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# The Language of Substance Use and Recovery: Novel Use of the Go/No–Go Association Task to Measure Implicit Bias

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**ABSTRACT**

Previous research has found initial evidence that word choice impacts the perception and treatment of those with behavioral health disorders through explicit bias (i.e., stigma). A more robust picture of behavioral health disorder stigma should incorporate both explicit and implicit bias, rather than relying on only one form.

The current study uses the Go/No–Go Association Task to calculate a *d'* (sensitivity) indexed score of automatic attitudes (i.e., implicit associations) to two terms, "addict" and "person with substance use disorder."

Participants have significantly more negative automatic attitudes (i.e., implicit bias) toward the term "addict" in isolation as well as when compared to "person with a substance use disorder."

Consistent with previous research on explicit bias, implicit bias does exist for terms commonly used in the behavioral health field. "Addict" should not be used in professional or lay settings. Additionally, these results constitute the second pilot study employed the Go/No–Go Association Task in this manner, suggesting it is a viable option for continued linguistic stigma related research.

## Introduction

The process of meaning-making in the action of naming or defining a person, group, or object, is ultimately a largely political act, and, as Foucault (1969) would imply, assigning meaning and definition in language is an act of power assertion and authority that may either subjugate or legitimate the subject in question. Defining individuals, groups, and ideas cannot be divorced from the political power of the authority to do so (Foucault, 1982). The use of language is a use of power, and such power has psychological impacts. The supposed neutrality of clinical terms leaves out the role of authority that is needed to create such terms and omits the fact that such terms will be applied to a population with or without their consent (Prilleltensky, 2008). It also ignores that the act of problematizing or pathologically taxonomizing a behavior may be a stigmatizing act itself (Fraser et al., 2017). These points are central to a critical understanding when referring to vulnerable groups, such as those with a substance use disorder (SUD). Definitions, power, and biopolitics must all be taken into account when considering discourse used to describe disorder and the context in which subject is considered *dis*-ordered (Fomiatti, Moore, & Fraser, 2017).

Stigma, defined classically as a "mark of disgrace or permanent flaw," can be either reduced or accentuated through the political act of naming or defining. Semantic meanings of even seemingly neutral clinical terms are often co-opted and eventually used pejoratively, otherwise known as semantic drift or semantic prosody (West, Perner, Laz, Murdick, & Gartin, 2015). This is why clinical discourse must be frequently updated, specifically when it is used to define people by their pathology or disability (e.g., inebriate > alcoholic > person with an alcohol use disorder). For those who hold marginalized or minority positions in larger societies, stigma enacted through language can function as a "permanent mark of disgrace," with wide ranging consequences to one's well-being, self-esteem, and, in extremes, can present a danger to their very lives (Prilleltensky, 2008).

Stigmatizing language can be co-opted, for pejorative purposes, from more neutral usages like clinical discourse. Terms such as "idiot" were at one time taxonomic clinical and therefore "legitimate" terms (West et al., 2015). Occasionally, in specifically narrow and intentional contexts, pejorative terms are reclaimed by minority groups as a socio-political act of empowerment through "echoic" recitation and overt use of slurs by the derogated target in ways which strip negative connotation from such terms (Bianchi, 2014; Gaucher, Hunt, & Sinclair, 2015). Terms like "queer" (within LGBTQ+ advocacy efforts), and even in 12-step mutual aid groups, whereby members self-identify as "addicts" or "alcoholics." Do such acts––the reclamation of pejorative terms––serve to empower and reduce stigma that may be associated with the terms themselves? Qualitatively, the act does seem to serve some therapeutic purpose, at least in 12-step mutual aid communities (Goffman, 1963; Hughes, 2007; McIntosh & McKeganey, 2001), although more exploration of

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whether it is the reclaimed term or the action itself (e.g., identity reformation) that involves the benefit. More recently however, the use of seemingly pejorative terms has created questions as to the value of such terms within the SUD treatment, advocacy, and recovery support fields and communities.

The collective fields and communities of substance use disorder and recovery (SUD-R) is composed of the treatment system and clinical professions as well as pre-and post-treatment paraprofessional (e.g., peer specialists) and lay individual support networks (i.e., the recovery community) (White, 1998). However, despite this diversity of stakeholders, the majority of the recovery experience is framed through the language of non-clinical support groups. This permeable barrier between professional treatment and non-professional support groups has created a semantic interchange of clinical and non-clinical discourse.

As an example of this interchange, the use of "addict" and "alcoholic" among 12-step mutual aid groups has likely influenced the terms used to describe individuals with an SUD in similar ways in clinical settings. This semantic interchange between the clinical and informal mutual aid has meaningful impact though, as popular terms are often used in such a way as to disempower, and even stigmatize, the individual depending on context ("addict" may be empowering in a 12-step meeting but stigmatizing in the general public or in clinical team meetings) (Tkach, 2017). Acceptance of these terms occurs among SUD professionals and recovery community members due to the proximity and colocation of shared concepts between the two. Subsequently, the transpositions of such language into the larger society, especially terms such as "drug addict" or "addict," have been shown to further stigmatize an already disempowered and underserved identity that is highly vulnerable to stigma (Kelly, Dow, & Westerhoff, 2010; McGinty, Goldman, Pescosolido, & Barry, 2015).

Perceptions of those with SUD have been found to be explicitly biased among a diverse set of individuals, including behavioral health professionals (Kelly et al., 2010), medical practitioners (van Boekel, Brouwers, van Weeghel, & Garretsen, 2013), and the general public (Barry, McGinty, Pescosolido, & Goldman, 2014). This type of explicit bias has been associated with decreased help-seeking behavior among individuals with an SUD (Clement et al., 2015; Stone, 2015; Stringer & Baker, 2015), decreased quality of care by professionals treating individuals with an SUD (van Boekel et al., 2013), and the willingness to support non-discriminatory policy impacting individuals with an SUD (Barry et al., 2014). Explicit bias, however, is not the only form of bias; implicit bias, or the subconscious beliefs held by individuals, also should be considered in any complete picture of stigma toward individuals with an SUD.

Implicit bias is based on the assumption that subconscious associations exist toward the characteristics of individuals (e.g., race (Greenwald, McGhee, & Schwartz, 1998), body type (Buhlmann, Teachman, & Kathmann, 2011), gender (Lemm & Banaji, 1999), sexual orientation (Morrison & Morrison, 2008)). Measuring implicit bias has been recently popularized through the Implicit Association Task (IAT; Greenwald et al., 1998) in the social sciences. Implicit bias, as seemingly unconscious biases, then is believed to be based in more primordial affiliations with in-group and dominant realities, and may be apart from and separate to, the social or ethical values we hold. For example, while racism has been largely deemed socially unacceptable in American modernity (with many individuals now explicitly denying racist beliefs), implicit bias is believed to represent the dominant and latent reality of the discriminatory beliefs toward other-race individuals, which likely exists given that racism is still prevalent systemically and in aggregate individual actions.

Given that explicit bias is well documented toward individuals with an SUD in a variety of settings and from a myriad of professionals, what then is the role and magnitude of implicit bias? More specifically, in the context of commonly used language in the SUD-R fields, what role does word choice play in eliciting stronger implicit bias, or negative attitudes, toward those with an SUD?

Recent research into bias invoked from language has suggested that terms like "addict," "substance abuse," "clean/dirty," and "medication-assisted treatment" are associated with negative perceptions, and furthermore, are likely to result in negative explicit bias (e.g., punitive treatment plans, suboptimal healthcare delivery, desire for greater social distance) when used among professionals and the general public (Kelly, 2004; Kelly et al., 2010; Kelly, Saitz, & Wakeman, 2016; Kelly & Westerhoff, 2010; Wakeman, 2017; White & Kelly, 2011). In perhaps the most well-known study on bias and language in the field, Kelly et al. (2010), found that behavioral health professionals responded with more punitive treatment suggestions when given vignettes with the term "substance abuse" versus "substance use disorder." Similarly, McGinty et al. (2015) found that the portrayal of behavioral health disorders as treated versus untreated negatively impacted the level of perception of social desirability and self-efficacy. While these studies manipulated explicit bias through the use of stigmatizing language and their antithetical counterparts, they do not measure implicit levels of bias that may be present among individuals when presented with both types of language. Additionally, the previously completed studies have only explored the impact of a small subset of potentially negative and positive terms. Previous studies have also relied on self-reported responses to vignettes, rather than a quantifiable measure of bias itself. While these self-report responses to are believed to correctly quantify explicit bias, the use of a more readily quantifiable metric of bias, such as that of implicit bias measured via the Go/No–Go Association Task (GNAT; Nosek & Banaji, 2001) may aid the field.

The current study seeks further expand upon the linguistic research in the SUD-R field by measuring levels of implicit bias through use of the GNAT. While there remain many linguistic terms to study further (e.g., addict, alcoholic, clean/dirty, relapse, etc.), the current study is limited to one potentially negative term," "addict" and the term's antithesis, "person with a substance use disorder." The limiting to one set of terms was done as the current study serves as a pilot study to provide further empirical evidence

of the usefulness of the GNAT in measuring implicit bias in the SUD-R field.

## Methods

### Participants

25 adult (18+ years of age) participants were recruited through groups on popular digital media platforms for individuals interested in, or impacted by, SUD. Participants had a mean age of 35.52 years (SD = 11.80 years); 56.0% were female, 88.0% were Caucasian, 60.0% were married, 60.0% had either a 4-year bachelor's degree or graduate degree, 68.0% were employed, 40.0% were employed in the behavioral health or medical field, 68.0% had a household income of over $50,000 in the previous calendar year, and 56.0% considered themselves in recovery. Participants held primary residence in the Southern, Northeastern, and Western United States.

### Design

In this study, we administered a single test, the GNAT, which is designed to measure implicit bias toward objective categories (i.e., "addict" and "person with substance use disorder"). This methodology was originally piloted with a similar sample with the objective categories of "substance abuse" and "person with substance use disorder" (Ashford, Brown, & Curtis, in press).

The GNAT, related to the broadly used IAT (Greenwald et al., 1998), allows for the analysis of objects both in isolation (without a comparison) and comparatively (multiple objects), whereas the original IAT only allows for the comparative analysis. The GNAT involves participants classifying words into subordinate categories and then examining both the speed (response time) and correctness of the classification (signal detection theory).

It should be noted that the original IAT has faced criticism based upon its reliability in measuring implicit bias, especially when compared to measures of explicit bias (Bosson, Swam, & Pennebaker, 2000), as well as if implicit bias as measured is useful in predicting or correlating with future actions taken by respondents (Blanton et al., 2009). As the current study is utilizing the GNAT in light and in the context of previous explicit bias research, we believe that its use in supporting previous evidence by creating an explicit + implicit bias framework is a valid use case. As such, both levels of criticism we believe are mediated, as the GNAT is not being used in isolation from explicit bias data toward individuals with substance use concerns.

### Study administration

Following IRB approval from the University of Pennsylvania review board #8, participants were recruited from digital media platforms. Following recruitment, survey administration was completed via a participant's personal computer through Qualtrics. Following consent, all participants completed the GNAT via Inquisit Millisecond V.5. All participants were assigned response IDs, which were used via the embedded data function of Qualtrics to allow participants data from the GNAT to be associated with demographics. Upon completion of the GNAT, all participants completed a brief demographics questionnaire.

### GNAT

Administration of the GNAT began with two practice blocks to allow each participant to orientate themselves to the task (Table 1). Practice blocks began by asking the participant to classify the objective categories with no evaluative category used, and to classify the evaluative categories with no objective category used. Following the practice blocks, each participant completed four GNAT test blocks consisting of two activities each (practice activities and main test activity). Each GNAT test block appeared in partially randomized order, with the main test activity measuring automatic attitudes toward "addict" and "person with a substance use disorder." Following the recommendations from Nosek and Banaji (2001), the response deadline for the practice blocks was 1000 ms, and the GNAT test blocks used response deadlines of 750 ms first and 600 ms second. Each practice block consisted of 20 practice trials, while GNAT test blocks began with 16 practice trials, followed by 60 test trials that were used for the statistical analysis.

### Data analysis

All data analysis was completed via SPSS V.23. Statistical significance was defined *a priori* at .05. The GNAT administrations were scored using the $d'$ method described by Nosek and Banaji (2001), originally defined by Green and Swets (1966). This method calculates sensitivity, indexed by $d'$, by first converting the proportion of correct "go" responses for signal items and incorrect "go" responses for noise items into $z$-scores and then calculating the difference between the $z$-score values. $d'$ values of 0 or below (i.e., negative) indicate that participants were either not performing the task as instructed or were unable to cor-

**Table 1.** GNAT design.

| Blocks | Tasks | Trials | Stimuli |
|---|---|---|---|
| 1a | Practice | 20 | Target: addict, distractor: substance use disorder |
| 1b | | 20 | Target: substance use disorder, distractor: addict |
| 2a | | 20 | Target: good, distractor: bad |
| 2b | | 20 | Target: bad, distractor: good |
| 3 | Practice | 16 | Targets: addict or bad, distracters: substance use |
| | Main Task 1 | 60 | disorder or good |
| 4 | Practice | 16 | Targets: addict or good, distracters: substance use |
| | Main Task 2 | 60 | disorder or bad |
| 5 | Practice | 16 | Targets: substance use disorder or good, distracters: |
| | Main Task 3 | 60 | addict or bad |
| 6 | Practice | 16 | Targets: substance use disorder or bad, distracters: |
| | Main Task 4 | 60 | addict or good |

Note. Good = positively associated adjectives; Bad = negatively associated adjectives. Words were shown on screen one by one, requiring participant to press a space bar for words that belonged to target categories (signals), and do nothing for words that did not belong to target categories (noise). The presented order of all blocks 1–6 was random.

rectly identify signal items from noise items. Thus, test blocks with $d'$ scores of 0 or below were removed from final analysis. This resulted in two participants who completed the study having scores removed prior to final analysis (final $N = 23$).

Paired $t$-test analyses were used to compare the test blocks mean $d'$ scores (M "substance abuse + good" – M "substance abuse + bad"; M "person with substance use disorder + good" – M "person with a substance use disorder + bad"), and Cohen's $d$ was calculated for each test block, with negative scores indicating negative evaluations of the objective target. Additionally, independent $t$-test analyses were used to determine if sensitivity varied by objective or evaluative categories.

As in Nosek and Banaji's (2001) GNAT exploratory experiments, the current study evaluates $d'$ scores with the underlying assumption that higher $d'$ scores will be present in test blocks that have stronger automatic attitudes, or implicit associations.

## Results

Sensitivity did not vary by objective category ("addict" or "person with substance use disorder"; $F(1,22) = .134$, $p = .716$), or by evaluative category ("good" or "bad"; $F(1,22) = .029$, $p = .865$), suggesting that automatic attitudes found between the test blocks was unique to the association between objective and evaluative targets.

Participants had significant stronger associations with "addict + bad" ($d' = 2.426$) as compared to "addict + good ($d' = 1.368$, $t(22) = 3.773$, $p < .0001$, $d = -0.99$), and with "person with substance use disorder + bad" ($d' = 1.909$) as compared to "person with substance use disorder + good" ($d' = 1.364$, $t(22) = 3.225$, $p = .004$, $d = -0.79$). While both objective categories had significant stronger negative associations, the average difference in negative associations between "addict" and that of "person with substance use disorder" was significant ($t(22) = 2.273$, $p = .033$, $d = -0.49$). On average, the negative association for "addict" was 0.517 higher than that for "person with a substance use disorder" (95% CI [0.045, 0.989]) (Figure 1).

An additional point of post hoc interest was whether participant recovery status, or whether participants worked in the behavioral health field, was associated with automatic attitudes. Table 2 provides full descriptive statistics of participant's $d'$ scores for each objective category.

Participants recovery status was not significantly associated with automatic attitudes of the objective category ("addict + good," $F(1,21) = .912$, $p = .350$; "addict + bad," $F(1,21) = .031$, $p = .861$; "SUD + good," $F(1,21) = .041$, $p = .841$; "SUD + bad," $F(1,21) = 1.445$, $p = .243$).

Similarly, whether or not the participant worked in the behavioral health field was not significantly associated with automatic attitudes of the objective category ("addict + good," $F(1,21) = .113$, $p = .740$; "addict + bad," $F(1,21) = 2.218$, $p = .151$; "SUD + good," $F(1,21) = .957$, $p = .339$; "SUD + bad," $F(1,21) = 1520$, $p = .231$).

## Discussion

The current study was the second pilot employing the GNAT to measure the levels of negative attitudes, or associations, toward commonly used phrases in the SUD-R field––"addict" and "person with a substance use disorder." Similar to the original pilot (Ashford, Brown, & Curtis, in press), results suggest that previously identified negative phrases ("addict" in the current study) do have a higher level of negative association, in isolation and as compared to a more positive phrase ("person with a substance use disorder" in the current study).

Whereas previous studies have measured explicit bias via self-reported answers to vignettes using positive and negative phrases (Kelly et al., 2010; Kelly & Westerhoff, 2010; McGinty et al., 2015), the use of the GNAT allows for comparison of participant attitudes using response time and response correctness, providing a measurable level of implicit bias toward the negative and positive. Among participants, "addict" was significantly associated at a higher level toward the negative than the positive, and while "person with a substance use disorder" was also significantly associated at a higher level toward the negative than the positive, the association was

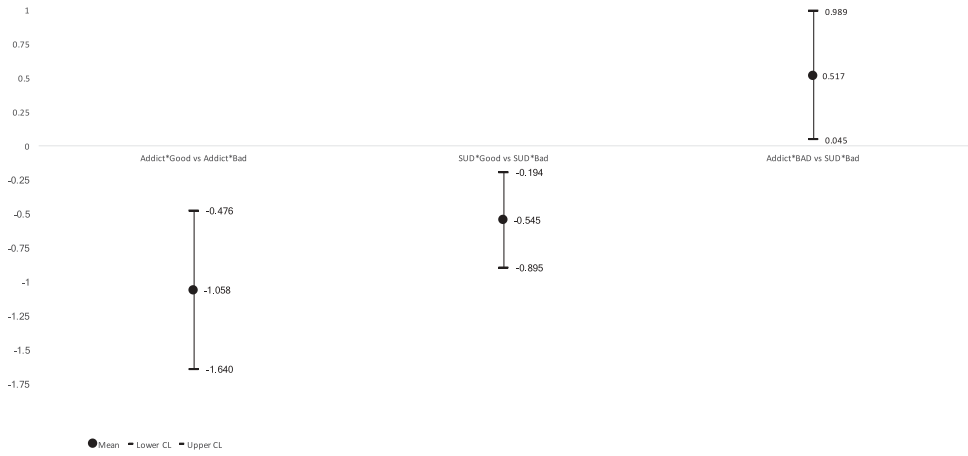


**Figure 1.** Sensitivity ($d'$ scores) means and 95% confidence intervals of addict and person with substance use disorder.

Table 2. $d'$ scores for participants by recovery status and profession type.

| Group: | Addict + good MS (SD) | Addict + bad MS (SD) | SUD + good MS (SD) | SUD + bad MS (SD) |
|---|---|---|---|---|
| In recovery ($N$ = 14) | 1.217 (0.695) | 2.523 (1.748) | 1.266 (0.795) | 1.731 (0.619) |
| Not in recovery ($N$ = 9) | 1.482 (0.637) | 2.415 (0.637) | 1.336 (0.817) | 2.047 (0.610) |
| Work in BH field ($N$ = 9) | 1.378 (0.708) | 3.008 (1.912) | 1.493 (0.703) | 2.052 (0.677) |
| No work in BH field ($N$ = 14) | 1.283 (0.632) | 2.142 (0.864) | 1.165 (0.835) | 1.728 (0.574) |

SUD = person with a substance use disorder; BH = behavioral health, MS = $d'$ mean score, SD = $d'$ standard deviation.

significantly less than that of the negative association toward "addict." Thus, it is likely that while "person with a substance use disorder" still invokes a level of implicit bias, it is a more favorable term to "addict."

Interestingly, though not significant at the .05 level, participant recovery status and whether or not they were employed in the behavioral health field suggest potentially intriguing results. Participants who worked in the behavioral health field had greater negative associations toward "addict + bad" and "substance use disorder + bad" than those who did not work in the behavioral health field. This result is striking as it is logical to believe that those working in the behavioral health field would have a more humane perspective, meaning less biased, of those with substance use concerns, despite the language used to refer to them. However, as this was not the case on the implicit level, that behavioral health professionals had stronger negative associations suggests that continuing to use terms like "addict" in the profession could lead to unintended consequences when treating patients. These findings are also supported in previous studies on explicit bias (van Boekel et al., 2013), which found high levels of stigma and discriminatory beliefs among health professionals toward patients with substance use concerns. The combination of both implicit and explicit bias toward patients is not only cause for concern but should serve as a catalyst for immediate change in the field among professionals and patient advocacy groups.

The reclamation of pejorative labels, such as "addict" and "alcoholic," is also believed to be important in the recovery community (i.e., calling oneself an "addict" as an act of honesty and humility) (Goffman, 1963; Hughes, 2007; McIntosh & McKeganey, 2001). However, participants not in recovery had stronger associations toward "addict + good" and "substance use disorder + bad" than those in recovery. While associations were strongest among "addict + bad" for all participants, this may suggest while SUD is positive terminology for those in recovery (and thus should be used over "addict"), the impact of using SUD is moderated by recovery status. However, as the results between participants in recovery and not in recovery are descriptive only, and not statistically significant, this theory needs further exploration to draw stronger conclusions and future recommendations.

It should be further examined if alternative terms to "addict," such as "person with a substance use disorder," can provide a similar perceived therapeutic and cathartic benefit (Goffman, 1963; Hughes, 2007; McIntosh & McKeganey, 2001) for individuals in recovery. This future work should focus on terms used in the process of identity reformation (i.e., moving from an acceptance of negative identity to a formation of positive identity) in the recovery process. It is possible the sanitization of negative associations tied to terms such as addict, with such a disruptive and destructive pathology, may never occur. Still, continued acceptance of the term "addict" in mutual aid groups must be placed within the confines of self-identification (Tkach, 2017).

At the same time, professionals and advocates in the field must be aware of the stigma that may negatively affect individuals with an SUD, as well as that the exercise of authority over language itself may lend not only to the oppression of those affected, but potentially diminish any latent positive effects of language choice. Individual autonomy in the self-identification should prevail in most scenarios that are private and not affiliated to public consumption (e.g., advocacy, policy, etc.). Those who retain a recovery status, or identify as being in recovery, should lead the parameters of discourse in the description and labeling of their own identity.

Overall, as significance was not found at the .05 level for either comparison among recovery status or type of professional field, and only approached significance in these results, further exploration with a larger sample is needed.

## Limitations

The current study should be viewed in light of several limitations. As a pilot study, the sample was limited, and the results are not readily generalizable to a larger population. However, as this is the second pilot study employing the GNAT in this manner, and both pilots have resulted in medium to large effect sizes, we believe that when a larger sample study is conducted similar results can be expected. There was also an undersampling of representative minority groups in the current study, which poses a significant limitation. Bias and stigma, explicit or implicit, is likely to manifest and impact minority populations in different ways. As such, with a sample that is largely White, non-Hispanic, the results are limited in their application to the larger population.

The use of implicit measures has been criticized given the mid-level reliability results published on such measures and should be cause to limit any overzealous interpretation of the current results. While implicit bias has not been found to accurately predict behavior, when results from this study are viewed in context of previous explicit bias data, it provides a more robust framework of language-choice impact on SUD bias overall.

## Future directions

With two successfully completed pilot studies utilizing the GNAT, we believe next steps are to undertake similarly designed studies with a larger sample size that is representative of the general public in the United States. Additionally,

further small-sample studies must be completed on additional phrases and words that have been suggested to have a negative association (e.g., dirty, relapse, alcoholic, etc.). Doing so will allow for preliminary data to support claims that these phrases should ultimately cease being utilized in the field and among the general public as well, in order to reduce bias, stigma, and discrimination. This should be an ongoing evaluation, as pejoratives tend to eventually shift to new terms over time. The use of research to stay ahead of the crest of stigma-related linguistics should be a priority for researchers in the field.

It is also critical that the study of linguistics within the context of the SUD-R field be examined closely situated next to measures of internalized shame, self-efficacy, and self-esteem as it relates to individuals in recovery themselves. Doing so will help to provide a more succinct understanding of the role of language choice in any therapeutic process, as well as overall quality of life among recovering individuals. We also suggest that additional qualitative exploration of the benefits of using pejorative terms as reclaimed, empowerment mechanisms be undertaken with individuals in recovery.

Future studies should also be adapted to target specific professionals that interact and exert influence over individuals with SUD, as well as those that are directly involved in the creation of substance use related policies and legislation. This should include criminal justice professional legislators, recovery community organization professionals, and educators.

Finally, future work should not only explore suggested negative associated words, but also their positive counterparts or replacements. The GNAT can be used to analyze in isolation or comparison, and as future word choice suggestions are made they should be tested and validated with the GNAT as well as measures of explicit bias.

## Conclusion

The use of the term "addict" elicits significantly more negative attitudes both in isolation and compared to the term "substance use disorder." While all terms can be problematic, currently the term "substance use disorder" appears to be a less-stigmatizing term on both explicit and implicit levels. Therefore, it stands to reason that "person with a substance use disorder" may be a better alternative than the label of "addict" in most scenarios. Individuals with SUD and in recovery are among the most vulnerable populations, and stigma-related reasons are a primary reason for not seeking treatment or continuing support. Cessation of the term "addict," should be a high priority among all behavioral health agencies, professionals, and especially among those in recovery advocacy organizations, where positive messaging and imagery are of primary importance. The continued use for the term "addict" within mutual aid settings, such as 12-step groups, may provide a degree of benefit, however further contextual research is needed.

Given the evidence from the current study, as well as previous research into explicit bias, we recommend that "addict" should be replaced by the phrase "person with a substance use disorder" in communications that are applicable (e.g., marketing campaigns, clinical notes, legislative testimony, etc.), in an effort to reduce any negative bias toward those with SUD or in recovery from an SUD. Ongoing research into implicit and explicit bias involving terms used to describe such vulnerable populations should be part of a larger stigma-reduction effort.

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