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Moderators of Implicit and Explicit Drinking Identity in a Large US Adult Sample

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Abstract

Drinking identity (viewing oneself as a drinker) is a potential risk factor for problematic drinking in US undergraduate samples. Whether that risk extends to a broader, more general US sample is unknown. Additionally, there are critical, unanswered questions with respect to moderators of the drinking identity–problematic drinking relationship; an important issue for designing prevention efforts. Study aims were to assess the unique associations and interactive effects of implicit and explicit measures of drinking identity on problematic drinking, and to evaluate age and sex as potential moderators of the drinking identity–problematic drinking relationship. A sample of 11,320 adults aged 18–98 completed measures of implicit and explicit drinking identity and problematic drinking (the Alcohol Use Disorder Identification Test; AUDIT). Implicit and explicit drinking identity had positive, significant associations with AUDIT scores, as expected. Moderation analyses indicated small, but significant, interactions. There was an implicit by explicit identity interaction consistent with a synergistic effect: lower implicit and explicit identity was linked to a greater probability of being a non-drinker. Age moderated explicit but not implicit

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Contributors

Each author participated in designing the study. Lindgren outlined the manuscript, conducted analyses, wrote portions of the introduction and discussion, and edited all sections. Gasser wrote portions of the introduction and discussion and edited all sections. Werntz oversaw data collection, and wrote the method. Namaky processed the data and made figures and tables. Teachman oversaw data collection, wrote portions of the discussion, and edited all sections. All authors have contributed to and approved the final manuscript.

Conflict of Interest

Bethany Teachman has a significant financial interest in Project Implicit, Inc., which provided services in support of this project under contract with the University of Virginia. All other authors declare that they have no conflicts of interest.

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identity: lower drinking identity appeared to be more protective for younger individuals. Sex moderated implicit but not explicit identity: a weaker positive association with implicit identity and AUDIT scores was observed among men, potentially reflecting stigma against women's drinking. Findings suggest that drinking identity's potential as a risk factor for problematic drinking extends to a more general US sample and that both implicit and explicit identity should be targeted in prevention efforts.

Keywords

implicit drinking identity; explicit drinking identity; hazardous drinking; age; sex

1. Introduction

Drinking identity (the extent to which individuals view themselves as drinkers) is a robust predictor of US undergraduate problematic drinking. Both implicit and explicit measures of drinking identity uniquely predict drinking behaviors, cross-sectionally (Lindgren et al., 2013a; 2013b) and longitudinally (Gray, LaPlante, Bannon, Ambady, & Shaffer, 2011; Lindgren et al., 2015b). It is important to identify factors that attenuate or intensify the drinking identity—problematic drinking relationship and to establish whether drinking identity is associated with drinking in a more demographically diverse sample. Thus, we assessed explicit and implicit drinking identity and problematic drinking in a large sample of US adults with a broad age range, and evaluated age and sex as moderators of the identity—drinking relationship.

1.1 Drinking Identity

Drinking identity derives from one's direct experiences with alcohol and one's environment and culture (Lindgren et al., 2015a). From the vantage of dual process models (general: Strack & Deutsch, 2004; alcohol: Wiers et al. 2007), drinking identity can be conceptualized at both the implicit (automatic, reflexive) and explicit (controlled, reflective) cognitive levels. Measures assessing implicit and explicit drinking identity have been developed, and each has distinct advantages. Implicit measures, especially the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998), do not require conscious introspection, are relatively resistant to faking (see Kim, 2003), and are less subject to self-presentation concerns (see Greenwald et al., 2002). Explicit measures (self-report questionnaires) are easier to administer, but are subject to self-presentation concerns.

Findings from longitudinal and cross-sectional studies of undergraduates indicate that implicit and explicit drinking identity are modestly correlated and that both predict unique variance in drinking behavior (Lindgren, 2013b; 2015b). Further, studies focusing on implicit drinking identity compared to other implicit alcohol cognitions (e.g., alcohol approach associations) found that drinking identity was the most consistent, and often the only unique, predictor of undergraduates' problematic drinking (Lindgren et al., 2013b; 2013b; 2015b). Moreover, implicit drinking identity predicted risky drinking practices prospectively, even after controlling for baseline drinking behavior (see Gray et al., 2011; Lindgren et al., 2015b). Analogously, two studies evaluating explicit measures of identity

related to alcohol dependence and/or recovery found they predicted recovery self-efficacy and rates of relapse (Beckwith, Best, Dingle, Perryman, & Lubman, 2015) and treatment retention (Buckingham, Frings, & Albery, 2013). Collectively, these findings, along with a recent theoretical formulation of substance cessation (Frings & Albery, 2015), suggest that drinking identity is important not only for undergraduates but also for individuals who are older and/or drink more heavily.

1.2 Interactive Effects and Potential Moderators

We know of only one study evaluating implicit and explicit drinking identity that included adults over the age of 25 (Werntz, Steinman, Glenn, Nock, & Teachman, 2016), indicating the need for research with a broader age range. Further, studies evaluating potential moderators of implicit and/or explicit identity's effects on drinking are scarce and focused on self-control variables (e.g., Foster, Neighbors, & Young, 2014; Lindgren, Neighbors, Westgate, & Saleminck, 2014). Also, critical questions concern whether implicit and explicit identity have interactive effects and whether demographic variables (e.g., age or sex) will attenuate or intensify the drinking identity—problematic drinking relationship. Regarding the former, one might expect synergistic effects (i.e., having high scores on implicit and explicit identity might be associated with higher problematic drinking); alternatively, one might expect that implicit identity would be more positively associated with problematic drinking if explicit identity is low (perhaps due to low self-awareness or self-presentation concerns, cf. Lindgren et al., 2013b). One study (Lindgren et al., 2013b) tested the two-way interaction between implicit and explicit identity, but it was non-significant. The authors noted that study might have been underpowered for detecting small effects, which suggests the importance of evaluating the two-way interaction in a larger sample.

Demographic characteristics, like age, are important potential moderators. Other work (using the same online platform used in the current study) found that older age is associated with slightly weaker implicit but slightly stronger explicit drinking identity (Werntz et al., 2016), but it did not evaluate age as a moderator of the drinking identity—problematic drinking relationship. Moreover, the majority of previous research on drinking identity had samples aged 18 to 25, the approximate age range of “emerging adulthood.” A fundamental characteristic of emerging adulthood is increased identity exploration prior to the assumption of the greater responsibilities of adulthood (Arnett, 2000). This focus on identity exploration combined with the fact that alcohol risk behaviors are at their peak during this age range (SAMHSA, 2012) might amplify the relationship between drinking identity and problematic drinking in emerging adults in contrast to older populations. This may be particularly pronounced for explicit identity; namely, because younger individuals appear to perceive heavy drinking as less stigmatizing than older individuals (Keyes et al., 2010), this might be reflected in greater willingness to report identification with drinking (resulting in more variance in explicit identity and a tighter explicit identity—problematic drinking relationship) among younger versus older adults. Age might have a smaller moderation effect on implicit identity because implicit measures are generally less subject to self-presentation concerns (see Greenwald et al., 2002).

Finally, to our knowledge, sex has not been evaluated as a moderator. Doing so is critical because there are established sex differences in drinking: men drink more and experience more alcohol-related problems than women across age groups (SAMHSA, 2012; Wilsnack, Wilsnack, Kristjanson, Vogeltanz-Hold, & Gmel, 2009), and men have stronger implicit and explicit drinking identities than women (Werntz et al., 2016). There are also sex differences in stigma related to heavy drinking. Women's drinking and drinking-related problems appear to be perceived more negatively than men's (see Greenfield et al., 2007), which could result in women being less willing to endorse a strong drinking identity. This could reduce the range of women's responses, thereby, limiting women's drinking identity as a predictor, leading to the expectation of a stronger drinking identity—problematic drinking relationship among men. On the other hand, men hold more stigmatizing attitudes about individuals with alcohol problems than women do (see Keyes et al., 2010; Corrigan & Watson, 2007). Should this alter men's report of their drinking identity (e.g., by adding extraneous influences on identity reports), it could limit men's drinking identity as a predictor. Ultimately, these findings suggest competing hypotheses for the direction of sex as a potential moderator. Similar to age, if stigma and self-presentation are contributing factors, sex may have a smaller moderation effect on implicit (vs. explicit) drinking identity.

1.3 Study Overview

The current study assessed implicit and explicit drinking identity in a large sample of US adults and evaluated potential moderators of the relationship between drinking identity and problematic drinking. Implicit and explicit identity were each expected to be positively and uniquely related to problematic drinking. Their two-way interaction was also evaluated. Competing hypotheses were offered and tested, including a small, synergistic effect (a stronger implicit drinking identity and problematic drinking relationship at higher [vs. lower] levels of explicit drinking identity), a self-presentation effect (a stronger implicit drinking identity and problematic drinking relationship at lower [vs. higher] levels of explicit drinking identity), and a null effect (consistent with Lindgren et al., 2013b). Finally, age and sex were evaluated as moderators. Both were expected to more strongly moderate explicit (vs. implicit) drinking identity, with younger individuals having a stronger association between drinking identity and problematic drinking, and less clear predictions for sex.

2. Method

2.1 Participants

Participants were visitors to Project Implicit Mental Health (PIMH; www.ImplicitMentalHealth.com) between June 2011 and March 2015. PIMH is a research and education website where visitors can learn more about their implicit associations related to mental health (e.g., alcohol use, anxiety, and depression). Participants 18 and older who self-reported as US citizens or residents were eligible. Participants that selected the alcohol study ($N=11,320^1$; age $M=27.6$, $SD=10.8$, range = 18–98) were 62.3% women, 37.3%

¹A total of 28,525 visitors initially consented to participate in the alcohol study, but many did not complete all measures, as is typical with online data collections at public sites.

men, and .4% did not report gender; 72.5% were Caucasian, 7.0% were African American, 3.4% were East or South Asian, 5.4% reported multiple races, and 11.7% were another or unknown race, or did not report race. Ethnicity was reported as 81.4% not Hispanic or Latino, 11.5% Hispanic or Latino, and 7.0% unknown or did not report ethnicity. Education was reported as 11.4% having a high school diploma or less education, 50.1% having completed some college, 23.9% having a Bachelor's degree or some graduate school, 13.4% having a graduate degree, and 1.3% did not report education.

2.2 Measures

2.2.1 Implicit Drinking Identity—Implicit drinking identity was measured by the Brief Implicit Association Test (BIAT; Sriram & Greenwald, 2009), a variant of the Implicit Association Test (IAT; Greenwald et al., 1998). The Drinking identity BIAT measures how strongly individuals implicitly associate themselves with being a drinker (versus abstainer). Prior research has used an IAT version of the task (Lindgren et al., 2013b, 2014; 2015b). During the task, participants sort words into superordinate categories as quickly as possible. There were four categories with associated stimuli: *self* (me, self, I, my), *others* (not me, other, them, they), *drinker* (alcohol, drunk, intoxicated, drinking), and *abstaining* (abstaining, abstain, sober, refrain). For half of the blocks in the task, *self* + *drinker* are paired, and participants have to classify words as either belonging to one of the listed categories (by pressing the “I” key) or not belonging (“E” key). These reaction times are then compared to participant's reactions to comparison blocks, where *self* + *abstainer* are paired, and the same words appear on the screen to be classified as either belonging or not. There were six blocks total, with alternating category pairings. Sixteen words were presented per block. The BIAT was scored using current guidelines (Greenwald, Nosek, & Banaji, 2003; Nosek et al., 2014). The scoring algorithms create a D score, which is conceptually similar to Cohen's *d* effect size between the response latencies of the two types of sorting blocks². Split half-reliability = .57, similar to the internal consistency reported by Nosek et al. (2014) for the well-validated race BIAT ($r = .55$).

2.2.2 Explicit Drinking Identity—To capture individuals' explicit drinking identity, two semantic differential questions were developed to mirror the relative structure of the implicit task (i.e., semantic differential; see Greenwald et al., 1998; Ranganath & Nosek, 2008). Participants rated “to what extent do you think of yourself as a drinker or non-drinker?” and “others as drinkers or non-drinkers?” on a 9-point Likert-type scale from “completely as drinking” to “completely as abstaining.” Explicit drinking identity was calculated by subtracting the “others” response from the “self” response, with greater scores reflecting stronger *self-drinker* associations. This method of assessing explicit drinking identity allows for a more direct comparison to the implicit measure, which is also relative (comparing *self* to *other* drinking identity) and has been used in other domains (e.g., mental illness stigma; Peris, Teachman, & Nosek, 2008).

²Data were screened based on standard scoring guidelines excluding data with too many missing or fast trials (Greenwald, Nosek, & Banaji, 2003). This occurred when data were also being screened for meeting age and residency criteria; approximately 7% of scores were excluded for not meeting scoring guidelines.

2.2.3 Risk of Alcohol Use Disorder—The Alcohol Use Disorders Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) is a 10-item self-report questionnaire that assesses risk of an alcohol use disorder. Greater scores reflect more alcohol use disorder symptoms. Scores were calculated for participants who responded to at least seven items (97% of the sample). Cronbach's $\alpha = .84$.

2.3 Procedure

Following informed consent, participants completed the implicit identity task, the explicit identity questions, the AUDIT, and demographic questions in a random order. During debriefing, participants could decide whether to receive their implicit identity feedback (e.g., “Your implicit data suggest that you strongly identify more with DRINKER than NON-DRINKER.”). Participants were not compensated for their time.

3. Results

3.1 Descriptive Statistics

Please see Table 1 for the descriptive statistics and zero-order correlations between study variables. Implicit and explicit drinking identities were positively correlated with one another and with AUDIT scores, as expected. Implicit and explicit drinking identities were also significantly correlated with age and sex (but r s were $< .10$). Approximately 14% of the sample reported “never” drinking alcohol; 39% had AUDIT scores of at least 8 (an indicator of possible problem drinking); 5.3% had scores of at least 20 (an indicator of possible alcohol dependence; see Babor et al., 2001).

3.2 Tests of Moderation

Analytic Plan—Figure 1 presents the distribution of AUDIT scores. We used a zero-inflated negative binomial model (ZINB) to examine the relationship between drinking identity and AUDIT scores given multiple zero AUDIT scores. Although a ZINB is typically used for true count variables (e.g., number of drinks), it can also be used to model positively-skewed data with an abundance of zeros (Cameron & Trivedi, 2005). The ZINB fit the AUDIT data better than the negative binomial, zero-inflated poisson, and poisson models (Long & Freese, 2014). A zero-inflated model assumes that zeros come from two possible sources: (a) people who will always have an AUDIT = 0 (i.e., people who do not drink at all) and (b) people who sometimes have an AUDIT = 0 (i.e., people who do drink but do not score above 0) (Long & Freese, 2014). The ZINB model thus yields probability estimates for each kind of zero: 1) that a 0 observation is from the “always zero” (vs. not zero) group, more technically referred to as a “structural zero” and 2) that a 0 observation is from the “sometimes zero” part of the distribution (vs. somewhere else on the range of non-zero scores), more technically referred to as a “sampling zero.”

We fit four ZINB models to evaluate moderators of the association between drinking identity and AUDIT scores (see Table 2). Model 1 included explicit and implicit identity, age, and sex. Model 2 added the interaction between explicit and implicit identity. Models 3 and 4 tested age and sex, respectively, as moderators of implicit and explicit identity. None of the

three-way interactions between implicit identity, explicit identity, and age (or sex) was significant.

Implicit and explicit drinking identity—In the inflation portion of the model, both implicit ($e^b = 0.44$, $p < 0.001$) and explicit ($e^b = 0.55$, $p < 0.001$) identity were negatively associated with being in the “always zero” group. For every one-unit increase in implicit and explicit identity, the odds of being “always zero” on the AUDIT (or a “structural zero”) decreases by a factor of 0.44 and 0.55, respectively. Analogously, in the count portion of the model, both implicit ($e^b = 1.37$, $p < 0.001$) and explicit ($e^b = 1.18$, $p < 0.001$) identity were positively associated with AUDIT scores. These coefficients indicate that for every one-unit increase in implicit and explicit identity, AUDIT scores are expected to increase by a factor of 1.37 and 1.18, respectively.

The two-way interaction was significant in the inflation ($p < .05$), but not count, portion. Figure 2 plots the interaction, revealing that the small negative relationship between implicit identity and the probability of being an “always zero” (or “structural zero”) is weaker for higher levels of explicit identity. This pattern is roughly consistent with a synergistic effect, albeit with an emphasis on lower implicit and explicit identity being linked to higher probability of being a non-drinker, suggesting a protective (vs. risk-promoting) effect.

Age—Age moderated explicit, but not implicit, identity in the inflation and count portions of the model. Figure 3 shows that for younger adults, there was a relatively strong decrease in the probability of being an “always zero” (or “structural zero”) as explicit drinking identity increased. However, in older adults, the shift in probability was slight. A similar pattern was found in the count portion (see Figure 4). The overall positive explicit drinking identity-AUDIT relationship is strongest among individuals 18–25, then stays constant at a slightly weaker level among individuals age 25 and up.

Sex—Sex only moderated implicit (but not explicit) identity in the count portion of the model. Figure 5 indicates that the implicit identity-AUDIT relationship is stronger for women than men.

4. Discussion

The current study assessed implicit and explicit measures of drinking identity in a large US sample. Participants were drawn from across the adult lifespan to investigate the generalizability of findings from previous studies and to evaluate potential moderators of drinking identity—problematic drinking relationships. As expected, implicit and explicit identity were both positive predictors of problematic drinking (e.g. Lindgren et al., 2013b; 2015b), though the effect was larger for explicit drinking identity. For example, a one standard deviation change in implicit identity is associated with a 1.14 factor change in the expected AUDIT score, whereas a one standard deviation change in explicit identity is associated with a 1.48 factor change in the expected AUDIT score. The study is one of the first demonstrations that both implicit and explicit identity predict problematic drinking outside of an undergraduate sample. The large sample size meant we could also detect small moderator effects. The pattern of the small implicit by explicit identity interaction was

consistent with synergistic effects, finding that having low scores on both types of drinking identity is predictive of not drinking at all. The finding suggests that a fuller understanding of a person's protected/risk status could benefit from assessing both implicit and explicit drinking identity.

Age played an important role in evaluating the generalizability of results and as a moderator of effects. Participants' age ranged from 18–98, which is much broader than the 18–25 range found in most drinking identity studies. Age did not moderate implicit drinking identity's effect on AUDIT scores, suggesting implicit identity may be a consistent risk factor for problematic drinking across ages. Age did moderate explicit drinking identity's effect on problematic drinking, but the effect was concentrated in younger adults. There was a stronger positive relationship between explicit drinking identity and problematic drinking (vs. not drinking) among adults under 25 compared to the (smaller but still evident) effect for those over 25. This could reflect the fact that identity formation is particularly salient for younger adults (Arnett, 2000) and could suggest that having an abstaining identity is especially protective for them. Nonetheless, the fact that stronger explicit drinking identity was associated with higher problem drinking scores and lower probability of being a non-drinker across all age groups suggests identity could be an important risk factor for younger and older adults.

Sex moderated implicit but not explicit identity and only in the count portion of the model. There was a weaker positive relationship between implicit drinking identity and problematic drinking among men (vs. women). This finding was contrary to predictions that sex would especially moderate explicit drinking identity. Perhaps the implicit measure's use of the comparative term "abstain" did not resonate strongly with men given men's higher drinking levels than women and cultural messages about drinking being more acceptable for men. As a result, this could have made the implicit measure less valid, and consequently less predictive, for men. This speculation is clearly *post hoc* though and there is extensive data on the predictive validity of the implicit drinking identity measure; thus, replication of this unexpected interaction will be important.

4.1 Implications and Future Directions

Collectively, the findings provide important evidence for the robustness of both explicit and implicit measures of drinking identity as predictors of problematic drinking in a more diverse sample. These findings are also consistent with dual process models of drinking (see Wiers et al., 2007), which posit that reflexive/automatic cognitive processes (which are thought to be captured by implicit measures) and reflective/controlled cognitive processes (which are thought to be captured by explicit measures) contribute to drinking. The findings also suggest that both implicit and explicit drinking identity are potential protective and risk factors to target in screening and intervention efforts. Finally, this study is also among the first to identify moderation effects for the identity-problem drinking relationship, and additional research is needed to evaluate other moderators (e.g., the centrality of drinking to identity).

4.2 Limitations and Conclusion

Several study limitations should be noted. First, this study was cross-sectional. Second, although this sample is larger, is more inclusive than previous drinking identity studies, and the rates of drinking in this sample are roughly equivalent to US epidemiological data (SAMHSA, 2013), samples drawn from Project Implicit (a sister website to the current study site) tend to be more politically liberal, more educated, and younger than the general US population (Nosek et al., 2007). Third, the study relied on self-report (vs. clinical interview) for assessing problematic drinking. Nonetheless, study findings extend our knowledge of drinking identity.

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Highlights

- We investigated implicit and explicit drinking identity in a large US sample.
- Moderators of the identity—problematic drinking relationship were evaluated.
- Moderation effects were small.
- Identity positively predicted problem drinking across age groups and sex.
- Drinking identity is a promising, generalizeable risk factor for problem drinking.

Figure 1.
Distribution of the Scores on the Alcohol Use Disorder Identification Test (AUDIT).

Figure 2.

Predicted probability of being an always zero on the Alcohol Use Disorder Identification Test (AUDIT) as a function of implicit and explicit identity. Implicit Drinking Identity was measured using the Brief Implicit Association Test. Higher scores = stronger identification with drinking. Explicit Drinking Identity was measured using two semantic differential items. Higher scores = stronger identification with drinking. Implicit identity standard deviation was 0.42 and explicit identity standard deviation was 2.37.

Figure 3.

Predicted probability of being an always zero on the Alcohol Use Disorder Identification Test (AUDIT) as a function of explicit identity and age. Explicit Drinking Identity was measured using two semantic differential items. Higher scores = stronger identification with drinking. Explicit identity standard deviation was 2.37.

Figure 4.

Predicted Alcohol Use Disorder Identification Test (AUDIT) scores as a function of explicit identity and age. Explicit Drinking Identity was measured using two semantic differential items. Higher scores = stronger identification with drinking. Explicit identity standard deviation was 2.37.

Figure 5. Predicted AUDIT score as a function of implicit identity and sex. Implicit Drinking Identity was measured using the Brief Implicit Association Test. Higher scores = stronger identification with drinking. Implicit identity standard deviation was 0.42.

Table 1
Descriptive Statistics and Correlations between Implicit, Explicit, and Demographic Variables

Variable	Descriptive Statistics				Correlations				
	M	SD	Min	Max	1	2	3	4	5
1. Implicit Drinking Identity	-0.01	0.43	-1.49	1.47	--				
2. Explicit Drinking Identity	-0.71	2.38	-8	8	.23***	--			
3. AUDIT scores	7.99	6.53	0	40	.28***	.47***	--		
4. Sex	0.63	0.48	--	--	-.07***	-.08***	-.12***	--	
5. Age	27.59	10.74	18	98	-.08***	.04***	-.09***	-.04***	--

Note. $N = 11,320$. Implicit Drinking Identity was measured using the Brief Implicit Association Test. Higher scores = stronger identification with drinking. Explicit Drinking Identity was measured using two semantic differential items. Higher scores = stronger identification with drinking. AUDIT = the Alcohol Use Disorder Identification Test. Higher scores = greater risk of an alcohol use disorder. Sex was coded 0 = male, 1 = female.

 $p < .001$.

*
 $p < .05$.

Table 2
Count Regression Analyses Evaluating Moderators of Drinking Identity and AUDIT Scores

Count Portion	Model 1		Model 2		Model 3		Model 4	
	Coef	95% CI	Coef	95% CI	Coef	95% CI	Coef	95% CI
Age	0.988 ***	[0.986,0.989]	0.988 ***	[0.986,0.989]	0.988 ***	[0.987,0.989]	0.988 ***	[0.987,0.989]
Sex	0.875 ***	[0.851,0.900]	0.875 ***	[0.851,0.900]	0.875 ***	[0.851,0.900]	0.868 ***	[0.844,0.893]
Implicit	1.368 ***	[1.322,1.416]	1.364 ***	[1.319,1.411]	1.259 ***	[1.142,1.387]	1.242 ***	[1.178,1.310]
Explicit	1.179 ***	[1.168,1.190]	1.179 ***	[1.168,1.189]	1.143 ***	[1.120,1.167]	1.180 ***	[1.165,1.196]
Implicit × Explicit			0.994	[0.973,1.015]				
Age × Implicit					1.003	[1.000,1.006]		
Age × Explicit					1.001 **	[1.000,1.002]		
Sex × Implicit							1.178 ***	[1.099,1.263]
Sex × Explicit							0.997	[0.980,1.014]
Inflation Portion								
Age	0.678 ***	[0.550,0.837]	0.676 ***	[0.551,0.828]	0.451 ***	[0.336,0.606]	0.688 **	[0.550,0.861]
Sex	0.947	[0.712,1.260]	0.939	[0.709,1.242]	0.969	[0.740,1.271]	1.299	[0.809,2.086]
Implicit	0.436 ***	[0.308,0.618]	0.249 ***	[0.138,0.451]	0.0836	[0.002,4.037]	0.417 **	[0.216,0.805]
Explicit	0.574 ***	[0.542,0.609]	0.562 ***	[0.528,0.597]	3.089 ***	[1.351,7.060]	0.538 ***	[0.486,0.596]
Implicit × Explicit			0.846 *	[0.735,0.975]				
Age × Implicit					1.088	[0.891,1.329]		
Age × Explicit					0.917 ***	[0.877,0.958]		
Sex × Implicit							1.100	[0.496,2.440]
Sex × Explicit							1.102	[0.975,1.246]
<i>N</i>	10921		10921		10921		10921	
<i>AIC</i>	63312.2		63309.4		63269.3		63293.0	
<i>BIC</i>	63392.5		63404.3		63378.8		63402.5	

Note. Implicit Drinking Identity was measured using the Brief Implicit Association Test. Higher scores = stronger identification with drinking. Explicit Drinking Identity was measured using two semantic differential items. Higher scores = stronger identification with drinking. Coefficients are exponentiated. In the count portion of the model, the coefficients can be interpreted as the factor change in the Alcohol Use Disorder Identification Test (AUDIT) associated with a one-unit increase in the predictor. In the inflation portion of the model, the coefficients are odds-ratios and are interpreted as the factor change in the odds of being the always zero group associated with a one-unit increase in the predictor.

100.0 > *d*

'10.0 > *d*
**
'50.0 > *d*
*

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