

ROLE OF CRITICAL THINKING SKILLS IN MENTAL
HEALTH TREATMENT SELECTION

by

Alaina Nicole Talboy

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The thesis of Alaina Nicole Talboy is approved:

Ronald W. Belter, Ph.D., Committee Member

Date

Rodney P. Guttmann, Ph.D., Committee Chair

Date

Accepted for the Department/Division:

Ronald W. Belter, Ph.D., Director

Date

Accepted for the University:

Richard S. Podemski, Ph.D., Dean, Graduate School

Date

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ABSTRACT

ROLE OF CRITICAL THINKING SKILLS IN MENTAL HEALTH TREATMENT SELECTION

Alaina Nicole Talboy

Previous research has evaluated how medical practitioners utilize critical thinking skills to determine which treatments should be presented to clients. Yet there are only a handful of studies that evaluate how clients personally utilize critical thinking skills to select treatments. With the large amount of mental health information available through advertising and the Internet, it is important to understand how people evaluate this information. Critical thinking is examined in five dimensions: inference, interpretation, deduction, recognition of assumptions, and evaluation of arguments. The current study used three masked and unmasked treatment descriptions to determine if statements related to individual critical thinking dimensions would correspond to scores in each of the dimensions. Researchers hypothesized that critical thinking scores would be related to treatment selection.

Results indicate that participants with higher critical thinking skills were more likely to choose a treatment with some to extensive amounts of empirical research. Participants with lower critical thinking skills were more likely to choose the pseudotreatment. Qualitative data suggest there is a relationship between the critical thinking dimensions and which treatments were selected, but the quantitative data does not show a statistically significant relationship. Additional research is recommended to explore this relationship in depth.

CHAPTER I
ROLE OF CRITICAL THINKING SKILLS IN MENTAL
HEALTH TREATMENT SELECTION

People make decisions that influence their lives every day. Some are simple: whether to eat a bagel or toast for breakfast; while others are complex: whether to purchase or lease a vehicle. Decision making is a series of mental or cognitive processes through which people weigh different options to select the scenario they most prefer. Embedded in this process is the employment of critical thinking skills that may be used to assign appropriate weights to each option. Previous research on decision making has shown how valuable high critical thinking skills can be (Brookfield, 2000; Gaudiano, Brown, & Miller, 2011; Hanoch, Katsikopoulos, Gummerum, & Brass, 2007; Kwan et al., 2008). The purpose of the current study is to examine critical thinking skills in a mental health context, specifically within a decision-making scenario. The secondary purpose is to determine if there is a specific critical thinking dimension associated with selecting an empirically supported treatment over a pseudotreatment.

Critical Thinking

When discussing health treatment options with their clients, professionals may not take into account how clients apply critical thinking skills to the mental health knowledge the clients possess. Critical thinking can be thought of in two parts: "the thinking skills themselves and the meta-cognitive skill of analyzing the reasoning process for the purpose of critiquing and improving those skills" (Stanton, Wong, Gore, Sevdalis, & Strub, 2012, p. 204). In regard to mental health, previous researchers looked at how professionals apply critical thinking skills to a client's situation and treatment and how there are several preceding stages of assessment (Hays, 2008; Jenicek & Hitchcock, 2004). To begin to understand the client, the professionals must

have a strong knowledge base (i.e. mental health literacy) from which to draw. The professional must also have an awareness of his or her personal cultural values, social biases, and power struggles as well as the client's values and biases (Hays, 2008). After this initial assessment, the professional needs to evaluate his or her biases and values critically to determine whether they augment or counter the client's values. Lastly the professional can start applying the preceding critical thinking skills to determine diagnosis, best course of treatment, and possible outcomes. Despite the amount of research on how medical professionals apply critical thinking skills to treatment selection, there is a gap in the current research that needs to address how clients apply critical thinking skills to medical decision-making.

Currently, there is a variety of definitions for critical thinking. Paul and Elder (2008) stated that critical thinking skills are based on universal intellectual values that include accuracy, clarity, relevance, precision, depth, fairness, and breadth. Once mastered, these skills become part of a person's self-directed, self-monitored, and self-corrective thinking (Paul & Elder, 2008). Levy (1997) argued that critical thinking is not a set of values, per say, but that it is an active and systematic cognitive strategy that people can use to evaluate information, solve problems, and make decisions. Klaczynski, Gordon, and Fauth (1997) postulated that it is not enough to simply think about a problem, but that people must be able to evaluate information that may challenge their beliefs. Ennis (1987) simply described critical thinking as a type of reasonable, reflective way of thinking that is aimed at deciding what to believe and what to do. Critical thinking lies at the heart of many professions and it is a main component within college curriculum, but there is an ongoing debate over its precise meaning and scope (Brookfield, 2000).

Critical Thinking Assessments

As of 2012, there were a multitude of assessments being used to test critical thinking skills. Researchers and educators use these assessments throughout a wide range of settings including education, industry, and government. Critical thinking skills were first examined empirically through the Watson Glaser Critical Thinking Appraisal (WGCTA; Watson & Glaser, 1980). The WGCTA examines five empirically derived major subscales of critical thinking including (a) inference, (b) interpretation, (c) deduction, (d) recognition of assumptions, and (e) evaluation of arguments (Table 1; Sharp, Herbert, & Redding, 2008; Watson & Glaser, 1980). By looking at these specific aspects, evaluators can determine each test taker's score in different areas of critical thinking skills to provide a more accurate reflection of individual skill sets.

The next major exam created to investigate critical thinking skills was the Cornell Critical Thinking Test (CCTT; Ennis, Millman, & Tomko, 1985). The CCTT evaluates slightly different subsets of critical thinking skills including (a) induction, (b) deduction, (c) meaning, (d) evaluation, (e) credibility of statements, (f) assumption identification, (g) meaning, and (h) observation (French, Hand, Therrien, & Vasquez, 2012). While the wording may appear different between these two exams, the five major subscales originally defined in the WGCTA are also examined in the Cornell test along with other variables. The WGCTA and the CCTT are two of the most widely recognized and evaluated critical thinking examinations and are still commonly used today in a number of settings (French et al., 2012; Vaughan-Wrobel, O'Sullivan, & Smith, 1997).

The Critical Thinking Questionnaire (CTQ; Sharp & Herbert, 2003) is based on the five major subscale definitions from the WGCTA and the CCTT (Sharp & Herbert, 2003). Sharp and Herbert used 26 items from the WGCTA-Form S (Watson & Glaser, 1994) and the CCTT-Z to

Table 1

Common Definitions of the Five Major Subscales of Critical Thinking

Major Subscale	Definition
Inference	Ability to determine if a statement is true or false based on the information provided.
Interpretation	Ability to determine if generalizations or conclusions are warranted based on the information provided.
Deduction	Ability to determine if the statement "follows" from the information provided in a statement or principle.
Recognition of Assumptions	Ability to determine whether an assumption or presupposition is embedded in the information provided.
Evaluation of Arguments	Ability to determine is an argument is strong and relevant or weak and irrelevant to the question asked.

Note. Adapted from "The Role of Critical Thinking Skills in Practicing Clinical Psychologists' Choice of Intervention Techniques," by I. R. Sharp, J. D. Herbert, and R. E. Redding, 2008, *The Scientific Review of Mental Health Practices*, 6(1), p. 24.

test psychologists' abilities in interpretation, deduction, recognition of assumptions, and evaluation of arguments. However, Sharp et al. (2008) also used three adapted items from Stanovich (2001) to test the inference subscale. The resulting 28-item questionnaire was designed to cover the five major subscales discussed above specifically in the field of psychology. Internal consistency was determined by computing a K-R 20 reliability coefficient ($\alpha = .70$; Gaudiano et al., 2011; Sharp & Herbert, 2003, Sharp et al., 2008), and similar results were reported in a study by Becker, Darius, and Schaumberg (2007). Becker et al. used the CTQ in their Posttraumatic Stress Disorder (PTSD) study to determine the relationship between their clients' critical thinking skills and treatment selection. The results indicate that critical thinking skills are vital to selecting an empirically supported treatment (Becker et al., 2007).

Critical Thinking and Mental Health

Research indicates that these critical thinking skills are also important within mental health fields (Kwan et al., 2008). With the advent of the World Wide Web, the general public is able to access almost unlimited information about any number of topics, including health information. As of 2011, almost 80% of approximately two billion Internet users utilized the web to search for information on diseases, symptoms, and treatments (Reavley et al., 2011). Families, friends, and clients may now learn information about a wide range of mental health treatment options currently available, which may aid and enhance participation in health care decision-making (Kwan et al., 2008). Compared to 30 years ago, today's public is better educated, more literate, and more informed—an improvement that, in theory, should lead to better treatment selection (Kwan et al., 2008). The reality, though, is that many people do not verify the web-based medical information and often consider the Internet as credible as radio, television, and magazines (Flanagin & Metzger, 2000). Therefore, it is important for people to use their critical thinking skills to determine which information is trustworthy.

Critical thinking skills are also an important part of treatment selection because of the amount of information available regarding over-the-counter and prescription medications. For example, Hanoch et al. (2007) surveyed 108 students (58 in the United States and 50 in Germany) to determine if there were differences in knowledge of over-the-counter pain relievers between American and German undergraduates. Hanoch et al. found that American undergraduates were less likely than their German counterparts to know the side effects related to over-the-counter medication. This lack of education led to more misuse and accidental overdose. Nevertheless, both sets of students were likely to read the labeling on the bottle either prior to purchase or prior to consumption (Hanoch et al., 2007). The German undergraduates'

knowledge and understanding was most likely due to Germany's strict government regulations, drug packaging, and industry marketing strategies (Hanoch et al., 2007).

Research indicates that access to information allows people to utilize their critical thinking skills to make appropriate decisions (Weiler, 2004). However, removing access to that information forces people to act on personal bias and experience; this could result in inappropriate decision-making (Weiler, 2004). Therefore, it is probable that students in Germany were better able to employ critical thinking skills than American students because of their exposure to accurate and complete information regarding pharmaceuticals. For example, over-the-counter pain relievers were only available through a pharmacist in Germany which required interaction with a medical professional before receiving the drug (Hanoch et al., 2007). Likewise, these drugs were required to include protective and educational materials on the packaging to help consumers make an informed treatment choice (Hanoch et al., 2007). In the United States, people could buy pain relievers from a variety of locations that typically do not have a medical professional on staff (i.e. grocery stores and convenience stores), and these labels were not as strictly regulated as their counterparts in Germany (Hanoch et al., 2007). Therefore, it is important for people to know how to perceive the information presented to them including the purpose of each treatment, its efficacy, and side effect information. As demonstrated in the Hanoch et al. (2007) study, critical thinking skills play an important role in clients' lives when it comes to health and medication. At this time there is a need for research indicating what role critical thinking skills have in how clients select mental health treatments when offered several choices.

Critical Thinking and Mental Health Treatment Selection

Evaluating and utilizing a client's decision on treatments falls between the medical and social models of client care. The medical model places responsible healthcare decision-making on the medical provider, whereas the social model encourages a collaborative decision-making process between the provider and client. At the beginning of treatment, doctors may attempt to explain with great detail all the options available for treatment and recommend what they consider to be the best option (Gambrill, 2005; Lilienfeld, Lynn, & Lohr, 2003). In this case, the client may select a treatment in one of two ways: resign to accept the professionals' opinions and select the recommended *choice* with little *decision-making* involved or critically evaluate the treatments, weigh the professionals' opinions, and make the *decision* after a lengthy appraisal of all options.

In recent years, there were only a handful of studies completed to evaluate the role of critical thinking and client decision-making throughout treatment selection. Critical thinking is an essential component in the evaluation and selection of empirically based treatment options (Gambrill, 2005; Gaudiano et al., 2011; Jenicek & Hitchcock, 2004; Lilienfeld et al., 2003). Gaudiano et al. postulated that the use of critical thinking skills would always end with practitioners selecting empirically supported treatments for their clients instead of the clients choosing for themselves.

For example, van Mossel, Alford, and Watson (2011) evaluated oncologists' presentations of treatment options to clients with cancer. The results indicated a two-stage approach to helping clients select treatment plans. The first stage was exemplified by a client-centered statement of "it's their decision" in which oncologists firmly stated that the choice falls on the client and no one else (van Mossel et al., 2011, p. 281). The second stage involved

realigning the clients' expectations with "what's real" (van Mossel et al., 2011, p. 283). The latter stage completely removes the clients' negotiating power and placed responsibility for appropriate treatment back on the oncologist. Several participants in the study remarked that they had to talk their clients into certain treatments because the doctor felt the clients did not truly understand the choices being offered (van Mossel et al., 2011). By relying on the bias that clients do not have the ability to think critically about treatment options, the oncologists effectively removed any chance the clients had to make decisions regarding their own health.

Gaudiano et al. (2011) completed a separate study to determine the relationship between critical thinking and psychotherapists' recommendation of treatment options. Gaudiano et al. administered an Internet-based survey assessing critical thinking skills to 143 psychotherapists in the field. Prior research indicated that psychotherapists would often use treatments that were not evidence-based and that many of the techniques employed during treatment lacked scientific validity and credibility (Gaudiano et al., 2011). Lilienfeld et al. (2003) argued that professionals use treatments like these because they failed to employ critical thinking skills when making treatment decisions for their clients.

In the social model of client care, clients are given the option of choosing their own treatment plans based on their personal opinions as well as the information provided by professionals. Conversely, it is vital for professionals to assess whether the client has the appropriate level of critical thinking skills to assume this role. Becker et al. (2007) conducted a novel study with 160 clients who had varying degrees of trauma history. The individuals were asked to imagine themselves developing moderate to severe PTSD which allowed researchers a way to assess the participants' critical thinking skills in relation to their treatment selection process (Becker et al., 2007). They discovered that clients with higher critical thinking skills

tended to select treatments such as Cognitive Behavior Therapy (CBT), specifically exposure therapy, which are based on empirical support and proven efficacy (Becker et al., 2007).

Conversely, clients with lower levels of critical thinking skills did not select CBT, but instead opted for treatments that were not founded in empirical research and lacked utility such as My Therapy Buddy, a pseudotreatment (Becker et al., 2007).

Treatment Options

When the client and the practitioner show strong critical thinking skills, treatment options become a joint venture based on the therapist's suggestion of treatment, selection based on client preferences, and available resources. When people are referred for mental illness treatment, they have a variety of efficacious pharmacological and psychotherapeutic treatments from which to choose (Khalsa, McCarthy, Sharpless, Barrett, & Barber, 2011). According to Khalsa et al., clients often start treatment with an expectation that their preference will be most helpful (e.g. a specific style of psychotherapy, medication, etc.). However, the public seems to base its opinions of treatments on general belief systems which are not always supported by empirical evidence (Jorm et al., 2000). This misguidance could influence clients to select popular "cures" or home remedies over empirically validated treatment options.

An assortment of treatment options for mental illnesses evolved over the years as different schools of psychology (e.g. Behavioral, Humanist, and Psychodynamic) have emerged. Common treatment plans may include antidepressant medications (such as Selective Serotonin Reuptake Inhibitors, commonly referred to as SSRIs), CBT, interpersonal therapy, St. Johns wort, and fad remedies which are also referred to as pseudotreatments (Khalsa et al., 2011). The first three treatments have been supported through several years of empirical research, whereas home remedies are usually passed down through families, friends, and website testimonials with

little to no experimental support. Regardless of empirical support, home remedies are still a highly sought-after treatment (Astin, 1998). For example, Kwan et al. (2008) examined consumers' and practicing pharmacists' feelings toward Natural Health Products (NHPs) versus prescription drugs. Information gathered from the 16 focus groups showed that consumers often felt comfortable making their own decisions when selecting NHPs over pharmaceuticals because they were able to utilize a wide range of information resources (Kwan et al., 2008). Most of these consumers actively sought out information on side effects, efficacy, and pricing while conferring little or not at all with pharmacists or doctors (Kwan et al., 2008). Unfortunately, the consumers' beliefs about the utility of NHPs were in direct conflict with the empirical data on which professionals rely. Medical professionals rated treatments such as antidepressants and CBT higher than vitamins and vice versa for consumers (Jorm et al., 2000).

The acai berry is a popular, well-known "super fruit" used as an NHP for everything from curing high blood pressure to aiding in weight loss (Colapinto, 2011; Jagger, 2007). Health food stores throughout the United States carry a large quantity of acai berry supplements because of their touted health benefits such as improving sexual performance, stopping cancer, improving depression, and many others (Marcason, 2009). Manufacturers are adding this berry to various foods and drinks since the marketability of healthy foods has increased so much over the past few years (Jagger, 2007). The primary researcher of the current study conducted a Google Search for acai berries and depression treatment that returned almost 2 million results; however, when searching through the PsychINFO database, there was no information available. One explanation for this popularity among the general public is because "pseudoscience by definition promises certainty, whereas science gives us probability and doubt" (Lilienfeld et al., 2003, p. xv). It is assumed that critical thinkers would be more likely than non-critical thinkers to dismiss

pop culture-driven treatment for empirically based treatments, but preference toward culturally popular treatments may be influenced by the sheer amount of advertising for pharmaceuticals on television each year.

Advertising

As of 2001, a total of 18,906 advertisements for prescription and over-the-counter drugs were shown during a 504-hour sample across three major television networks in the United States (Brownfield, Bernhardt, Phan, Williams, & Parker, 2004). Brownfield et al. determined that 428 of these commercials were for prescriptions, representing 2.3% of all aired commercials. The average length of the prescription commercials was 43.9 seconds with more than half lasting longer than 1 minute compared to the 21.7 second average for over-the-counter medication advertisements (Brownfield et al., 2004). The major networks aired the prescription commercials most often during the midafternoon (peak 2:00 pm to 4:00 pm) and early evening hours (peak 6:00 pm to 8:00 pm) with an average of 21.8 minutes and 18.1 minutes respectively (Brownfield et al., 2004). Americans who watched an average amount of television were exposed to pharmaceutical adverts for more than 30 hours each year (Brownfield et al., 2004). To ensure pharmaceutical companies contracted peak advertising time for their commercials, they paid approximately \$4.3 billion to networks and television stations (Bell, Taylor, & Kravitz, 2010).

In a survey conducted by the Food and Drug Administration (FDA), 71% of respondents indicated seeing four or more unique adverts for distinct depression drugs within the past month on television, whereas less than 5% of respondents learned about medications through a medical provider (Aikin, Swasy, & Braman, 2004). Another important aspect of this topic was how participants believed governing bodies such as the FDA regulated and controlled prescription

commercials. About half of the respondents in a separate study on prescription drug advertising believed that the FDA regulated the commercials, and 43% believed these drugs were fully safe to use with no side effects (Lipman, 2006). Unfortunately, neither of those statements is true. The FDA does not regulate drug commercials, and as many as one third of the commercials omitted important and possibly life-threatening side effect information (Lipman, 2006). Moreover, many of these advertisements did not describe the disorder the pharmaceutical was meant to treat, and only 40% of the commercials accurately described the efficacy of the treatment (Lipman, 2006).

Direction of the Current Study

At the time of this study, several questions were raised regarding how doctors and clients chose their treatment option for mental illness and what influenced their decisions. Research on treatment selection has historically been limited to how professionals selected and presented choices for treatment options with little to no input from the clients. This style of treatment is based on the medical model of client care and has been in use for decades. Currently, there is a push among medical practitioners in several areas of medicine to move toward the social model of client care which allows the client to have an active role in treatment selection and referral (Brown, Bornstein, & Wilcox, 2012; Bryers & van Teijlingen, 2010; Garth, Murphy, & Reddihough, 2009; Higginson, Gao, Amesbury, & Normand, 2010; Oliva et al., 2008). In recent years, a handful of studies were conducted to examine participants' selection of treatment for specific medical problems such as cancer (Gambrill, 2005; Jenicek & Hitchcock, 2004). However, only Becker et al. (2007) addressed selection of mental health treatments, specifically those for PTSD. With the exception of the Becker et al. study, the assumed health literacy of the client was relied upon without evaluation of critical thinking skills which could have easily

influenced selection of empirically based treatments over pseudotreatments (i.e. clients with depression select SSRIs over acai berries for their treatment). The motivation of the current study is to determine how a participant's critical thinking skills may influence his or her selection of masked treatments. Building off the PTSD study, this research will indicate whether certain aspects of critical thinking skills (i.e. inference, interpretation, deduction, recognition of assumptions, and evaluation of arguments) help influence the participant's selection of a particular treatment based on the corresponding statement. Researchers will also evaluate whether the treatment name influences the participant's selection.

Research Questions

1. Will participants who demonstrate a high level of critical thinking skills select a treatment that is prominently supported through empirical research?
2. Will participants who demonstrate a low level of critical thinking skills select a treatment that lacks empirical research and empirical support?
3. Is there a correlation between the scores on individual aspects of critical thinking skills and the most influential statement in the treatment description?
4. Does one aspect of critical thinking skills play a larger role in treatment selection than the other aspects?
5. Will participants change their preferred treatment choice when provided accurate treatment names versus masked names?

Hypotheses

1. The researcher hypothesized that there would be a strong relationship between participants with high critical thinking skills and selection of empirically supported mental health treatments based on the first research question. This hypothesis was

- based on previous research linking PTSD treatment selection and critical thinking skills.
2. The researcher hypothesized that there would be a strong relationship between participants with low critical thinking skills and selection of the less empirically supported treatments based on the second research question. This hypothesis was based on previous research linking PTSD treatment selection and critical thinking skills.
 3. The researcher hypothesized that there would be a strong correlation between the participant's critical thinking subscale scores and how they ranked their statements from most influential to least influential. This hypothesis has not been tested in previous studies.
 4. The researcher hypothesized that there will be a positive correlation between the statements selected as most influential and the highest scored critical thinking dimension. Likewise, there will be a positive correlation between the statement selected as least influential and the lowest scored critical thinking dimension. This hypothesis has not been tested in previous studies.
 5. The researcher hypothesized that participants would change their preferred treatment option from their original choice because of product name. For example, participants who chose acai berries or St. Johns wort over SSRIs would change their response when given the unmasked drug name. This hypothesis was based on research regarding pharmaceutical advertisements and mental health literacy information.

Significance of the Current Study

Relating critical thinking skills to the treatment selection process for mental illness treatments may uncover more information about how clients make treatment choices and whether other variables influence those choices. Since previous research indicates that medical professionals are more likely to present efficacious treatments to clients when they utilize critical thinking skills, clients who demonstrate an equally high level of critical thinking skills should be able to differentiate between several treatment options as well. If these results can be demonstrated, active practitioners using a social model of client care may be able to better tailor their treatment descriptions to match the person's assumed level of critical thinking. Since treatment options are varied based on the disorder they are meant to treat, research on critical thinking skills may also provide a basis for future pharmaceutical labeling methods.

Prior research indicated that students in Germany were better able to employ their critical thinking skills because the German government regulated the pharmaceutical information provided with over-the-counter medications (Hanoch et al., 2007). If critical thinking skills are instrumental to choosing an efficacious treatment over a pseudotreatment, drug administrations like the FDA may be able to utilize this information for designs of pharmaceutical labels within the United States.

CHAPTER II

METHOD

The aim of this study was to determine if critical thinking scores influenced the treatments participants selected. The researcher hypothesized that participants with high critical thinking skills would choose an empirically supported treatment, while participants with low critical thinking skills would choose a pseudotreatment. This study was approved by the University of West Florida's Institutional Review Board (Appendix A) and is supported by two grants: one from the University of West Florida through the Office of Research and Sponsored Programs and the other from the University of West Florida through the Center on Aging (Appendix B).

Participants

Currently registered undergraduate students from the University of West Florida were invited via email to complete this study through SurveyMonkey. Permission from chairpersons in the College of Arts and Sciences as well as the College of Professional Studies was obtained prior to emailing their pool of students. Each participant was given the opportunity to enter a drawing for one of four \$25 Target gift cards. Students from the Psychology Research Pool—an organized group of undergraduate research students who receive School of Psychology and Behavioral Sciences course credit for participating in studies—were given the opportunity to enter the drawing or earn extra credit to be used in their currently registered psychology courses.

Materials

Three treatment descriptions provided outlines of SSRIs, St. Johns wort herbal, and a pseudotreatment using acai berries (Appendix C). The treatments were presented as mental health treatments named Drug A, B, or C, and each complete drug description included treatment

information formatted so that each sentence corresponded to a specific critical thinking skill. For example, the Deduction statement for Drug A was "there is limited evidence that shows this drug targets specific neurotransmitters in the brain." The researcher took precautions to ensure that each treatment had approximately the same length and word count ($u = 89.33$) so that participants would not be influenced by the length of each treatment depiction. The descriptions were also reviewed by faculty members to ensure equivalent treatment information was presented. The description and rationale for the three drug options is listed below.

Drug A. St. Johns wort is a moderately effective treatment for depression and was presented as Drug A in this study. A meta-analysis included a review of 29 clinical trials with over 5000 participants diagnosed with major depression. In that study, researchers determined that St. Johns wort had the same efficacy as standard antidepressants but only half as many negative side effects (Fegert, Kölch, Zito, Glaeske, & Janhsen, 2006). A separate meta-analysis completed by researchers for the Cochrane Database of Systematic Reviews confirmed those results and substantiated St. Johns wort herbal remedy as a viable treatment option for mild to moderate depression (Linde, Berner, & Kriston, 2008). As previously stated, home remedies are still a highly sought-after treatment for depression (Astin, 1998). Therefore, it is likely that participants from the current study could have been familiar with this herbal supplement but not understand the potential benefits it had to combat depression specifically. The researcher compiled empirical information from several clinical trials and combined it with general treatment information in the treatment description presented to participants (see Fava et al., 2005; Kasper, Angheliescu, Szegedi, Dienel, & Keiser, 2006; Kasper et al., 2008; Linde et al., 2008; National Center for Complementary and Alternative Medicine [NCAM], 2006).

Drug B. Drug B was a pseudotreatment based on information found on the Internet regarding the acai berry. At the time of this study, the acai berry was sold as a natural health supplement and espoused as a cure-all for a variety of problems including depression. From an extensive research review, there was no empirical evidence to support this treatment. However, it was still included in the current study because of the extensive positive marketing campaign associated with the acai berry and its promoted health benefits (see Nicholls, 2011; WebMD, 2011). The exaggerated benefits listed on promotional websites were mitigated by a WebMD article which stated the acai berry did not have any additional health benefits beyond those of similar fruits such as blueberries. For the purpose of this study, the acai berry was included as a pseudotreatment. One of the hypotheses tested was whether participants with lower critical thinking skills would select this pseudotreatment over established and researched treatments like Drug A and Drug C. The researcher created this treatment options summary from the limited peer-reviewed information available at the time as well as promotional sources (see Jagger, 2007; Marcason, 2009; Nicholls, 2011; WebMD, 2011).

Drug C. SSRIs are a commonly prescribed treatment for mild to severe depression and were presented as Drug C in this study. This treatment can range from several months to many years and has a moderate range of possible side effects. At the time of this study, there was a debate about the efficacy of SSRIs and whether these drugs were better than placebos for mild to moderate depression treatment (DeRubeis et al., 2005). However, SSRIs were still considered a well-known and first-choice depression treatment option for many providers because of the volume of scientifically supported data. To provide participants a snapshot of this treatment option, data were compiled from the FDA Safety Guides as well as from published empirical

research (see Amsterdam & Shults, 2005; David, Szentagotai, Lupu, & Cosman, 2008; DeRubeis et al., 2005; Food and Drug Administration [FDA], 2011; Imber et al., 1990).

Measures

Participants were assessed through the CTQ which measured their levels of critical thinking skills across five domains: inference, interpretation, deduction, recognition of assumptions, and evaluation of arguments. For the three treatments (Drug A, B and C), each sentence in the survey was written to reflect one of these domains resulting in a five sentence description. For example, the Interpretation statement for Drug A was "research indicates 49-57% of people have positive, measurable results from using this drug." Each participant's overall CTQ score was compared to his or her masked treatment selection as well as to his or her unmasked treatment selection. Internal consistency was determined by computing a K-R 20 reliability coefficient ($\alpha = .70$; Gaudiano et al., 2011; Sharp & Herbert, 2003, Sharp et al., 2008), and similar results were reported by Becker et al. (2007), and the 28 items on this questionnaire were compiled from widely used measure of critical thinking with supported validity and reliability (see Ennis et al., 1985; Stanovich, 2001; Watson & Glaser, 1980; Watson & Glaser, 1994) Dr. Sharp granted permission to reprint and use the CTQ for the purpose of this study (Appendix D).

Procedures

The researcher conducted a pilot test on graduate students in the Psychology department to assess the time it took to complete all measures and then made revisions based on feedback from that test. The results from the pilot test were used for design changes and suggestions only, so the data were not included in the final analysis. After all corrections were made, the primary researcher sent an e-mail invitation to undergraduate students who were enrolled at the

University of West Florida during the Fall 2012 semester. The e-mail included a brief introduction to the study and process as well as the link redirecting students to the SurveyMonkey Web site where all aspects of the survey including the informed consent, preexperimental questionnaire, treatment descriptions, CTQ, and a disclosure statement were included (Appendix E).

Students navigated through the study based on how they answered specific questions. Upon signing the informed consent, students were directed to the preexperimental questionnaire consisting of demographic data and exclusionary questions. Students were excluded from the survey if they were currently enrolled in or previously completed an Abnormal Psychology course. This course describes common symptoms and treatments for mental illnesses, so students who were taking or completed the course would have additional knowledge specific to this study that other participants would not. Depending on how students answered exclusion questions, SurveyMonkey allowed participants to complete the remainder of the study or thanked them for their time and then exited the survey. Students who met inclusion criteria were given instructions on how the rest of the study would progress while those who did not were thanked and the survey exited.

The treatment descriptions were presented as hypothetical treatments for the first part of the survey. The three treatment descriptions were broken into five segments based on the dimensions of critical thinking assessed in the CTQ. The sentence from each treatment option (Drug A, B and C) that corresponded to a given critical thinking dimension was presented at the same time on the same screen. After reading each segment, the participants selected one of the three as their most preferred choice and answered an open-ended *why* question to allow participants to elaborate on why they selected one drug over the other two drugs. After doing so

for each of the five segments, participants were presented with all three complete masked treatment options and asked to select their most preferred choice. Based on the selection, the participants were redirected to another page showing all five segments of the selected treatment and asked to rank order the statements from 1 (*most influential*) to 5 (*least influential*). After completing this portion of the study, all participants were redirected to the same page stating the descriptions were actually based on currently used depression treatments. The treatments were presented under their correct treatment name (St. Johns wort, Acai Berries, and SSRIs) using the same treatment descriptions from before. The participants were asked to reselect their most preferred choice and answer an open-ended *why* question to elaborate why they selected one drug over the other two drugs. The second part of the survey consisted of questions from the CTQ broken into sections so that the students would not be overwhelmed by the number of questions on a single page.

Upon completion of all study requirements, SurveyMonkey redirected participants to a full disclosure statement. After the participants acknowledged the disclosure statement regarding the experiment and agreed to a confidentiality statement, the participants were given a link to a separate survey so they could enter their contact information for the \$25 Target gift card drawing.

Controls

Conducting a study online required additional control over a study conducted face-to-face. To limit the study to selected participants, invitations were sent out to the students' unique email accounts assigned by the University of West Florida. The researcher also controlled for random responses throughout the survey; otherwise, the data collected would likely have been unusable. Several "dummy" questions were added throughout the questionnaires with set

responses to ensure participants were reading the questions and answering appropriately. For example, one of the dummy questions asked participants to answer "5" regardless of the other choices. These types of questions allowed the researcher to review select questions quickly so any participant who did not answer appropriately was removed prior to data analysis.

Testing effects were reduced by presenting the segments of treatment descriptions in a random order to all participants. The pages containing the five statement categories were randomized. The presentation of the three segments on each page was randomized as well. Generalizability could be extended to all undergraduate students because participants were selected from majors across the university instead of just the School of Psychological and Behavioral Sciences. However, these results may not generalize to other populations without further testing.

CHAPTER III

RESULTS

The researchers used the Statistical Package for the Social Sciences Version 18 to analyze descriptive and inferential statistics. QSR International's NVivo 9 qualitative data analysis software was used to categorize and quantify qualitative data. Unless otherwise specified, the accepted alpha level for significance was $p < 0.05$.

Descriptive Statistics

Participants were recruited from multiple undergraduate majors from the University of West Florida. Out of the 306 responses, 103 participants were disqualified because they were enrolled in or already completed a course in Psychopathology or Abnormal Psychology, leaving 203 eligible participants. An additional six participants were removed from analysis because the reported age was below 18 years old. After accounting for incomplete surveys (completion rate = 78%), 44 males (27.7%) and 113 females (71.1%) completed enough survey data to be used for analysis ($N = 159$). Ethnic demographics were also compiled to ensure the sample was representative of the University of West Florida's undergraduate population (Table 2).

Table 2

Ethnicity Demographics

Ethnicity	<i>n</i>	%
White or Caucasian	101	63.5
From Multiple Ethnicities	16	10.1
Asian	8	5.0
Hispanic	9	5.7

(continued)

Table 2 *Ethnicity Demographics* (continued)

Ethnicity	<i>n</i>	%
Black or African-American	19	11.9
American Indian or Alaskan Native	1	0.6
Middle Eastern	2	1.3
Native Hawaiian or other Pacific Islander	2	1.3
No Response	1	0.6
Total	159	100

Of the 159 respondents, 2% ($n = 3$) were divorced, 1% ($n = 1$) were widowed, 10% ($n = 16$) were married, 1% ($n = 2$) were separated, and 86% ($n = 136$) had never married. The reported age range for participants included in the analysis was 18 years old to 66 years old with a mean age of 21.89 years and a standard deviation of 7.382 years. For background information, participants reported whether they did not receive depression treatment at all ($n = 128$, 80.5%), received depression treatment within the past six months ($n = 3$, 1.9%), or received depression treatment more than six months ago ($n = 23$, 14.5%). They also reported whether they did not use antidepressant medication at all ($n = 135$, 84.9%), used antidepressant medication within the past six months ($n = 5$, 3.1%), or used antidepressant medication more than six months ago ($n = 15$, 9.4%). Researchers then grouped participants based on their reported undergraduate major. Several majors were condensed (i.e. pre-biology and biology were condensed under the same heading) for classification purposes. Researchers then calculated the mean and standard deviation of critical thinking scores based on these groupings (Table 3).

Table 3

Critical Thinking Scores per Undergraduate Major

Major	<i>M</i>	<i>SD</i>	<i>n</i>
Art	14	1	2
Biology	15	4	15
Building Construction	14	2	3
Business	15	3	8
Chemistry	22		1
Communications	16	2	2
Criminal Justice	15	3	4
Education	15	1	6
Engineering	18	1	3
English	18		1
Health and Exercise Sciences	14	6	15
History	17	4	2
Hospitality Recreation and Resource Management	17	3	2
Information Technology	16	7	8
Nursing	16	3	16
Political Science	20		1
Psychology	15	4	19
Social Work	14	4	4
Undecided	14	4	9
Workforce and Program Development	15	6	2
Total	15	4	123

Inferential Statistics

Researchers used several inferential statistical tests based on the varied types of data collected. The results were evaluated based on five primary variables: critical thinking scores, age, ethnicity, sex, and undergraduate major.

Critical thinking score. Researchers used an ANOVA to determine the difference in critical thinking scores among participants who chose among the three treatment options—SSRIs, St. Johns wort, and acai berries—in a masked and unmasked condition. Results indicated that there was a statistically significant difference in critical thinking skills among the three masked treatment options ($F(2,119) = 4.082, p = 0.019$). The mean critical thinking score across all three groups was 15 (Table 4). For ANOVAs with significant results, researchers elected to use a Tukey posthoc because it provided accurate alpha levels even when adapted for use on unequal sample sizes. For the masked treatment selection, the Tukey posthoc results indicated that critical thinking scores of participants who chose SSRIs differed significantly from the critical thinking scores of participants who chose acai berries ($p = 0.017$). However, critical thinking scores of participants who chose St. Johns wort also differed significantly from

Table 4

Critical Thinking Score per Masked Treatment Selection

Treatment Option	<i>N</i>	<i>M</i>	<i>SD</i>
SSRIs	89	15	3
St. Johns wort	25	16	4
Acai berries	8	12	7
Total	122	15	4

Note. SSRIs = Selective Serotonin Reuptake Inhibitors.

participants who chose acai berries ($p = 0.024$). However, the critical thinking scores of participants who chose SSRIs did not differ significantly from participants who chose St. Johns wort ($p = 0.972$). The results indicate that participants with higher levels of critical thinking skills were more prone to select treatments with at least some empirical support like St. Johns wort or SSRIs in the masked condition. However, the participants with lower levels of critical thinking skills were more likely to select the pseudotreatment over empirically supported treatments in the masked condition.

A one-way ANOVA was also used to determine if critical thinking scores differed among participants during selection from the three unmasked treatment options. Results indicated that there was a statistically significant difference in critical thinking skills among the participants who selected among three unmasked treatment options ($F(2,119) = 3.185, p = 0.045$). The mean critical thinking score across all three treatment selections was 15 (Table 5). A Tukey posthoc analysis of unmasked treatment selection indicated that critical thinking scores of participants who chose SSRIs differed significantly from the critical thinking scores of participants who chose acai berries ($p = 0.036$). However, critical thinking scores of participants who chose St.

Table 5

Critical Thinking Score per Unmasked Treatment Selection

Treatment Option	<i>N</i>	<i>M</i>	<i>SD</i>
SSRIs	81	16	3
St. Johns wort	28	15	3
Acai berries	13	13	8
Total	122	15	4

Note. SSRIs = Selective Serotonin Reuptake Inhibitors.

Johns wort did not differ significantly from participants who chose acai berries ($p = 0.090$). The critical thinking scores of participants who chose SSRIs did not differ significantly from participants who chose St. Johns wort ($p = 0.985$). Like the results in the masked treatment condition, participants with higher levels of critical thinking skills were more likely to choose the efficacious treatment selection over the pseudotreatment in the unmasked condition, and participants with lower levels of critical thinking skills were more likely to choose the pseudotreatment over empirically supported treatments in the unmasked condition. The difference between the masked and unmasked conditions was revealed in the critical thinking scores of participants who selected between acai berries and St. Johns wort. While the difference in critical thinking scores was significant in the masked condition, it was no longer significant in the unmasked condition suggesting the real treatment name had some influence over the treatment selection.

Analysis of the individual critical thinking dimension scores revealed that individual dimension scores were not related to which treatment participants selected (Table 6). In this sample, the results suggest that participants were using all critical thinking skills in combination to select their treatment instead of relying on an individual critical thinking skill. Researchers also completed a series of correlations between critical thinking dimension scores and the ranking of the associated statement. Results showed that there was a relationship between the Assumption statement ranking and the Evaluation dimension score (Table 7). However, the anticipated relationship between the specific dimension score and the associated statement ranking were not significant for any of the dimensions as researchers hypothesized.

Table 6

Critical Thinking Dimension Scores by Treatment Selection

Critical Thinking Dimension	<i>df</i>	<i>F</i>	<i>p-value</i>
Masked			
Inference	2, 118	0.539	0.585
Interpretation	2, 116	0.931	0.397
Deduction	2, 116	0.683	0.507
Assumption	2, 115	0.305	0.737
Evaluation	2, 116	0.254	0.776
Unmasked			
Inference	2, 118	2.137	0.123
Interpretation	2, 116	0.855	0.428
Deduction	2, 116	1.755	0.178
Assumption	2, 115	0.515	0.599
Evaluation	2, 116	1.022	0.363

Table 7

Correlations of Statement Rank and Critical Thinking Dimension Score

Statement Ranking	Score				
	Inference	Interpretation	Deduction	Assumption	Evaluation
Inference	0.094	-0.065	-0.013	-0.050	-0.173
Interpretation	0.090	0.161	0.171	0.133	-0.057
Deduction	-0.152	0.050	-0.029	-0.177	0.073
Assumption	-0.026	-0.043	0.021	0.122	0.236*
Evaluation	-0.004	-0.048	-0.096	-0.019	-0.072

* $p < 0.05$ (2-tailed)

These results indicate that participants were more likely to rely on Evaluation during the Assumption trial more so than any other individual critical thinking dimension. Lastly, researchers evaluated how the critical thinking dimension scores were related to each other and found there was a statistically significant relationship between Interpretation and Deduction at $p < 0.05$ (Table 8), but there were no other significant relationships among the critical thinking dimensions. The results could be indicative of the entwined relationship between the five critical thinking dimensions.

Table 8

Correlations of Critical Thinking Dimension Scores

	Score				
	Inference	Interpretation	Deduction	Assumption	Evaluation
Inference	1.000	0.026	0.056	0.101	-0.078
Interpretation		1.000	0.373*	0.164	0.015
Deduction			1.000	0.017	0.001
Assumption				1.000	0.063
Evaluation					1.000

* $p < 0.05$ (2-tailed)

Age. Researchers determined there was a significant difference in the ages of participants who reported previous treatments for depression ($F(2, 149) = 3.243, p = 0.042$). However, there was no significant difference in the ages of participants who reported antidepressant use ($F(2, 150) = 1.104, p = 0.334$). The first results were expected because the older a person is the more likely he or she has experienced depression at some point in his or her life. However, it was interesting to find that antidepressant use was not significantly related to the participants' age. Age did not differ significantly across participants' masked treatment

selection ($F(2, 127) = 1.082, p = 0.342$) nor in the unmasked treatment selection ($F(2, 122) = 0.346, p = 0.708$). These results suggest that treatment selection did not change based on the age of the participant.

Pearson regressions were used to evaluate the relationship between age and critical thinking scores, two continuous variables. The results indicated that the relationship between age and critical thinking scores was not significant ($r(123) = 0.012, p = 0.900$). Additional analysis also indicated there were no significant correlations between the participants' ages and their scores on the individual critical thinking dimensions (Table 9). These results suggest that neither overall critical thinking skills nor the individual critical thinking dimensions differ across the ages sampled in this experiment.

Table 9

Critical Thinking Dimension Scores by Age

Critical Thinking Dimension	<i>df</i>	<i>r</i>	<i>p-value</i>
Inference	120	-0.167	0.069
Interpretation	118	0.032	0.732
Deduction	118	0.109	0.240
Assumption	117	0.035	0.711
Evaluation	118	-0.052	0.577

Ethnicity. Chi-square analyses were used to compare two nominal variables to determine if proportions of the first variable differed based on the second variable (i.e. ethnicity and treatment selection). A chi-square analysis revealed the proportions of masked treatment selections differed significantly across different ethnic groups ($\chi^2 = 36.596, p = 0.000$).

However, when the unmasked treatment names were given, the treatment selection no longer

differed significantly across ethnic groups ($\chi^2 = 12.833, p = 0.381$). These results indicated that participants were critical in their evaluation of the masked treatment options, but became less critical when the unmasked treatment options were presented. These results could also indicate that participants were easily influenced to change their response based on the real treatment names.

Researchers used an ANOVA to determine that critical thinking scores differed significantly among ethnic groups ($F(6,116) = 2.292, p = 0.040$). A Tukey posthoc analysis revealed a significant difference between White and Middle Eastern participants ($p = 0.023$), Multiple Ethnicities and Middle Eastern participants ($p = 0.017$), Hispanic and Middle Eastern participants ($p = 0.034$), and Black/African-American and Middle Eastern participants ($p = 0.043$). All other posthoc analyses of critical thinking skills based on ethnicity were not statistically significant ($p > 0.05$). Researchers also determined there was a significant difference in scores on the Inference critical thinking dimension among ethnic groups (Table 10). A Tukey posthoc analysis of the Inference dimension revealed a significant difference in scores between participants who reported Multiple Ethnicities and participants who reported Asian ($p = 0.009$). Additional analysis is needed to conclude the accuracy of these results because the measures used to create the CTQ were normalized on a limited ethnic sample which included Caucasians, African-Americans, Asians, and Hispanics so the measure may not be valid for other ethnicities. Likewise, the sample of each ethnicity in the current study was limited, so the results may not accurately reflect critical thinking abilities among these groups. Additional research is needed to determine if there are true differences in critical thinking abilities among participants who identified themselves as Middle Eastern, Native American, and Hawaiian or other Pacific Islander.

Table 10

Critical Thinking Dimension Scores by Ethnicity

Critical Thinking Dimension	<i>df</i>	<i>F</i>	<i>p-value</i>
Inference	6, 115	2.587	0.022
Interpretation	6, 113	0.901	0.497
Deduction	6, 113	0.880	0.512
Assumption	6, 112	0.845	0.538
Evaluation	6, 113	0.739	0.620

Sex. Researchers used chi-squares to examine the proportions of reported depression treatment between males and females and did not find a significant difference ($\chi^2 = 4.068, p = 0.131$). However, the chi-square indicated a significant difference in the reported use of antidepressants between males and females ($\chi^2 = 8.757, p = 0.013$). The results indicated that females in this sample used antidepressants more than males within the past six months. Sex was also evaluated through a chi-square, and results indicated it was not a factor in the participants' masked treatment selection ($\chi^2 = 1.747, p = 0.417$) and not a factor in the unmasked treatment selection ($\chi^2 = 1.679, p = 0.432$). Therefore, sex was not a predictor in masked or unmasked treatment selection. An ANOVA was used to determine that sex did not appear to contribute to differences in participants' critical thinking scores ($F(1,119) = 0.572, p = 0.451$). An analysis of the individual critical thinking dimensions based on sex did not reveal any significant differences between males and females (Table 11). The results indicated that neither overall critical thinking scores nor the individual critical thinking dimensions differed between males and females. While this sample was representative of the University of West Florida's

undergraduate population, future research will need to evaluate the differences between males and females using equal group sizes.

Table 11

Critical Thinking Dimension Scores by Sex

Critical Thinking Dimension	<i>df</i>	<i>F</i>	<i>p-value</i>
Inference	1, 118	0.029	0.864
Interpretation	1, 116	2.165	0.144
Deduction	1, 116	0.024	0.877
Assumption	1, 115	0.034	0.853
Evaluation	1, 116	2.815	0.096

Undergraduate major. Researchers used chi-squares to examine the proportions of reported depression treatment use among reported undergraduate majors and did not find a significant difference ($\chi^2 = 38.154, p = 0.462$). However, the chi-square indicated a significant difference in the reported used of antidepressants based on the reported undergraduate major ($\chi^2 = 63.196, p = 0.006$), but there was not enough variability among the groups to conduct a posthoc analysis. Reported undergraduate major was also evaluated through a chi-square, and results indicated the proportions of masked treatment selection did not differ significantly across majors ($\chi^2 = 41.276, p = 0.329$). The proportions of unmasked treatment selections did not differ across participants' reported majors either ($\chi^2 = 39.088, p = 0.421$). Reported undergraduate major did not appear to influence whether participants select empirically supported treatments or the pseudotreatment.

A one-way ANOVA was used to determine that critical thinking scores did not vary significantly among participants in different undergraduate majors ($F(19,102) = 0.561, p =$

0.925). Additionally, an analysis of the individual critical thinking dimensions based on reported undergraduate major revealed a significant difference in participants' Evaluation score (Table 12). Therefore, it is not likely that participants from different majors vary significantly in overall critical thinking abilities or individual critical thinking dimensions. However, the sample sizes from each major were not equally distributed so these results will need to be verified through additional testing using equal sample sizes.

Table 12

Critical Thinking Dimension Scores by Undergraduate Major

Critical Thinking Dimension	<i>df</i>	<i>F</i>	<i>p-value</i>
Inference	19, 102	0.623	0.881
Interpretation	19, 102	1.432	0.129
Deduction	19, 102	0.988	0.481
Assumption	19, 102	0.933	0.545
Evaluation	19, 102	1.421	0.134

Qualitative Analysis

Qualitative data were collected through open-ended *why* questions to give participants a chance to explain why they made a particular selection. The text box was limited to 500 characters, though most participants did not exceed 250 characters. These open-ended questions were attached to each of the five critical thinking dimension statements presented as well as the masked and unmasked treatment selections. The qualitative data were categorized based on whether the participant selected SSRIs, St. Johns wort, or acai berries. Once the data were categorized, the researcher used the *Coding Query* to determine how many times each category appeared within the seven open-ended response sets. In each response set, a word frequency

search was conducted on the top 25 results, and the word length minimum was set at five to reduce the appearance of common words like "the." Setting the minimum length to five did not remove all of the irrelevant words (i.e. *which*), so researchers picked the 10 most salient words according to their relationship to the statements presented. Once the words were selected, researchers used a specific word frequency query for each word to determine how often the word appeared within each of the seven open-ended questions.

SSRIs. The coding query for SSRIs returned the most qualitative results out of the three treatment categories (SSRIs, St. Johns wort, or acai berries; $N = 457$). SSRIs accounted for over half of all open-ended responses within the Interpretation, Deduction, and Evaluation categories and accounted for the least responses in the Inference category (Table 13). Results from the *Coding Query* for the SSRIs node indicated that the top 10 words were mentioned in the open-ended responses over 500 times in total, and *research* was the most referenced word among all

Table 13

Coding Query for SSRIs

Statement	<i>N</i>	Coverage (%)
Inference	30	21.43
Interpretation	97	67.36
Deduction	81	55.10
Assumption	50	34.48
Evaluation	83	57.24
Masked Selection	62	46.62
Unmasked Selection	54	42.19

Note. SSRIs = Selective Serotonin Reuptake Inhibitors.

participants in this category ($N = 89$). Based on the qualitative data, participants who selected SSRIs were influenced by statements which indicated this drug was supported through empirical research.

The top 10 words were formed into a frequency list based on their appearance within the open-ended *why* questions (Table 14). The frequency counts indicated that Interpretation and Evaluation statements had the most influence on why participants chose SSRIs over St. Johns wort or acai berries regardless of statistical significance. Evaluation of the qualitative data suggested that participants relied more on the highly referenced critical thinking dimension to aid

Table 14

Word Frequency for SSRIs

Word	<i>N</i>	Inference	Interpretation	Deduction	Assumptions	Evaluation
research	89	.	10	3	.	44
positive	83	.	52	.	.	2
results	82	.	43	.	1	7
side effects	67	26	3	1	4	6
evidence	61	.	1	42	.	6
doctor	27	.	.	.	18	.
scientific	27	.	.	.	.	16
measurable	25	.	12	1	.	.
tested	24	.	6	4	1	6
works	21	2	1	6	1	4
Total	506	28	128	57	25	91

Note. SSRIs = Selective Serotonin Reuptake Inhibitors.

their treatment selection, but the quantitative data were not significant. This could suggest a problem with the measures used or indicate the difficulty of measuring each independent critical thinking dimension. Therefore, additional research is needed to determine exactly how these individual critical thinking dimensions influence participants' selection of SSRI in the masked and unmasked trials.

St. Johns wort. The coding query for St. Johns wort returned the second most qualitative results with roughly one third the responses as SSRIs ($N = 148$). Within the Assumption and Inference categories, St. Johns wort accounted for approximately one third of all open-ended responses (Table 15), and the majority of responses for this category were in the Inference statement selection. Results from the *Coding Query* for the St. Johns wort node indicated that the top 10 words were mentioned in the open-ended responses 233 times in total and *side effects* was the most referenced word ($N = 82$). Evaluation of the qualitative data suggested that participants who selected St. Johns wort preferred to try a treatment with at least

Table 15

Coding Query for St. Johns Wort

Statement	<i>N</i>	Coverage (%)
Inference	57	40.71
Interpretation	0	0.00
Deduction	1	00.68
Assumption	48	33.10
Evaluation	4	2.76
Masked Selection	19	14.28
Unmasked Selection	19	14.84

some empirical support over a treatment with no support. However, these participants also indicated they would prefer to try an over-the-counter remedy before asking doctors for a prescription. These results suggest there was a moderate preference for homeopathic remedies, but the participants still wanted a doctor's assurance and expertise regarding treatment options.

The top 10 words were formed into a frequency list based on their appearance within the open-ended questions (Table 16). The frequency counts indicated that Inference and Assumption statements had the most influence over whether participants selected St. Johns wort over SSRIs or acai berries regardless of statistical significance. Evaluation of the qualitative data suggested that participants relied more on the highly referenced critical thinking dimension to aid

Table 16

Word Frequency for St. Johns Wort

Word	<i>N</i>	Inference	Interpretation	Deduction	Assumptions	Evaluation
side effects	82	58	.	.	4	.
symptoms	24	20	.	.	.	.
recommended	29	.	.	.	23	.
prescription	26	.	.	.	24	.
professionals	21	.	.	.	16	.
over-the-counter	18	.	.	.	13	.
available	9	.	.	.	5	.
works	9	4	.	.	2	.
possible	8	7	.	.	.	1
results	7	1	.	.	.	.
Total	233	90	0	0	87	1

their treatment selection, but the quantitative data were not significant. Again, this could suggest a problem with the measures used or indicate the difficulty of measuring each independent critical thinking dimension. Therefore, additional research is needed to determine exactly how these individual critical thinking dimensions influence participants' selection of St. Johns wort in the masked and unmasked trials.

Acai berries. The coding query for acai berries returned the fewest qualitative results with less than one sixth the responses that SSRIs returned ($N = 52$). Out of the three treatment options provided, participants were least likely to select acai berries over SSRIs or St. Johns wort in any of the dimensions tests. Within the Assumption and Inference categories, acai berries accounted for less than one seventh of all open-ended responses (Table 17). The majority of responses for the acai berries category were in the Deduction statement selection. Results from the *Coding Query* for the acai berries node indicated that the top 10 words were mentioned in the open-ended responses 68 times in total and *side effects* was the most referenced word ($N = 23$). Evaluation of the qualitative data suggested that participants who selected acai berries were more likely to select a drug with no side effects even though it may not treat the symptoms associated with depression.

The top 10 words were formed into a frequency list based on their appearance within the open-ended *why* responses (Table 18). The frequency counts indicated that the Deduction statement had the most influence on whether participants selected acai berries over SSRIs or St. Johns wort regardless of statistical significance. Evaluation of the qualitative data suggested that participants relied more on the highly referenced critical thinking dimension to aid their treatment selection, but the quantitative data were not significant. Like the previous sections, these results could suggest a problem with the measures used or indicate the difficulty of

Table 17

Coding Query for Acai Berries

Statement	<i>N</i>	Coverage (%)
Inference	13	9.29
Interpretation	2	1.39
Deduction	18	12.24
Assumption	3	2.07
Evaluation	9	6.21
Masked Selection	2	1.50
Unmasked Selection	5	3.91

Table 18

Word Frequency for Acai Berries

Word	<i>N</i>	Inference	Interpretation	Deduction	Assumptions	Evaluation
side effects	23	12	.	6	.	1
neurotransmitters	10	.	.	10	.	.
brain	8	.	.	8	.	.
evidence	7	.	.	6	.	1
research	5	.	1	1	.	1
testing	4	1	.	.	.	2
recommended	3	.	.	.	3	.
symptoms	3	2	.	.	.	1
treatment	3	.	.	1	.	1
better	2	.	.	.	.	2
Total	68	15	1	47	3	9

measuring each independent critical thinking dimension. Therefore, additional research is needed to determine exactly how these individual critical thinking dimensions influence participants' selection of St. Johns wort in the masked and unmasked trials.

CHAPTER IV

DISCUSSION

The purpose of this study was to determine if there was a significant difference in critical thinking scores of participants who were choosing among three treatments: SSRIs which have empirical support, St. Johns wort which has mixed empirical support, and acai berries which was included as a pseudotreatment with no empirical support. In order to evaluate how overall critical thinking skills, individual critical thinking dimensions, and treatment names influence mental health treatment selection, the hypothesis was separated into five research questions.

Research Questions 1 and 2

The critical thinking scores of participants who selected SSRIs and St. Johns wort were significantly higher than the critical thinking scores of participants who selected acai berries in both the masked and unmasked treatment options. This pattern indicated that participants with higher critical thinking scores were more likely to choose an efficaciously and empirically supported treatment compared to participants with lower critical thinking scores who were more likely to choose a fake treatment option, or a pseudotreatment. Support for this finding comes from prior research conducted by Becker et al. (2007) who determined PTSD clients with high critical thinking scores chose empirically supported treatments over pseudotreatments. These findings also aligned with the research conducted on medical professionals who used critical thinking skills to select treatment for their clients (see Gambrill, 2005; Gaudiano et al., 2011; Jenicek & Hitchcock, 2004; Lilienfeld et al., 2003; van Mossel et al., 2011). Medical providers tested in those studies who scored higher on critical thinking measures were more likely to select efficacious treatments for their clients than medical providers who scored lower on critical thinking measures.

Previous research indicated that when clients seek out treatment for a mental illness, they already have a set treatment plan in mind (Khalsa et al., 2011). Therefore, it is important for medical professionals to provide enough data regarding efficacy, empirical research, and side effect information for clients to make informed decisions. While research indicated that SSRIs were the most commonly prescribed treatment for depression, the qualitative data from the open-ended *why* questions suggested that many participants in the current study were more likely to take St. Johns wort as their first treatment option because it was available as an over-the-counter medication. For example, several participants noted they would be more likely to take an over-the-counter medication if it were recommended by a health professional before taking a prescription that "messed with [their] neurotransmitters." Participants who chose acai berries over the other two options also stated that they did not want their "neurotransmitters messed with," but these participants preferred a treatment that did not require a doctor's appointment.

Other participants in the current study indicated that they would be more likely to take SSRIs than another treatment regardless of the other options simply because that treatment method had the "most empirical support." These participants noted that it was important for a prescription to change the neurotransmitters "since research shows" doing so decreases depression. Participants who chose SSRIs also mentioned that their doctor's opinion was more important than their pharmacist's because the doctor would know his or her personal background to prescribe appropriate medications. Kwan et al. (2008) indicated that participants from 16 focus groups felt more comfortable making their own decisions versus seeking out medical advice from doctors or pharmacists. While the participants who selected SSRIs in this study run counter to this evidence, participants who chose St. Johns wort or acai berries would be more

likely to conduct research on the drugs personally before seeking out the advice of a professional.

Research Questions 3 and 4

Researchers hypothesized that there would be a strong correlation between one or more individual critical thinking dimension scores and the associated statement rankings. For example, the researchers predicted that participants who rated the Inference statement as the most influential in their treatment selection would have Inference as the highest individual dimension score. However, results indicated that the dimension scores were not correlated with any of the corresponding statement rankings. There are a number of possible explanations to explain the null hypothesis. For example, it is possible that critical thinking has a general pattern that is not readily separable into its components using the CTQ. Alternatively, the pattern could have resulted because participants were using a combination of critical thinking dimensions to determine if a statement was important or not. For example, there was a significant relationship between the Evaluation score and the Assumption ranking, so participants could have been using their Evaluation skills to determine the importance of the Assumption statement in comparison to other statements. Likewise, this would suggest that high critical thinking scores were interacting at the level at which they were tested. However, future research would need to support this statement since none of the other interactions were statistically significant.

Researchers also hypothesized that there would be one dimension of critical thinking that would play a larger role in the selection process regardless of the participants' overall critical thinking scores. The inferential statistics did not show a clear delineation among any of the critical thinking dimensions which aligned with the assumptions from the null hypothesis. However, qualitative data from the open-ended *why* questions at the end of each treatment

selection suggested that certain areas could play an important role in the participants' selection of treatment. The qualitative data from the open-ended *why* questions were separated based on which treatment participants selected: SSRIs, St. Johns wort, or acai berries.

SSRIs. Participants with the highest critical thinking scores chose SSRIs, and participant statements from the open-ended *why* questions indicated these participants could be more influenced by Interpretation and Evaluation regardless of statistical significance. Based on the median scores, participants who selected SSRIs scored highest in Interpretation and Evaluation and lowest in Inference out of the five critical thinking dimensions. These results could indicate that participants in this group were better able than other participants in the study to determine the strength of an argument and whether the generalizations were warranted based on the information provided. Additional research is necessary to support these findings.

St. Johns wort. Those who chose St. Johns wort could have been influenced by their Evaluation and Assumption critical thinking skills more so than their other skills. Based on the median scores, participants who selected St. Johns wort scored highest in Assumptions and Evaluation and lowest in Inference. The qualitative data from the open-ended *why* responses indicates these participants could be better able than other participants in the study to determine if the statements were true based on the information provided as well as determine if there were assumptions embedded in the treatment descriptions. Additional research is necessary to determine exactly how these participants' highest and lowest scoring critical thinking dimensions influenced their treatment selections.

Acai berries. Participants who chose acai berries could have been influenced by their Deduction critical thinking skills. Based on the median scores, participants who selected acai berries scored highest in Deduction and Evaluation and lowest in Inference. The open-ended

why responses from these participants could indicate they were better at determining whether statements followed from the information provided, whereas participants from the other two categories relied more on their other critical thinking dimensions.

Since participants from all categories scored the same median score in Evaluation, it could be assumed that the statistically significant relationship between evaluation scores and the rankings show how participants used their evaluation skills regardless of which dimension the statement is related to. Even though Evaluation was the highest scoring dimension for all participants, it appeared that other critical thinking skills played a more significant role in treatment selection depending on the category participants selected. Future research should extrapolate this finding to determine if there are true differences in selection methods between categories.

Research Question 5

Researchers hypothesized that participants would change their preferred treatment choices when provided unmasked treatment names versus masked names. Results from the chi-square analysis on ethnicity and treatment selection indicated this hypothesis is supported. When participants were provided three masked treatment options, selection varied significantly among the ethnic groups. However, when the unmasked treatment options were provided, the difference between the ethnic groups was no longer significant. The results could be indicative of how participants view mental health treatments based on varying cultural backgrounds. For example, based on median average in the masked treatment trial, Middle Eastern participants were more likely to select St. Johns wort or acai berries whereas Native Hawaiian or other Pacific Island participants were more likely to select St. Johns wort or SSRIs. All other ethnic categories predominantly selected SSRIs in the masked condition. Looking at the breakdown of participant

choices during the selection trials, it appears that fewer participants selected SSRIs and that more selected acai berries, and the St. Johns wort category remained the same when unmasked treatments were described (Figure 1). However, these results need to be evaluated through additional studies because of the skewed sample sizes collected for each ethnicity.

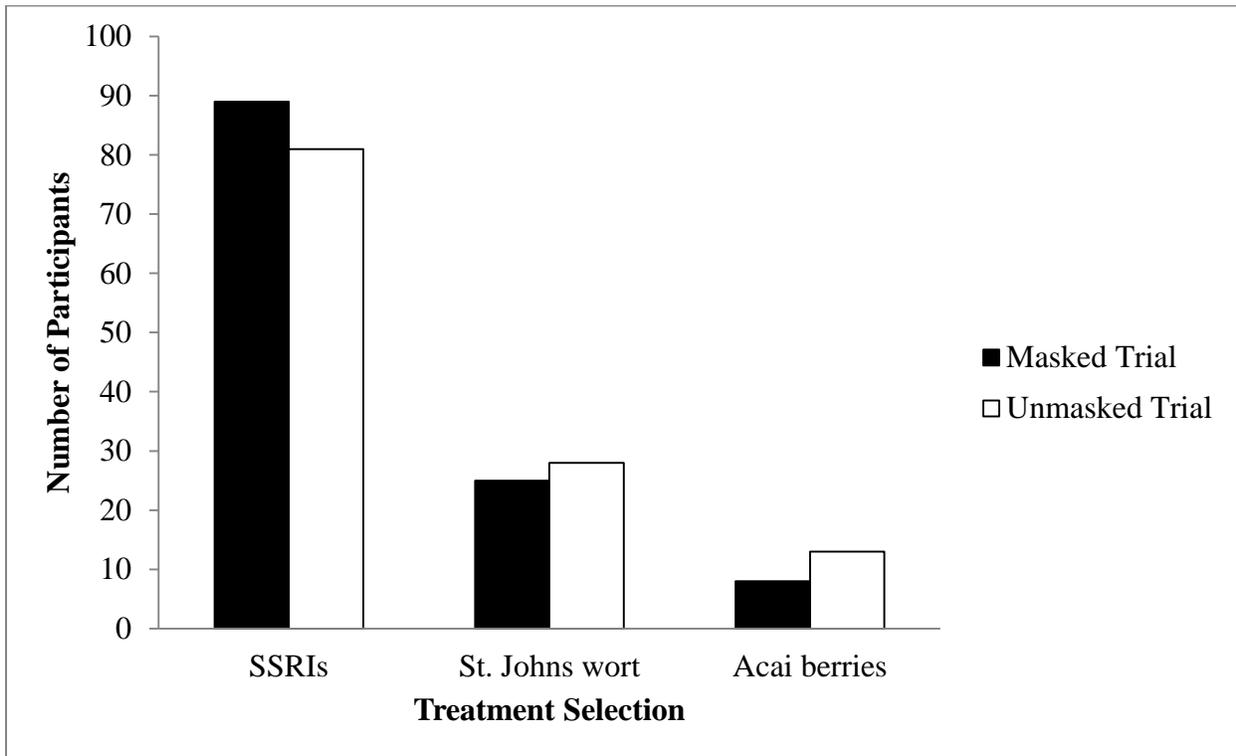


Figure 1. Comparison of treatment selection before and after unmasking. In the masked trial ($N = 122$), 89 participants selected SSRIs, 25 participants selected St. Johns wort, and eight participants selected acai berries. In the unmasked trial ($N = 122$), 81 participants selected SSRIs, 28 participants selected St. Johns wort, and 13 participants selected acai berries. Note: SSRIs = Selective Serotonin Reuptake Inhibitors.

After participants were given the chance to rate each statement according to its influence on overall treatment selection during the unmasked trial, they were informed that those descriptions were real treatments used to combat depression. After providing the real treatment name with the same description, participants were asked to select their most preferred treatment.

Approximately 25% of participants who selected one treatment option in the masked trial switched to a different treatment option in the unmasked trial (Figure 2).

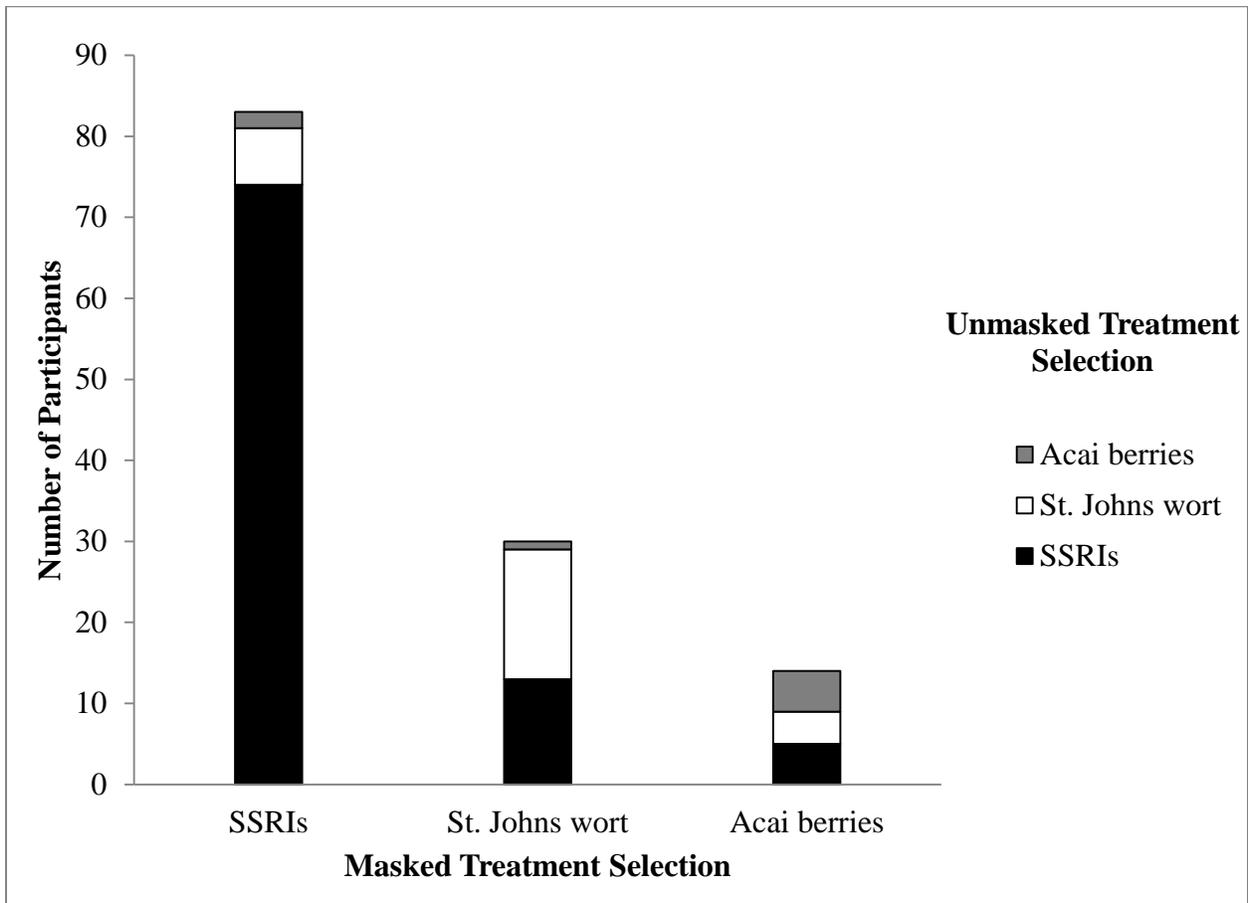


Figure 2. Comparison of treatment selection for participants who switched to a new treatment in the unmasked trial. The black bars represent participants who selected SSRIs in the masked trial. In the unmasked trial, 13 participants switched to St. Johns wort and five participants switched to acai berries. The white bars represent participants who selected St. Johns wort in the masked treatment trial. In the unmasked trial, seven of these participants switched to SSRIs and four participants switched to acai berries. The grey bars represent participants who selected acai berries during the masked treatment trial. In the unmasked trial, two of these participants switched to SSRIs and one switched to St. Johns wort. Note: SSRIs = Selective Serotonin Reuptake Inhibitors.

Qualitative data from participants who selected SSRIs in the masked condition but switched to St. Johns wort during the unmasked condition cited the following reasons in their own words:

- Few side effects, positive results, recommended by professionals but available over the counter.
- Few side effects with still decent proven results statistically.
- Safest option.
- It is natural which is appealing to me.
- Decent amount of information and available over the counter.
- It has fewer reported side effects.
- Because the condition being treated is depression, it seems that this treatment may be the best. Of course depression is a mental disorder, but in this case, a placebo effect may be just as good as the real drug if it is really making people feel better.

Although there were several participants who switched from SSRIs to acai berries, only one listed a qualitative answer: "I like acai berries." Participants who switched from acai berries to either of the other treatments did not provide any qualitative data to suggest why they switched when the unmasked names were given. Participants who switched from St. Johns wort to SSRIs during the unmasked condition cited the following reasons in their own words:

- This is the safest and most positive choice.
- Knowing it would treat depression I would choose SSRIs. Depression could be a serious problem and use the riskier prescription to help because I believe it is still relatively safe so the benefits would outweigh the cost.
- Outcomes were more sought after and the name seemed to be representative.

- It's scientifically designed and tested medicine instead of arbitrary herbs.
- I would choose the drug with the most research behind it to tackle my medical problems. I would choose something proven to work otherwise I'm just wasting my time.

Participants who switched from St. Johns wort to acai berries cited the following reasons in their own words:

- This treatment is the most natural which means it is less harmful.
- I believe in herbal medicine and the positive effects of natural substances.

Based on the quantitative research, a person may be easily influenced by the name of the drug regardless of the empirical, or lack of empirical, information provided. The qualitative data also provides additional clues as to why people switched when real treatment names were given. Many participants suggested that scientific backing or side effect information was more important even though they were given the exact same treatment descriptions in both trials. It could be that they were primed by the drug name to expect a certain type of treatment during the unmasked trial whereas in the masked trial, they had to make their choice based on only the information provided. This difference could indicate how individual preferences play a role in decision making in addition to other factors such as critical thinking skills. Alternatively, participants who switched to a new treatment selection during the unmasked trial could have switched because of the research design. The unmasked trial was conducted less than five minutes after the masked trial so it is possible that participants assumed there was a trick or they were being tested on a different aspect not previously mentioned. Future research design should separate the trials by inserting parts of the CTQ throughout. However, it is feasible, based on the qualitative data, that the majority of participants who switched to St. Johns wort or acai berries

preferred a homeopathic or herbal remedy to a pharmacological intervention. Participants who switched to SSRIs preferred a medication that was empirically supported and was moderated through a medical practitioner. The assumption that critical thinkers would be more likely than non-critical thinkers to dismiss pop culture-driven treatment for empirically based treatments was supported in this study.

Limitations and Future Directions

In a real-world setting, the client seeking treatment for depression may have a choice among a biological treatment, a psychological treatment, a combination of the two, and possibly other choices if the provider has specific training in alternative treatments. However, to reduce the possibility of a participant's bias toward one modality of treatment, only biological treatments were presented. Likewise, the provider will typically limit the selection process to one or two choices for the client, if not make the selection for the client, depending on which model of client care the provider follows (i.e. social versus medical). In this study, the choices were limited to three options, providing only a modicum of latitude over real-life scenarios.

The population used during this study was a convenience sample of undergraduates at the University of West Florida. While every attempt was made to diversify the sample being used, researchers were only able to recruit from 20 undergraduate majors, leaving many in the population unaccounted for. Future research should include other populations, including adults already in the workforce as well as older adults who have retired from the workforce. Future research should also develop alternative experiments to elaborate on individual dimensions of critical thinking and their role in treatment selection. If participants are commonly using Evaluation to determine the ranking of the statement, it is important for researchers to determine how other dimensions could be tested without directly involving Evaluation.

This research was limited to the mental health field and how participants select mental health treatments specifically. The research would be more adaptive and account for more decision making scenarios if the study was adapted to a new topic (i.e. politics or finances). Additional focus should be given to alternative areas of decision-making where framing effects may be taken into consideration (i.e. selecting treatment for a life-threatening illness versus an everyday cold). Additionally, researchers might examine what role a caregiver has in treatment selection for a mentally ill person. This could impact the way treatment information is provided as well as clarify what role, if any, the caregiver currently has in this particular stage of the treatment process.

Since the study was completed online through SurveyMonkey, additional limitations should be taken into consideration. While every attempt was made to ensure only students from the University of West Florida were participating in the study, it is not possible to verify each participant because identifying information was not collected with the responses. Contact information for students who elected a gift card drawing entry or extra credit points was collected on a separate survey within SurveyMonkey. Additionally, it is possible that several students worked together to fill out the survey even though instructions stated each survey was to be completed individually with no help from other people. It is also possible that participants looked up treatment information on the Internet while completing study requirements. Future researchers who wish to replicate this study should take these limitations under consideration when deciding to conduct follow-up studies online versus in-person.

Summary

Researchers determined that participants with higher critical thinking skills were more likely to select the efficacious treatment over the pseudotreatment in the masked and unmasked

trials, and participants with lower critical thinking skills were more likely to select the pseudotreatment over the other treatments in masked and unmasked trials. There was a statistically significant difference in critical thinking skills of participants who selected SSRIs from the participants who selected acai berries. Hypothesis 1 and 2 were supported by the findings. Hypothesis 3 and 4 suggested that there was a relationship between the individual critical thinking dimensions and the rankings of statements within the selected treatment. The null hypothesis was supported by the findings which could indicate a general pattern within critical thinking that was not easily differentiated through the CTQ. Further testing with alternative critical thinking measures are needed to determine the extent of the relationship between the individual critical thinking dimensions and the statements rankings. Hypothesis 5 stated that participants would switch to a different treatment based on the real treatment names. This hypothesis was supported for approximately 25% of the population. Many participants suggested that scientific backing or side effect information was more important even though they were given the exact same treatment descriptions in both trials. It is possible that participants were primed by the drug name to expect a certain type of treatment during the unmasked trial, whereas in the masked trial participants had to make their selection based on only the information provided.

CHAPTER V

CONCLUSION

Critical thinking skills are a crucial component to mental health decision making as well as everyday decision making. As the current research has shown, people who fail to use these skills properly are more likely to choose less efficacious treatments for themselves or the people they are taking care of. Likewise, participants who demonstrated higher levels of critical thinking skills were more likely to select the empirically supported treatments such as SSRIs and St. John wort. The present study also suggested that 25% of the sample was influenced by treatment names, which could indicate an inherent bias toward or away from certain treatment options. In further support of this idea, people who chose a different treatment during the unmasked treatment trials could have been relying solely on an unconscious bias instead of using their critical thinking skills to determine which treatment to select. Secondary findings also suggest that the participants' ethnicity played a role in their treatment selection. It is possible that different ethnic backgrounds are drawn to homeopathic remedies such as St. Johns wort or acai berries. It is also possible that these participants have tried herbal remedies in the past and experienced positive results. The same conclusions could be derived for participants who selected SSRIs. It is important to note, however, that over 70% of the population selected an empirical treatment in both the masked and unmasked trials.

Researchers examined how individual critical thinking dimensions influenced the ranking of description statements but did not find any significant interactions. Nor were there any significant interactions between the individual dimension rankings and selection during the masked and unmasked trials. It is possible that measuring critical thinking skills at the highest, combined level interfered with attempts to measure the individual dimensions. It is also possible

that the five dimensions examined cannot be easily separated due to the integral connection between them. The qualitative data suggested that the individual dimensions had at least some influence over the participant's treatment selection, but additional research will be needed to evaluate these relationships.

Based on previous research, critical thinking skills are a crucial component of mental health literacy which is the knowledge and beliefs regarding mental disorders that aid in prevention, recognition, and treatment of mental illnesses (Cook & Want, 2010; Gaudiano et al., 2011; Jorm et al., 2000). Since stigmas surrounding mental health are often a result of poor or lacking mental health literacy, it is possible that critical thinking skills lie at the heart of stigmas surrounding mental health. For example, German participants in the Hanoch et al. (2007) study were better able to understand and comprehend drug information for over-the-counter pain relievers than their American counterparts. These results were supported by research which indicated that access to information allowed people to utilize their critical thinking skills to aid in decision making (Weiler, 2004). Therefore, the underlying role of critical thinking could be seen not only in decision-making, but also in stigmas related to mental health as well as general mental health literacy (Gaudiano et al., 2011; Lilienfeld et al., 2003).

Critical Thinking within Mental Health Stigmas

Mental health stigmas can be viewed as a result of people failing to properly employ critical thinking skills to understand mental illnesses and their associated treatments. How a mentally ill person experiences and views his or her symptoms is often quite different from how other people view that person's symptoms. The stigmas surrounding mental health are varied but border the same three central themes: (a) self-stigma, (b) personal stigma, and (c) perceived stigma (Cook & Want, 2010). Self-stigma is defined as one's reaction to one's own

mental illness; personal stigma is defined as a person's attitude toward someone else with a mental illness; and perceived stigma is defined as how people with mental illness believe others may perceive them. Differences in stigmas depend on variables such as age, sex, immigration status, and education. For example, people with higher education levels and/or better mental health literacy are less likely than people without that knowledge to stigmatize themselves or others based on their mental illness (Cook & Want, 2010). It is possible that like participants in the Hanoch et al. (2007) study, participants in this study with higher education levels were better able to employ their critical thinking skills in a variety of situations. The results from the current study did not explicitly test critical thinking skills across education levels, but there was enough variability in age to determine that critical thinking skills did not differ dramatically.

The results from the current study indicated that providing treatment information, albeit brief summaries, allowed over 70% of the sample utilize their previously learned critical thinking skills to aid in treatment selection. Therefore, the results from this study aligned with information from the Hanoch et al. (2007) study suggesting that by increasing mental health literacy, even slightly, helped participants think critically about the choices being made. By thinking critically, the public can begin to educate themselves on the wide range of mental illnesses and their associated treatments, which in turn can begin reducing bias toward the mentally ill. Prior research also indicated that stigmas may shape whether clients will seek health care and, once they do, if they will adhere to the treatments outlined (Gonzalez et al., 2010). Like biases against mental illness in general, a person who thinks critically about health care and treatments may increase treatment seeking and adherence behaviors. For example, none of the males in the current study's sample stated they were prescribed antidepressants. It is possible that none of the males were ever prescribed an antidepressant before. However, it is

also possible that males may not feel comfortable disclosing this type of information because of preconceived "weakness" associated with being on antidepressants.

Because of the public's inaccurate views of mental illness, increasing mental health literacy is a subject several researchers have begun to examine in depth. For example, Kitchener and Jorm (2002) developed Mental Health First Aid courses to increase the public awareness of mental health issues. Kitchener and Jorm found that participants' knowledge of depression and recognition of its symptoms increased to 93.3% posttest (Kitchener & Jorm, 2002). In a follow-up study using Health and Aging government employees as well as employees from Family and Community Services departments, Kitchener and Jorm (2004) determined that participants who went through the first aid course have a posttest recognition score of 95.8% compared to the waitlist posttest recognition score of 90.3%. These courses sought to inform participants about symptoms, treatments, and general information regarding mental illness (Kitchener & Jorm, 2002, 2004). By increasing their mental health literacy, the participants may have been able to properly utilize their critical thinking skills when evaluating information related to mental illness.

At this time, the mental health literacy levels among the general population in the United States are difficult to gauge because of inaccurate and misleading information in the medical and consumer literature (Lipman, 2006). Likewise, researchers who examined literacy levels continued to find contradictory results. For example, Angermeyer, Holzinger, and Matschinger (2009) found that mental health literacy levels regarding depression among their sample increased from 26.9% correctly identifying mental disorders in 1993 to 37.5% in 2001. In a previous study, Jorm et al. (1997) determined that 39% of participants in their sample correctly identified depression and that 72% of participants were able to discern that the depression

vignette was related to a mental health domain. The researchers in these studies were able to reduce the stereotypes associated with the mental illness vignettes being used by increasing the participant's mental health literacy. As previous research suggested, increasing the mental health literacy of these participants allowed them to utilize previously learned critical thinking skills to avoid pitfalls normally associated with stereotypic thinking. Results from the current study support these findings.

Critical Thinking within Other Stereotypes

Mental health stigmas are not the only stereotypes or biases people generally hold. All forms of stereotyping are a result of prior beliefs people hold which can bias their evaluation of arguments and data (Baron, 1995; Evans, Over, & Manktelow, 1993; George, 1995; Klaczynski et al., 1997; Klaczynski & Narasimham, 1998; Moshman & Franks, 1986; Sá, West, & Stanovich, 1999). Humans are capable of thinking which is "clear, precise, accurate, relevant, consistent, profound, and fair" (Paul, 1990, p. 45). Unfortunately, humans are also capable of thinking which is "often imprecise, vague, inaccurate, irrelevant, superficial, trivial, and biased" (Paul, 1990, p. 45). When people utilize critical thinking skills as a foundation for their thought patterns, they will be able to avoid the illogical pitfalls commonly associated with stereotypes and prejudices (Sá et al., 1999). Therefore when critical thinking skills are employed, they play a key role in reducing the expression and prevalence of stereotypes and prejudices.

Much like the research on critical thinking within the mental health field, it may be prudent to evaluate how critical thinking skills are utilized in regard to other biases and prejudices. For example, if increasing mental health literacy allowed participants to utilize already developed critical thinking skills to combat mental health stigmas, could the same process be used to combat racism, sexism, or even ageism? Paul (1990) argued that through

recognition of social, moral, and political implications that result from lower order learning (i.e. learning that does not require reflective or deep thought), both developed and underdeveloped nations could begin to understand the importance of a significant intellectual growth throughout the public. Paul stated that such growth would lead to an increase in "reflective and critical thought about deep-seated problems of environmental damage, human relations, over-population, rising expectations, diminishing resources, global competition, personal goals, and ideological conflict" (Paul, 1990, p. 46). Clearly, the idea that thinking critically about issues is not something new, but only research within recent years has tried to show how invaluable critical thinking skills truly are for every person.

REFERENCES

- Aikin, K. J., Swasay, J. L., & Braman, A. C. (2004). Patient and physician attitudes and behaviors associated with DTC promotion of prescription drugs—summary of FDA survey research results. Retrieved from Food and Drug Administration website: <http://www.fda.gov/downloads/Drugs/ScienceResearch/ResearchAreas/DrugMarketingAdvertisingandCommunicationsResearch/UCM152860.pdf>
- Amsterdam, J. D., & Shults, J. (2005). MAOI efficacy and safety in advanced stage treatment-resistant depression—a retrospective study. *Journal of Affective Disorders, 89*(1-3), 183-188.
- Angermeyer, M. C., Hozlinger, A., & Matschinger, H. (2009). mental health literacy and attitude towards people with mental illness: A trend analysis based on population surveys in the eastern part of Germany. *European Psychiatry, 24*, 225-232.
- Astin, J. A. (1998). Why patients use alternative medicine. *The Journal of the American Medical Association, 279*(19), 1548-1553. doi:10.1001/jama.279.19.1548.
- Baron, J. (1995). Myside bias in thinking about abortion. *Thinking and Reasoning, 1*, 221–235.
- Becker, C. B., Darius, E., & Schaumberg, K. (2007). An analog study of patient preferences for exposure versus alternative treatments for posttraumatic stress disorder. *Behaviour Research and Therapy, 45*, 2861-2873.
- Bell, R. A., Taylor, L. D., & Kravitz, R. L. (2010). Do antidepressant advertisements educate consumers and promote communication between patients with depression and their physicians? *Patient Education and Counseling, 81*, 245-250.

- Brookfield, S. D. (2000). Contesting criticality: Epistemological and practical contradictions in critical reflection *Proceedings of the 41st Annual Adult Education Research Conference*. Vancouver, B.C.: University of British Columbia, Department of Education Studies.
- Brown, C., Bornstein, E., & Wilcox, C. (Eds.). (2012). Partnership and empowerment program: A model for patient-centered, comprehensive, and cost-effective care. *Clinical Journal of Oncology Nursing*, 16(1), 15-17.
- Brownfield, E. D., Bernhardt, J. M., Phan, J. L., Williams, M. V., & Parker, R. M. (2004). Direct-to-consumer drug advertisements on network television: An exploration of quantity, frequency, and placement. *Journal of Health Communication*, 9, 491-497. doi:10.1080/10810730490523115.
- Bryers, H. M., & van Teijlingen, E. (2010). Risk, theory, social and medical models: A critical analysis of the concept of risk in maternity care. *Midwifery*, 26(5), 488-496.
- Colapinto, J. (2011, April). Strange fruit. *The New Yorker*, 87(15), 120-137.
- Cook, T. M. & Want, J. L. (2010). Descriptive epidemiology of stigma against depression in a general population sample in Alberta. *BioMed Central Psychiatry*, 10(29), 1-11.
- David, D, Szentagotai, A., Lupu, V., & Cosman, D. (2008). Rational emotive behavior therapy, cognitive therapy, and medication in the treatment of major depressive disorder: A randomized clinical trial, posttreatment outcomes, and six-month follow-up. *Journal of Clinical Psychology*, 64(6), 728-746.
- DeRubeis, R. J., Hollon, S. D., Amsterdam, J. D., Shelton, R. C., Young, P. R., Salomon, R. M., . . . Gallop, R. (2005). Cognitive therapy vs medications in the treatment of moderate to severe depression. *Archives of General Psychiatry*, 62, 409-416.

- Ennis, R.H. (1987). *A taxonomy of critical thinking dispositions and abilities*. In J. Baron & R. Sternberg (Eds.), *Teaching thinking skills: Theory and practice*. New York, NY: W.H. Freeman. pp. 9-26.
- Ennis, R. H., Millman, J., & Tomko, T. N. (1985). *Cornell Critical Thinking Tests Level X & Level Z Manual*, (3rd ed.). Pacific Grove, CA: Critical Thinking Books and Software.
- Evans, J. St. B. T., Over, D. E., & Manktelow, K. (1993). Reasoning, decision making and rationality. *Cognition*, *49*, 165–187. doi:10.1016/0010-0277(93)90039-X
- Fava, M., Alpert, J., Nierenberg, A. A., Mischoulon, D., Otto, M. W., Zajecka, J., ... Rosenbaum, J. F. (2005). A Double-blind, Randomized Trial of St Johns Wort, Fluoxetine, and Placebo in Major Depressive Disorder. *Journal of Clinical Psychopharmacology*, *25*(5), 441-447. doi:10.1097/01.jcp.0000178416.60426.29.
- Fegert, J. M., Kölch, M., Zito, J. M., Glaeske, G., & Janhsen, K. (2006). Antidepressant use in children and adolescents in Germany. *Journal of Child and Adolescent Psychopharmacology*, *16*(2), 197–206. doi:10.1089/cap.2006.16.197.
- Flanagin, A. J., & Metzger, M. J. (2000). Perception of internet information credibility. *Journalism & Mass Communication Quarterly*, *77*(3), 515-540.
- Food and Drug Administration [FDA] (2011). Medical product safety information. Retrieved from Food and Drug Administration website: <http://www.fda.gov/safety/medwatch/safetyinformation/default.htm>
- French, B. F., Hand, B., Therrien, W. J., & Vazquez, J. A. (2012). Detection of sex differential item functioning in the Cornell Critical Thinking Test. *European Journal of Psychological Assessment*, *28*(3), 201-207.

- Gambrill, E. (2005). *Critical thinking in clinical practice: Improving the quality of judgments and decisions* (2nd ed.). Hoboken, NJ: Wiley.
- Garth, B., Murphy, G. C., & Reddihough, D. S. (2009). Perceptions of participation: child patients with a disability in the doctor-parent-child partnership. *Patient Education and Counseling, 74*(1), 45-52.
- Gaudio, B. A., Brown, L. A., & Miller, I. W. (2011). Factors associated with critical thinking abilities in psychotherapists. *Cognitive Behaviour Therapy, 40*(2), 137-146.
- George, C. (1995). The endorsement of the premises: Assumption based or belief-based reasoning. *British Journal of Psychology, 56*, 93-111.
- Gonzalez, H. M., Vega, W. A., Williams, D. R., Tarraf, W., West, B. T., & Neighbors, H. W. (2010). Depression care in the United States: Too little for too few. *Archives of General Psychiatry, 67*(1), 37-46.
- Hanoch, Y., Katsikopoulos, K. V., Gummerum, M., & Brass, E. P. (2007). American and German students' knowledge, perceptions, and behaviors with respect to over-the-counter pain relievers. *Health Psychology, 26*(6), 802-806.
- Hays, P. A. (2008). *Addressing cultural complexities in practice: Assessment, diagnosis, and therapy*. Washington, D. C.: American Psychological Association.
- Higginson, I. J., Gao, W., Amesbury, B., & Normand C. (2010). Does a social model of hospice day care affect advanced cancer patients' use of other health and social services? A prospective quasi-experimental trial. *Supportive Care in Cancer, 18*(5), 627-637.
- Imber, S. D., Pilkonis, P. A., Sotsky, S. M., Elkin, I., Watkins, J. T., Collins, J. F., . . . Leber, W. R. (1990). Mode-specific effects among three treatments for depression. *Journal of Counseling and Clinical Psychology, 58*(3), 352-359.

- Jagger, A. (2007, March). Amazonian berry. *Chemistry & Industry*, 6, 24-25.
- Jenicek, M., & Hitchcock, D. L. (2004). *Evidence based practice: Logic and critical thinking in medicine*. Chicago, IL: American Medical Association Press.
- Jorm, A. F., Christensen, H., Medway, J., Korten, A. E., Jacomb, P. A., & Rogers, B. (2000). Public belief systems about the helpfulness of interventions for depression: Associations with history of depression and professional help-seeking. *Social Psychiatry and Psychiatric Epidemiology*, 35, 211-219.
- Jorm, A. F., Korten, A. E., Jacomb, P. A., Christensen, H., Rodgers, B., & Pollitt, P. (1997). "Mental health literacy": A survey of the public's ability to recognise mental disorders and their beliefs about the effectiveness of treatment. *The Medical Journal of Australia*, 166, 182-186.
- Kasper, S., Anghelescu, I., Szegedi, A., Dienel, A., & Kieser, M. (2006). Superior efficacy of St Johns wort extract WS® 5570 compared to placebo in patients with major depression: A randomized, double-blind, placebo-controlled, multi-center trial. *BioMed Central Medicine*, 4(14). doi:10.1186/1741-7015-4-14.
- Kasper, S., Gastpar, M., Müller, W. E., Volz, H. P., Dienel, A., Kieser, M., & Möller, H. J. (2008). Efficacy of St. Johns wort extract WS® 5570 in acute treatment of mild depression: A reanalysis of data from controlled clinical trials. *European Archives of Psychiatry and Clinical Neuroscience*, 258(1), 59-63. doi:10.1007/s00406-007-0779-2.
- Khalsa, S., McCarthy, K. S., Sharpless, B. A., Barrett, M. S., & Barber, J. P. (2011). Beliefs about the causes of depression and treatment preferences. *Journal of Clinical Psychology*, 67(6), 539-549.

- Kitchener, B. A. & Jorm, A. F. (2002). Mental health first aid training for the public: Evaluation of effects on knowledge, attitudes and helping behavior. *BioMed Central*, 2(10). doi:10.1186/1471-244X-2-10.
- Kitchener, B. A., & Jorm, A. F. (2004). Mental health first aid training in a workplace setting: A randomized controlled trial. *BioMed Central*, 4(23). doi:10.1186/1471-244X-4-23.
- Klaczynski, P. A., Gordon, D. H., & Fauth, J. (1997). Goal-oriented critical reasoning and individual differences in critical reasoning biases. *Journal of Educational Psychology*, 89, 470-485.
- Klaczynski, P. A., & Narasimham, G. (1998). Development of scientific reasoning biases: Cognitive versus ego-protective explanations. *Developmental Psychology*, 34, 175-187.
- Kwan, D., Boon, H. S., Hirschhorn, K., Welsh, S., Jurgens, T., Eccott, L., . . . & Cohen-Kohler, J. C. (2008). Exploring consumer and pharmacist views on the professional role of the pharmacist with respect to natural health products: A study of focus groups. *BioMed Central Complementary and Alternative Medicine*, 8(40), 1-11.
- Levy, D. A. (1997). *Tools of critical thinking: Metathoughts for psychology*. Boston, MA: Allyn & Bacon.
- Lilienfeld, S. O., Lynn, S. J., & Lohr, J. M. (Eds.). (2003). *Science and pseudoscience in clinical psychology*. New York, NY: Guilford Press.
- Linde, K., Berner, M. M., & Kriston, L. (2008). St Johns wort for major depression. *Cochrane Database of Systematic Reviews*, 4(CD000448). doi:10.1002/14651858.CD000448.pub3.
- Lipman, M. M. (2006). Bias in direct-to-consumer advertising and its effect on drug safety. *Hofstra Law Review*, 35(2), 761-769.

- Marcason, W. (2009). What is the acai berry and are there health benefits? *Journal of the American Dietetic Association*, 1968. doi:10.1016/j.jada.2009.09.017
- Moshman, D., & Franks, B. (1986). Development of the concept of inferential validity. *Child Development*, 57, 153-165.
- National Center for Complementary and Alternative Medicine [NCAM]. (2006). St. Johns wort and depression. *National Institutes of Health*, Publication No. D005. Retrieved from National Institutes of Health website: <http://nccam.nih.gov/health/stjohnswort/sjw-and-depression.htm#about>
- Nicholls, T. (2011). *How will your health improve with the acai berry?* Evolution Health and Fitness [Web page]. Retrieved from <http://www.evolutionhealth.com/acai/acai-benefits.html>
- Oliva, G. S., de Mendonça, R. G., Sant'Anna, M. J., Passarelli, M. L., Coates, V., & Omar, H. A. (2008). Integral care for pregnant adolescents: Impact on offspring. *International Journal of Adolescent Medicine and Health*, 20(4), 537-546.
- Paul, R. (1990). Critical thinking: What every person needs to survive in a rapidly changing world (A. J. A. Binker, Eds.). In *Critical Thinking: What, Why, and How* (pp. 45-56). Hoboken, NJ: John Wiley & Sons, Inc.
- Paul, R., & Elder, L. (2008). *The miniature guide to critical thinking concepts and tools*. Foundation for Critical Thinking Press [Web document]. Retrieved from http://www.criticalthinking.org/files/Concepts_Tools.pdf

- Reavley, N. J., Mackinnon, A. J., Morgan, A. J., Alvarez-Jimenez, M., Hetrick, S. E., Killackey, E., . . . Jorm, A. F. (2011). Quality of information sources about mental disorders: A comparison of Wikipedia with centrally controlled web and printed sources. *Psychological Medicine, 42*, 1753-1762.
- Sá, W. C., West, R. F., & Stanovich, K. E. (1999). The domain specificity and generality of belief bias: Searching for a generalizable critical thinking skill. *Journal of Educational Psychology, 91*(3), 497-510.
- Sharp, I. R., & Herbert, J. D. (2003). *The role of critical thinking skills in practicing psychologists' theoretical orientation and choice of intervention techniques*. Philadelphia, PA: Drexel University.
- Sharp, I. R., Herbert, J. D., & Redding, R. E. (2008). The role of critical thinking skills in practicing clinical psychologists' choice of intervention techniques. *The Scientific Review of Mental Health Practice, 6*(1), 21-30.
- Stanovich, K. E., (2001). *How to think straight about psychology (6th ed)*. New York, NY: HarperCollins.
- Stanton, N. A., Wong, W., Gore, J., Sevdalis, N., & Strub, M. (2012). Critical thinking. *Theoretical Issues in Ergonomics Science, 12*(3), 204-209.
- van Mossel, C., Alford, M., & Watson, H. (2011). Challenges of patient-centred care: Practice or rhetoric. *Nursing Inquiry, 18*(4), 278-289.
- Vaughan-Wrobel, B. C., O'Sullivan, P., & Smith, L. (1997). Evaluating critical thinking skills of baccalaureate nursing students. *Journal of Nursing Education, 36*(10), 485-488.
- Watson, G. & Glaser, E. M. (1980). *Watson-Glaser Critical Thinking Appraisal-Manual Forms A and B*. San Antonio, TX: Psychological Corporation.

Watson, G., & Glaser, E. M. (1994). *Watson-Glaser Critical Thinking Appraisal-Manual Form S*. San Antonio, TX: Psychological Corporation.

WebMD. (2011). Acai berries and acai berry juice—What are the health benefits? [Web page]. Retrieved from <http://www.webmd.com/diet/guide/acai-berries-and-acai-berry-juice-what-are-the-health-benefits>

Weiler, A. (2004). Information-seeking behavior in generation Y students: Motivation, critical thinking, and learning theory. *The Journal of Academic Librarianship*, 31(1), 46-53.

APPENDICES

Appendix A

Institutional Review Board Approval



Ms. Alaina Talboy
6301 Cotton St.
Pensacola, FL 32526

July 31, 2012

Dear Ms. Talboy:

The Institutional Review Board (IRB) for Human Research Participants Protection has completed its review of your proposal titled "Treatment Preference," as it relates to the protection of human participants used in research, and granted approval for you to proceed with your study on 07-31-2012. As a research investigator, please be aware of the following:

- * You will immediately report to the IRB any injuries or other unanticipated problems involving risks to human participants.
- * You acknowledge and accept your responsibility for protecting the rights and welfare of human research participants and for complying with all parts of 45 CFR Part 46, the UWF IRB Policy and Procedures, and the decisions of the IRB. You may view these documents on the Research and Sponsored Programs web page at <http://www.research.uwf.edu/internal>. You acknowledge completion of the IRB ethical training requirements for researchers as attested in the IRB application.
- * You will ensure that legally effective informed consent is obtained and documented. If written consent is required, the consent form must be signed by the participant or the participant's legally authorized representative. A copy is to be given to the person signing the form and a copy kept for your file.
- * You will promptly report any proposed changes in previously approved human participant research activities to Research and Sponsored Programs. The proposed changes will not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the participants.
- * **You are responsible for reporting progress of approved research to Research and Sponsored Programs at the end of the project period 07-31-2013. If the data phase of your project continues beyond the approved end date, you must receive an extension approval from the IRB.**

Good luck in your research endeavors. If you have any questions or need assistance, please contact Research and Sponsored Programs at 850-857-6378 or irb@uwf.edu.

Sincerely,

Dr. Richard S. Podemski, Associate
Vice President for Research
And Dean of the Graduate School

Dr. Carla Thompson, Chair
IRB for the Protection of Human
Research Participants

CC: Rodney Guttman, Ronald Belter

Appendix B
Funding Information



Research and Sponsored Programs
11000 University Parkway, Bldg. 11
Pensacola, FL 32514-5750

March 22, 2012

Alaina N Talboy
6301 COTTON ST
PENSACOLA , FL 325261146

RE: 2012 Graduate Student Scholarly and Creative Activity Award

Dear Ms Talboy:

The Scholarly and Creative Activities Committee (SCAC) has completed its review of the Graduate Student Scholarly and Creative Activity proposals. The committee's intent is to achieve the broadest possible impact with funds available. I am pleased to approve their recommendation that your project receive funding.

As a recipient of this award, we extend an invitation to you to present your research at the 2012 Student Scholars Symposium. Details regarding the symposium will be published in ARGUS early next spring.

The information regarding your award is as follows:

Project Title: "Perceptions of Depression Treatments"
Award End Date: May 31, 2012
Award Amount: \$500.00
Department: Sch of Psychology & Beh Sci (SPBS)
Fund Number: 164223

An individual account is being established for your award with the fund number listed above. The funds provided through your grant are to be spent in accordance with University regulations, and administrative staff in your academic department should be able to assist you with this. Any expenditure from this account will require certain approval signatures on the appropriate forms. No reimbursable expenditures may be made after the award ending date unless a one-time six-month extension is approved. A request for an extension should be made by contacting Cheryl Allen at 850-857-6378 or e-mail scac@uwf.edu prior to the ending date. Extensions will be limited to no more than six months. **Any equipment or unused supplies purchased with these grant funds will remain the property of the University of West Florida. All publications of your research shall acknowledge support as "This project was supported by a grant from the University of West Florida through the Office of Research and Sponsored Programs."**

Congratulations on your award and good luck in your research endeavors.

Sincerely,

Dr. Richard S. Podemski, Associate Vice President for Research
And Dean of the Graduate School

CC: Diana Robinson , Robert Rotunda , Laura Bryan

Phone 850.474.2824 Fax 850.474.2082
Web research.uwf.edu
An Equal Opportunity/Equal Access/Affirmative Action Employer

Appendix C

Table 19 Treatment Description Statements Addressing
Each Dimension of the Critical Thinking Questionnaire

Table 19

Treatment Description Statements Addressing Each Dimension of the Critical Thinking Questionnaire

	Drug A	Drug B	Drug C
Inference	In some people, symptoms are reduced but there are a few reported side effects associated with taking this drug.	In most people, symptom reduction is unknown but there are no known side effects from taking this drug.	In most people, symptoms are reduced but there are several reported side effects associated with taking this drug.
Interpretation	Research indicates 49-57% of people have positive measurable results from using this drug.	No research has been conducted to determine if people have positive measurable results from using this drug.	Research indicates 53-64% of people have positive measurable results from using this drug.
Deduction	There is limited evidence that shows this drug targets specific neurotransmitters in the brain.	There is no evidence that shows this drug targets specific neurotransmitters in the brain.	There is evidence that shows this drug targets specific neurotransmitters in the brain.
Recognition of Assumptions	This drug is available over the counter and without prescription; however, it is often recommended by medical professionals.	This drug is available online and does not require a prescription. It is not commonly recommended by medical professionals.	This drug is available by prescription only and must be recommended by a medical professional.
Evaluation of Arguments	Some studies indicate that this drug is as effective as other types of treatments, but there are also some studies that indicate this is only as effective as a placebo treatment.	Although this drug was originally marketed for weight loss, it shows potential for treating mental illness as evidenced by consumer reviews and testimonials.	Studies show this drug is as effective as other types of treatment, and results are demonstrated by several decades of rigorous scientific research.

Note. Drug A (95 words) is based on St. John's wort, Drug B (91 words) is based on acai berries, and Drug C (82 words) is based on Selective Serotonin Reuptake Inhibitors (SSRIs). Word count $\mu = 89.33$.

Appendix D
Copyright Permission Letter



Copyright Permission - CTQ

2 messages

Alaina Raymer-Talboy <anr24@students.uwf.edu>

Tue, Apr 3,
2012 at 10:32
AM

To: is@medavante.com

Good morning, Dr. Sharp.

I am completing a master's thesis at The University of West Florida tentatively entitled "Perceptions of Depression Treatment in Relation to Critical Thinking Skills." I am writing to request your permission to reprint the following material in my thesis:

Critical Thinking Questionnaire (CTQ; Sharp & Herbert, 2003)
Ian Randolph Sharp

**THE ROLE OF CRITICAL THINKING SKILLS IN PRACTICING
PSYCHOLOGISTS' THEORETICAL ORIENTATION AND CHOICE OF
INTERVENTION TECHNIQUES**

© Copyright 2003

Ian R. Sharp. All rights reserved.

Page 75-79

The excerpt to be reproduced is the CTQ in its entirety.

A print copy of my thesis will be archived in the John C. Pace Library at the University of West Florida in Pensacola. An electronic version will be archived at the Florida Center for Library Automation (FCLA). The requested permission extends to any future revisions and editions of my thesis/dissertation including non-exclusive world rights in all languages. These rights will in no way restrict republication of the material in any other form by you or others authorized by you. Your signing of this letter will confirm that you own [or your company owns] the copyright to the above-described material.

Thank you for your attention in this matter.

--

Regards,

Alaina N. Talboy, Graduate Assistant
Doctoral Support Center
University of West Florida
Pensacola, FL

Research Editor -- Psychology and Social Sciences
Journal of Young Investigators
<http://www.jyi.org>



Ian Sharp <IS@medavante.com>

Tue, Apr 3,
2012 at 10:43
AM

To: Alaina Raymer-Talboy <anr24@students.uwf.edu>

Alaina,
Sounds like an interesting study. We published this work in 2008 and I have attached a copy. Feel free to reprint.
Best,
Ian Sharp

From: Alaina Raymer-Talboy [mailto:anr24@students.uwf.edu]

Sent: Tuesday, April 03, 2012 11:33 AM

To: Ian Sharp

Subject: Copyright Permission - CTQ

[Quoted text hidden]

Confidentiality Notice: This e-mail, together with any attachments, is confidential information of MedAvante, Inc., Hamilton NJ. It may contain confidential and legally privileged information that is intended only for the individual or entity named in the e-mail address. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or reliance upon the contents of this e-mail is strictly prohibited. If you have received this e-mail transmission in error, please reply to the sender at once, so that MedAvante can arrange for proper delivery, and then please permanently delete the original e-mail message, your reply, and destroy any copies or printouts. Thank you.



SRMHP Sharp Herbert Redding.pdf
970K

Appendix E
SurveyMonkey Form

Treatment Preference

Informed Consent

Primary Investigator: Alaina N. Talboy, The University of West Florida
Advisor: Dr. Rodney Guttman, The University of West Florida

Before agreeing to participate in this research study, it is important that you read the following explanation of this study. This statement describes the purpose, procedures, benefits, and risks of the study. Also listed is your right to withdraw from the study at any time. No guarantees or assurances can be made as to the results of the study.

Explanation of Procedures This study is set up in two parts. Part I requires participants to read treatment options and choose their most preferred option. Part II is a series of vignettes and questions the participant must answer.

Risks and Discomforts The questions on these surveys are personal and sensitive in nature and may trigger feelings of discomfort in some participants. These feelings are generally short-lived. Participation in this study is voluntary; refusal to participate has no penalty. You are free to withdraw consent and discontinue participation in this project at any time.

Benefits All participants will be given the opportunity to be entered into a drawing for one of four \$25 gift cards. Students in the Psychology Research Pool are eligible for 1 ArgoPoint or an entry for the gift card drawing.

Confidentiality All information gathered from the study will remain confidential. Your identity as a participant will not be disclosed to any unauthorized persons; only the researchers and the University of West Florida Institutional Review Board will have access to the research materials, which will be kept in a secure location. Any references to your identity that would compromise your anonymity will be removed or disguised prior to the preparation of the research reports and publications. Information gathered during this study may be used in future research; however, it will also remain anonymous.

Questions For information or questions concerning the research project, participants may e-mail Alaina Talboy at anr24@students.uwf.edu or Dr. Rodney Guttman at rguttman@uwf.edu.

1. This agreement states that you have received a copy of this informed consent. Please indicate your agreement below.

- I agree
- I do not agree

Confidentiality Agreement

At this time, students across the University of West Florida's campus have not yet completed or are still completing study requirements. As a participant, it is imperative that you keep the true nature of this study confidential until the results have been released publicly. Informing friends, coworkers, or classmates may jeopardize the results and invalidate any research conducted up until this point.

Treatment Preference

2. I agree to keep the contents of this study confidential.

- I agree.
- I do not agree.

Demographic Data

Please enter the following information.

3. Are you male or female?

- Male
- Female

4. Are you White, Black or African-American, American Indian or Alaskan Native, Asian, Native Hawaiian or other Pacific islander, or some other race?

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- From multiple races

Some other race (please specify)

5. Are you now married, widowed, divorced, separated, or never married?

- Married
- Widowed
- Divorced
- Separated
- Never married

6. What is your age (in years)?

Treatment Preference

7. What is your major?

8. What psychology courses have you taken or are currently taking?

- Introduction to Psychology
- Abnormal Psychology
- Life-Span Developmental Psychology
- Fundamentals of Psychology
- Health Psychology
- Psychopathology
- Social Psychology
- Cognitive Psychology
- None
- Other (please specify)

Background Information

Please answer the following questions honestly and to the best of your ability.

9. Have you heard of depression?

- Yes
- No

10. Have you ever been treated for depression?

- Yes, within the past 6 months.
- Yes, more than 6 months ago.
- No.

11. Have you ever used antidepressant medication?

- Yes, within the past 6 months.
- Yes, more than 6 months ago.
- No.

Treatment Preference

Part I

In the following sections, you will be instructed to read three hypothetical treatment descriptions and then select which you would personally choose based on what is presented. Please answer all questions honestly and to the best of your ability. Responses are required for all questions.

12. Please select which drug you would be more likely to choose based on the statement provided.

In some people, symptoms are reduced but there are a few reported side effects associated with taking this drug.

In most people, symptom reduction is unknown but there are no known side effects from taking this drug.

In most people, symptoms are reduced but there are several reported side effects associated with taking this drug.

Why?

13. Please select which drug you would be more likely to choose based on the statement provided.

Research indicates 53-64% of people have positive measurable results from using this drug.

Research indicates 49-57% of people have positive measurable results from using this drug.

No research has been conducted to determine if people have positive measurable results from using this drug.

Why?

Treatment Preference

14. Please select which drug you would be more likely to choose based on the statement provided.

- There is no evidence that shows this drug targets specific neurotransmitters in the brain.
- There is limited evidence that shows this drug targets specific neurotransmitters in the brain.
- There is evidence that shows this drug targets specific neurotransmitters in the brain.

Why?

15. Please select which drug you would be more likely to choose based on the statement provided.

- This drug is available online and does not require a prescription. It is not commonly recommended by medical professionals.
- This drug is available by prescription only and must be recommended by a medical professional.
- This drug is available over the counter and without prescription; however, it is often recommended by medical professionals.

Why?

16. Please select which drug you would be more likely to choose based on the statement provided.

- Studies show this drug is as effective as other types of treatment, and results are demonstrated by several decades of rigorous scientific research.
- Some studies indicate that this drug is as effective as other types of treatments, but there are also some studies that indicate this is only as effective as a placebo treatment.
- Although this drug was originally marketed for weight loss, it shows potential for treating mental illness as evidenced by consumer reviews and testimonials.

Why?

Treatment Preference

17. Please read the following hypothetical treatment descriptions and select which treatment you would most likely choose.

Drug A: In some people, symptoms are reduced but there are a few reported side effects associated with taking this drug. Research indicates 49-57% of people have positive measurable results from using this drug. There is limited evidence that shows this drug targets specific neurotransmitters in the brain. This drug is available over the counter and without prescription; however, it is often recommended by medical professionals. Some studies indicate that this drug is as effective as other types of treatments, but there are also some studies that indicate this is only as effective as a placebo treatment.

Drug B: In most people, symptom reduction is unknown but there are no known side effects from taking this drug. No research has been conducted to determine if people have positive measurable results from using this drug. There is no evidence that shows this drug targets specific neurotransmitters in the brain. This drug is available online and does not require a prescription. It is not commonly recommended by medical professionals. Although this drug was originally marketed for weight loss, it shows potential for treating mental illness as evidenced by consumer reviews and testimonials.

Drug C: In most people, symptoms are reduced but there are several reported side effects associated with taking this drug. Research indicates 53-64% of people have positive measurable results from using this drug. There is evidence that shows this drug targets specific neurotransmitters in the brain. This drug is available by prescription only and must be recommended by a medical professional. Studies show this drug is as effective as other types of treatment, and results are demonstrated by several decades of rigorous scientific research.

Why?

You selected Drug A

18. The researchers would like to know which statement was the most influential in your treatment choice. Please rank the following treatment statements from 1 (*most influential*) to 5 (*least influential*).

In some people, symptoms are reduced but there are a few reported side effects associated with taking this drug.

Research indicates 49-57% of people have positive measurable results from using this drug.

There is limited evidence that shows this drug targets specific neurotransmitters in the brain.

This drug is available over the counter and without prescription; however, it is often recommended by medical professionals.

Some studies indicate that this drug is as effective as other types of treatments, but there are also some studies that indicate this is only as effective as a placebo treatment.

Treatment Preference

You selected Drug B

19. The researchers would like to know which statement was the most influential in your treatment choice. Please rank the following treatment statements from 1 (*most influential*) to 5 (*least influential*).

- In most people, symptom reduction is unknown but there are no known side effects from taking this drug.
- No research has been conducted to determine if people have positive measurable results from using this drug.
- There is no evidence that shows this drug targets specific neurotransmitters in the brain.
- This drug is available online and does not require a prescription. It is not commonly recommended by medical professionals.
- Although this drug was originally marketed for weight loss, it shows potential for treating mental illness as evidenced by consumer reviews and testimonials.

You selected Drug C

20. The researchers would like to know which statement was the most influential in your treatment choice. Please rank the following treatment statements from 1 (*most influential*) to 5 (*least influential*).

- In most people, symptoms are reduced but there are several reported side effects associated with taking this drug.
- Research indicates 53-64% of people have positive measurable results from using this drug.
- There is evidence that shows this drug targets specific neurotransmitters in the brain.
- This drug is available by prescription only and must be recommended by a medical professional.
- Studies show this drug is as effective as other types of treatment, and results are demonstrated by several decades of rigorous scientific research.

Treatment Preference

21. Imagine the theoretical treatments you were just presented are actually real treatments used to treat depression. Please select which treatment you would choose based on the following information.

St. John's wort: In some people, symptoms are reduced but there are a few reported side effects associated with taking this drug. Research indicates 49-57% of people have positive measurable results from using this drug. There is limited evidence that shows this drug targets specific neurotransmitters in the brain. This drug is available over the counter and without prescription; however, it is often recommended by medical professionals. Some studies indicate that this drug is as effective as other types of treatments, but there are also some studies that indicate this is only as effective as a placebo treatment.

Selective Serotonin Reuptake Inhibitors (SSRIs): In most people, symptoms are reduced but there are several reported side effects associated with taking this drug. Research indicates 53-64% of people have positive measurable results from using this drug. There is evidence that shows this drug targets specific neurotransmitters in the brain. This drug is available by prescription only and must be recommended by a medical professional. Studies show this drug is as effective as other types of treatment, and results are demonstrated by several decades of rigorous scientific research.

Acai berries: In most people, symptom reduction is unknown but there are no known side effects from taking this drug. No research has been conducted to determine if people have positive measurable results from using this drug. There is no evidence that shows this drug targets specific neurotransmitters in the brain. This drug is available online and does not require a prescription. It is not commonly recommended by medical professionals. Although this drug was originally marketed for weight loss, it shows potential for treating mental illness as evidenced by consumer reviews and testimonials.

Why?

Part II

In this section, you will be provided several short vignettes and questions. Please answer honestly and to the best of your abilities. Do not spend too much time on any one question, and do not use help from others or other sources. Instructions are provided for some of the exercises.

Treatment Preference

22. Imagine that disorder X occurs in one in every 1,000 people. Imagine also there is a test to diagnose the disorder that always gives a positive result when a person has the disorder. Finally, imagine that the test has a false positive rate of 5 percent. This means that the test wrongly indicates that the disorder is present in 5 percent of the cases where the person does not have the disorder. Imagine that we choose a person randomly, administer the test, and that it yields a positive result (indicates that the person has the disorder). What is the probability that the individual actually has the disorder, assuming that we know nothing else about the individual's psychological or medical history?

- <10%
- 10-30%
- 30-50%
- 50-70%
- 70-90%
- >90%

23. Imagine that disorder occurs in every 10,000 people instead. To show I am paying attention to the question, I will select "5" as my answer.

- 1
- 2
- 3
- 4
- 5

The next exercises consist of brief paragraphs followed by several conclusions. ***For these questions please assume that everything in the paragraph is true.*** The problem is to judge whether or not each of the proposed conclusions logically follows beyond a reasonable doubt from the information given. Please mark either *follows* or *does not follow* after the conclusion.

Statement: Chris had poor posture, had very few friends, was ill at ease around people, and in general was very unhappy. Then, a close friend recommended that Chris visit Dr. Carll, a reputed expert on helping people improve their personalities. Chris took this recommendation and, after three months of therapy with Dr. Carll, developed more friendships, was more at ease, and in general felt happier.

24. Without Dr. Carll's therapy, Chris would not have improved.

- Follows
- Does Not Follow

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25. Without a friend's advice, Chris would not have heard of Dr. Carll.

- Follows
- Does Not Follow

Statement: When I go to bed at night, I usually fall asleep quite promptly. But about twice a month I drink coffee during the evening, and whenever I do, I lie awake and toss for hours.

26. My problem is mostly psychological; I expect that the coffee will keep me awake and therefore it does.

- Follows
- Does Not Follow

27. On nights when I want to fall asleep promptly, I'd better not drink coffee in the evening.

- Follows
- Does Not Follow

The next exercises consist of brief paragraphs followed by several conclusions. ***For these questions please assume that everything in the paragraph is true.*** The problem is to judge whether or not each of the proposed conclusions logically follows beyond a reasonable doubt from the information given. Please mark either *follows* or *does not follow* after the conclusion.

Statement: When the Journal Company, Inc. was created in 1960, it was the largest psychological journal company America had known up to that time. It produced twice as many psychological journals as all of its domestic competitors put together. Today, the Journal Company, Inc. produces about 20 percent of the psychological journals that are made in this country.

28. In 1960, the Journal Company, Inc. produced not less than 66 percent of the total domestic output of psychological journals.

- Follows
- Does Not Follow

29. Today, domestic competitors produce more than three times as many psychological journals as does the Journal Company, Inc.

- Follows
- Does Not Follow

Treatment Preference

30. The Journal Company, Inc. produces fewer psychological journals then it did in 1960.

- Follows
- Does Not Follow

In this section, each exercise consists of several statements followed by several suggested conclusions.

For the purposes of this study, consider the statements in each exercise as true without exception.

After reading the conclusion beneath the statement, please mark whether you think it FOLLOWS or DOES NOT FOLLOW from the statement given, regardless of whether you believe the statement to be true or not from your own experience or knowledge.

Statement: No person who thinks scientifically places any faith in the predictions of astrologers. Nevertheless, there are many people who rely on horoscopes provided by astrologers. Therefore

31. People who lack confidence in horoscopes think scientifically.

- Follows
- Does Not Follow

32. Many people do not think scientifically.

- Follows
- Does Not Follow

Statement: Most persons who attempt to break their smoking habit find that it is something that they can accomplish only with difficulty, or cannot accomplish at all. Nevertheless, there is a growing number of individuals whose strong desire to stop smoking has enabled them to break the habit permanently. Therefore

33. Only smokers who strongly desire to stop smoking will succeed in doing so.

- Follows
- Does Not Follow

34. A strong desire to stop smoking helps some people to permanently break the habit.

- Follows
- Does Not Follow

Below are several statements followed by several proposed assumptions. You are to decide for each

Treatment Preference

assumption whether a person, in making the given statement, is really making that assumption. If you think that the given assumption is taken for granted in the statement, chose *Assumption Made*. If you think the assumption is not necessarily taken for granted in the statement, chose *Assumption Not Made*.

Statement: "I'm traveling to South America for a psychological conference. I want to be sure that I do not get typhoid fever, so I shall go to my physician and get vaccinated against typhoid fever before I begin my trip."

35. If I don't take the injection, I shall become ill with the fever.

- Assumption Made
- Assumption Not Made

36. Select "4" to show you are still paying attention to the questions.

- 1
- 2
- 3
- 4
- 5

37. By getting vaccinated against typhoid fever, I decrease the chances that I will get the disease.

- Assumption Made
- Assumption Not Made

38. Typhoid fever is more common in South America than it is where I live.

- Assumption Made
- Assumption Not Made

For the next questions, someone is speaking; but in each case there is an unstated assumption. Again, an assumption is a statement that is taken for granted. From the choices that follow, select the one (A, B, or C) that is most probably the unstated assumption. Consider each item by itself.

39. Statement: The fact that Bridgetown's children have been forced to work explains their misbehavior.

- A) Children who have never been forced to work behave properly.
- B) Children who behave improperly have been forced to work.
- C) Children who have been forced to work behave improperly

Treatment Preference

40. Statement: What we should do is not make them work. Then they will be all right. I know it.

- A) Children who are forced to work will misbehave.
- B) Children who are not forced to work will behave properly.
- C) Children who behave properly have not been forced to work.

41. Statement: The explanation of the misbehavior of Bridgetown's present-day crop of youngsters is a simple one. These children have been severely punished at some time or other. That's the trouble.

- A) Children who have been severely punished misbehave.
- B) Children who misbehave have been severely punished at some time.
- C) Children who haven't been severely punished behave properly.

42. Statement: What we should do is never punish them. That would take care of things.

- A) Children who behave badly have been punished at some time.
- B) Children who are punished will misbehave.
- C) Children who behave properly have never been punished.

Below are several questions followed by several arguments. *For the purpose of this study, please regard each argument as true.* The problem then is to decide whether it is a strong (it is important and directly related to the question) or weak (not directly related to the question or related only to trivial aspects) argument. Remember that each argument is to be regarded as true.

Question: Should the United States Department of Health and Human Services keep the public informed of its anticipated scientific research programs by publicizing ahead of time the needs that would be served by each program?

43. No; some become critical of the government when widely publicized projects turn out unsuccessfully.

- Strong Argument
- Weak Argument

44. Yes; only a public so informed will support vital research and development activities with its tax dollars.

- Strong Argument
- Weak Argument

Treatment Preference

Question: Do juries decide court cases fairly when one of the opposing parties is rich and the other is poor?

45. No; because rich people are more likely to settle their court cases.

- Strong Argument
- Weak Argument

46. No; most jurors are more sympathetic to poor people than to the rich, and the jurors sympathies affect their findings.

- Strong Argument
- Weak Argument

47. No; because rich people can afford to hire better lawyers than poor people, and juries are influenced by the skill of the opposing lawyers.

- Strong Argument
- Weak Argument

Below are several questions followed by several arguments. *For the purpose of this study, please regard each argument as true.* The problem then is to decide whether it is a strong (it is important and directly related to the question) or weak (not directly related to the question or related only to trivial aspects) argument. Remember that each argument is to be regarded as true.

Question: Should pupils be excused from public schools to receive religious instruction in their own churches during school hours?

48. No; having public school children go off to their separate churches during school hours would seriously interfere with the educational process and create friction among children of different religions.

- Strong Argument
- Weak Argument

49. No; religious instruction during school hours would violate our constitutional separation of church and state; those who desire such instruction are free to get it after school hours.

- Strong Argument
- Weak Argument

Treatment Preference

Please answer the following questions honestly and to the best of your ability.

	Improvement	No Improvement
Treatment	200	77
No Treatment	50	15

50. The table above summarizes data from an experiment. Based on the data, please rate the degree of effectiveness of the treatment on the scale below.

- not at all effective
- somewhat effective
- effective
- very effective

51. If the above table was an accurate reflection of the effectiveness of an innovative new treatment, how likely would you be to use it?

- would not use
- would possibly use
- would probably use
- would definitely use

Disclosure Information

Thank you for completing all study requirements on treatment preferences. Your participation in this study has helped further research in the field of Psychology and is greatly appreciated. Please continue after reading the Disclosure Information for a chance to win a \$25 Target Gift Card. You may print this page for your records.

Confidentiality

At this time, students across the University of West Florida's campus have not yet completed or are still completing study requirements. As a participant, it is imperative that you keep the true nature of this study confidential until the results have been released publicly. Informing friends, coworkers, or classmates may jeopardize the results and invalidate any research conducted up until this point.

In this study, you were asked to read three treatment descriptions broken into five segments, and then select which treatment description you preferred. Afterwards, you completed a critical thinking questionnaire. The hypothesis being tested in this study is:

- To determine if there is a relationship between levels of critical thinking skills and selection of empirically supported treatments.

Treatment Preference

It was required for the Investigator to deceive you about the purpose of this study to test the hypotheses listed above. Selective Serotonin Reuptake Inhibitors (SSRIs) is a well-documented and effective treatment used for depression. St. John's wort is still being investigated and the research is divided on whether this is an effective treatment or not. The Acai Berry was placed as a pseudotreatment because there is no empirical evidence to support effectiveness of this treatment. If you would like to view the cited research regarding any of these treatments options, please submit a request in writing to anr24@students.uwf.edu.

Available Counseling Services Due to the subjective and personal nature of the questions involved in this study, some participants may feel slight discomfort. If you feel as though you could benefit from counseling services, the University of West Florida Counseling Center provides free counseling to students in building 19. The center is open Monday through Friday 8am-5pm, and can be reached at (850) 474-2420.

Contact Information If you have any questions or concerns about the study, please feel free to contact the Primary Researcher, Alaina N. Talboy at (352) 872-3290, anr24@students.uwf.edu, or the Faculty Advisor, Dr. Rodney Guttman at (850) 474-3449, rguttman@uwf.edu.

Thank you for your time and input. It is greatly appreciated!

52. This agreement states that you have received a copy of this disclosure. Please indicate your agreement below.

- I agree
- I do not agree

53. I agree to keep the contents of this study confidential.

- I agree.
- I do not agree.

Thank you!

YOU MUST CLICK DONE TO ENTER YOUR INFORMATION FOR THE GIFT CARD DRAWING.

Duplicate entries to win a \$25 gift card will result in automatic disqualification. Psychology students: please indicate on the form if you would like to be entered for the \$25 gift card OR extra credit through the PRP. You must choose one or the other.