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Establishing the Validity of a Measure of Implicit Bias Toward People with Alcohol Use Disorder

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ESTABLISHING THE VALIDITY OF A MEASURE OF IMPLICIT BIAS TOWARD

PEOPLE WITH ALCOHOL USE DISORDERS

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Master's Program in Experimental Psychology

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2024

Dedication

To my parents, Carlos & Elma Portillo, and my brother, Dr. Carlos Portillo, Jr.

I love you all to the moon and back.

ESTABLISHING THE VALIDITY OF A MEASURE OF IMPLICIT BIAS TOWARD

PEOPLE WITH ALCOHOL USE DISORDERS

by

ERIN MARIE PORTILLO, B.S.

THESIS

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Abstract

Alcohol use disorder has been identified as one of the major burdens of disease but also remains one of the disorders with the lowest treatment prevalence. For individuals who seek treatment for their alcohol use disorder, they may experience barriers that impact their treatment for alcohol use disorder. These barriers may extend to a person's beliefs, attitudes, and stigma. While attitudes and beliefs refer to their perceived need for treatment and beliefs of self-reliance, stigma is multistep process that makes way for stereotypes, prejudice, and acts of discrimination to take place. With labels such as "alcoholic" implying negative connotation and being frequently used, the fear of being stigmatized and negatively labeled often results in delayed or entirely avoided care. Attitudes towards stigmatized and other groups have primarily been examined using explicit measures of bias. While thought to be the most convenient way to learn about a person's attitude, these measures may be affected by introspective limits and response factors. As such, explicit measure may succumb to social desirability. Research has turned to use of implicit measures such as the Implicit Association Test (IAT) to assess an individual's unconscious and uncontrollable associations. The IAT is a validated task asking participants to quickly associate stimulus items with one of the two contrasting categories. The IAT measures response latency such that stronger associations are easier to pair resulting in faster response times and fewer errors made. While IATs have been used to assess biases toward vulnerable groups, the present study is among the first to psychometrically assess a measure of implicit bias toward persons with an alcohol use disorder through the lens of contact theory. Participants (n=175, 54.3% male) completed a developed IAT categorizing target categories (i.e., alcoholic versus non-alcoholic) and value categories (approach versus avoid), and also completed explicit measures of stigma. The IAT D-score was calculated and used to assess construct validity.

Pearson correlations were also used to assess convergent and predictive validity. Results indicated small but significantly negative IAT D-scores, indicative of negative implicit bias toward people with alcohol use disorder. Exploratory analyses indicated that drinkers and children of alcoholics had an implicit bias toward people with alcohol use disorder, not in line with contact theory which would suggest that contact with stigmatized and other groups decreases prejudice ad increases positive attitudes. The IAT was not associated with explicit measures. However, initial results of the present study provide evidence of negative implicit attitudes toward alcohol use disorder. Future research should further assess negative implicit attitudes toward persons with alcohol use disorder, test the stability of the IAT using test-retest, and use multinomial processing tree analyses to further examine conscious and unconscious biases toward people with alcohol use disorder.

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Chapter 1: Introduction

Alcohol Use as A Public Health Concern

Alcohol use disorder, as characterized by heavy, compulsive alcohol use has been and remains a public health concern (Carvalho et al., 2019; Rehm et al., 2017). For diseases where alcohol use is only partially attributable, those who consumed more alcohol have a higher risk of medical consequences such as liver cirrhosis, mental disorders, and unintentional and intentional injury (Rehm, 2011; Rehm et al., 2017). Notably, alcohol use disorder has been identified as one of the major contributors to the burden of disease and mortality, as well as one of the disorders with the lowest treatment prevalence. Specifically, only one in six adults in the United States report being asked about their drinking by a healthcare professional (Carvalho et al., 2019), further adding to the number of patients who do seek medical treatment versus those who do not seek treatment for alcohol use disorder. For those with alcohol use disorder, individuals may experience different types of barriers such as treatment-related and person-centered barriers.

Treatment-related barriers encompass various implementation barriers. For example, for those presenting to primary care with an alcohol use disorder, research suggests little to no use of standardized screening tools (Carvahlo et al., 2019). Treatment for alcohol use disorder, particularly psychosocial and pharmacological interventions, are available in primary and specialized care (Connor et al., 2016; Carvahlo et al., 2019). However, implementation in primary care settings remains difficult as trained professionals in these interventions are not always readily available or are only available for high-income patients (Urbanoski et al., 2018). Due to these limitations, patients with alcohol use disorder often receive services in the emergency department or are admitted to the hospital, two settings that that may be ill prepared to provide treatment for AUD associated with health problems (Urbanoski et al., 2018). Aside

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from treatment barriers, researchers have identified other factors associated with low treatment utilization such as person-centered barriers and structural barriers (Corrigan et al., 2014).

At a broader level, provider and structural-level barriers may largely include policies or regulations that limit opportunities and resources and discrimination from healthcare professionals (Schomerus et al., 2022). For example, requiring patients with alcohol-related liver disease who need a liver transplant to be abstinent for six months prior to the transplant is far stricter than criteria for those with non-alcohol related liver disease or fatty liver disease (Schomerus et al., 2022). Furthermore, healthcare providers who indicate feelings of anger and dissatisfaction toward patients with alcohol use disorder, believing treatment for alcohol use disorder does not work, also tend to be more restrictive of clinical interventions for patients (Warren et al., 2012). Negative attitudes further exacerbate treatment avoidance due to patients' fear of negative labeling and potential treatment repercussions they believe they will encounter (Schomerus et al., 2011).

Person-centered barriers can include individual factors such as socioeconomic status, employment status, limited transportation, and education level. However, these types of barriers can extend into a person's beliefs, attitudes, and stigma. Attitudes and beliefs refer to the individual's perceived need for treatment and beliefs of self-reliance (Corrigan et al., 2014). Researchers posit that these attitudes individuals hold are mirrored in social networks and judicial systems, contributing to the underutilization of treatment. The last person-centered barrier is stigma, a process that typically includes labeling and assignment to outgroups, followed by being subjected to stereotypes and prejudices, then exposed to acts of discrimination (Kilian et al., 2021).

When individuals stigmatize others, a multi-step process occurs where the individual uses diagnoses to label and assign others to groups which allows for stereotyping to then take place (Kilian et al., 2021). This process is made easier when labels such as "alcoholic" imply negative connotations. With terms like these frequently used, stereotyping and prejudices are set in motion. Stereotypes are conditioned thoughts, such as believing an "alcoholic" to be dangerous, while prejudices are the approval of stereotypes that lead to negative emotions like fear or anger. These prejudices make way for acts of discrimination to take place such as social exclusion or unemployment (Kilian et al., 2021). As stigmatization of individuals with alcohol use disorder remains a key contributor to health inequity (Kilian et al., 2021), the negative attitudes and the subsequent negative consequences warrants further attention.

The experience of negative attitudes and perceptions, particularly the awareness of public stigma, may have negative impacts on individuals (Morris et al., 2023). In a previous review comparing attitudes towards individuals with alcohol use disorder and other mental illnesses, those with alcohol use disorder were highly stigmatized as they were consistently perceived as dangerous (Crisp et al., 2000; Pescosolido et al., 2010), rated as being more responsible for their condition (Crisp et al., 2000, 2005), and were more likely to be on the receiving end of feelings of anger and fear resulting in higher degree of acceptance of discrimination than individuals with non-alcohol related disorders (Angermeyer & Matschinger, 1996; Kilian et al., 2021; Schomerus et al., 2011). This type of public stigma often leads to a vicious cycle of self-stigma and delayed or avoided care. Carrieri et al. (2022) posit that this vulnerable group may experience dehumanization, an extreme form of stigma, at a heightened level leading to care avoidance at higher levels than other vulnerable groups.

Research suggests that the awareness of public stigma results in internalized stigma often culminating in feelings of guilt, shame, and poorer recovery outcomes (Morris & Schomerus, 2023). Further, research has found that most individuals engaging in harmful drinking also engage in label avoidance, the fear of being labeled an "alcoholic," and construct their drinking identity as unproblematic and care-free, thus setting them apart from the "alcoholic other" (Morris et al., 2022). Engaging in label avoidance out of fear of negative perception results in further avoidance of timely help-seeking, treatment adherence, and recovery (Schomerus et al., 2022; Corrigan et al., 2017). Previous research indicates that alcohol stigma has been and remains a well-established barrier to treatment seeking and utilization as well as overt and subtle forms of discrimination against individuals with alcohol use disorder, including by healthcare professionals (Morris & Schomerus, 2023).

Due to these larger issues both in and out of the healthcare system, the lower rates of treatment prevalence have led to patients seeking treatment, if any, very late in the disease process. As a result, individuals can be negatively characterized by their higher levels of alcohol use, comorbidity, and functional losses (Rehm et al., 2015). To this end, the examination of attitudes, specifically implicit biases, is warranted to further assess the impact of negative attitudes on vulnerable populations.

Explicit Attitudes

The majority of research examining the role of attitudes toward individuals with AUD focuses on explicit bias. In a previous study assessing healthcare provider negative attitudes towards individuals who consume alcohol, results indicate that primary care providers consistently reported lower regard for treating patients with alcohol use history (Gilchrist et al., 2011). Similarly, a separate study assessing hospital-based healthcare providers attitudes towards

patients with alcohol use disorders found healthcare workers to exhibit a greater degree of stigma towards patients with alcohol use disorders such that they preferred greater social distancing, deemed alcohol use disorder a sign of weakness, and believed patients to be responsible for both onset and offset of the disorder (Soh et al., 2019). Results from a previous national survey assessing attitudes and social distancing preferences of Americans towards individuals with alcohol use disorder suggest that overall, most, especially women, were less willing to interact with someone with an alcohol use disorder (Abraham et al., 2013). These results were especially highlighted in the context of family relationships and work life (Abraham et al., 2013). Furthermore, participants overwhelmingly supported a medical model of alcohol use disorder such that nearly 95% of participants supported treatment for alcohol use disorder being covered by medical insurance. These beliefs, however, did not translate into increased willingness to interact with persons with alcohol use disorders. (Abraham et al., 2013).

As healthcare providers play a crucial role in the identification and treatment of alcohol use disorders, research demonstrates that negative attitudes and low professional satisfaction towards patients seeking treatment have detrimental effects on several aspects of care including a decreased willingness to provide patient care resulting in especially suboptimal outcomes (Meltzer et al., 2013; Saitz et al., 2002). Thus, while providers have a unique opportunity to identify and treat patients with alcohol use disorder, negative explicit attitudes instead result in poor communication between the patient and provider, decreased therapeutic alliance, and hampers patients' recovery by negatively impacting their self-esteem, self-efficacy, and treatment adherence (Link & Phelan, 2001; Meltzer et al., 2013; Palmer et al., 2009; van Boekel et al., 2014). Furthermore, a previous review conducted by Molina-Mula et al., (2018) indicated that healthcare professionals' attitudes differed according to roles, nature of contact with drug

dependent patients, and an overall lack of training and education in general drug dependency. These results, however, did not include an implicit measure of bias, did not focus solely on alcohol use disorder, or included various forms of providers in their sample.

While self-report measures are thought to be the most convenient way to learn about a participant's attitude, Greenwald and colleagues (2002) posit that there are two factors that affect participants' responses: introspective limits and response factors. Greenwald et al., (2002) posits that because a person lacks awareness, they cannot accurately report on the intended domain, regardless of their motivation to respond accurately to instructions. Contrastingly, response factors assume that the participant is aware of their regard on the intended domain and can then report accurately but demand characteristics and faking mask accurate self-report. Thus, while explicit measures of bias can be used as a predictor of intentional acts of prejudice, such as providers refusing to treat patients with alcohol use disorder, such measures are meant to reflect non-automatic processes (i.e., controllable, intentional responses) and may succumb to social desirability.

Implicit Bias

Implicit biases are unconscious and uncontrollable negative associations that may influence judgement and behavior towards individuals (Brownstein, 2015). Such biases can be activated by situational cues (e.g., a person's skin color), leading to actions that are not easily controlled because they are done unconsciously (Blair et al., 2011; Brownstein, 2015; FitzGerald et al., 2017). Greenwald et al., (2009) posits that in highly sensitive areas where individuals are susceptible to prejudice and stigmatization, implicit attitudes are a better predictor of behaviors of discrimination than explicit or self-report measures as noted in Penner et al., (2010) review indicating the negative impact on effective interaction between providers and their patients.

Thus, the Implicit Association Test (IAT) created by Greenwald (1998) is used to measure implicit, automatic attitudes as some automatic attitudes may be unconsciously negative and different from what is reported or stated (Pruett & Chan, 2006; Egloff & Schmukle, 2002).

Implicit Association Test

Developing a measure of implicit negative bias towards individuals with alcohol use disorder may enhance the knowledge to determine the extent to which implicit bias exists among individuals who drink. The IAT is a validated tool used to assess the strength of association between contrasted concepts which participants must classify as they appear on the screen (Greenwald et al., 1998). The task for the participant is to quickly associate stimulus items (words, pictures, etc.) with one of two contrasting categories. Depending on the latency in response time, the IAT measures the strength of the association such that the stronger associations are easier to pair resulting in faster response times and fewer errors made (Greenwald et al., 1998). For example, one of the most widely used IATs assesses implicit attitudes toward African Americans compared to European Americans (Greenwald & Krieger, 2006; Nosek et al., 2002). Participants are asked to distinguish African American faces from European American faces (categories) followed by distinguishing pleasant versus non-pleasant words (valences). Participants then distinguish all four categories (African American faces, European American faces, pleasant and non-pleasant words). The basis of the IAT is to make inferences about attitudes (category-valence associations) based on response latencies in two of the four category blocks as it easier to quickly group items that are cognitively associated with each other (Greenwald & Krieger, 2006; Nosek et al., 2002). IATs can differ in various ways, with the most common being in the associations being measured (e.g., alcohol-approach versus alcohol-avoid; alcohol-positive versus alcohol-negative). IATs may also differ in length/number

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of trials. For example, Sriram & Greenwald (2009) introduced the Brief IAT such that there are fewer trials and concepts in comparison to the regular IAT. Brief IATs are driven by the difficulty in finding a natural contrast between concepts. Thus, depending on the concept(s) of interest, associations, and the length of the IAT may be designed specifically for each interest.

Previous studies assessing the validity of the IAT have measured the construct, convergent, and predictive validity of the tool (Gray et al., 2011; Pruett et al., 2006). Construct validity refers to the extent to which the measure accurately assesses what it is intended to and is established by examining differences in the association of target and value categories. According to Campbell and Fiske (1959), when two or more constructs are assessed by more than a single method, the multi-trait multimethod (MTMM) approach can be used to determine convergent and predictive validity (Campbell and Fiske, 1959). Convergent validity refers to the extent to which scales measuring the same construct are related (Carlson & Herdman, 2012). As such, correlations between the IAT and a similar explicit measure are assessed. Predictive validity refers to the extent to which the implicit measure predicts relevant behavior (Greenwald et al., 2009). To examine predictive validity of the IAT, multiple hierarchical regressions are utilized to assess the relationship between the IAT and related explicit behavior.

Empirical Support for the IAT

While Implicit association tests have been used primarily in the context of race and prejudice (Greenwald et al., 1998; Baron et al., 2006; Haider et al., 2011; Maina et al., 2018; Tobon et al., 2021), IAT research has expanded to understanding biases toward other vulnerable groups. In a recent systematic review examining implicit racial/ethnic bias in healthcare providers using the Implicit Association Test, researchers reviewed 37 studies with pro-White or anti-Black, Hispanic, American Indian, or dark skin bias among healthcare providers in various

disciplines and levels of training (Maina et al., 2018). The IAT is commonly used to measure race, skin tone, compliance, medical cooperativeness, procedural cooperativeness, and quality care compared to race (Maina et al., 2018). Authors of the review further discuss the association between implicit biases and the provision of healthcare. For example, pediatricians with pro-White bias are less likely to prescribe post-care narcotics to Black children (Sabin and Greenwald, 2012). Additional results found that counselors and trainees with pro-White/anti-Black bias associate Black patients with poorer anticipated therapeutic bonds than White patients (Katz and Hoyt, 2014). Lastly, a survey among resident physicians found an association between pro-White bias and lower rates of appropriate treatment for Black patients with acute coronary syndrome (Green et al., 2007). These findings further illustrate the disparities vulnerable groups face in the healthcare system and directly from trusted providers.

Furthermore, in a recent meta-analysis assessing implicit bias toward people with disabilities, Antonopoulos et al., (2023) reviewed twelve studies using the Disability IAT developed by Pruett and Chan (2006). Results indicated general negative attitudes toward general disability where participants were quicker to associate "disabled" with "bad" and "nondisabled" with "good" (Federici & Meloni, 2009). This same implicit bias was seen in participants before and after an educational intervention (Archambault et al., 2008; Lu et al., 2018). While the association of contact with people with disabilities was assessed in some studies, results are mixed. Antonopoulos et al., (2023) report most studies showing no significant effect on contact. However, in studies finding significant effects, relatives of people with disabilities had significantly higher negative implicit bias than those without relatives with disabilities (Federici & Meloni, 2009). These results suggest that those in contact with people with disabilities hold more negative implicit attitudes, offering mixed support for Allport's

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(1954) contact theory. This theory suggests that under certain circumstances, contact between groups may reduce prejudice (Allport et al., 1954). Further research that has supported this theory has shown that the greater contact one has with a stigmatized group, such as patients who are HIV-positive, the less negative attitude one has toward that group (Brener et al., 2007). However, this is not always the case as mixed findings also indicate that greater exposure to patients with AUD is associated with more negative attitudes (Brener et al., 2007; Kelleher & Cotter, 2009; Warren et al., 2012). In situations in which contact does not lead to positive attitudes, research suggests this may be due to optimal conditions for equal group status, inter-group cooperation, and authority support not being met (Brener et al., 2007; Pettigrew 1998). Furthermore, as research suggests a difference between implicit and explicit attitudes towards stigmatized groups, these attitudes may result in different behaviors towards these groups (Gaertner & Dovidio, 2000). Developing a measure of implicit bias towards individuals with alcohol use disorder may enhance the knowledge to determine the extent to which implicit bias exists in a more general population.

IAT and Alcohol Use

Implicit measures of alcohol-related cognitions, particularly among college students, have become more widely researched as the need to understand drinking behaviors also increases (Lindgren et al., 2013). While no IAT currently exists to measure implicit biases toward people with alcohol use disorders, IATs have been developed to identify other alcohol-related cognitions (Lindgren et al., 2013). Currently, research utilizing IATs in alcohol research has focused on identity, motivations to drink, and college students (Lindgren et al., 2013). These IATs contain alcohol-related stimuli which may trigger processes resulting in the tendency to approach or avoid alcohol related stimuli as well as reflective processes that may result in

inhibiting drinking behaviors (Lindgren et al., 2013). While distinct from the proposed purposes of the current study, the broader research on IAT in the context of drinking behavior merits elaboration.

IAT related to biases toward drinking behaviors among college students include Alcohol Excitement IAT, Alcohol Cope IAT, Stress Drinking IAT, Drinking Identity IAT, and Alcohol Approach IAT (Lindgren et al., 2013). For example, the Alcohol Cope IAT was developed by Lindgren and colleagues (2011) based on the motivational models of addiction and used to implicitly measure drinking to cope or to reduce stress. In a similar approach, Palfai and colleagues (2003) created the Alcohol Approach IAT as a measure of whether an individual's motivation toward alcohol is appetitive or inhibitory (Lindgren et al., 2013; Palfair et al., 2003). Lindgren and colleagues (2013) further developed the Stress Drinking Brief-IAT to assess the association of stress related stimuli with drinking or reaching out. Lastly, the most recent IAT developed by Lindgren et al., (2020) is the Drinking Identity IAT which assesses drinking identity in predicting risky drinking outcomes in college students. These previous studies suggest that most of these IATs are predictive of drinking outcomes and behaviors among drinkers. However, no IAT to measure potential bias toward people with AUD currently exists, to the best of our knowledge.

Present Study

The current study intends to develop and validate an implicit measure assessing negative implicit biases towards individuals with alcohol use disorder through the lens of contact theory. Specifically, this study will determine the construct, convergent, and predictive validity. Specific to convergent validity, the IAT and the Hispanic Perceived Public Stigma of Mental

Health alcohol subscale should positively correlate with each other. In assessing predictive validity, it is expected that the IAT and alcohol use should moderately correlate.

The hypotheses for the current study include: H1): Participants will categorize stimuli when the target and attribute pairings reflect a nonalcoholic person with approach and alcoholics with avoid than if pairings were reversed, consistent with previous IAT research and indicative of construct validity. H2): Greater negative bias as indicated by negative IAT scores will be predictive of alcohol use scores. H3): Increased perceptions of public stigma, specifically towards alcohol use disorder, will be negatively associated with the IAT, such that individuals with increased public stigma of alcohol use disorder will also exhibit greater negative bias towards individuals with alcohol use disorder as indicated by a negative IAT score. Ultimately, implicit biases in a general population may negatively influence help seeking behaviors among those with alcohol use disorder. Although explicit measures of bias may be easier and quicker to use, these measures also have potential to be easily swayed by social desirability and response factors that keep participants from responding accurately. Thus, this proposed study's aim is to assess implicit biases towards individuals with alcohol use disorder, laying a foundation for future research on implicit attitudes towards alcohol use disorder in various contexts.

Chapter 2: Methods

Participant Recruitment

Participants were recruited via Prolific. Participants who voluntarily participated in the online survey read an informed consent form which detailed their rights as participants and explained the study procedures. After reading the form, participants were able to make an informed decision on participating in the study. Those who decided to participate chose a multiple-choice option acknowledging that they voluntarily agreed to participate. Upon completion of the survey, participants were compensated $10.50 per hour. Inclusion criteria included being 18 years or older, identifying as Hispanic, meeting the criteria for alcohol use which was having at least one drink of alcohol per week, being a resident of the United States, and consenting to participating in the study. Exclusion criteria included anyone who is younger than 18 years of age, did not identify as Hispanic, did not meet the alcohol use criteria, was not a resident of the United States, and did not consent to participating in the study.

Measures

Implicit Association Test- Alcohol and Contact

Participants responded to a computer-based reaction time task using standard procedures for the IAT created on IATgen and delivered via Qualtrics (Greenwald et al., 1998; Carpenter et al., 2019; Qualtrics, 2022). The IAT developed for the study measures strength of association between concepts of target categories (alcoholic versus non-alcoholic) and value categories (approach versus avoid). The stimuli for target categories are alcohol use words (i.e., "drinker," "partier," "drunk," "drink") and non-alcohol use words (i.e., "non-drinker," "abstainer," "sober," "abstain"). Consistent with contact theory, the value category consists of approach words (i.e., "near," "approach," "closer," "toward") and avoid words (i.e., "escape," "avoid," "far," "away").

Note that while the term "alcoholic" is dated and discouraged in peer reviewed publications, we will use it as it is still used in lay language to describe a person with significant drinking problems.

Participants completed seven blocks of stimuli sorting by pressing the key designated for the stimulus (see Figure 1). Block one is a practice block (20 trials) of only targets (e.g., alcohol, non-alcoholic); Block two is a practice block (20 trials) of only categories (e.g., approach, avoid). Next is a combined block (e.g., "incompatible" block: alcohol + approach, non-alcoholic + avoid) using both targets and categories. This is subdivided into 20 practice trials (Block 3) and 40 critical trials (Block 4; scoring uses data from B3 and B4). Following is another practice block (Block 5), consisting of the categories with the sides reversed (e.g., approach, avoid). This is done to wash out any left–right associations learned in the earlier blocks. Finally, participants repeat the combined block with the categories in their reversed positions (e.g., "compatible" block: alcohol + avoid, non-alcohol + approach). Similarly, this is divided into 20 practice trials (Block 6) and 40 critical trials (Block 7). Using Greenwald and colleagues (2020) recommended standard IAT procedures and scoring algorithm, data from the combined B3, B4, B5, and B6 blocks will be analyzed. A standardized difference score (D score) will be calculated for each participant based on the length of time to respond, accounting for the error feedback provided to participants displaying an "X" for 300ms for incorrect responses. As Greenwald and authors (2020) recommend the built-in error penalty procedure, participants are forced to correct errors. Thus, no additional penalty will be added to participants IAT scores (Greenwald et al., 2003; Carpenter et al., 2019). A D-score of 0 indicates no difference in preference; a positive D score indicates preference for alcoholics. Lastly, a negative D score indicates an implicit preference for non-alcoholics. Previous IAT studies have resulted in internal consistency within the .80 range

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(Bosson et al., 2000). The present study assessed the internal consistency of the IAT using a split-half procedure (De Houwer & De Bruycker, 2007), estimate = .87 and Cronbach's alpha, α = .86.
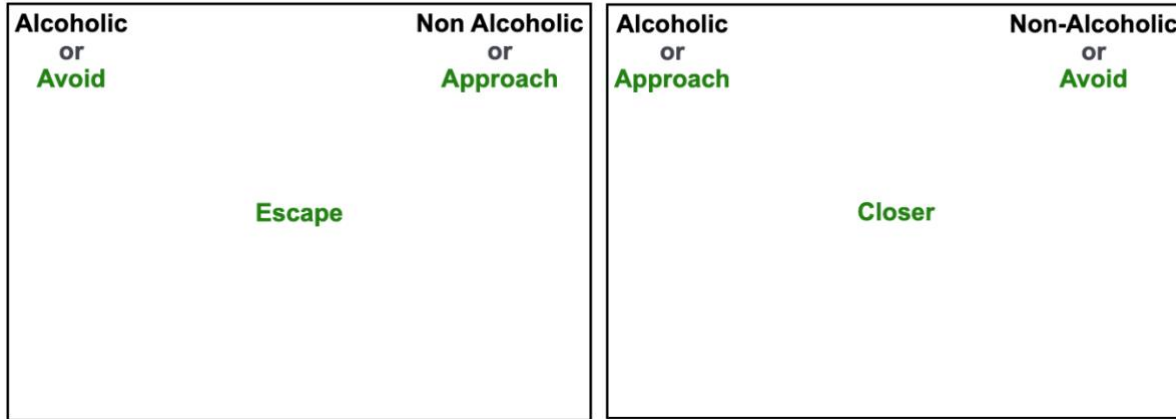
Figure 1. Combined blocks
Note. Participants who implicitly prefer to avoid alcoholics than non-alcoholics should be faster to sort the pairings on the left and slower to sort the pairings on the right. If the participant selects "I" for escape, they are then asked to correct their mistake by pressing the "E" key.

Barriers to Help Seeking. The Barriers to Help Seeking Scale (BHSS) is a 31-items scale used to identify reasons someone might choose not to seek help for a persistent pain in their body. The BHSS asks participants to rate how much of a reason each item would be to not seek help for pain on a 5-point Likert-type scale, with 0 being "not at all" and 4 being "very much" (Mansfield et al., 2005). The measure consists of five subscales including need for control and self-reliance (α = .90), minimizing problem and resignation (α = .87), concrete barriers and distrust of caregivers (α = .72), privacy (α = .77), and emotional control (α = .87). Lower scores indicate that the item/factor is less of a barrier to seeking help. The measure has previously shown good reliability in previous studies (α = .93; Mansfield et al., 2005) and each subscale showed acceptable reliability in the current study.

Self-Stigma of Seeking Help. The Self-Stigma of Seeking Help (SSOSH) is a 10-item self-report instrument designed to assess the stigma associated with seeking psychological help.

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The SSOSH uses a 5-point Likert-type scale with 1 being "strongly disagree" and 5 being "strongly agree." (Vogel et al., 2006). The measure has previously shown acceptable reliability ($\alpha = .83$; Bathje & Pryor, 2011) and showed good reliability in the present study ($\alpha = .91$).

Hispanic Perceived Public Stigma of Mental Health. The Hispanic Perceived Public Stigma of Mental Health Scale is a 32-item non-validated scale that be used to assess Hispanic perceptions of public stigma on mental illnesses. This scale has four subscales, one of which was used to assess perceptions of public stigma on alcohol use disorder. Each item is rated on a 4-point Likert-type scale ranging from 1 "strongly disagree" to 4 "strongly agree". The subscale in the present study had poor reliability ($\alpha = .34$).

Children of Alcoholics Screening Test. The Children of Alcoholics Screening Test (CAST-6; Elgan et al, 2021) helps identify individuals who may have had a parent who suffered from alcohol use. The screening measure consists of 6 questions that focus on experiences the participant may have seen or experienced when their parent was drinking alcohol. The scale uses dichotomous scoring of a yes or no response, and those who score a 2 or more are identified as having a parent with alcohol use problems.

Alcohol Use Disorder Identification Test. Participant alcohol use was measured using the Alcohol Use Disorder Identification Test (WHO, 2001). The AUDIT is a commonly used tool to assess occurrence and frequency of alcohol consumption and alcohol related consequences. The AUDIT is a 10-item screening tool that utilizes a 5-point Likert-type scale, with 0 being "*never*" and 4 being "*daily or almost daily.*" The scores are summed to yield a total score and can range between 0 to 40 with higher scores indicating greater alcohol use disorder severity. The AUDIT has previously shown acceptable reliability ($\alpha = .74$; Lindgren et al., 2020) and good reliability in the current study ($\alpha = .84$).

Sociodemographics. Lastly, participants completed a standard demographics form with questions such as age, sex, and ethnicity.

Procedure

All procedures were approved by the University of Texas at El Paso Institutional Review Board (Protocol #1931742) prior to data collection. Participants were recruited via Prolific, a secure web-based site. The measures and accompanying informed consent were delivered through Qualtrics. Data was collected in September 2022. After acknowledging the consent form, participants completed the various measures and IAT. Upon completion, participants were compensated for their time.

Approach to Analyses

Statistical analyses were computed using R programming. Descriptive analyses were conducted to assess sample characteristics. Next, a D score was computed for the IAT following Greenwald et al. (2003) recommended scoring guidelines. Although there are 7 blocks in the IAT, only practice blocks (3 and 6) and test blocks (4 and 7) will be analyzed (Greenwald et al., 2003; Carpenter et al., 2019). A D-score of 0 indicates no difference in preference; a positive D score indicates preference for alcoholics. Lastly, a negative D score indicates an implicit preference for non-alcoholics. A Pearson correlation will then be used to assess the association between the IAT and the Hispanic Perceived Public Stigma of Mental Health alcohol subscale to assess convergent validity of the IAT. Hierarchical linear regressions will then be conducted to assess for predictive validity using alcohol use severity scores as the dependent variable. Lastly, correlations between the Implicit Association Test-Alcohol Use, Barriers to Help Seeking, Hispanic Perceived Public Stigma subscale, Self-Stigma of Seeking Psychological Help, and the

Children of Alcoholics Screening Test to assess the relationship between the implicit and explicit measures.

Power Analysis

A power analysis was conducted using Benedek Kurdi's Implicit Association Test Power Calculator for Behavioral Prediction to determine the sample size. In accordance with Kurdi's parameters to determining sample size, the following determinants were set: IAT was selected as the type of implicit measure, the study focus was set to primary such that validity is the focus of the study with the group category set to 'substance abuse.' Next, the type of criterion measure selected was group perception based on direct trait assessments about social groups, including comfort with group, and ratings of group likability, friendliness, or trustworthiness. Lastly, attribute polarity was set to high polarity and the scoring method selected was difference score so that the score is computed from ratings of stigmatized and non-stigmatized groups on the same measure. Based on the criterion selected and power set to .80, the needed N was 152 participants.

Chapter 3: Results

Participant Characteristics

A total of 190 responses were collected, however, following Greenwald et al., (2003) recommendations, excessively fast responses (> 10% trials < 300ms) were removed resulting in a final sample size of 175 Hispanic participants (M_{age} = 32.80, SD = 10.37, 54.3% males) ranging in age from 19 years old to 73 years old. Notably, most participants reported high scores of alcohol consumption (60.7%) such that they fell within the alcohol dependence range. The remaining participants (30.3%) reported less alcohol consumption but still fell within the harmful consumption range (Table 1).

Table 1. Participant Characteristics and Descriptive Statistics

Characteristic	Frequency/Mean(SD)	n	
Age	32.80 (*10.37*)	175	
Biological Sex			
Male	54.3%	95	
Women	45.7%	80	
Measure	Frequency/Mean(*SD*)	n	Min/Max
Alcohol Use	18.49 (*0.83*)	175	0-40
Harmful Consumption (8-14)	30.3%	53	
Alcohol Dependence (15+)	60.7%	122	

IAT Results

The effect size for the IAT was small with the mean IAT D score trending towards participants slightly favoring non-alcoholics or an implicit negative bias toward alcoholics M_D $_{Score}$ = -0.07, SD = 0.46, d = -0.17, with these scores significantly differing from zero (t(174) = -2.20, p = 0.029, 95% $CI_{D\ Score}$ [-0.14, -0.007]). The magnitude of these effects was captured using the D effect scores. Following the suggested effect size guidelines used by Greenwald and authors (see Project Implicit website, https://implicit.harvard.edu; d of .15 to .35 is slight, .35 to .65 is moderate, and greater than .65 is a strong effect), the strength of the average effect

observed for the IAT was calculated. Although the IAT exhibited a negative *d* score, using

IATgen's scoring algorithm, the negative D score is the result of Target A + negative and Target

B + positive. In the present study, "alcoholic" was entered as Target A and "non-alcoholic" was

entered as Target B. These results serve only as a relative measure of preference for alcoholics

compared to non-alcoholics. See Table 2.

Table 2. Results of IAT

	n	*Scored*	*M*	*SD*	*95% CI*	*t*	*d*	*Rel*	*α*	*Err*	*Drop*
Alcohol - Contact	190	175	-0.076	0.46	[-0.14, -0.008]	-2.20*	-0.1664	0.87	0.86	0.08	0.08

Note. Rel = split half reliability. Err = error proportion. Drop = proportion of participants dropped for >10% < 300ms (Greenwald et al., 2003). **p < .05*

Validity of the Alcohol-Contact IAT

Convergent Validity

Next, the extent to which IAT scores correlated with the Hispanic Perceived Public

Stigma of Mental Health alcohol subscale were assessed. The correlation between IAT scores

and the subscale were not statistically significant (*r* = .11, *ns*).

Predictive Validity

The extent to which the IAT scores predicted alcohol use severity was assessed using

regression analyses. For regression analyses, participant age and sex were controlled for in step

one. At step two, IAT scores were entered. Results of the linear regression model using IAT

scores to predict alcohol use severity (F(3,172) = 1.273, Adjusted R^2 = .005, *p* = .254), were not

statistically significant (Table 3).

Table 3. Regression analyses predicting alcohol use scores

	B	SE	β	R²	ΔR²
Step 1					
Age	-.064	.048	-.101		
Sex	.842	.999	.064	.015	.15
Step 2					
IAT scores	1.277	1.116	.088	.022	.007

Note. Dependent variable = alcohol use severity scores. *p < .05

Correlations between IAT and Explicit Measures

Correlations between the IAT and explicit measures were not consistent with the average correlation of $r = .21$ set between IATs and explicit measures in Greenwald et al., (2009). Results did not yield significant correlations between the IAT and Self Stigma of Seeking Psychological Help ($r = .09$, *ns*). Similarly, statistically non-significant correlations were observed with the Need for Control and Self-Reliance ($r = -.08$, *ns*), Emotional Control subscales ($r = -.06$, *ns*), Concrete Barriers and Distrust of Caregivers ($r = -.07$, *ns*), Privacy ($r = -.07$, *ns*), and Minimizing Problems and Resignation ($r = -.07$, *ns*). Lastly, regarding self-reported drinking, the IAT was not statistically correlated with alcohol use severity scores ($r = .11$, *ns*). See Table 4 for correlations of IAT and explicit measures.

Table 4. Correlations of Variables

Variable	n	M	SD	1	2	3	4	5	6	7	8	9
1. IAT	175	-.07	0.46	—								
2. AUDIT	175	18.49	6.59	0.11	—							
3. HPPSMH	175	2.68	0.34	0.11	0.04	—						
4. SSSOH	175	2.44	0.93	0.09	−0.04	0.12	—					
5. Need for Control	175	0.34	0.47	-0.08	.0.08	0.06	0.52**	—				
6. Minimizing Problems	175	0.57	0.57	−0.07	0.02	0.10	0.36**	0.44**	—			
7. Barriers	175	0.45	0.45	-0.07	0.10	0.04	0.21**	0.35**	0.39**	—		
8. Privacy	175	0.37	0.47	-0.07	-0.02	0.13	0.45**	0.62**	0.35**	0.45**	—	
9. Emotional Control	175	0.43	0.61	-0.06	0.09	0.04	0.43**	0.60**	0.50**	0.48**	0.68**	—

Note. $^*p < .05.$ $^{**}p < .01.$

Exploratory Analyses

As the sample of the current study was comprised of drinkers in the harmful and dependent ranges and participants who also identified as children of alcoholics, exploratory analyses were prompted. No relationship for the following analyses were hypothesized.

Results

The IAT results for participants in the harmful range of alcohol use scores indicate a moderate and significant effect size with the mean IAT D score indicating participants had an implicit preference for non-alcoholics $M_{D\ Score}$ = -0.23, SD = 0.44, d = -0.52, $t(52)$ = -3.57, p = 0.0004, 95% $CI_{D\ Score}$ [-0.357, -0.109] however, the very small sample size should be noted. Non-significant results are seen for participants in the dependent range of alcohol use scores with the mean IAT D score indicating an implicit preference for non-alcoholics $M_{D\ Score}$ = -0.004, SD = 0.44, d = -0.011, $t(121)$ = -.0117, p = 0.90, 95% $CI_{D\ Score}$ [-0.084, -0.750].

Next, IAT results were broken down for those identifying as children of alcoholics based on the Children's of Alcoholics Screening Test. For children of alcoholics, results indicate a

small but nonsignificant effect size with the mean IAT D score suggesting an implicit preference for non-alcoholics $M_{D\ Score}$ = -0.07, SD = 0.46, d = -0.169, $t(76)$ = -1.49, p = 0.14, 95% $CI_{D\ Score}$ [-0.17, -0.025]. Analyses for non-children of alcoholics yield similar results where a small and nonsignificant effect size with the mean IAT D score suggesting an implicit preference for non-alcoholics $M_{D\ Score}$ = -0.07, SD = 0.47, d = -0.163, $t(97)$ = -1.62, p = 0.11, 95% $CI_{D\ Score}$ [-0.17, -0.025]. Lastly, correlations between the IAT and the Children's of Alcoholics Screening Test were non-significant (r = -.05, ns). Refer to Tables 5 and 6 for IAT results and correlations.

Table 5. Exploratory IAT Results

	n	*Scored*	*M*	*SD*	*95% CI*	*t*	*d*	*Rel*	*α*	*Err*
Harmful	53	53	-0.23	0.44	[-0.357, -0.109]	-3.57*	-0.52	0.87	0.87	0.09
Dependent	122	122	-0.004	0.44	[-0.084, -0.750]	-0.11	-0.011	0.86	0.86	0.08
COA	77	77	-0.07	0.44	[-0.17, -0.025]	-1.49	-0.1697	0.86	0.85	0.08
Non-COA	98	98	-0.07	0.47	[-0.17, -0.017]	-1.62	-0.1632	0.86	0.87	0.08

Note. Dependent and harmful are groups based on alcohol use severity scores. COA = children of alcoholics, based on scores from Children of Alcoholics Screening Test. *p < .05.

Table 6. Correlation of IAT and Children of Alcoholics

Variable	*n*	*M*	*SD*	1	2
1. IAT	175	-.07	0.46	—	
2. CAST	175	2.02	2.36	-0.05	—

Note. *p < .05. **p < .01.

Chapter 4: Discussion

The present study sought to validate a measure of negative implicit biases towards individuals with alcohol use disorder through the lens of contact theory. Results based on the negative IAT D-scores suggest that participants held an implicit bias toward people with alcohol use disorder compared to people without alcohol use disorder. Further, exploratory analyses indicate that drinkers and children of alcoholics showed an implicit bias toward alcohol use disorder. Previous research on contact theory suggests that contact with stigmatized and other groups decreases prejudice thereby increasing positive attitudes (Allport, 1954). The current findings are not entirely in line with contact theory as it would suggest that increased exposure to people with alcohol use disorder would result in decreased biases toward the group. Lastly, the IAT did not correlate with explicit measures, however, potential explanations and solutions are discussed. Overall, these initial results provide evidence that implicit attitudes towards individuals with alcohol use disorder are negative and future research should further examine negative attitudes with explicit measures better related to the stigma toward persons with alcohol use disorder.

Support for the validity of the IAT for assessing negative implicit biases towards individuals with alcohol use disorder was mixed. In assessing construct validity, results suggest small but significant implicit bias. Specifically, IAT D-scores indicate participants had an implicit bias toward people with alcohol use disorder compared to people without alcohol use disorder. These results support our initial hypothesis that participants would categorize stimuli when the target and attribute pairings reflected a nonalcoholic person with approach and alcoholic with avoid than if pairings were reversed. While no other IAT assessing attitudes towards individuals with alcohol use disorder currently exists, to the best of our knowledge, these findings are consistent with other general substance use IAT literature. For example, Benau

and colleagues (2024) assessed implicit attitudes toward individuals who use substances. Specifically, the authors assessed the implicit attitudes of the general public toward people who engage in substance use with positive (i.e., terrific, laughing, pleasing, fantastic, excellent, cheer, worthy, magnificent) or negative (i.e., despise, horrible, gross, annoy, rotten, worthless, yucky, disaster) attribute categories and concept categories such as substance user (i.e., drug user, heroin user, alcoholic, cocaine user, crack user, meth user, benzo user, PCP user, injection drug user) and non-substance user (i.e., teetotaler, sober person, non-drug user, drug-free person, abstainer; Benau et al., 2024). Results of this study indicated strong negative biases towards individuals with substance use disorders (Benau et al., 2024). Similarly, Schroeder (2022) assessed implicit attitudes towards individuals diagnosed with a substance use disorder using addiction/substance use and sobriety/recovery as target categories and pleasant/unpleasant as attribute categories. Results indicated an implicit preference for sobriety/recovery and unfavorable attitudes toward addiction/substance use (Schroeder, 2022). Thus, the results of the current study examining an alcohol specific IAT are in line with findings from prior research of IAT for substance use disorders and/or substance use.

It was hypothesized that the IAT and the explicit measure, Hispanic Perceived Public Stigma of Mental Health alcohol subscale, would be moderately correlated and support convergent validity. However, the hypothesis was not supported as the correlation between the measures was nearly zero and nonsignificant. However, the most likely explanation for these results may be that the present study utilized a measure that was not representative of explicit bias toward persons with alcohol use disorder. As a result, no definitive conclusions can be drawn related to the association between implicit and explicit attitudes toward people with alcohol use disorder. A more appropriate measure for future research may be one assessing the

endorsement of alcohol stigma. It should be noted that the alcohol subscale used had an unacceptable Cronbach's alpha ($\alpha = .34$) which may indicate that items included in the measure were not representative of the domain of behavior (i.e., stigma towards persons with alcohol use disorder). In sum, future research should explore convergent validity by including a measure of the endorsement of stigma or other related measure.

A significant challenge in assessing convergent validity using stigma is that research regarding the correlations between implicit and explicit measures has been mixed. In general, previous research suggests that correlations between the IAT and explicit measures should positively and moderately correlate (Hofmann et al., 2005). In a meta-analysis assessing the strength of implicit-explicit correlations, Hofmann and colleagues (2005) found implicit and explicit measures to have an average correlation of .24. Similarly, Benau et al., (2024) argue for the expectation of at least small to moderate correlations which would indicate that the IAT and the explicit measures overlap but are not the same. However, research also suggests that while the two measures are assessing similar constructs, the IAT is still a measure of unconscious attitudes and explicit measures are an absolute measure of attitudes and, therefore, the two should not be expected to correlate (Vaughn et al., 2011; Pruett et al., 2006). Another potential explanation for the weak and nonsignificant correlation may also be due to the influence of social desirability that is often seen in self-report and explicit measures of stigma (Greenwald et al., 2002; Hoffman et al., 2005). Hoffman and colleagues (2005) posit that implicit and explicit correlations between mundane topics such as consumer preferences should be relatively high while implicit and explicit correlations between socially sensitive topics such as prejudice against a minority group should be relatively low. The examination of stigma against people with alcohol use disorder may be viewed as less acceptable than other biases and is, therefore, more

negatively impacted than other forms of stigma or bias. Therefore, the essential step toward establishing expected correlations between implicit and explicit measures of stigma or bias towards people with alcohol use disorder is to rely on a well-validated measure of attitudes toward outgroups such as the Allophilia Scale (Pittinsky et al., 2011) or establish the validity of a measure of explicit bias.

Next, predictive validity was assessed using regression analyses predicting alcohol use scores. It was hypothesized that the IAT would be predictive of the respondent's severity of alcohol. However, the hypothesis was not supported as the IAT scores did not predict alcohol use. It should be noted that these are associations, and it may be possible for the IAT to predict changes in alcohol use severity among at risk drinkers by way of stigma. Another potential explanation for these findings or lack thereof, may be that whether people are at risk of having an alcohol use disorder is not related to whether they would stigmatize others with an alcohol use disorder. Although sparce in literature, a previous study by Hatgis and colleagues (2008) found that college students who had personal experiences with a substance were less likely to believe people are personally responsible for their substance us disorder. Based on this research, one would expect that those with more severe alcohol use disorders would be less likely to stigmatize people with alcohol use disorders. Altogether, it may be that the Alcohol Use Disorder Identification Test was not an effective measure to use in conjunction with the IAT. Specifically, the use of the Alcohol Use Identification Disorder Test may not have been the appropriate measure to robustly measure explicit behavior related to alcohol attitudes or more generally, the engagement in behavior for which the bias is being assessed as associations made on the IAT may be an important predictor of future behavior related to the endorsement of stigma. It may be

useful for future research to instead include a measure of stigma endorsement or engagement or perceived controllability of alcohol use.

In assessing the correlation between the IAT and all other explicit measures, it was anticipated that the measures would moderately correlate with the IAT. Specifically, it was anticipated that factors related to Barriers to Help Seeking (i.e., need for control and self-reliance, emotional control, concrete barriers and distrust of caregivers, privacy, and minimizing problems and resignation) and Self-Stigma of Seeking Help would be moderately correlated with the IAT. This was anticipated because implicit biases toward individuals with alcohol use disorder may be related to an individual's willingness to seek help. However, the findings indicated that the IAT did not significantly correlate with explicit measures such as the subscales related to Barriers to Help Seeking or the Self-Stigma of Seeking Help. Benau and colleagues (2024) suggest that due to the few explicit measures of attitudes *towards* individuals who use substances, most research makes use of measures that assess adjacent constructs such as self-stigma (i.e., attitudes of individuals with substance use disorders) or perceived public stigma of substance use (i.e., the belief that most people harbor a belief). As such, the lack of correlational findings may be due to having measured adjacent constructs such as stigma of help seeking. Another potential explanation for these findings may be that these measures were not the best explicit indicators of stigma toward alcohol use disorder. The Barriers to Help Seeking Scale measures potential reasons the participant may not seek help for persistent bodily pain while the Self-Stigma of Seeking Help assesses the self-stigma associated with seeking psychological help. The lack of findings based on the use of these measures suggests that it may be more useful to measure explicit negative attitudes towards or expectations of individuals with alcohol use disorder, such as a social distancing measure or perceived responsibility or controllability of

alcohol use. Previous research from Benau and colleagues (2024) found that their IAT assessing

bias towards persons who engage in substance use strongly correlated with greater social

distancing/expectations of negative outcomes, negative attitudes towards injecting drug users,

greater perceived controllability of drug use, and greater stigma endorsement (Benau et al.,

2024). Thus, using a measure such as the Social Distancing Scale for Substance Users (Brown,

2011) to measure stigma in the form of social distancing or using a measure of attribution of

responsibility for substance use disorder may be measures that better assesses explicit negative

behavior toward a person who engages in alcohol use and result in significant and positive

correlations with the IAT.

Exploratory Analyses

Post-hoc exploratory analyses were conducted to assess hypotheses related to contact

theory. Contact theory posits that the more contact one has with a stigmatized group, the more

positive attitudes one may have (Allport, 1954). Thus, exploratory analyses were twofold. First,

it is expected that heavy drinkers are more likely to spend time with other heavy drinkers

(Bourdeau, et al., 2017). Based on contact theory, it was anticipated that individuals with alcohol

use disorder would be less likely to stigmatize others with alcohol use disorder. Secondly, it is

anticipated that children of alcoholics would have less implicit bias towards people with alcohol

use disorder based on their previous exposure or contact with a parent who had an alcohol use

disorder. As such, exploratory analyses were conducted with data on participants who fell within

the harmful and dependent drinking ranges as well as children and non-children of alcoholics.

Although research is mixed, it was anticipated that the IAT scores for both harmful and

dependent drinkers would trend in the direction of favoring alcoholics based on contact theory.

Exploratory results indicate that both harmful and dependent drinkers did have an implicit bias

toward persons with alcohol use disorder, however, these results were only significant for harmful drinkers. A potential explanation may be that this group of harmful drinkers do not recognize themselves as having an alcohol use disorder but do recognize others engaging in problematic drinking. Prior research amongst people who consume alcohol has suggested that those engaging in at-risk drinking are likely to have low problem recognition resulting in attitudes about their drinking that set them apart from the "alcoholic other" (Morris et al., 2022; Khadjesari et al., 2019). Furthermore, these results are also underpowered therefore caution should be taken in this interpretation. Thus, the results of this exploratory analysis should be used as preliminary to further similar hypotheses.

For results specific to children of alcoholics, IAT D-scores, while non-significant, indicated an implicit preference for non-alcoholics. These findings did not support our anticipated results based on contact theory which suggests that increased contact with a stigmatized group may increase positive attitudes. While previous research is mixed, it was anticipated that children of alcoholics would not have an implicit preference for non-alcoholics due to their contact with parents with harmful drinking patterns. Previous work in mental health research suggests that stigma from one's personal network (i.e., friends and family) may be less likely to occur (Corrigan et al., 2002) such that for persons with alcohol use disorder, it may be less expected for negative attitudes to result from their children. However, research also suggests the important role that other trusted family members play for children of alcoholics as children of alcoholics are more likely to have negative childhood experiences (i.e., child abuse) and therefore may hold negative attitudes toward alcohol use disorders if they attribute negative childhood experiences to their parent's alcohol use disorder. (AlSaad et al., 2023; Park & Shepp, 2015). It may also be inferred that the preference for non-alcoholics stems from non-alcoholic

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family members that helped reduce risks for the child by being supportive and fostering as much of a positive environment as possible to overcome their adverse environments (Park & Shepp, 2015). To further explore these relationships, it may be important to consider a) attributions, b) positive childhood experiences.

Overall, the current findings provide initial support for the developed IAT for alcohol use disorder biases. Specifically, the small but significant IAT D-scores suggest that participants had an implicit bias toward alcohol use disorder. Although correlations with explicit measures did not yield significant findings, current findings can be leveraged to support future research. For example, the lack of hypothesized relationships with explicit measures may be due to not having used measures that assess related behaviors of interest as well as the lack of robust explicit measures available resulting in measuring adjacent constructs. Furthermore, exploratory results, though cautiously interpreted, do not support contact theory as drinkers and children of alcoholics had an implicit bias toward alcoholics rather than holding more positive attitudes and preference for alcoholics. Further evaluation of contact theory is warranted and may include an explicit measure of contact such as social distancing and more detailed history of contact with others who may have an alcohol use disorder. Preliminary results of this research support the need for future research, however, the IAT is not without controversy.

Criticisms of the IAT

While the IAT has been widely used in research, it has been met with much criticism. The tool has been previously criticized as a "noisy measure" (Schimmack, 2019) due to its low re-test stability across measurement time points. However, that assessment assumes that the construct being tested by the IAT is stable over time itself. This notion is not widely accepted as previous research has argued for use of a situational model of attitudes such that attitudes are

situation dependent and therefore unstable over time (Payne et al., 2017). A common narrative in implicit bias research is that implicit biases are reflective of trait-like characteristics of a person and that these biases are developed during childhood and are, thus, stable over time. As such, it may be that attitudes towards people who drink are developed early and are seen later in implicit tasks like that of the present study. In a previous study conducted by Gawronski et al., (2017), researchers examined temporal stability of implicit and explicit measures in three content domains (i.e., racial attitudes, political attitudes, and self-concept). For implicit measures, researchers found an average stability of $r = .54$ and $r = .75$ for explicit measures. Although not done in the present study, future research should evaluate test-retest reliability to assess stability of the developed measure.

Further, previous meta-analyses have found significant yet low correlations between implicit measures and explicit measures to range between .12 to .28 (Cameron et al., 2012; Greenwald et al., 2009). The results of the current study are not in line the results of these meta-analyses, however, previously discussed issues such as measuring adjacent constructs and not having explicit measures related to implicit bias toward individuals with alcohol use disorder should be taken into account. Although researchers have argued that implicit measures are not predictors of behavior and cite these smaller correlations, Greenwald et al., (2015) posit that even the smallest of correlations have significant societal impact (e.g., prejudice and discrimination) where results may impact many people simultaneously or affect one individual repeatedly. Gawronski and colleagues (2019) also suggest that strong relations between implicit and explicit measures should be expected when a high conceptual correspondence exists. As such, researchers suggest caution in using implicit measures as predictors of future behavior and in interpreting IAT results as trait-like characteristics but also advise against dismissing the IAT

entirely. Researchers posit that while the IAT cannot determine whether an individual associates *flowers + pleasant* or *non-alcoholics + pleasant* in the absolute sense (Lane et al., 2007), the IAT can assess relative associations (Carpenter et al., 2019; Greenwald & Banaji, 2017; Gawronski, 2019). Thus, while the present study did not find significant correlations between implicit bias and self-stigma of help seeking or barriers to help seeking, it did inform future research, specifically regarding future inclusion of measures.

Limitations

Several limitations of the study should be acknowledged. First, the study did not have include test-re-test reliability and, therefore, the stability of the IAT could not be assessed. Second, the measures included in the study as explicit measures of behavior were not the best measures of attitudes or related behavior. For example, the Hispanic Perceived Public Stigma of Mental Health was geared toward perceived public stigma of alcohol use disorder, not an individual's explicit attitude or endorsement of stigma toward alcohol use disorder. Also, as previously stated, the Hispanic Perceived Public Stigma of Mental Health alcohol subscale was not psychometrically sound as its use in the current study showed an unacceptable Cronbach's alpha. Next, the sample utilized were Hispanics who indicated at least an at-risk level of drinking. As such, these results cannot be generalized to other samples.

Moreover, while the results showed preliminary support for the IAT, the target and value categories were a mix of nouns and adjectives and only had four stimuli per category. To this end, Nosek et al., (2007) recommend selecting appropriate category labels and stimuli that can be easily identified, avoiding gendered stimuli, selecting stimuli items relevant to the scope of the research, and to the extent possible, selecting stimulus items that can be categorized based on the intended nominal feature rather than an irrelevant stimulus feature (color or length of words,

gender, etc.). Furthermore, Nosek et al., (2005) found that while IAT effects were relatively unaffected by the number of stimulus items in each category, it is recommended to use more than one item at the least and have equal items per category. Future research should use the recommendations provided to guide the development of future IATs. Lastly, the current study did not utilize a measure of social desirability. This may be important for future research as Hoffman and colleagues (2005) posit that correlations between implicit and explicit measure may be affected by participants responding in a socially desirable way.

Future Research

The current study has shed some light on implicit biases toward individuals with alcohol use disorder. Despite the study's inconsistent findings and limitations, it also provides a sound basis for identifying the next steps for this line of research. Future research should continue to use contact theory to refine the stimuli used to assess implicit biases toward individuals with alcohol use disorder, however, stimuli should be developed based on previously set recommendations to ensure stronger and more domain related attribute stimuli. This includes an equal number of stimuli in target (i.e., alcoholic and non-alcoholic) and value (i.e., approach and avoid) categories and using words that are more familiar to individuals (e.g., using "drinker" instead of "tippler"). By doing so, this would not only ensure optimal outcomes in IAT development but also continue to add to the literature on contact theory and stigmatized groups. The results of the explicit measures used in the current study can be leveraged to make more cautious decisions in the inclusion of future explicit measures. Specifically, future research should measure explicit behaviors more directly related to the attitudes of interests, such as stigma toward individuals with alcohol use disorder and social distancing preferences.

Another exciting next step for this line of IAT research will include the use of multinomial processing tree models to gain a better understanding of the extent to which the underlying processes that contribute to responses on the IAT are stable. Multinomial processing models are guided by hypothesized statistical parameters thought to represent the cognitive processes that influence responses (Calanchini, 2020). As such, researchers argue that multinomial processing tree models are well-positioned to provide statistically rigorous insight into the cognitive processes that take place when responding to IATs and can be used to better inform not only alcohol stigma research but IAT stability research (Elder et al., 2023).

Conrey and colleagues (2005) argue that implicit measures are made of joint contributions of multiple processes, not only automatic processes. In fact, authors argue for a quadruple process model such that there are four distinct processes occurring during an implicit task (Conrey et al., 2005). These include the likelihood of automatic bias being activated by a stimulus, there being a correct response that can be determined, the overcoming of bias, and that when no other information is provided or just a general lack of information, guessing can be overcome (Conrey et al., 2005). Based on a race IAT example provided by Conrey and colleagues (2005), the quad model can be adapted to fit our current context of an Alcoholic-Non-Alcoholic IAT. That is, association activation may be driving the automatic tendency to respond negatively (i.e., avoid) to an "alcoholic." Depending on key assignment for the blocks, this automatic tendency may be congruent or incongruent with the correct answer for "alcoholic" based on discrimination. In blocks where alcoholics must be paired with negative/avoidance stimuli, there is no conflict with pairing, therefore no bias to overcome. However, when incongruent pairing is required (alcoholic with approach) then responses are driven by either automatic associations or accurate discrimination which determines whether the participant

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overcomes associations/bias. Lastly, if no association is activated or a correct response is not available, the participant must guess. While participants may guess by hitting right or left keys randomly, previous research has also found that participants show an unintentional preference for the right-hand key or may intentionally respond with the positive key to avoid looking prejudiced and socially desirable (Conrey et al., 2005). By implementing this statistical procedure, we may be able to identify more nuanced factors of the conscious and unconscious processes related to implicit biases against people with alcohol use disorder.

Conclusion

As alcohol use disorder remains one of the most highly stigmatized disorders, it is important to continue to assess the factors negatively impacting help seeking and treatment utilization. Previous research has found stigma and explicit biases in both the general public and healthcare systems to be prominent barriers for individuals with alcohol use disorder seeking treatment. However, research on implicit biases toward individuals with alcohol use disorder is sparce. This research is one of the first steps in identifying a sound implicit measure of alcohol use disorder bias that may be a useful tool in other settings. Future research should further explore whether implicit measures assess stable attitudes over time or if attitudes and responses to the IAT are context dependent with the use of multinomial processing tree models.

References

Abraham, A. J., Bride, B. E., & Roman, P. M. (2013). Public attitudes toward persons with alcohol use disorders (AUDs): The role of social contact and treatment-seeking behavior. *Sociological Focus, 46*(4), 267-280.

Allport, G. W., Clark, K., & Pettigrew, T. (1954). The nature of prejudice.

Angermeyer, M. C., & Matschinger, H. (1996). Social distance of the population toward psychiatric patients. *Gesundheitswesen (Bundesverband Der Arzte Des Offentlichen Gesundheitsdienstes (Germany)), 58*(1 Suppl), 18-24.

Antonopoulos, C. R., Sugden, N., & Saliba, A. (2023). Implicit bias toward people with disability: A systematic review and meta-analysis. *Rehabilitation Psychology,*

Archambault, M. E., Van Rhee, J. A., Marion, G. S., & Crandall, S. J. (2008). Utilizing implicit association testing to promote awareness of biases regarding age and disability. *The Journal of Physician Assistant Education, 19*(4), 20-26.

Baron, A. S., & Banaji, M. R. (2006). The development of implicit attitudes: Evidence of race evaluations from ages 6 and 10 and adulthood. *Psychological Science, 17*(1), 53-58.

Bathje, G., & Pryor, J. (2011). The relationships of public and self-stigma to seeking mental health services. *Journal of Mental Health Counseling, 33*(2), 161-176.

Benau, E. M., Zavodnick, J. H., & Jaffe, R. C. (2024). Initial evidence of reliability and validity of an implicit association test assessing attitudes toward individuals who use substances. *The American Journal of Drug and Alcohol Abuse,* , 1-11.

Blair, I. V., Steiner, J. F., & Havranek, E. P. (2011). Unconscious (implicit) bias and health

disparities: Where do we go from here? *The Permanente Journal, 15*(2), 71.

Bosson, J. K., Swann Jr, W. B., & Pennebaker, J. W. (2000). Stalking the perfect measure of

implicit self-esteem: The blind men and the elephant revisited?. *Journal of personality and

social psychology*, *79*(4), 631.

Brener, L., Von Hippel, W., & Kippax, S. (2007). Prejudice among health care workers toward

injecting drug users with hepatitis C: Does greater contact lead to less

prejudice? *International Journal of Drug Policy, 18*(5), 381-387.

Brownstein, M. (2015). No title. *Implicit Bias*

Calanchini, J. (2020). How multinomial processing trees have advanced, and can continue to

advance, research using implicit measures. *Social Cognition*, *38*(Supplement), s165-s186.

Cameron, C. D., Brown-Iannuzzi, J. L., & Payne, B. K. (2012). Sequential priming measures of

implicit social cognition: A meta-analysis of associations with behavior and explicit

attitudes. *Personality and Social Psychology Review*, *16*(4), 330-350.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the

multitrait-multimethod matrix. *Psychological Bulletin, 56*(2), 81.

Carlson, K. D., & Herdman, A. O. (2012). Understanding the impact of convergent validity on

research results. *Organizational Research Methods, 15*(1), 17-32.

Carpenter, T. P., Pogacar, R., Pullig, C., Kouril, M., Aguilar, S., LaBouff, J., ... & Chakroff, A.

(2019). Survey-software implicit association tests: A methodological and empirical

analysis. *Behavior research methods*, *51*, 2194-2208.

Carrieri, P., Barré, T., Bureau, M., Marcellin, F., & Mourad, A. (2022). Stigma and care

    avoidance in people with unhealthy alcohol use: A call for research and action. *Journal of*

    Hepatology, 77(4), 1221-1222.

Carvalho, A. F., Heilig, M., Perez, A., Probst, C., & Rehm, J. (2019). Alcohol use disorders. *The*

    Lancet, 394(10200), 781-792. https://https://doi.org/10.1016/S0140-6736(19)31775-1

Connor, J. P., Haber, P. S., & Hall, W. D. (2016). Alcohol use disorders. *The*

    Lancet, 387(10022), 988-998.

Conrey, F. R., Sherman, J. W., Gawronski, B., Hugenberg, K., & Groom, C. J. (2005).

    Separating multiple processes in implicit social cognition: the quad model of implicit task

    performance. *Journal of personality and social psychology*, *89*(4), 469.

Corrigan, P. W., Druss, B. G., & Perlick, D. A. (2014). The impact of mental illness stigma on

    seeking and participating in mental health care. *Psychological Science in the Public*

    Interest, 15(2), 37-70.

Corrigan, P. W., & Watson, A. C. (2002). Understanding the impact of stigma on people with

    mental illness. *World Psychiatry, 1*(1), 16.

Corrigan, P., Schomerus, G., Shuman, V., Kraus, D., Perlick, D., Harnish, A., Kulesza, M.,

    Kane-Willis, K., Qin, S., & Smelson, D. (2017). Developing a research agenda for

    understanding the stigma of addictions part I: Lessons from the mental health stigma

    literature. *The American Journal on Addictions, 26*(1), 59-66.

Crisp, A. H., Gelder, M. G., Rix, S., Meltzer, H. I., & Rowlands, O. J. (2000). Stigmatisation of

    people with mental illnesses. *The British Journal of Psychiatry, 177*(1), 4-7.

Crisp, A., Gelder, M., Goddard, E., & Meltzer, H. (2005). Stigmatization of people with mental illnesses: A follow-up study within the changing minds campaign of the royal college of psychiatrists. *World Psychiatry, 4*(2), 106.

De Houwer, J., & De Bruycker, E. (2007). The implicit association test outperforms the extrinsic affective Simon task as an implicit measure of inter-individual differences in attitudes. *British Journal of Social Psychology*, *46*(2), 401-421.

Egloff, B., & Schmukle, S. C. (2002). Predictive validity of an implicit association test for assessing anxiety. *Journal of Personality and Social Psychology, 83*(6), 1441.

Elder, J., Wilson, L., & Calanchini, J. (2023). Estimating the reliability and stability of cognitive processes contributing to responses on the Implicit Association Test. *Personality and Social Psychology Bulletin*, 01461672231171256.

Elgán, T. H., Berman, A. H., Jayaram-Lindström, N., Hammarberg, A., Jalling, C., & Källmén, H. (2021). Psychometric properties of the short version of the children of alcoholics screening test (CAST-6) among Swedish adolescents. *Nordic journal of psychiatry*, *75*(2), 155-158.

Federici, S., & Meloni, F. (2009). Making decisions and judgments on disability: The disability representation of parents, teachers, and special needs educators. *J Educ Inf Cybern, 1*(3), 20-26.

FitzGerald, C., & Hurst, S. (2017). Implicit bias in healthcare professionals: A systematic review. *BMC Medical Ethics, 18*(1), 1-18.

Gaertner, S. L., & Dovidio, J. F. (2000). The aversive form of racism.

Gawronski, B. (2019). Six lessons for a cogent science of implicit bias and its criticism. *Perspect Psychol Sci, 14*(4), 574-595. https://10.1177/1745691619826015

Gawronski, B., Morrison, M., Phills, C. E., & Galdi, S. (2017). Temporal stability of implicit and explicit measures: A longitudinal analysis. *Personality and Social Psychology Bulletin, 43*(3), 300-312.

Gilchrist, G., Moskalewicz, J., Slezakova, S., Okruhlica, L., Torrens, M., Vajd, R., & Baldacchino, A. (2011). Staff regard towards working with substance users: A european multi-centre study. *Addiction, 106*(6), 1114-1125.

Gray, H. M., LaPlante, D. A., Bannon, B. L., Ambady, N., & Shaffer, H. J. (2011). Development and validation of the alcohol identity implicit associations test (AI-IAT). *Addictive behaviors*, *36*(9), 919-926.

Green, A. R., Carney, D. R., Pallin, D. J., Ngo, L. H., Raymond, K. L., Iezzoni, L. I., & Banaji, M. R. (2007). Implicit bias among physicians and its prediction of thrombolysis decisions for black and white patients. *Journal of General Internal Medicine, 22*, 1231-1238.

Greenwald, A. G., Banaji, M. R., & Nosek, B. A. (2015). Statistically small effects of the Implicit Association Test can have societally large effects.

Greenwald, A. G., & Banaji, M. R. (2017). The implicit revolution: Reconceiving the relation between conscious and unconscious. *American Psychologist, 72*(9), 861.

Greenwald, A. G., Banaji, M. R., Rudman, L. A., Farnham, S. D., Nosek, B. A., & Mellott, D. S. (2002). A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. *Psychological review*, *109*(1), 3.

Greenwald, A. G., & Krieger, L. H. (2006). Implicit bias: Scientific foundations. *California Law Review, 94*(4), 945-967.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*(6), 1464.

Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., & Banaji, M. R. (2009). Understanding and using the implicit association test: III. meta-analysis of predictive validity. *Journal of Personality and Social Psychology, 97*(1), 17.

Haider, A. H., Sexton, J., Sriram, N., Cooper, L. A., Efron, D. T., Swoboda, S., Villegas, C. V., Haut, E. R., Bonds, M., & Pronovost, P. J. (2011). Association of unconscious race and social class bias with vignette-based clinical assessments by medical students. *Jama, 306*(9), 942-951.

Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the Implicit Association Test and explicit self-report measures. *Personality and social psychology bulletin*, *31*(10), 1369-1385.

Katz, A. D., & Hoyt, W. T. (2014). The influence of multicultural counseling competence and anti-black prejudice on therapists' outcome expectancies. *Journal of Counseling Psychology, 61*(2), 299.

Kelleher, S., & Cotter, P. (2009). A descriptive study on emergency department doctors' and nurses' knowledge and attitudes concerning substance use and substance users. *International Emergency Nursing, 17*(1), 3-14.

Khadjesari, Z., Stevenson, F., Toner, P., Linke, S., Milward, J., & Murray, E. (2019). 'I'm not a real boozer': A qualitative study of primary care patients' views on drinking and its consequences. *Journal of Public Health, 41*(2), e185-e191.

Kilian, C., Manthey, J., Carr, S., Hanschmidt, F., Rehm, J., Speerforck, S., & Schomerus, G. (2021). Stigmatization of people with alcohol use disorders: An updated systematic review of population studies. *Alcoholism: Clinical and Experimental Research, 45*(5), 899-911.

Lane, K. A., Banaji, M. R., Nosek, B. A., & Greenwald, A. G. (2007). Understanding and using the implicit association test: IV. *Implicit Measures of Attitudes, 59*, 102.

Lindgren, K. P., Hendershot, C. S., Neighbors, C., Blayney, J. A., & Otto, J. M. (2011). Implicit alcohol motives predict unique variance in drinking in Asian American college students. *Motivation and Emotion*, *35*, 435-443.

Lindgren, K. P., Burnette, J. L., Hoyt, C. L., Peterson, K. P., & Neighbors, C. (2020). Growth mindsets of alcoholism buffer against deleterious effects of drinking identity on problem drinking over time. *Alcoholism: clinical and experimental research*, *44*(1), 233-243.

Lindgren, K. P., Neighbors, C., Teachman, B. A., Wiers, R. W., Westgate, E., & Greenwald, A. G. (2013). I drink therefore I am: Validating alcohol-related implicit association tests. *Psychology of Addictive Behaviors, 27*(1), 1.

Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology, 27*(1), 363-385.

Lu, J., Webber, W. B., Romero, D., & Chirino, C. (2018). Changing attitudes toward people with disabilities using public media: An experimental study. *Rehabilitation Counseling Bulletin*, *61*(3), 175-186.

Maina, I. W., Belton, T. D., Ginzberg, S., Singh, A., & Johnson, T. J. (2018). A decade of studying implicit racial/ethnic bias in healthcare providers using the implicit association test. *Social Science & Medicine, 199*, 219-229.

Mansfield, A. K., Addis, M. E., & Courtenay, W. (2005). Measurement of Men's Help Seeking: Development and Evaluation of the Barriers to Help Seeking Scale. *Psychology of Men & Masculinity*, *6*(2), 95.

Meltzer, E. C., Suppes, A., Burns, S., Shuman, A., Orfanos, A., Sturiano, C. V., Charney, P., & Fins, J. J. (2013). Stigmatization of substance use disorders among internal medicine residents. *Substance Abuse, 34*(4), 356-362.

Molina-Mula, J., González-Trujillo, A., & Simonet-Bennassar, M. (2018). Emergency and mental health nurses' perceptions and attitudes towards alcoholics. *International Journal of Environmental Research and Public Health*, *15*(8), 1733.

Morris, J., Moss, A. C., Albery, I. P., & Heather, N. (2022). The "alcoholic other": Harmful drinkers resist problem recognition to manage identity threat. *Addictive Behaviors, 124*, 107093.

Morris, J., Boness, C. L., & Burton, R. (2023). (Mis)understanding alcohol use disorder: Making the case for a public health first approach. *Drug and Alcohol Dependence, 253*, 111019. https://10.1016/j.drugalcdep.2023.111019

Morris, J., & Schomerus, G. (2023). Why stigma matters in addressing alcohol harm. *Drug and Alcohol Review,*

Nosek, B. A., Banaji, M. R., & Greenwald, A. G. (2002). Harvesting implicit group attitudes and beliefs from a demonstration web site. *Group Dynamics: Theory, Research, and Practice, 6*(1), 101.

Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (2005). Understanding and using the Implicit Association Test: II. Method variables and construct validity. *Personality and Social Psychology Bulletin*, *31*(2), 166-180.

Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (2007). The implicit association test at age 7: A methodological and conceptual review. *Automatic Processes in Social Thinking and Behavior, 4*, 265-292.

Palfai, T. P., & Ostafin, B. D. (2003). Alcohol-related motivational tendencies in hazardous drinkers: Assessing implicit response tendencies using the modified-IAT. *Behaviour Research and Therapy, 41*(10), 1149-1162.

Palmer, R. S., Murphy, M. K., Piselli, A., & Ball, S. A. (2009). Substance user treatment dropout from client and clinician perspectives: A pilot study. *Substance use & Misuse, 44*(7), 1021-1038.

Payne, B. K., Vuletich, H. A., & Lundberg, K. B. (2017). The bias of crowds: How implicit bias bridges personal and systemic prejudice. *Psychological Inquiry, 28*(4), 233-248.

Penner, L. A., Dovidio, J. F., West, T. V., Gaertner, S. L., Albrecht, T. L., Dailey, R. K., & Markova, T. (2010). Aversive racism and medical interactions with black patients: A field study. *Journal of Experimental Social Psychology, 46*(2), 436-440.

Pescosolido, B. A., Martin, J. K., Long, J. S., Medina, T. R., Phelan, J. C., & Link, B. G. (2010). "A disease like any other"? A decade of change in public reactions to schizophrenia, depression, and alcohol dependence. *American Journal of Psychiatry, 167*(11), 1321-1330.

Pettigrew, T. F. (1998). Intergroup contact theory. *Annual review of psychology*, *49*(1), 65-85.

Pruett, S. R., & Chan, F. (2006). The development and psychometric validation of the disability attitude implicit association test. *Rehabilitation Psychology, 51*(3), 202.

Rehm, J., Manthey, J., Struzzo, P., Gual, A., & Wojnar, M. (2015). Who receives treatment for alcohol use disorders in the european union? A cross-sectional representative study in primary and specialized health care. *European Psychiatry, 30*(8), 885-893. https://10.1016/j.eurpsy.2015.07.012

Rehm, J. (2011). The risks associated with alcohol use and alcoholism. *Alcohol Research & Health, 34*(2), 135.

Rehm, J., Gmel Sr, G. E., Gmel, G., Hasan, O. S., Imtiaz, S., Popova, S., Probst, C., Roerecke, M., Room, R., & Samokhvalov, A. V. (2017). The relationship between different dimensions of alcohol use and the burden of disease—an update. *Addiction, 112*(6), 968-1001.

Sabin, J. A., & Greenwald, A. G. (2012). The influence of implicit bias on treatment recommendations for 4 common pediatric conditions: Pain, urinary tract infection, attention

deficit hyperactivity disorder, and asthma. *American Journal of Public Health, 102*(5), 988-995.

Saitz, R., Friedmann, P. D., Sullivan, L. M., Winter, M. R., Lloyd-Travaglini, C., Moskowitz, M. A., & Samet, J. H. (2002). Professional satisfaction experienced when caring for substance-abusing patients: Faculty and resident physician perspectives. *Journal of General Internal Medicine, 17*(5), 373-376.

Schimmack, U. (2021). The Implicit Association Test: A method in search of a construct. *Perspectives on Psychological Science*, *16*(2), 396-414.

Schomerus, G., Leonhard, A., Manthey, J., Morris, J., Neufeld, M., Kilian, C., Speerforck, S., Winkler, P., & Corrigan, P. W. (2022). The stigma of alcohol-related liver disease and its impact on healthcare. *Journal of Hepatology, 77*(2), 516-524. https://10.1016/j.jhep.2022.04.026

Schomerus, G., Lucht, M., Holzinger, A., Matschinger, H., Carta, M. G., & Angermeyer, M. C. (2011). The stigma of alcohol dependence compared with other mental disorders: A review of population studies. *Alcohol and Alcoholism, 46*(2), 105-112.

Schroeder, C. (2022). *The development of an implicit association test linking substance addiction, stigma, and bias* Available from Health Research Premium Collection, ProQuest Dissertations & Theses Global. (2733502004).

Soh, K. C., Lim, W. S., Cheang, K. M., & Chan, K. L. (2019). Stigma towards alcohol use disorder: Comparing healthcare workers with the general population. *General Hospital Psychiatry, 58*, 39-44. https://10.1016/j.genhosppsych.2019.01.001

Sriram, N., & Greenwald, A. G. (2009). The brief implicit association test. *Experimental psychology*, *56*(4), 283-294.

Tobon, A. L., Flores, J. M., Taylor, J. H., Johnson, I., Landeros-Weisenberger, A., Aboiralor, O., Avila-Quintero, V. J., & Bloch, M. H. (2021). Racial implicit associations in psychiatric diagnosis, treatment, and compliance expectations. *Academic Psychiatry, 45*(1), 23-33.

Urbanoski, K., Cheng, J., Rehm, J., & Kurdyak, P. (2018). Frequent use of emergency departments for mental and substance use disorders. *Emergency Medicine Journal, 35*(4), 220-225.

Van Boekel, L. C., Brouwers, E. P., van Weeghel, J., & Garretsen, H. F. (2014). Healthcare professionals' regard towards working with patients with substance use disorders: Comparison of primary care, general psychiatry and specialist addiction services. *Drug and Alcohol Dependence, 134*, 92-98.

Vaughn, E. D., Thomas, A., & Doyle, A. L. (2011). The multiple disability implicit association test: Psychometric analysis of a multiple administration IAT measure. *Rehabilitation Counseling Bulletin*, *54*(4), 223-235.

Vogel, D. L., Wade, N. G., & Haake, S. (2006). Measuring the self-stigma associated with seeking psychological help. *Journal of counseling psychology*, *53*(3), 325.

Wallhed Finn, S., Mejldal, A., & Nielsen, A. S. (2023). The associations between public stigma and support for others' help-seeking for alcohol use disorder: A cross sectional study in the general danish population. *Addiction Science & Clinical Practice, 18*(1), 46.

Warren, O. U., Sena, V., Choo, E., & Machan, J. (2012). Emergency physicians' and nurses'

    attitudes towards alcohol-intoxicated patients. *The Journal of Emergency Medicine, 43*(6),

    1167-1174.

World Health Organization. AUDIT: The Alcohol Use Disorders Identification Test—Guidelines

    for Use in Primary Care; World Health Organization, Department of Mental Health and

    Substance Dependence: Geneva, Switzerland, 2001.

Appendices

Appendix A: Alcohol Contact Implicit Association Test

Instructions: Place your left and right index fingers on the "E" and "I" keys. At the top of the screen are 2 categories. In the task, words and/or images appear in the middle of the screen.

When the word/image belongs to the category on the left, press the **E** key as fast as you can. When it belongs to the category on the right, press the **I** key as fast as you can. If you make an error, a red **X** will appear. Correct errors by hitting the other key.

Please try to go as fast as you can while making as few errors as possible.

When you are ready, please press the [Space] bar to begin.

Target category words

Alcoholic
- Drinker
- Partier
- Drunk
- Drink

Non-Alcoholic
- Non-Drinker
- Abstainer
- Sober
- Abstain

Value category words

Approach
- Near
- Approach
- Closer
- Toward

Avoid
- Escape
- Avoid
- Away
- Far

Appendix B: Barriers to Help Seeking

Imagine that you begin to experience some pain in your body. The pain is not so overwhelming that you can't function. However, it continues for more than a few days and you notice it regularly. You consider seeking help from a medical doctor or other clinician at the student health center. Below are several reasons why you might choose NOT to seek help. Please read each reason and decide how important it would be in keeping you from seeking help.

0 = not at all
1 = slightly important
2 = neutral
3 = moderately important
4 = very much

1. I would think less of myself for needing help.
2. I don't like other people telling me what to do.
3. Nobody knows more about my problems than I do.
4. I'd feel better about myself knowing I didn't need help from others.
5. I don't like feeling controlled by other people.
6. It would seem weak to ask for help.
7. I like to make my own decisions and not be too influenced by others.
8. I like to be in charge of everything in my life.
9. Asking for help is like surrendering authority over my life.
10. I do not want to appear weaker than my peers.
11. The problem wouldn't seem worth getting help for.
12. The problem wouldn't be a big deal; it would go away in time.
13. I wouldn't want to overreact to a problem that wasn't serious.
14. Problems like this are part of life; they're just something you have to deal with.
15. I'd prefer just to suck it up rather than dwell on my problems.
16. I would prefer to wait until I'm sure the health problem is a serious one.
17. People typically expect something in return when they provide help.
18. I would have real difficulty finding transportation to a place where I can get help.
19. I wouldn't know what sort of help was available.
20. Financial difficulties would be an obstacle to getting help.
21. I don't trust doctors and other health professionals.
22. A lack of health insurance would prevent me from asking for help.
23. Privacy is important to me, and I don't want other people to know about my problems.
24. This problem is embarrassing.
25. I don't want some stranger touching me in ways I'm not comfortable with.
26. I don't like taking off my clothes in front of other people.
27. I wouldn't want someone of the same sex touching my body.
28. I don't like to get emotional about things.
29. I don't like to talk about feelings.
30. I'd rather not show people what I'm feeling.
31. I wouldn't want to look stupid for not knowing how to figure this problem out.

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Appendix C: Self-Stigma of Seeking Help

INSTRUCTIONS: People at times find that they face problems that they consider seeking help for. This can bring up reactions about what seeking help would mean. Please use the 5-point scale to rate the degree to which each item describes how you might react in this situation.
1 = Strongly Disagree
2 = Disagree
3 = Agree & Disagree Equally
4 = Agree
5 = Strongly Agree

1. I would feel inadequate if I went to a therapist for psychological help.
2. My self-confidence would NOT be threatened if I sought professional help.
3. Seeking psychological help would make me feel less intelligent.
4. My self-esteem would increase if I talked to a therapist.
5. My view of myself would not change just because I made the choice to see a therapist.
6. It would make me feel inferior to ask a therapist for help.
7. I would feel okay about myself if I made the choice to seek professional help.
8. If I went to a therapist, I would be less satisfied with myself.
9. My self-confidence would remain the same if I sought professional help for a problem I could not solve.
10. I would feel worse about myself if I could not solve my own problems.

Appendix D: Hispanic Perceived Public Stigma of Mental Health

Hispanic Perceived Public Stigma of Mental Health Scale

32 item scale that assess Hispanic perceptions of public stigma of mental health. This scale has 4 subscales, Depression, Anxiety, PTSD, and Alcohol Use Disorder. Items are rated on a 5-point Likert-type scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). Higher scores indicate increased Hispanic perceptions of public stigma towards mental illnesses. (R) indicates reverse coded items

Alcohol Use Disorder (AUD)

Please read the following paragraph about Alcohol Use Disorder.

Alcohol Use Disorder (AUD) is an illness with problematic pattern of alcohol consumption. Those with AUD often spend a lot of time consuming and obtaining alcohol, have a hard time cutting down their drinking quantities, due to the tolerance they have created, and when they do lessen their drinking, they experience withdrawal symptoms (I.e., shaking, sweating, insomnia). Additionally, those with AUD's alcohol use impacts their occupational, social, and home life.

1. Most Hispanic people think that people with Alcohol Use Disorder are dirty.

2. Most Hispanic people think they can tell if someone has Alcohol Use Disorder.

3. Most Hispanic people think of Alcohol Use Disorder as a mental illness. (R)

4. Most Hispanic people think someone with Alcohol Use Disorder is weak.

5. Most Hispanic people think that someone with Alcohol Use Disorder is violent.

6. Most Hispanic people feel comfortable being friends with someone with Alcohol Use Disorder. (R)

7. Most Hispanic people of younger generations are less judgmental of someone with Alcohol Use Disorder than Hispanics of older generations (e.g., parents, grandparents). (R)

8. Most Hispanic people think people with Alcohol Use Disorder are not very religious.

Appendix E: Children of Alcoholics Screening Test- Shortform
Instructions: Please select the answer below that best describes your feelings, behaviors, and experiences related to your guardian's alcohol use if there is any. Take your time and be as accurate as possible. (Yes, No response items; 2 or more yes indicates COA).

1. Have you ever thought that one of your parents had a drinking problem?
2. Did you ever encourage one of your parents to quit drinking?
3. Did you ever argue or fight with a parent when he or she was drinking?
4. Have you ever heard your parents fight when one of them was drunk?
5. Did you ever feel like hiding or emptying a parent's bottle of liquor?
6. Did you ever wish that a parent would stop drinking?

Appendix F: Alcohol Use Disorder Identification Test- US
Please answer the following questions regarding your alcohol use and consequences.

Questions	0	1	2	3	4	5	6
1. How often do you have a drink containing alcohol?	Never	Less than Monthly	Monthly	Weekly	2-3 times a week	4-6 times a week	Daily
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 drink	2 drinks	3 drinks	4 drinks	5-6 drinks	7-9 drinks	10 or more drinks
3. How often do you have six or more drinks on one occasion?	Never	Less than Monthly	Monthly	Weekly	2-3 times a week	4-6 times a week	Daily

4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
8. How often during the last year have you been unable to remember what happened the	Never	Less than monthly	Monthly	Weekly	Daily or almost daily

night before because of your drinking?					
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year

Appendix G: Demographics

Please read each question carefully and select the most accurate response.

1. How old are you? _____

2. What sex were you assigned at birth?

    _____ Male
    _____ Female

3. Your Gender Identity:

NOTE: Cis Gender terms Cis Man and Cis Woman denote individuals whose gender identity corresponds with the sex assigned to them at birth.
{Choose one}
( ) Cis Man   ( ) Cis Woman   ( ) Trans Man   ( ) Trans Woman ( ) Another Identity

4. Are you Hispanic or Latino?

    _____ Yes
    _____ No

5. Please indicate which of the following categories best describes your race:

    ____White
    ____African American
    ____Asian American
    ____Native American / Alaskan Native
    ____ Native Hawaiian / other Pacific Islander
    ____Other (please specify) _____

6. Where were you born?

    ○ United States
    ○ Argentina
    ○ Bolivia
    ○ Brazil
    ○ Chile
    ○ Colombia
    ○ Costa Rica
    ○ Cuba
    ○ Dominican Republic
    ○ Ecuador
    ○ El Salvador
    ○ Guatemala
    ○ Honduras
    ○ Mexico
    ○ Nicaragua
    ○ Panama
    ○ Paraguay
    ○ Peru
    ○ Puerto Rico
    ○ Uruguay
    ○ Venezuela
    ○ Other (specify) _____

7. Where was your mother born?

    ○ United States
    ○ Argentina
    ○ Guatemala
    ○ Honduras

- ○ Bolivia
- ○ Brazil
- ○ Chile
- ○ Colombia
- ○ Costa Rica
- ○ Cuba
- ○ Dominican Republic
- ○ Ecuador
- ○ El Salvador

- ○ Mexico
- ○ Nicaragua
- ○ Panama
- ○ Paraguay
- ○ Peru
- ○ Puerto Rico
- ○ Uruguay
- ○ Venezuela
- ○ Other (specify) _____

8. Where was your father born?

- ○ United States
- ○ Argentina
- ○ Bolivia
- ○ Brazil
- ○ Chile
- ○ Colombia
- ○ Costa Rica
- ○ Cuba
- ○ Dominican Republic
- ○ Ecuador
- ○ El Salvador

- ○ Guatemala
- ○ Honduras
- ○ Mexico
- ○ Nicaragua
- ○ Panama
- ○ Paraguay
- ○ Peru
- ○ Puerto Rico
- ○ Uruguay
- ○ Venezuela
- ○ Other (specify) _____

9. Where was your maternal grandmother (i.e., your mother's mother) born?

- ○ United States
- ○ Argentina
- ○ Bolivia
- ○ Brazil
- ○ Chile
- ○ Colombia
- ○ Costa Rica
- ○ Cuba
- ○ Dominican Republic
- ○ Ecuador
- ○ El Salvador

- ○ Guatemala
- ○ Honduras
- ○ Mexico
- ○ Nicaragua
- ○ Panama
- ○ Paraguay
- ○ Peru
- ○ Puerto Rico
- ○ Uruguay
- ○ Venezuela
- ○ Other (specify) _____

10. Where was your maternal grandfather (i.e., your mother's father) born?

- ○ United States
- ○ Argentina
- ○ Bolivia
- ○ Brazil
- ○ Chile
- ○ Colombia
- ○ Costa Rica
- ○ Cuba

- ○ Guatemala
- ○ Honduras
- ○ Mexico
- ○ Nicaragua
- ○ Panama
- ○ Paraguay
- ○ Peru
- ○ Puerto Rico

- ○ Dominican Republic
- ○ Ecuador
- ○ El Salvador
- ○ Uruguay
- ○ Venezuela
- ○ Other (specify) _____

11. Where was your paternal grandmother (i.e., your father's mother) born?

○ United States	○ Guatemala
○ Argentina	○ Honduras
○ Bolivia	○ Mexico
○ Brazil	○ Nicaragua
○ Chile	○ Panama
○ Colombia	○ Paraguay
○ Costa Rica	○ Peru
○ Cuba	○ Puerto Rico
○ Dominican Republic	○ Uruguay
○ Ecuador	○ Venezuela
○ El Salvador	○ Other (specify) _____

12. Where was your paternal grandfather (i.e., your father's father) born?

○ United States	○ Guatemala
○ Argentina	○ Honduras
○ Bolivia	○ Mexico
○ Brazil	○ Nicaragua
○ Chile	○ Panama
○ Colombia	○ Paraguay
○ Costa Rica	○ Peru
○ Cuba	○ Puerto Rico
○ Dominican Republic	○ Uruguay
○ Ecuador	○ Venezuela
○ El Salvador	○ Other (specify) _____

13. I am:

_____ Single (never married)
_____ Engaged
_____ Married
_____ Divorced
_____ Widow/Widower
_____ Living with significant other
_____ Separated

14. What is your total annual household/family income from all sources? (Check one)

_____ Less than $15,000
_____ Between $15,000 and $30,000
_____ Between $30,000 and $50,000
_____ More than $50,000

15. What is the size of your household, including yourself? _____ Members

16. Who lives with you? (Mark all that apply)

○ Spouse   ○ Partner/Boyfriend/Girlfriend
○ Your children   ○ Mother/Father
○ Sister/Brother   ○ Son-in-law/Daughter-in-law
○ Mother-in-law/Father-in-law   ○ Aunt/Uncle
○ Nieces/Nephews   ○ Cousin
○ Grandchildren   ○ Grandparent
○ Other (specify) _____

17. What is your religious affiliation?

__ Christian
__ Catholic
__ Jewish
__ Hindu
__ Buddhist
__ Muslim/Islam
__ Agnostic
__ Atheist
__ Non-religious/secular
__ Other (specify)_____

18. Which of the following best described your work situation in the past month? (Can select more than one)

○ Full time (More than 30 hours)
○ Part time (Less than 30 hours)
○ Paid leave (temporarily laid off, sick leave, maternity leave)
○ Seasonal worker
○ Looking for work
○ Not employed, not looking for work
○ Retired
○ Disability
○ Housework
○ Student

19. Which best describes your profession?
○   Actor or Entertainer
○   Artist
○   Graphic Designer
○   Musician
○   Writer/Producer/Director
○   Farmer or Forester

- Natural Resource Specialist/Environmentalist
- Accountant
- Administrative Assistant
- Business manager/Executive
- Business Owner/Entrepreneur
- Retail Sales
- Sales/Marketing
- Human Resources
- Finance (e.g., Actuary, Banking, Loan Officer, Planner)
- Management Consultant
- Real Estate Agent/Realtor/Appraiser/Developer
- Sports Management
- Journalist
- Public Relations/Media Relations
- Advertising
- College Administrator/Staff
- College Faculty
- Early Childcare Provider
- Elementary School Teacher
- Secondary School Teacher in Science, Technology, Engineering, or Math (STEM)
- Secondary School Teach in non-STEM subject
- Librarian
- Teacher's Assistant/Paraprofessional
- K-12 Administrator
- Other K-12 Professional
- Military
- Federal/State/Local
- Protective Services (e.g., Homeland Security, Law Enforcement, Firefighter)
- Postal Worker
- Dietician/Nutritionist
- Home Health Worker
- Medical/Dental Assistant (e.g., Hygienist, Lab Tech, Nursing Asst.)
- Registered Nurse
- Therapist (e.g., Physical, Occupational, Speech)
- Computer Programmer/Developer
- Computer/Systems Analyst
- Web Designer
- Lawyer/Judge
- Paralegal
- Clinical Psychologist
- Dentist/Orthodontist
- Medical Doctor/Surgeon
- Optometrist
- Pharmacist
- Veterinarian
- Engineer

- Research scientist (e.g., Biologist, Chemist, Physicist)
- Urban Planner/Architect
- Custodian/Janitor/Housekeeper
- Food Service
- Hair Stylist/Aesthetician/Manicurist
- Interior Designer
- Skilled Trades (e.g., Plumber, Electrician, Construction)
- Social/Non-Profit Services
- Clergy
- Homemaker/Stay at home
- Other
- Undecided

Vita

       Erin Marie Portillo was born and raised in El Paso, Texas. While attending The University of Texas at El Paso, she was awarded the BUILDing SCHOLARS scholarship, funded by the National Institutes of Health, under the mentorship of Dr. Craig Field in the Latino Alcohol and Health Disparities Research and Training Center (LAHDR). During her undergraduate career, Erin authored and co-authored two manuscripts with her BUILDing SCHOLARS summer mentor, Dr. Louis Brown at The University of Texas Health Science Center at Houston. Erin went on to earn her bachelor's of science degree in Psychology from The University of Texas at El Paso in spring of 2020. During the fall of 2020, Erin enrolled in the doctoral program at The University of Texas at El Paso to pursue a master's degree in Experimental Psychology while continuing to work under the mentorship of Dr. Field. Her first-year project assessed the potential protective effects of ethnic identity on intragroup marginalization, alcohol use, and alcohol related problems among Hispanic college students at universities across the country. While working in LAHDR, Erin has collaborated on a manuscript published in *Alcohol, Clinical, and Experimental Research* and has several other manuscripts in preparation. She has also collaborated on numerous poster presentations. Erin will continue at The University of Texas at El Paso in pursuit of her Ph.D. in Health Psychology. She intends to continue her line of research on implicit biases towards persons with alcohol use disorder.

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