Ritchey, 2008). One response does not allow for variation within the data; therefore, prior college experience was removed.

Recommendation for Further Research

This study adds to extant literature that investigates a relationship between perception and actual skill performance. Recommendations for future research provide counsel lessons learned from this study. Though assumptions were met given the small sample size, it is recommended future studies negotiate additional course sections for inclusion as part of the sample size. There was no additional data available that would build on the low population for this study. As such, further research to build on this study with more data points from a larger sample may determine if a relationship exists between adult online students' perception and their critical thinking skills is recommended.

Introducing an appraisal to a student population is at risk of being received as a test. To prevent this from becoming a hindrance, this researcher recommends the development of language to remove this consideration. For example the use of explore versus assess is recommended.

The demographic questions fulfilled this study's purpose; however, it would be interesting to determine students' perceptions regarding assessments/appraisals/tests. This can be done by adding an additional demographic question to the survey.

A mixed methodology might offer a more in depth look as to the reason students perceived higher skill levels, thus providing a qualitative justification for the disparity between perceived and actual skill levels.

Kuehn (2014) petitioned education organizations for assistance with producing critical thinking problem solvers. An additional recommendation includes the building of

partnerships between for-profit educational institutions and business organizations in their respective market areas to articulate ideas and implement hands-on activities to include focus groups, internships, and joint task forces created to develop sustainable initiatives that impact its triple bottom line.

Conclusion

This study further explored students' perceptions of their critical thinking skills and the impact of their perceived beliefs on performance. By its contribution to the body of knowledge, it has provided another view of students' perception and its effect on their actual critical thinking skills level. This study's results provide insight on perception with evidence-based data that confirms though self-perception may be considered a reality, it can also lead an individual into misconceived notions regarding ability.

This study adds to the body of knowledge and offers suggestions for future research. Consequently, an educational institution and an organization can form partnerships that will increase students' ability to make contributions through participation in ad hoc initiatives that are developed for the purpose of growing the organization from the inside out.

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APPENDIX. STATEMENT OF ORIGINAL WORK

Academic Honesty Policy

Capella University's Academic Honesty Policy (3.01.01) holds learners accountable for the integrity of work they submit, which includes but is not limited to discussion postings, assignments, comprehensive exams, and the dissertation or capstone project.

Established in the Policy are the expectations for original work, rationale for the policy, definition of terms that pertain to academic honesty and original work, and disciplinary consequences of academic dishonesty. Also stated in the Policy is the expectation that learners will follow APA rules for citing another person's ideas or works.

The following standards for original work and definition of *plagiarism* are discussed in the Policy:

> Learners are expected to be the sole authors of their work and to acknowledge the authorship of others' work through proper citation and reference. Use of another person's ideas, including another learner's, without proper reference or citation constitutes plagiarism and academic dishonesty and is prohibited conduct. (p. 1)
>
> Plagiarism is one example of academic dishonesty. Plagiarism is presenting someone else's ideas or work as your own. Plagiarism also includes copying verbatim or rephrasing ideas without properly acknowledging the source by author, date, and publication medium. (p. 2)

Capella University's Research Misconduct Policy (3.03.06) holds learners accountable for research integrity. What constitutes research misconduct is discussed in the Policy:

> Research misconduct includes but is not limited to falsification, fabrication, plagiarism, misappropriation, or other practices that seriously deviate from those that are commonly accepted within the academic community for proposing, conducting, or reviewing research, or in reporting research results. (p. 1)

Learners failing to abide by these policies are subject to consequences, including but not limited to dismissal or revocation of the degree.

Statement of Original Work and Signature

I have read, understood, and abided by Capella University's Academic Honesty Policy (3.01.01) and Research Misconduct Policy (3.03.06), including the Policy Statements, Rationale, and Definitions.

I attest that this dissertation or capstone project is my own work. Where I have used the ideas or words of others, I have paraphrased, summarized, or used direct quotes following the guidelines set forth in the APA *Publication Manual*.

Learner name and date	Jo Anne M. Bonomi, March 13, 2015
Mentor name and school	Barbara Bailey, School of Business and Technology