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THE IMPACT OF EMPATHY TRAINING ON PERCEPTIONS OF SUBSTANCE USE DISORDERS

by

KELSEA E. MAGEL

(Under the Direction of Jessica J. Brooks)

ABSTRACT

Negative attitudes and stigma toward individuals with mental health disorders, particularly substance use disorders, undoubtedly exist in communities around the globe. Lund and Boggero (2014) propose that negative attitudes toward mental health disorders have existed throughout history and across cultures, and there is an ongoing concern of how individuals with mental illness are affected by these negative attitudes (Poreddi, Thimmaiah, Pashupu, Ramachandra, & Badamath, 2014). Increasing levels of empathy in individuals has shown to decrease overall magnitude of negative attitudes; most empathy training tasks, however, are extensive and last several months. The current study examined the possibility of reducing negative implicit and explicit attitudes toward individuals with substance use disorders using a brief empathy training intervention (i.e., music videos). Participants experienced a significant increase in empathy levels, however, the increases between-groups were non-significant. A significant effect of empathy training on explicit attitudes toward individuals with substance use disorders was not detected. The Go/No-Go Association Task used as an implicit measure was not reliable; therefore implicit attitudes could not be used in interpretation. If brief empathy training were effective in increasing empathy and improving attitudes toward individuals with substance use disorders, future research should attempt to alter video content to improve attitudes toward other stigmatized groups.

INDEX WORDS: Empathy, Substance Use, Mental Illness, Go/No-Go Association Task, College students, Music videos

THE IMPACT OF EMPATHY TRAINING ON PERCEPTIONS OF SUBSTANCE USE
DISORDERS

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KELSEA E. MAGEL

B.S., Georgia Southern University, 2014

A Thesis Submitted to the Graduate Faculty of Georgia Southern University in Partial

Fulfillment of the Requirements for the Degree

MASTER OF SCIENCE

STATESBORO, GEORGIA

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THE IMPACT OF EMPATHY TRAINING ON PERCEPTIONS OF SUBSTANCE USE
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KELSEA E. MAGEL

Major Professor: Jessica J. Brooks
Committee: Nick Holtzman
Amy Hackney

Electronic Version Approved: May 2016

ACKNOWLEDGMENTS

I wish to express my deepest gratitude to my committee chair, Dr. Jessica J. Brooks, for the time and attention paid to my work, providing me with the lab space to conduct my research, and for the support throughout the process. I would like to thank my committee members, Dr. Nick Holtzman and Dr. Amy Hackney, for sharing their expertise and providing me with valuable feedback. Additionally, I would like to thank the research assistants in the Alcohol Mental and Physical Health Lab for their assistance with data collection.

For providing me with useful knowledge and skills and being a helping hand with all of my future goals, I would like to thank my internship supervisor, Bonnie Craven, LPC. I would also like to thank my fellow peers for the friendship we have shared, as well as the great amount of support you all have given me throughout our time here. Last but not least, I would like to thank my wonderful family for their words of encouragement and love throughout this process.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS.....	5
LIST OF TABLES.....	8
LIST OF FIGURES.....	9
 CHAPTER	
1 INTRODUCTION.....	10-18
Measuring Stigma with Implicit Cognition Measures.....	12
Empathy Training and Changing Attitudes.....	14
Evoking Empathy Using Music Videos.....	16
Purpose of the Study.....	17
2 METHOD.....	19-25
Participants.....	19
Design.....	20
Measures.....	20
Self-Assessment Manikin.....	21
Communication Emotional Response Scale.....	21
Attitudes to Mental Illness Questionnaire.....	22
Go/No-Go Association Task.....	23
Self-Report IAT Thermometer Questionnaire.....	24
Empathy Training Task.....	24
Procedures.....	25

3 RESULTS.....	27-32
Measure of Implicit Attitudes.....	27
Effect of Empathy Training on Empathy Levels.....	29
Effect of Empathy Training on Explicit Attitudes.....	31
4 DISCUSSION.....	33-39
Limitations.....	36
Future Directions.....	37
Conclusion.....	39
REFERENCES.....	40-47

LIST OF TABLES

Table 1. Session Design.....	48
Table 2. Go/No-Go Association Task Stimuli.....	49
Table 3. Go/No-Go Association Task Design.....	51
Table 4. Go/No-Go Association Task Reliability Measures.....	52
Table 5. Reliability of Explicit Measures.....	53

LIST OF FIGURES

Figure 1. GNAT Approach/Avoid D Prime Scores at Baseline.....	54
Figure 2. GNAT Good/Bad D Prime Scores at Baseline.....	55
Figure 3a. GNAT Approach D Prime Scores Baseline to Post-Training.....	56
Figure 3b. GNAT Avoid D Prime Scores Baseline to Post-Training.....	57
Figure 4a. GNAT Good D Prime Scores Baseline to Post-Training.....	58
Figure 4b. GNAT Bad D Prime Scores Baseline to Post-Training.....	59

CHAPTER 1

INTRODUCTION

Negative attitudes and stigma toward individuals with mental health disorders, particularly substance use disorders, undoubtedly exist in communities around the globe. Lund and Boggero (2014) propose that negative attitudes toward mental health disorders have existed throughout history and across cultures. Broadly, attitudes have been defined as a psychological tendency expressed by evaluating a particular entity with some degree of favor or disfavor (Eagly & Chaiken, 2007). Lund and Boggero (2014) explain how people separate themselves from individuals with mental illness because of perceptions that those with mental illness are dangerous, violent, and incompetent. The impact of negative attitudes toward mental illness has perpetuated *public stigma* (i.e., broad perceptions and reactions from the general population) and has fostered *self-stigma* (i.e., internalized negative beliefs and feelings of self) in individuals suffering from mental illness (Corrigan & Watson, 2002). In light of this, stigmatization of mental illness is considered one of the most pressing issues in the mental health field (Corrigan, 2000; Crisp, 2000).

Poreddi and colleagues (2014) explain an ongoing global concern exists regarding how mental health professionals and patients with mental illness are affected by these negative attitudes. Rüsçh, Brohan, Gabbidon, Thornicroft, and Clement (2014) define stigma as “a complex phenomenon that includes past experiences of discrimination and the anticipation of discrimination by others” (p. 1157). Stigma can affect processes such as coping with stress and self-concept, as well as impede on treatment seeking in those diagnosed with a psychiatric disorder (e.g., premature termination, failure to start treatment) (Teachman, Wilson, &

Komarovskaya, 2006). Patients with mental illness experience fear of stigmatization, as well as shame of their mental illness. This fear and shame could contribute to individuals suffering from mental illness either dropping out of their recovery/maintenance programs, or difficult to treat due to negative self-worth or resistance to treatment.

Teachman and colleagues (2006) state that stigma and negative attitudes toward mental illness remain serious problems and, more importantly, individuals belonging to this group are completely aware of the harm caused by these negative attitudes. The effects of stigma can be detrimental, as highlighted by Feldman and Crandall (2007):

“Mental illness causes two kinds of harm. The first is from the direct effects of the disorders—cognitive, affective and behavioral difficulties that limit one’s ability to function effectively. The second kind of harm is the social rejection, interpersonal disruption, and fractured identity that comes from the stigma of mental illness” (p. 138).

According to Crowe and Averett (2011), clients can experience lower self-esteem and heightened shame, fear, and avoidance because of these negative attitudes of others. This shame hinders a person from receiving the treatment they need, which in turn affects not only them but also their family (Robertson & Donnermeyer, 1977). Rüsç et al. (2014) discuss how disclosure of mental illness to family members can cause social rejection and discrimination. Another effect on family, as noted by Bademli & Duman (2014), is high stress due to taking care of the member with mental illness. For instance, from this stress, family members may begin to show a high prevalence of depressive symptoms.

When looking at attitudes toward mental health disorders, research shows negative attitudes are more likely to exist in those younger in age (15-24 years), lower in socioeconomic standing, less educated, single (Jagdeo, Cox, Stein, & Sarreen, 2009), and who do not work in

areas of mental health or social work (Smith & Cashwell, 2011). Importantly, Smith and Cashwell (2011) argue that negative attitudes also are not limited to a specific group and exist in mental health professionals. In a study performed by Feldman and Crandall (2007), substance dependence disorders were in the top 25 percentile of mental illnesses and were more likely to be socially rejected by rural adults. The current study focuses on *public stigma* in hopes of diminishing the negative effects it has on individuals with substance use disorders.

Measuring Stigma with Implicit Cognition Measures

Implicit attitudes, as defined by Stier and Hinshaw (2007), are “those that exist without the conscious knowledge of the respondent” (p. 111). Implicit attitudes are automatically activated in response to a stimulus and are not controlled, whereas explicit attitudes are rational, deliberate and easily accessible responses to a stimulus (Payne & Gawronksi, 2010). Implicit attitudes are important to measure because respondents may reply in a socially desirable way during an explicit self-report assessment in order to avoid being perceived as prejudice. Implicit measures also allow information (e.g., feelings, ideas) to come forward that a respondent may not even be aware of having (O’Shea, Watson, & Brown, 2015). Responses on an implicit cognition task, such as the “Go-No Go” Association Test (GNAT) (Nosek & Banaji, 2001), require respondents to respond as quickly as possible to stimuli, thus showing responses below a person’s normal level of awareness. It is important to measure implicit attitudes because this information may be a more accurate prediction of automatic processes (i.e., attitudes) and nonverbal behaviors than explicit measures (Monteith & Pettit, 2011).

Typical ways of measuring implicit attitudes include the Implicit Association Task (IAT) (Greenwald, McGhee, & Schwartz, 1998) and the GNAT. The IAT is the most frequently used task in measuring implicit attitudes. It is a computer-based task in which respondents are

prompted with stimuli representing a group or target (e.g., *White* or *Black* people), as well as positive or negative attributes (e.g., *Good* or *Bad* words) (Greenwald et al., 1998). O’Shea et al. (2015) explain that the basic idea underlying the IAT is “participants will make faster and more accurate responses when those responses are congruent with their current beliefs than when they are not” (p. 1).

Although the IAT is the most commonly used association task, it is not without flaws. O’Shea and colleagues (2015) point out how the IAT requires an opposite comparison group; however, not every categorical stimulus has an obvious comparison group. The GNAT has several major advantages over the traditional IAT, namely that it can assess the implicit association between a single target and two attributes (e.g., *Substance Use* and *positive* separate from *Substance Use* and *negative*) rather than the relative force-comparison of the IAT with two targets (e.g., *Substance Use* and *positive* and *Healthy* and *negative*, compared to *Substance Use* and *negative* and *Healthy* and *positive*). The GNAT measures participant’s level of sensitivity to the “signal” (i.e., target and attributes of interest) presented separate from their response to “noise” (i.e., irrelevant background noise whereby participants are to inhibit responses) (Nosek & Banaji, 2001). Contextual differences in the evaluation of the target stimuli to the attribute are also possible to assess using the GNAT. In other words, in addition to the single target (*Substance Use*) and attributes (*negative*, *positive*), various “noise” stimuli—or superfluous words in the background—can be used to assess the different contexts in which the target is being evaluated. For instance, substance use attitudes can be assessed in the context of healthy individuals or individuals with other psychiatric disorders.

The GNAT has been used to study implicit attitudes of social groups including gender (Mitchell, Nosek, & Banaji, 2003), racial groups (Mitchell et al., 2003; Nosek & Banaji, 2001),

and stigmatized groups (Bassett & Dabbs, 2005; Ranganath et al., 2008). Nosek and Banaji (2001) conducted various studies using the GNAT and compared their results to that of the IAT. With regard to gender, the IAT has shown people hold more favorable attitudes toward females over males; the GNAT showed the same results, however, it also showed the majority of participants were also more quickly and accurately able to associate *females* with *good* and *males* with *bad*, than they did matching females with bad and males with good. In a study examining implicit attitudes toward race, the IAT has shown people prefer white faces to black faces (Mitchell et al., 2003). In another study examining racial attitudes, Nosek and Banaji (2001) found participants showed greater sensitivity to when target stimuli were *white faces* with *good* and *black faces* with *bad*, and not vice versa. Although many studies have used the GNAT to assess implicit attitudes, it has yet to be used as a measurement of mental health-related attitudes, which is what the current study addresses.

Empathy Training and Changing Attitudes

With negative attitudes toward people with mental illness being such a pressing issue globally, researchers have been for ways to decrease these negative attitudes by increasing empathy. Ohrt, Foster, Hutchinson and Ieva (2009) define empathy as “one’s ability to take another’s perspective intellectually and then elicit an emotional response to the other’s emotion” (p. 320). They argue empathy is an ability that not only requires understanding on a cognitive level, but also on an emotional level. Peterson and Leonhardt (2015) state that those who use the concept of empathy in their lives try to see the world through the eyes of the person with whom they are communicating and taking a genuine interest in.

Three different types of empathy can be tested: cognitive, affective and behavioral.

Cognitive empathy is the conscious understanding of another’s internal states, as well as the

ability of a viewer to mentally separate self from a target (Brook & Kosson, 2013). *Affective empathy*, as defined by James and Blair (2007), is the emotional response to another individual's visual or vocal expression of emotion. *Behavioral empathy* is where an individual emulates the motor responses of the observed character (James & Blair, 2007). The current study assessed the affective aspect of empathy via Myers, Laurent, and Hodges' (2014) Communication Emotional Response Scale (CERS) by inducing empathy through music videos and song lyrics.

Effective induction of empathy has shown to improve attitudes toward the government (Wagaman & Segal, 2014) and animals (Azahar, Fakri, & Pa, 2014; Kielland, Skjerve, Osteras, & Zanella, 2010), as well as prevent burnout in counselors (Asuero et al., 2014) and attitudes toward mental illness in healthcare students (Ohrt et al., 2009; Perry, Gilbert, & Rawlinson, 2013; Vance, 2006). It also has been effective in improving the counselor-client relationship (Messina et al., 2012). The studies mentioned above use mindfulness techniques to evoke empathy, thus decreasing negative attitudes toward the target stimuli. *Mindfulness* is the ability to experience bodily sensations, thoughts and feelings, even when unpleasant. It also includes acting with awareness, attention and focusing on experience, not on stigma (Asuero et al., 2014). Many of these studies required extensive weeklong educational trainings; however, the current study wishes to shorten the time length based on a study by Ohrt and his colleagues (2009). Furthermore, research has yet to present empathy training of this kind to the general population, and the current study also sought to address this need.

In a review of empathy training effectiveness, Van Berkhout and Malouff (2015) found the duration of training had no effect on how well the training worked; however, all 19 studies showed a significant effect size in increasing empathy. Empathy training involves teaching

individuals the meaning of empathy, how to recognize emotions in others, how to take the perspective of others, and how to show empathy in various social situations (Van Berkhouit & Malouff, 2015). Such education to the public can foster more informed understanding about mental illness, and stigma and negative attitudes seem to reduce (Corrigan & Watson, 2002).

Evoking Empathy Using Music Videos

Recent research in the field of mental processes and mental health has led to evoking empathy via imagery and music (Markland, Hall, Duncan, & Simatovic, 2015; Ohrt et al., 2009). Music is an essential part of almost all societies and something in which people can easily relate (Vance, 2006). Music is often used to alter moods, express emotions, and alleviate stress for both the artists and listeners (Juslin & Vastfjall, 2008). Research by Vance (2006) indicated the use of music in healthcare education is likely to evoke empathy, as lyrics can be very moving. In addition to lyrics, oftentimes songs have corresponding videos, which could help enhance empathy as the viewer can identify with the character's story, portrayal, and music (Ohrt et al., 2009). Ohrt and his colleagues (2009) also argue that the use of a familiar or popular music video may enhance the empathy training process due to level of exposure, which increases the ability to discuss, or reflect on, what is going on and emotions felt while watching the video. Markland, Hall, Duncan, and Simatovic (2015) were the first to increase positive implicit and explicit attitudes toward exercise with the use of guided imagery; however, Ohrt and his colleagues (2009) took a brief approach involving 90-minute in-class discussions that also proved effective in enhancing empathy. The researchers prompted a classroom of mental healthcare students to read lyrics and watch a corresponding music video where the main character experiences negative life events. Ohrt et al. (2009) led a discussion with the students, which led to increased levels of empathy toward the main character in the music video. Music lyrics evoke empathy

because lyrics are like a story that creates emotion in most individuals. Some lyrical stories present controversial issues that enhance the listener's attention (Vance, 2006).

Purpose of Study

The current study examined the possibility of reducing negative implicit and explicit attitudes toward substance use disorders using a brief empathy training intervention (i.e., music videos). Although several studies have successfully used empathy training to reduce negative attitudes in professionals within medical (Poreddi et al., 2014; Vance, 2006) and mental health fields (Ohrt et al., 2009), none have examined effectiveness of empathy training in a general population, nor has an implicit measure of cognition assessed these attitudinal changes. In addition, previous studies using music videos have not attempted to reduce negative attitudes specifically toward individuals with substance use problems.

This experiment seeks to answer the following questions: (1) To what extent will a brief empathy training (i.e., the use of music videos and lyrics) alter self-reported levels of empathy toward individuals with substance use?; and (2) To what extent does empathy training alter implicit and explicit attitudes toward substance use disorders in a college sample?

Based on the findings where control group attitudes and empathy levels remained the same (Asuero et al., 2014), where a significant increase of empathy via empathy training was seen (Ohrt et al., 2009), and where poignant lyrics positively influenced empathy levels (Vance, 2006), the following predictions were made regarding the impact of empathy training on implicit and explicit cognitions:

Hypothesis 1. Implicit measurement (GNAT) of mental health attitudes, specifically related to substance use, will demonstrate acceptable internal reliability, as defined by Cronbach (1951).

Hypothesis II. Participants in the empathy training condition will demonstrate an increase in level of self-reported empathy toward and willingness to approach individuals with substance use problems from Time I to Time II, as measured by the Communication Emotional Response Scale (CERS) (Myers et al., 2014). Potential interactions between condition assignment and time (i.e., baseline to post-training) on changes in explicit empathy levels toward individuals with substance use problems will be examined.

Hypothesis III. Those who receive empathy training are expected to show an increase in positive implicit and explicit (general and willingness) attitudes toward individuals with substance use problems from baseline (Time I) to post-training (Time II). Potential interactions between condition assignment and time on changes in explicit attitudes and implicit attitudes toward individuals with substance use problems will be examined.

Hypothesis IV. Participants in the control condition will not show significant change in self-reported empathy levels or implicit and explicit (general and willingness) attitudes toward individuals with substance use problems from baseline to post-training.

CHAPTER 2

METHOD

Participants

Forty-seven undergraduate participants at Georgia Southern University were recruited using SONA, a web-based experiment management system. Forty-one participants ranged from ages 18 to 20, while four participants were 21-23, and two were 24-26. Twenty-two males and 24 females participated in this study, and one participant identified as transgender. In regards to marital status, 44 participants identified as single, one married, one divorced, and one did not wish to disclose. Twenty participants identified as African American, 24 identified as Caucasian, one identified as Native American, one identified as Pacific Islander/Asian American, and one identified as multiracial. Every participant classified themselves as native English speakers. The current study included 28 freshmen, 12 sophomores, 5 juniors, and 2 seniors, all whom were enrolled at Georgia Southern University. All participants answered catch items in the explicit measures correctly; therefore, none were removed from final analyses.

Participants were given class credit for their participation in the study (alternate options were also available for those who opted to not participate). Individuals of all genders, races, ethnicities, and class ranks participated; however, participants were required to be at least 18 years of age. Participants were randomly assigned to one of two conditions ('empathy' or 'control') prior to participation. Twenty-four participants completed the empathy-training task (i.e., Empathy Training condition) and 23 completed the neutral (control) task (Control condition). All procedures were approved by the Institutional Review Board (IRB), and all ethical and safety practice standards were followed.

Design

This mixed, multifactorial experiment required participants to physically attend a 90-minute research session in the AMP Health Laboratory at Georgia Southern University. A maximum of two participants were scheduled for one session. All data was collected with anonymity. Each participant was asked to input their own 4-digit participation number and then randomly assigned to one of two experimental conditions: (1) Empathy Training condition or (2) Control condition. The participation number was inputted as followed: participants were asked to input their first and last initial, followed by their two-digit birth month. Each group was administered the same battery of self-report questionnaires, computerized implicit tasks, as well as viewing the same lyrics/video. The only part differing from participant to participant was the condition in which they were placed prior to beginning the experiment, which determined the viewpoint in which the participant was prompted to watch the video. For instance, those in the Empathy Training condition were asked to pay attention to emotions felt within themselves and for the main character, whereas individuals in the Control condition were asked to objectively focus on the quality of the video. Finally, the participants were debriefed and excused (see Table I in Appendix I). Credit was awarded after completion of the research session.

Measures

Demographics. Each participant completed a questionnaire assessing: age, gender, race, ethnicity, education level, and marital status at the end of the study. In addition, participants were prompted to answer whether they or someone they know has been professionally diagnosed/treated for a mental health issue. Participants had the opportunity to decline answering if uncomfortable.

Self-Assessment Manikin (SAM). The SAM is a measurement of pleasure used in this study to measure the mood in each participant. The SAM (Lang, 1980) was completed by each participant on two separate occasions [Time I and Time II]. Test-retest reliability coefficients for the SAM have ranged between 0.55-0.78. Concurrent validity ranged from 0.56 to 0.87, and the criterion validity has been found to be acceptable (Nazari, Chianeh, Vahedi, & Rostami, 2012). This measure was used to determine affect pre- and post-training to ensure incoming attitudes and emotions were not affecting data. The SAM-pleasure scale demonstrated questionable test-retest reliability in the current study, with a Cronbach's alpha of .60 (Cronbach, 1951). Given that the nature of the study was to alter participants' mood, a lower reliability score potentially suggests effectiveness of the empathy training.

Communication Emotional Response Scale (CERS). The CERS (Batson, Early, & Salvarani, 1997) is a two-part measure of emotional states in which participants indicate the degree to which they feel emotions for themselves or others. The CERS consists of two subscales: Empathy and Distress. Part I of this measure contains a list of 26 adjectives describing different emotional states in which participants rate the extent to which they felt each emotion during the video on a 7-point Likert-scale from 1 (not at all) to 7 (extremely). Myers, Laurent, and Hodges (2014) used six of the adjectives—sympathetic, softhearted, warm, compassionate, tender, and moved—to assess participants' affective empathy. The level to which these adjectives assess affective empathy was tested and internal reliability was found to be adequate ($\alpha = .88$). Part II of this measure is used for the self-other aspect in level of distress from watching the video. Participants rated on a scale from 1 (not at all) to 9 (extremely) the level of distress, upset, trouble, and grief they felt for themselves during a bad experience, and then for the main character in the video (Batson et al., 1997; Myers et al., 2014). Myers and his

colleagues (2014) found these items to be related to each other ($\alpha = .58$). At Time I, the CERS subscales demonstrated excellent reliability, with the Distress scale producing a Cronbach alpha of .90 and the Empathy scale producing an alpha of .90 (Cronbach, 1951). Similarly, internal reliability remained high during the Time II administration, with Cronbach alphas of .93 and .87 for Distress and Empathy, respectively. Participants completed both parts of the CERS at Time I and Time II. The CERS demonstrated questionable test-retest reliability in the current study, with a Pearson's correlation coefficients of .57 for Empathy and .61 for Distress scales (Cronbach, 1951).

Attitudes to Mental Illness Questionnaire (AMIQ). The AMIQ (TNS, 2014) is a measurement of explicit attitudes toward mental illness. The AMIQ has two subscales: General Attitudes and Willingness Attitudes. Using a 5-point Likert Scale, it surveys a wide range of issues, including attitudes toward people with mental illness and opinions on services provided for those with mental health problems. In previous studies, Pearson's correlation coefficient for the AMIQ was 0.70 ($n = 256$), indicating reasonable test-retest validity. Kendall's tau b = 0.56 ($p < 0.001$) and Spearman's rank correlation rho = 0.70 ($p < 0.001$) have indicated good alternative test reliability (Ludy, Fekadu, Umoh, & Gallagher, 2006). Each participant completed the AMIQ two times over the course of the experiment [Time I and Time II]. Question 1 part 21 was removed because there was no data found upon analyses. Questions six and twenty-three were removed during analysis due to the ambiguity and lack of applicability to the participants. At Time I, the AMIQ subscales demonstrated good reliability, with the General Attitudes scale producing a Cronbach alpha of .85 and the Willingness Attitudes scale producing an alpha of .83 (Cronbach, 1951). Similarly, internal reliability remained good during the Time II administration, with Cronbach alphas of .85 and .86 for General Attitudes and Willingness

Attitudes, respectively. The AMIQ demonstrated good test-retest reliability in the current study, with a Pearson's r of .87 for Willingness Attitudes and .87 for General Attitudes (Cronbach, 1951).

Go/No-Go Association Task (GNAT). The GNAT (Nosek & Banaji, 2001) is an implicit computer task that was completed by each participant twice during the study. The GNAT presents target (*signal*) and distracter (*noise*) stimuli for brief periods of time (e.g., 600 ms, 750 ms). "Go" is acted out by pressing the space bar and "No-Go" is an inhibited response acted out by not pressing any key and waiting for the stimulus to disappear. The GNAT provides a d' (signal detection) index of an implicit attitude by assessing the strength of association between a target category (e.g., *characteristics of individuals with substance use disorders*) and attribute dimensions (e.g., *approach, avoid*) in the presence of noise (e.g., *characteristics of healthy individuals*) (Nosek & Banaji, 2001); that is, the speed in which each participant correctly respond to the target-attribute stimuli in the presence of distraction (noise). In this study, the GNAT will measure automatic attitudes toward substance use in relation to the motivational attributes of 'approach/avoid' and valence attributes ('good/bad') in two separate contexts of noise (healthy individuals and mental illness). The GNAT has demonstrated internal reliability between 0.6-0.8 (Nosek & Banaji, 2001), which is considered high for an implicit test of cognition. Research by Teachman (2006) has shown adequate convergent, discriminant, and predictive validity of the GNAT when studying different phobias.

In the current study, each GNAT consisted of 168 unique stimulus words (24 for each target and noise category, and 24 each attribute category) comprising one target category (Substance Use), four attribute categories (valence: *good/bad*, and motivation: *approach/avoid*), and two categories of noise (healthy individuals and mental illness). Participants completed four

GNATS during each session [at Time I and Time II], for a total of eight measurements overall—one set of GNATs assessed valence (good-bad) attitudes toward substance users in the context of healthy individuals (GNAT_gb_HLTH), and another in the context of general mental illness (GNAT_gb_MH). The second set of GNATs assessed motivational (approach-avoid) attitudes toward substance users in the context of healthy individuals (GNAT_aa_HLTH), and another in the context of mental illness (GNAT_aa_MH). Each GNAT consisted of 16 practice trials and 40 critical blocks. See Table 2 in Appendix II for stimuli and design.

Table 3 contains reliability scores for all of the implicit measures administered in the current study (see Appendix III). It is important to note that implicit measures tend to have lower reliability scores than explicit measures, thus all of the GNATs demonstrated adequate reliability in the current study, with the exception of “good” attributed to Substance Use Disorders in the context of Healthy Behaviors, “bad” attributed to Substance Use Disorders in the context of Mental Illness, and “approach” attributed to Substance Use Disorders in the Context of Healthy Behaviors.

Self-Report Thermometer Questionnaire (SRIAT-T). The SRIAT-T (Greenwald, Nosek, & Banaji, 2003) is an explicit attitude questionnaire that provides a comparable self-report measure of attitudes assessed by an implicit measure (i.e., GNAT). The thermometer portion of the questionnaire allows for participants to rate, on a warm to cold scale, how they feel toward certain people, places, and objects. Thus, results from the computerized GNATs can be compared to the explicit results of the SRIAT-T. Participants completed this measure at Time I and Time II. The SRIAT-T demonstrated acceptable reliability in the current study, with a Cronbach’s alpha of .75 (Cronbach, 1951).

Empathy Training Task. Participants were randomly assigned to one of two conditions: (1) the Empathy Training condition wherein participants read lyrics and watched the music video for “A Team” by Ed Sheeran and were prompted to pay attention to emotional details of the video (e.g., how the participant felt, how they viewed the main character), or (2) the Control condition where participants also read the lyrics to and watched/listened to the music video for “A Team” by Ed Sheeran, however, were prompted to pay attention to qualities of the video (e.g., color saturation, video quality). At the end of the research session, participants in the Empathy Training condition reflected on thoughts and feelings of the video to better name their feelings and bring the emotions into their awareness. These feelings could be about the main character, the plot, how they would have felt being in the video, etc. Those in the Control condition reflected on the various qualities of the video, for an objective and mechanic reflection.

Procedure

Upon attending the research session located in the AMP Health Laboratory, participants read and signed the informed consent. Following consent, consenting participants completed the first set of questionnaires, including the Self-Assessment Manikin (SAM), Attitudes to Mental Illness Questionnaire (AMIQ), Communication Emotional Response Scale (CERS), and the Self Report IAT Thermometer Questionnaire (SRIAT-T). These questionnaires were completed on the computer using MediaLab v2012 software that allowed the questionnaires and their questions to be randomized. Participants also completed a series of four modified approach-avoid/good-bad GNAT, which were randomized within each other but always the first assessment following the SAM. Participants were then prompted, via the computer, to read a set of lyrics very carefully. Upon reading the lyrics, each participant watched the corresponding music video, and then reflected on the video, whether emotionally (Empathy Training) or objectively (Control).

Finally, participants completed the second battery of questionnaires and series of GNATs, as well as a demographics survey. Lastly, participants were debriefed and dismissed.

CHAPTER 3

RESULTS

Measure of Implicit Attitudes

Thirty-seven to forty-one participants' d' prime scores were removed from analyses when the response to the GNATs produced outlier scores, depending on the individual GNAT. For instance, significantly slow response times, defined by Nosek and Banaji (2001) as over 1000 milliseconds), or significantly inconsistent responses were removed from the data during final analysis. Upon analyzing data for the GNAT, we found that an insufficient amount of data was recognized as consistent or swift responses. A common observation among research assistants was participants' difficulty persisting through the duration of the task. As a result, their performance suffered and 29 d' prime scores were below the threshold of interpretation.

Hypothesis 1 was not supported such that the implicit measure of cognition (GNAT) did not display acceptable internal reliability with Cronbach's Alphas ranging from .31 to .73 (See Table 4 in Appendix 4 for more information). Although this occurred, notable trends in the valid responses from the various GNATs can be discussed.

Figure 1 depicts d' prime scores from the GNATs assessing approach-avoid associations at Time I. Participants were considerably less likely to attribute *approach* to characteristics of individuals with substance use disorders than behaviors of healthy individuals. In addition, participants at Time I were more likely to attribute *avoid* with substance use disorders than behaviors of healthy individuals. Finally, participants were less likely to attribute *approach* to substance use disorders than *avoid* in the context of behaviors of healthy individuals at Time I. Also shown in Figure 1, participants were slightly less likely to associate *approach* with substance use disorders than characteristics of individuals with mental illness (see Appendix VI).

Second, participants were more likely to associate *avoid* with substance use disorders than mental illness. Lastly, the association of *approach* with substance use disorders was slightly less than the association of *avoid* with substance use disorders in the context of individuals with mental illness at Time I.

Figure 2 (see Appendix VII) shows d-prime scores from the GNATs assessing good-bad association at Time 1. Participants were considerably less likely to associate *good* with characteristics of individuals with substance use disorders than with behaviors of healthy individuals. Second, we found that participants were considerably more likely (.89 difference) to associate *bad* with substance use disorders than they would with healthy individuals. With healthy individuals as distractors, participants associated *bad* with substance use disorders more than they associated *good* with substance use disorders. In addition, Figure 2 shows that participants are slightly less likely to associate *good* with substance use disorders than mental illness. Also, participants are more likely to associate *bad* with substance use disorders than with mental illness. Finally, we noticed that participants are slightly more likely to associate *bad* with substance use disorders than *good* with substance use disorders at Time 1.

Figure 3a (See Appendix VIII) shows the change in *approach* associations with characteristics of individuals with substance use disorders from Time I to Time II. According to this figure, participants associated *approach* to substance use disorders slightly more at Time II than Time I when evaluated in the context of behaviors of healthy individuals. Also, participants associated *approach* with substance use disorders more at Time II than Time I within the context of characteristics of individuals with mental illness. Figure 3b shows the change in *avoid* associations with characteristics of individuals with substance use disorders from Time I to Time II. According to this figure, participants associated *avoid* with substance use disorders less at

Time II than at Time I when evaluated in the context of healthy individuals. In addition, participants tended to associate *avoid* with substance use disorders slightly less at Time II than Time I, within the context of mental illness. In conclusion, participants' level of association of *approach* with substance use disorders increased from Time I to Time II in both contexts, while the association of *avoid* with substance use disorders decreased in both contexts.

Figure 4a (see Appendix IX) shows the change in *good* associations with characteristics of individuals with substance use disorders from Time I to Time II. Participants were slightly more likely to associate *good* with substance use disorders at Time II than Time I, within the context of healthy individuals. In addition, participants were somewhat more likely to associate *good* with substance use disorders at Time II than Time I, within the context of mental illness.

Figure 4b shows the change in *bad* associations with characteristics of individuals with substance use disorders from Time I to Time II. According to this figure, participants' association of *bad* with substance use disorders increased from Time I to Time II, when evaluated in the context of healthy individuals. Also, participants' association of *bad* with substance use disorders slightly increased from Time I to Time II, in the context of mental illness. In conclusion, *good* attributes related to substance use disorders increased across contexts, as well as *bad* attributes to substance use disorders across contexts.

Effect of Empathy Training on Empathy Levels

A mixed model Multivariate Analysis of Variance (MANOVA) was used to analyze the effectiveness of empathy training via difference in Empathy and Distress CERS scores from Time I (baseline) to Time II (post-training) by condition (Empathy Training v. Control). This MANOVA serves to answer *Hypothesis II*, where it is predicted that participants in the Empathy

Training condition will demonstrate an immediate increase in Empathy level toward individuals with substance use disorders.

Before conducting the MANOVA the data were examined using SPSS Statistics to ensure all of its underlying assumptions were met. Univariate normality was assessed with Shapiro-Wilk tests and boxplots, and could be assumed. Additionally, no multivariate outliers were found in the data, supporting the assumption of multivariate normality. Correlations between the dependent variables were not excessive, indicating that multicollinearity was not of concern. Furthermore, relationships that exist between the dependent variables were roughly linear. Finally, Box's M was non-significant at $\alpha = .001$, indicating that homogeneity of variance-covariance matrices could be assumed. As all underlying assumptions were supported by the data, a MANOVA was conducted.

A significant main effect of Empathy was obtained, $F(1, 45) = 6.32, p = .02$, partial $\eta^2 = .12$, with Empathy levels post-training ($M = 20.53, SD = 8.22$) being significantly higher than Empathy levels at baseline ($M = 17.91, SD = 7.93$). A significant main effect of Distress was not found, $F(1, 45) = 3.29, p = .08$, partial $\eta^2 = .07$, with Distress levels post-training ($M = 24.19, SD = 11.25$) being higher than Distress levels at baseline ($M = 21.68, SD = 10.08$). A significant interaction between empathy and condition was observed, $F(1, 45) = 4.01, p = .05$, partial $\eta^2 = .08$. In addition, there was not a significant interaction between distress and condition $F(1, 45) = .28, p = .60$, partial $\eta^2 = .01$.

Examination of marginal means indicated that although there was a large change in Empathy levels and Distress levels in the Control condition from baseline ($M = 14.96, SEM = 1.55; M = 20.82, SEM = 2.12$) to post-training ($M = 19.74, SEM = 1.73; M = 24.09, SEM = 2.37$), the empathy training task did not produce a large change in Empathy levels and Distress levels in

the Empathy Training condition [baseline ($M = 20.75$, $SEM = 1.52$; $M = 22.50$, $SEM = 2.07$); post-training ($M = 21.29$, $SEM = 1.69$; $M = 24.29$, $SEM = 2.32$)].

Effect of Empathy Training on Explicit Attitudes

Due to lack of viable GNAT data, effects of empathy training on implicit attitudes were unable to be analyzed, which was an original piece of the analyses for *Hypotheses III and IV*. A mixed model MANOVA analyzed the level of change in General Attitudes (AMIQ) and Willingness Attitudes (AMIQ) toward individuals with substance use disorders following empathy training. This ANOVA served to answer *Hypotheses III and IV*, where it was predicted that those in the Empathy Training condition would experience a decrease in strength of negative explicit attitudes, whereas the Control condition would not experience change in explicit attitudes.

Before conducting the MANOVA the data were examined using to ensure all of its underlying assumptions were met. Univariate normality was assessed with Shapiro-Wilk tests and boxplots, and could be assumed. Additionally, no multivariate outliers were found in the data, supporting the assumption of multivariate normality. Correlations between the dependent variables were not excessive, indicating that multicollinearity was not of concern. Furthermore, relationships that exist between the dependent variables were roughly linear. Finally, Box's M was non-significant at $\alpha = .001$, indicating that homogeneity of variance-covariance matrices could be assumed. As all underlying assumptions were supported by the data, a MANOVA was conducted.

A significant main effect of Willingness Attitudes was not obtained, $F(1, 43) = 1.10$, $p = .30$, partial $\eta^2 = .03$, with Willingness Attitudes post-training ($M = 9.64$, $SD = 3.45$) being slightly lower than Willingness Attitudes at baseline ($M = 9.91$, $SD = 3.40$). A significant main

effect of General Attitudes was not found, $F(1, 43) = 2.02, p = .16$, partial $\eta^2 = .05$. A significant interaction between Willingness Attitudes and Condition was not observed, $F(1, 43) = .01, p = .92$, partial $\eta^2 = .00$. In addition, there was not a significant interaction between general attitudes and condition $F(1, 43) = 1.41, p = .24$, partial $\eta^2 = .05$.

Examination of the marginal means indicated that there was minimal change in Willingness Attitudes and General Attitudes in the Control condition from baseline ($M = 9.86, SEM = .75; M = 75.10, SEM = 3.18$) to post-training ($M = 9.62, SEM = .76; M = 77.86, SEM = 3.01$). In addition, the empathy training task did not produce a large change in Willingness Attitudes and General Attitudes in the Empathy Training condition [baseline ($M = 9.96, SEM = .70; M = 73.83, SEM = 2.98$); post-training ($M = 9.67, SEM = .71; M = 74.08, SEM = 2.82$)].

CHAPTER 4

DISCUSSION

The purpose of the current study was to determine if it is possible to reduce negative implicit and explicit attitudes toward individuals with substance use disorders using a brief empathy training intervention (i.e., music videos). While several previous studies have successfully used empathy training to reduce negative attitudes in professionals within medical (Poreddi et al., 2014; Vance, 2006;) and mental health fields (Ohrt et al., 2009), none have examined effectiveness of empathy training in the general college population, nor have they had an implicit measure of cognition (e.g., the GNAT) assessing these attitudinal changes. In addition, previous studies using music videos have not attempted to reduce negative attitudes specifically toward individuals with substance use disorders.

Empathy training research indicates that it is possible to effectively increase empathy in briefer formats (e.g., two weeks). The current study sought to determine if it was possible to effectively increase empathy in a brief 90 minute training session. It was hypothesized that empathy levels (assessed via the CERS) would increase post-empathy training, while the control condition's empathy levels remained the same. The results of the study revealed a significant change in empathy levels from Time I to Time II, however, not in the way it was originally hypothesized. That is, changes in empathy levels for the Control condition in contrast to the Empathy Training condition were much larger. Several studies examining effects of empathy training on levels of empathy toward individuals with mental illness provide insight to current findings. A primary difference may be the type of empathy training chosen in the current study compared to other designs, as well as the brevity of training procedure used in the current study. Asuero and colleagues (2014) conducted a study in which the intervention (i.e. empathy training) lasted a total of 28 hours over an eight-week period. This type of intervention strived for induce

mindfulness and empathy on a daily basis, including meditation exercises. Stigma related to mental illness seems to be widely accepted by the general public (Corrigan, 2000), thus the potential necessity for a more extensive route of empathy training for the general public.

Furthermore, a possible explanation for the significant findings in the Control condition could simply be the personality type of the individuals randomly selected into that group, or the Control condition training procedures were simply not different enough from the Empathy Training condition.

Previous research suggests that increasing empathy can be an effective way to change attitudes. As such, it was hypothesized that both implicit and explicit attitudes would become more positive toward individuals with substance use disorders following an empathy-training task. However, the results of a mixed model MANOVA related to General Attitudes (AMIQ) and Willingness Attitudes (AMIQ) revealed that General Attitudes did not change significantly toward individuals with substance use disorders. In previous research, participants were of healthcare, medical, and clinical backgrounds. According to Poreddi and colleagues (2014), being in these backgrounds does not make one immune to prejudices; however, nursing students tend to have less stigmatizing attitudes toward individuals with mental illness. Crowe and Averett (2015) found that individuals in the mental health field experienced an increased level of empathy toward individuals with mental illness due to their experience with them during their line of work. Mental health professionals in the study felt they learned to be patient with individuals with mental illnesses and were less judgmental of them (Crowe & Averett, 2015). The Ohrt et al. (2009) study, which also tested the use of music videos as a means of enhancing empathy levels, had participants who were counselors-in-training, rather than the general public. The current study measured attitudes toward individuals with substance use disorders, a type of

mental illness, within the general public; it is possible that empathy training could work more quickly in individuals with a healthcare background.

It is important to note that previous research has also shown that only a very small amount of highly productive emotional processing is necessary to achieve change (Diamond, Shahar, Sabo & Tsvieli, 2016). Rachman (1980) defined emotional processing as a process of absorption of emotional disruptions that make way for more adaptive experiences and behaviors. A recent study of short-term (i.e., 1 session/week over 32 weeks) dynamic therapy for clients with adjustment disorders found that one-minute of expressed grief distinguished between good and poor outcome cases (Kramer, Pascual-Leone, Despland, & de Roten, 2015). Previous research shows that “short term” therapy is, in fact, significantly longer than the one 90-minute session of empathy training in the current study. Previous research also suggests that emotional stimuli, whether words or symbols, take more time to process than neutral stimuli (González-Villar, Triñanes, Zurrón, & Carrillo-de-la-Peña, 2014; Yang, Luo, Zhu, Broster, Chen, Li, & Luo, 2014). The brevity of the empathy training in the current study could be an issue of increased time necessary for emotional processing, there is also a chance that empathy training in the current study requires higher valence of emotion.

In addition to differing methods of empathy training and participant background, no previous studies have implemented an implicit measure of cognition. Implicit measures of cognition can be extensive in that time spent going through the procedure can be cumbersome. The implicit attitudes measure in the current study (GNAT) was unable to be analyzed due to a lack of sufficient data points. Because research assistants reported participants’ difficulty persisting through the duration of the task, it is possible that the participants became tired and simply failed to put forth effort on the second administration of the GNATs. Greenwald, Nosek,

and Banaji (2003) presented a study in which implicit and explicit attitude correlations were higher with higher response latencies (described in ms). The correlations were higher when the response latency was on average 959ms, while the lowest correlations occurred when the response latency was 615-688ms. The speed at which the stimuli in the current study were presented (600-750ms) could have been too fast for many participants' to process, especially with the complexity of the GNAT.

Although the GNAT data could not be soundly analyzed, it is important to note implicit attitudes toward individuals with substance use disorders differed depending on the “noise” category (i.e., context in which the substance use was being evaluated). In previous research conducted by Waters and Valvoi (2009), anxious individuals were slower at responding to “neutral faces” (target) when the distractor was “happy faces” than when the distractor was “angry faces.” In the current study, substance use disorders were seen as more severe in comparison to healthy individuals than individuals with mental illness. This lends tentative support to the notion that the strength of stigma-related associations may change depending on the context in which the target stimuli is being evaluated.

Limitations

Although this study is one of the first of its kind to explore the effects of empathy training within a general sample, it is not without its limitations. First, a large portion of the study relied upon self-report measures of empathy and attitudes toward individuals with substance use disorders. Self-report measures are prone to social-desirability bias, thus is it possible that participants misrepresented their feelings and beliefs toward those with substance use disorders. Second, the use of a college-based sample serves as a limitation. Although a college-based sample was justified in the current study, use of the sample serves as a barrier to

external validity by not allowing generalization to other populations, such as adolescents, same-aged non-college attending peers, and older adults. Due to time constraints, the amount of participants collected (forty-seven) was significantly less than projected by G*Power (250). A fourth limitation is the time spent in the Empathy Training or Control task in comparison to responding to questionnaires. While the current study aimed to decrease the length of time engaging in empathy training, one could argue that participants spent more time completing questionnaires than receiving empathy training, causing the research session to last longer, yet simultaneously discouraging them from mindfully participating in a meaningful way. A fifth limitation of the current study is the lack of sufficient data for the implicit measure. This could potentially be due to the rapid speed in which stimuli were presented, and as a result a majority of participants were removed from final data analysis. It is also important to note that the GNAT is a newer implicit association task than more traditional and widely used measures, such as the IAT. Although the GNAT has been tested as reliable over many experiments, it has never been used in this context.

Aside from this study's limitations, it also boasts notable strengths. This study serves as the first to attempt to gauge the effects of empathy training via music videos on attitudes toward individuals with substance use disorders via implicit and explicit measures. In addition, the current study serves as the first to gauge these effects in the general student population, rather than in students seeking advanced degrees in health-related fields.

Future Directions

Although the study leaves questions unanswered, it provides guidance for future studies in this area. Future studies should seek to conduct longitudinal studies to understand the long-term effects of a brief, one-day empathy training procedure. Yang et al. (2014) found that

individuals have lower inhibitory accuracy when responding to emotional expressions than when responding to neutral expressions in the GNAT. They also found that more resources were recruited for the perceptual processing of inhibition cues than for the processing of response cues in the presence of emotional content. It is possible that it may take more time to process emotional information; therefore, brief empathy training may not be an effective training program. If this is the case, future research should then seek to understand the effectiveness of extensive empathy training on the general population. Extensive empathy training is typically completed daily over an eight to twenty-eight week period of time (Asuero et al., 2014; Messina et al., 2013).

Because the effects of training between conditions showed no significant differences, future studies should seek a different methodological procedures control condition, such as a different (more neutral) music video as opposed to the same video looked at from a different viewpoint. In addition, future studies should collect data for at least 250 participants in order to ensure adequate power in which sound interpretations can be drawn. Lastly, it is important to note some considerations when using the GNAT. Because the GNAT has never been used in substance use disorder context, it is possible that it is not the best measure for substance use attitudes in this context; however, future studies must be done in order to prove or disprove the GNAT's reliability in this context. Researchers also may want to manipulate the speed at which participants respond to stimuli (e.g., 600 ms, 750 ms, 1000ms). Some individuals may need more time to process the information in which they are presented. Future studies may also want to alter the "noise" categories in which the participants have to differentiate, as "Substance Use Disorders" may be too similar to the noise category of "Mental Illness."

Conclusion

The current study is the first of its kind. While previous research has assessed the change in empathy levels through the use of music videos, none have assessed implicit attitude changes or assessed the general college population. There were multiple goals of the current study: (1) to learn if empathy levels could be changed by watching a music video, (2) if those changes in empathy levels would lead to implicit and explicit attitude changes, and (3) to assess whether implicit and explicit attitudes would change in the same direction. The results revealed no significant changes in empathy levels between groups; however, empathy levels were found to significantly change over time, particularly within the control group. In addition, explicit attitudes toward individuals with substance use disorders did not significantly change as a result of empathy training. Due to lack of a sufficient number of data points, implicit attitudes were unable to be calculated, but speculations were made based on the data collected. It was theorized that the Empathy Training condition should have drastically different attitudes and levels of empathy toward individuals with substance use disorders from the control condition. In addition, it was theorized that the attitudes and levels of empathy in the Empathy Training condition could exist over a longer period of time than simply one day to allow for emotional processing, which is an important piece the current study was missing. Continuing this research is important for the future of substance abuse recovery through positive relations with the general population.

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APPENDIX I

1	2	3	4	5	6
SAM GNAT CERS AMIQ SRIAT-T <i>[Time I]</i>	Empathy: Read lyrics to “A Team”	Empathy: Watch “A Team” Music Video	Empathy: Reflect on “A Team” Music Video Emotion	SAM GNAT CERS AMIQ SRIAT-T <i>[Time II]</i>	Demographics
	Neutral: Read lyrics to “A Team”	Neutral: Watch “A Team” Music Video	Neutral: Reflect on “A Team” Music Video Quality		

Table 1. Session Design. This table represents the procedure in which participants went through during each session.

APPENDIX II

/1 = "ADDICT"	/1 = "DEPRESSED"	/1 = "HEALTHY"
/2 = "METH HEAD"	/2 = "ANXIOUS"	/2 = "FIT"
/3 = "STONER"	/3 = "SAD"	/3 = "WELL"
/4 = "WASTED"	/4 = "PISSED OFF"	/4 = "CHIPPER"
/5 = "ALCOHOLIC"	/5 = "BIPOLAR"	/5 = "WHOLESOME"
/6 = "POT HEAD"	/6 = "UNSTABLE"	/6 = "HAPPY"
/7 = "DRUNK"	/7 = "EMOTIONAL"	/7 = "SUCCESSFUL"
/8 = "HIGH"	/8 = "HOPELESS"	/8 = "SKILLED"
/9 = "BUZZED"	/9 = "UNHEALTHY"	/9 = "RESPECTFUL"
/10 = "PILL POPPER"	/10 = "PANIC"	/10 = "HELPING"
/11 = "BURN OUT"	/11 = "DISCOURAGED"	/11 = "SMILE"
/12 = "JUNKY"	/12 = "DESPAIR"	/12 = "STRONG"
/13 = "TWEAKER"	/13 = "WORRY"	/13 = "STRAPPING"
/14 = "DRUGGIE"	/14 = "ABNORMAL"	/14 = "ACTIVE"
/15 = "CRACK HEAD"	/15 = "PARANOIA"	/15 = "INTELLIGENT"
/16 = "DOPE FIEND"	/16 = "DELUSIONAL"	/16 = "LEVEL-HEADED"
/17 = "STONED"	/17 = "IMBALANCED"	/17 = "SENSIBLE"
/18 = "FRIED"	/18 = "DISTRESS"	/18 = "TIDY"
/19 = "STRUNG OUT"	/19 = "THERAPY"	/19 = "CONSIDERATE"
/20 = "INTOXICATED"	/20 = "EMPTY"	/20 = "REASONABLE"
/21 = "LIT UP"	/21 = "WORN DOWN"	/21 = "STURDY"
/22 = "GEEKED UP"	/22 = "FRAGILE"	/22 = "NUTRITIOUS"
/23 = "TRIPPING"	/23 = "APATHETIC"	/23 = "HYGENIC"
/24 = "SHROOMING"	/24 = "FEARFUL"	/24 = "HEALTHFUL"

/1 = "celebrating"	/1 = "horrible"	/1 = "come near"	/1 = "depart"
/2 = "pleasure"	/2 = "angry"	/2 = "close to"	/2 = "leaving"
/3 = "happy"	/3 = "terrible"	/3 = "nearer"	/3 = "distancing"
/4 = "friendly"	/4 = "noxious"	/4 = "move toward"	/4 = "avoid"
/5 = "joyful"	/5 = "tragic"	/5 = "closer"	/5 = "walk away"
/6 = "loving"	/6 = "unpleasant"	/6 = "advance"	/6 = "backward"
/7 = "beautiful"	/7 = "hate"	/7 = "forward"	/7 = "escape"
/8 = "smiling"	/8 = "destroy"	/8 = "go to"	/8 = "stop"
/9 = "glee"	/9 = "brutal"	/9 = "approach"	/9 = "dodge"
/10 = "glad"	/10 = "bad"	/10 = "coming close"	/10 = "bypass"
/11 = "glorious"	/11 = "evil"	/11 = "reaching"	/11 = "retreat"
/12 = "excitement"	/12 = "humiliate"	/12 = "contact"	/12 = "ignore"
/13 = "wonderful"	/13 = "disaster"	/13 = "catch up"	/13 = "hide from"
/14 = "triumph"	/14 = "nasty"	/14 = "meet"	/14 = "steer clear"
/15 = "good"	/15 = "gross"	/15 = "come close"	/15 = "shun"
/16 = "excellent"	/16 = "painful"	/16 = "forward"	/16 = "swerve"
/17 = "fabulous"	/17 = "yucky"	/17 = "draw near"	/17 = "away"
/18 = "superb"	/18 = "ugly"	/18 = "encounter"	/18 = "prevent"
/19 = "marvelous"	/19 = "dirty"	/19 = "face-to-face"	/19 = "avert"
/20 = "splendid"	/20 = "dislike"	/20 = "invite"	/20 = "flee"
/21 = "laughing"	/21 = "awful"	/21 = "pursue"	/21 = "take-off"
/22 = "cheerful"	/22 = "disgusting"	/22 = "confront"	/22 = "miss"
/23 = "terrific"	/23 = "revolting"	/23 = "next to"	/23 = "getaway"
/24 = "likable"	/24 = "sickening"	/24 = "converge"	/24 = "bolt from"

Table 2. Go/No-Go Association Task Stimuli. This table is a list of all stimuli used in the GNAT. Those in capital letters represent the “target” and “noise” words while the lower case represent the attribute words.

APPENDIX III

Sequence	1	2	3	4
Task Description	Target 1 + Good Attribute Combined Task (noise: Mental Illness)	Target 1 + Bad Attribute Combined Task (noise: Mental Illness)	Target 2 + Good Attribute Combined Task (noise: Healthy)	Target 2 + Bad Attribute Combined Task (noise: Healthy)
Task Instructions	* SUBSTANCE ABUSE * good	* SUBSTANCE ABUSE * bad	* SUBSTANCE ABUSE * good	* SUBSTANCE ABUSE * bad
Sample Stimuli	* PILL POPPER	* FRIED	* glad	* DRUNK
	* FRAGILE	* PANIC	* TWEAKER	* SKILLED
	* STONED	* smiling	* STRONG	* hate
	* joyful	* BUZZED	* temble	* good
	* angry	* evil	* marvelous	* HIGH
	* DEPRESSED	* ABNORMAL	* LIT UP	* nasty
	* unpleasant	* humiliate	* SENSIBLE	* REASONABLE
	* fabulous	* splendid	* destroy	* loving

Sequence	1	2	3	4
Task Description	Target 1 + Approach Attribute Combined Task (noise: Mental Illness)	Target 1 + Avoid Attribute Combined Task (noise: Mental Illness)	Target 2 + Approach Attribute Combined Task (noise: Healthy)	Target 2 + Avoid Attribute Combined Task (noise: Healthy)
Task Instructions	* SUBSTANCE ABUSE * approach	* SUBSTANCE ABUSE * avoid	* SUBSTANCE ABUSE * approach	* SUBSTANCE ABUSE * avoid
Sample Stimuli	* JUNKY	* DRUGGIE	* WELL	* ALCOHOLIC
	* PARANOIA	* RESPECTFUL	* WASTED	* pursue
	* BUZZED	* advance	* encounter	* leaving
	* reaching	* TRIPPING	* HAPPY	* HEALTHFUL
	* distancing	* next to	* avoid	* STONED
	* DELUSIONAL	* dodge	* BUZZED	* meet
	* shun	* SENSIBLE	* converge	* WHOLESOME
	* invite	* walk away	* ignore	* retreat

Table 3. Sample GNAT Design. This table represents an example of the procedure in which participants went through during each GNAT respectively.

APPENDIX IV

GNAT Type	Distractor ("Noise")	Attribute	Cronbach's Alpha
GNAT_HLTH	Healthy Behavior	Good	0.31
		Bad	0.61
GNAT_MH	Mental Illness	Good	0.73
		Bad	0.46
GNAT_HLTH	Healthy Behavior	Approach	0.36
		Avoid	0.65
GNAT_MH	Mental Illness	Approach	0.61
		Avoid	0.54

Table 4. This table represents reliability of each Go/No-Go Association Task used in the current study.

APPENDIX V

Measure	Reliability (Cronbach's Alpha)
SAM	0.60
CERS - Distress	0.93
CERS - Empathy	0.87
AMIQ - Willingness	0.83
AMIQ - Attitudes	0.85
SRIAT-T	0.75

Table 5. This table represents internal reliability for each measure in the current study.

APPENDIX VI

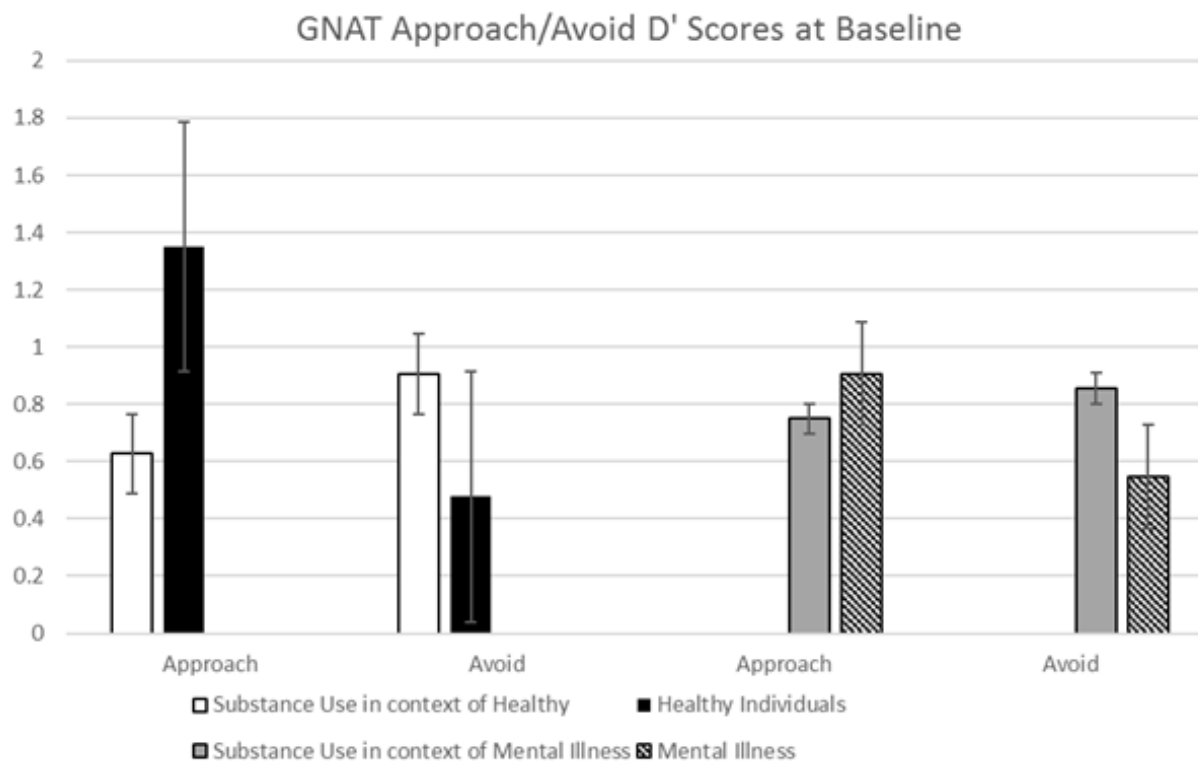


Figure 1. GNAT Associations of Approach and Avoid at Baseline. Associations of “Approach” with “Individuals with Substance Use Disorders” were weaker across both contexts at baseline. In addition, associations of “Avoid” with “Individuals with Substance Use Disorders” was stronger across both contexts but the association was stronger in the context of “Healthy Individuals” over the “Mental Illness” context.

APPENDIX VII

GNAT Good/Bad D' Scores at Baseline

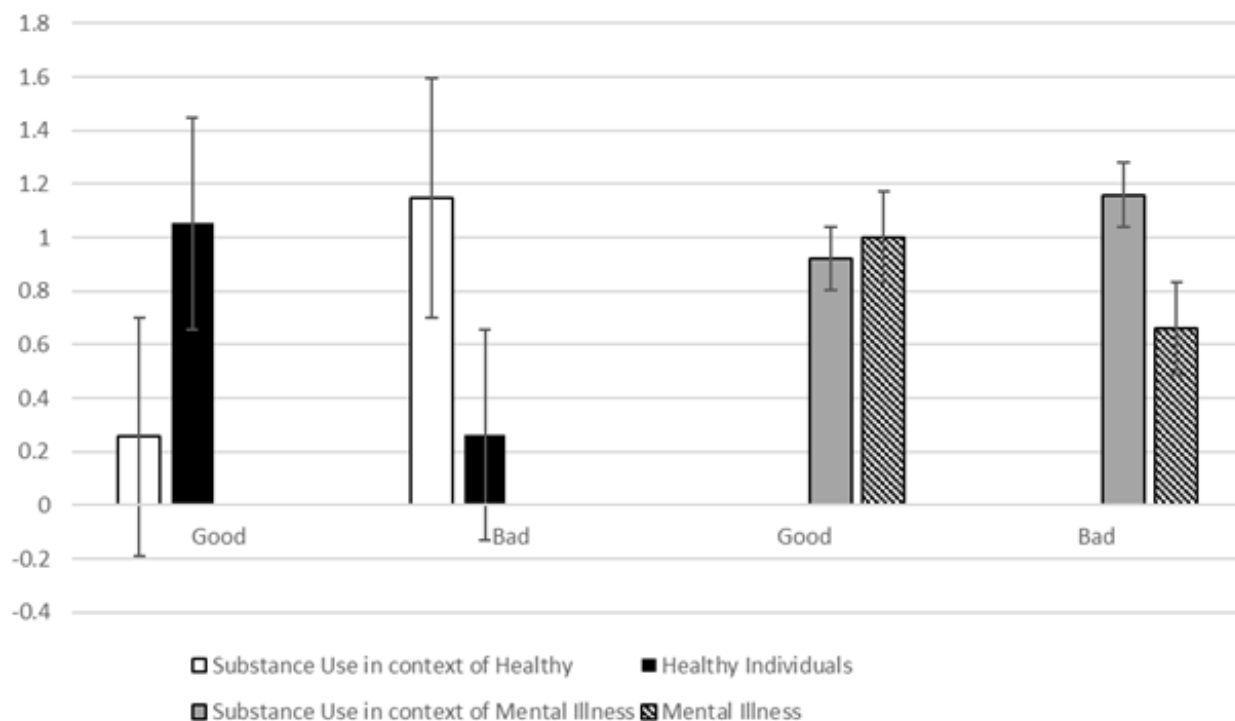


Figure 2. GNAT Associations of Good and Bad at Baseline. Associations of “Good” with “Individuals with Substance Use Disorders” were weak across both contexts at baseline; this association was weaker in the context of “Healthy Individuals” than in the context of “Mental Illness.” Associations of “Bad” with “Individuals with Substance Use Disorders” was stronger at approximately the same strength level across “Mental Illness” and “Healthy Individuals.”

APPENDIX VIII

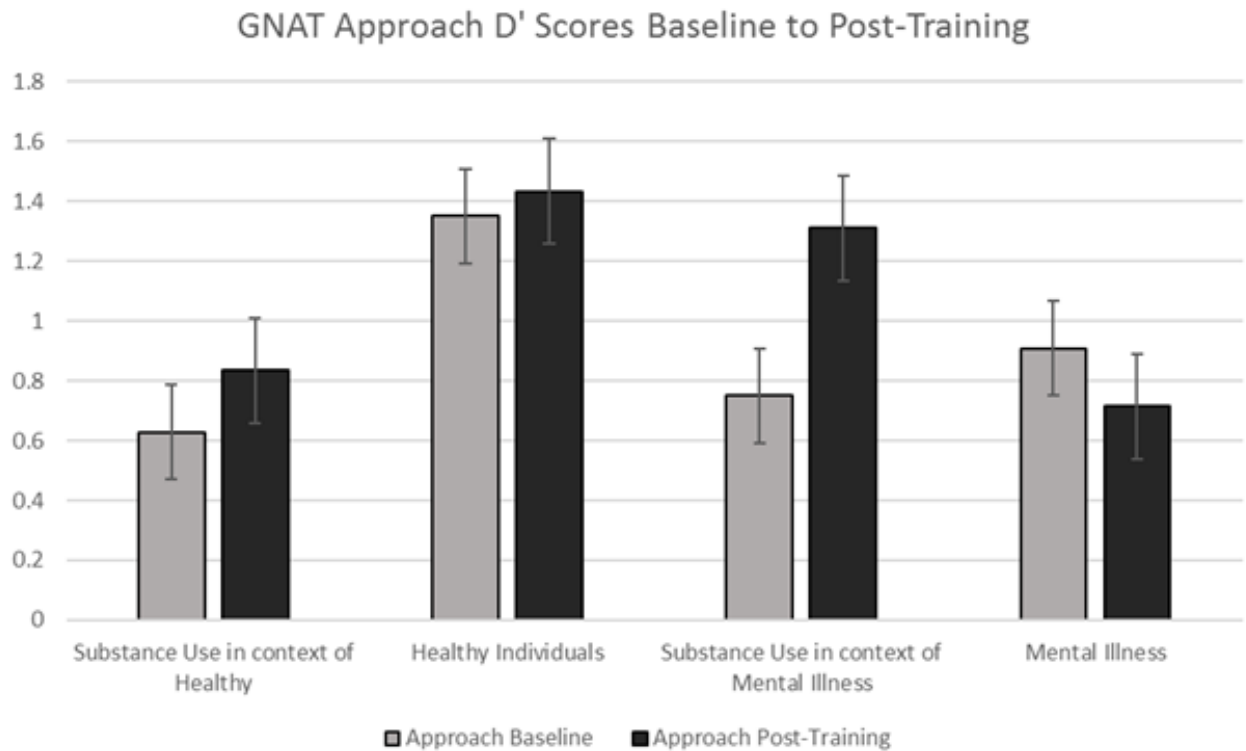


Figure 3a. GNAT Change in Association of Approach from Baseline to Post-Training. Important trends: The association of “Approach” with “Individuals with Substance Use Disorders” strengthened from baseline to post-training in both contexts but grew stronger in the context of “Mental Illness” than in the context of “Healthy Individuals.”

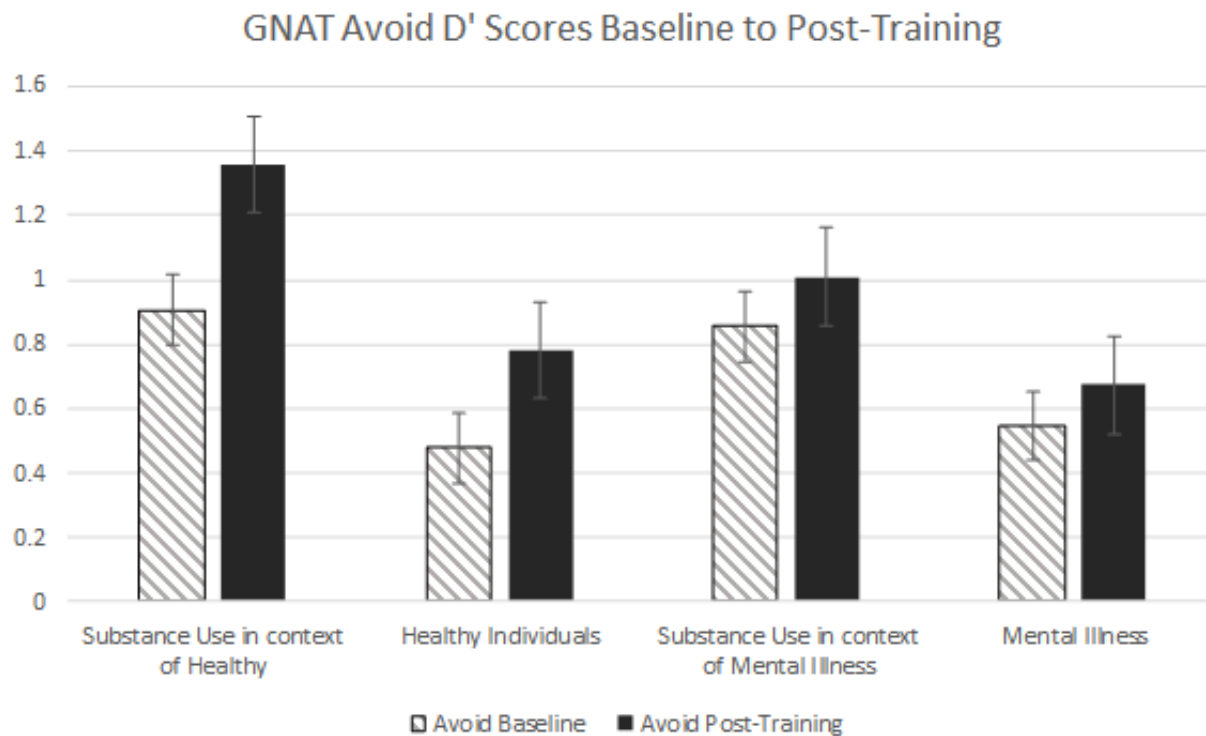


Figure 3b. GNAT Change in Associations Avoid from Baseline to Post-Training. Important trends: The association of “Avoid” with “Individuals with Substance Use Disorders” strengthened from baseline to post-training in both contexts. The association strengthened more so in the context of “Healthy Individuals” than in the context of “Mental Illness.”

APPENDIX IX

GNAT Good D' Baseline to Post-Training

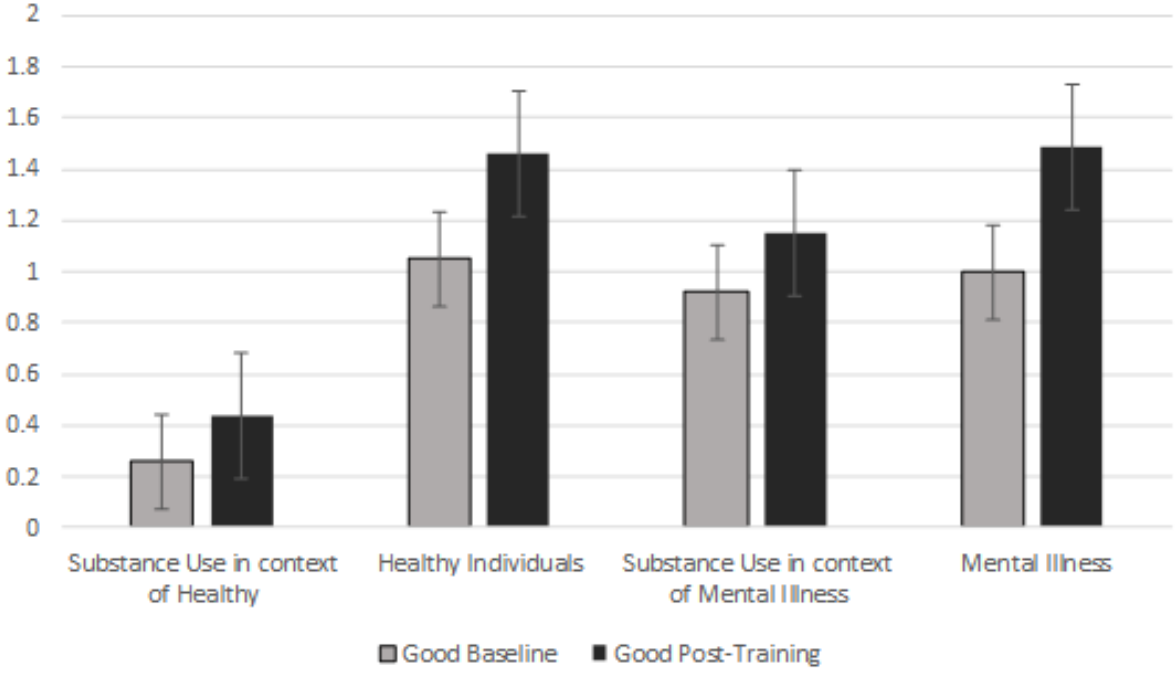


Figure 4a. GNAT Change in Associations Good from Baseline to Post-Training. Important trends: The association of “Good” with “Individuals with Substance Use Disorders” strengthened in both contexts but grew stronger in the context of “Mental Illness” than in the context of “Healthy Individuals.”

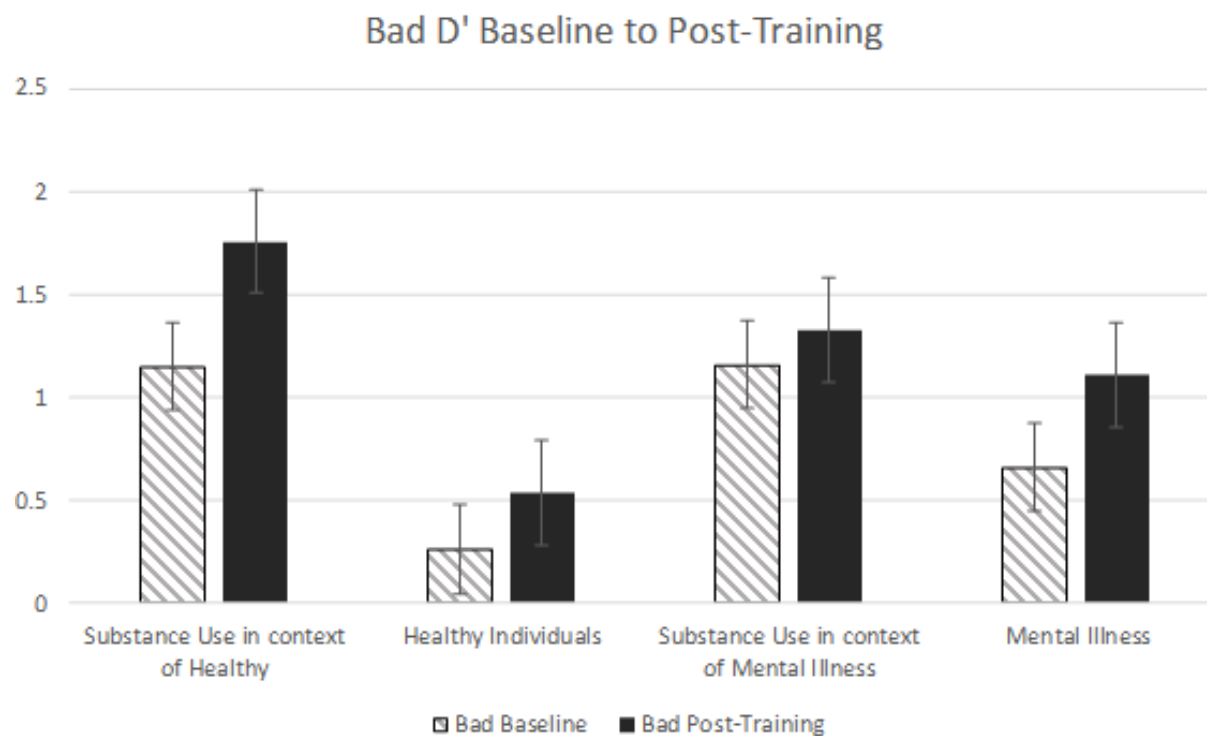


Figure 4b. GNAT Change in Associations Bad from Baseline to Post-Training. Important trends: The association of “Bad” with “Individuals with Substance Use Disorders” strengthened from baseline to post-training in both contexts. The association strengthened more so in the context of “Healthy Individuals” than in the context of “Mental Illness.”