



Published in final edited form as:

Psychol Addict Behav. 2017 September ; 31(6): 721–726. doi:10.1037/adb0000305.

Does Change in Self-Perceived Problem Drinker Identity Relate to Change in Alcohol Use? An Examination of Non-Treatment Seeking Hazardous Drinkers

Kevin S. Montes, Ph.D.^{1,*}, Ronda L. Dearing, Ph.D.², Eric D. Claus, Ph.D.³, and Katie Witkiewitz, Ph.D.¹

¹Center on Alcoholism, Substance Abuse, and Addictions – University of New Mexico

²Graduate College of Social Work – University of Houston

³Mind Research Network – Lovelace Respiratory Research Institute

Abstract

Identity change is related to reductions in alcohol use among treatment seekers, but it is unclear the extent to which identity change is associated with reductions in alcohol use among non-treatment seeking hazardous drinkers. The goal of the current study was to examine whether change in problem drinker identity (i.e., self-reported identification as a problem or non-problem drinker) was associated with reductions in heavy drinking among non-treatment seeking hazardous drinkers. Participants ($n = 149$) completed measures to assess alcohol use and were asked if they identified as a problem drinker at baseline and at 6, 12, 18, and 24-month follow-ups. Two groups were compared, (1) those who identified as a problem drinker at baseline but identified as a non-problem drinker at 12 months and (2) those who did not make the same transition. Latent mixture modeling was conducted to examine whether change in problem drinker identity was predictive of heavy drinking latent class growth trajectories. The results indicated that a self-reported transition from identification as a problem drinker to identification as a non-problem drinker was associated with greater reductions in heavy drinking over the assessment period and a 7 times greater likelihood of being in a rapidly decreasing heavy drinking latent trajectory class compared to participants who did not make the same transition. Self-reported transitions in identity appear to be a good predictor of heavy drinking trajectories among non-treatment seekers. A better understanding of how non-treatment seekers identification transitions from a problem to non-problem drinker is needed.

Keywords

problem drinker identification; heavy drinking; alcohol use; latent mixture modeling; non-treatment seekers

Approximately 92 million individuals in the United States meet lifetime criteria for an alcohol use disorder (AUD) and fewer than 20% of individuals who meet lifetime criteria for

*Correspondence concerning this article should be addressed to: Kevin S. Montes, Ph.D., Center on Alcoholism, Substance Abuse, and Addictions, University of New Mexico, 2650 Yale SE, Albuquerque, NM, 87106; Pn: (505) 925-2304; kevinmontes@unm.edu.

an AUD ever receive treatment (Grant et al., 2015). Interestingly, despite the fact that the majority of individuals with an AUD do not receive treatment, non-treatment seekers do report reductions in alcohol use and alcohol-related problems over time (Connor, Haber, & Hall, 2016; Dawson et al., 2005; Smart, 2007). Yet, questions remain regarding how individuals are able to change their drinking behavior in the absence of formal treatment or help-seeking. Cognitive evaluation of the costs and benefits of drinking may be one explanation. For example, Sobell and colleagues (1993) found that 57% of non-treatment seekers who resolved their drinking in the absence of treatment engaged in a cost-benefit analysis (i.e., decisional balance). Related to identity, it may be that when the costs of drinking outweigh its benefits, an individual may identify oneself as a problem drinker. Thus, such an analysis may precede changes in problem drinking identity (i.e., self-identification as a problem drinker) among non-treatment seekers, with an individual first making the subjective determination that they are a problem drinker before establishing a goal to reduce their drinking. If change in self-identification as a problem drinker (e.g., transition in identification from a problem to non-problem drinker) is an important predictor of prospective change in drinking, then individual-level factors that individuals use to evaluate whether they are a problem drinker may be important targets in both non-treatment and treatment contexts.

Past research has examined drinking identity (i.e., viewing oneself as a drinker; Lindgren, Gasser, et al., 2016) through the administration of self-reports and Implicit Association Tests (Lindgren et al., 2013). Drinking identity has consistently been found to be predictive of unique variance above and beyond other empirically supported predictors of alcohol use and alcohol-related problems (Lindgren, Ramirez, Olin, & Neighbors, 2016). Moreover, among treatment seekers, change in participants' user identity (i.e., having strong ties with other drinkers) relative to recovery identity (i.e., having strong ties with others in recovery) over the treatment period accounted for 34% and 41% of the variance in the frequency and quantity of participants' alcohol use (Dingle, Stark, Cruwys, & Best, 2014). Given these findings, it may be that perceived change in self-identification from a problem to non-drinker among non-treatment seekers would also be predictive of prospective reductions in drinking. The goal of the current study was to examine whether change in self-identification as a problem drinker was associated with reductions in heavy drinking among non-treatment seeking hazardous drinkers. The study represents a secondary analysis of data from a prospective observational study of non-treatment seeking hazardous drinkers (Dearing, Witkiewitz, Connors, & Walitzer, 2013). We explicitly focused on hazardous drinkers who never sought treatment during the two-year study period to isolate identity change that occurred outside of a treatment episode. It was hypothesized that hazardous drinkers whose identity transitioned from problem drinker to non-problem drinker would report greater reductions in heavy drinking frequency compared to participants who did not make this transition.

Method

Participants and Procedures

Participants' ($N=208$) average age when entering the study was 36.1 ($SD=12.4$), and 52.4% of participants were men. In terms of race, the sample consisted of: 68.3% of participants who were White/Caucasian; 26.9% who were Black/African American; and 4.9% who were Asian, Middle Eastern, Native American, or "other" race. Seven participants (3.4%) reported having a Hispanic or Latino ethnicity (four White/Caucasian; one Black/African American; two other race). A detailed account of the study procedures has been previously described (Dearing et al., 2013). Those who were eligible ($n=208$) completed the baseline assessment in person. Importantly, inclusion criteria were such that treatment seekers (i.e., individuals who reported no past year treatment, including self-help meetings) were excluded from the sample. All procedures were approved by the appropriate institutional review board, and all participants provided informed consent. The final sample for the current analysis excluded individuals ($n=27$) who had any form of help seeking during the study period and individuals ($n=32$) who were missing data on the drinking identity measure, for a total final analysis sample size of 149.

Measures

Alcohol Use—The Timeline Followback (TLFB; Sobell & Sobell, 1992) was used to assess daily drinking data during the 6 months before each assessment. TLFB data were used to compute a summary variable indicative of proportion heavy drinking days (proportion of days out of all available days a participant consumed five or more drinks [men] or four or more drinks [women]). Proportion of heavy drinking days was selected as the primary outcome given the common use of the outcome in alcohol clinical trials as a standard for hazardous use (Maisto, Witkiewitz, Moskal, & Wilson, 2016; National Institute on Alcohol Abuse and Alcoholism, 2005) and because it provides a convenient index of both frequency and intensity of drinking that also adjusts for varying number of days in the TLFB window.

Identity—Problem drinker and non-problem drinker identity at each time point was assessed using a treatment history questionnaire designed specifically for the original study (Dearing et al., 2013). The following "yes" or "no" question was used as the measure of drinking identity: "Do you currently think of yourself as a problem drinker?" Only a minority of individuals in the current study identified as a problem drinker at each timepoint (Baseline: $n(\%)=23$ (15.4%); 6-months: $n(\%)=25$ (17.4%); 12-months: $n(\%)=23$ (15.2%); 18-months: $n(\%)=20$ (15.6%); 24-months: $n(\%)=22$ (16.9%)). The majority of individuals identified as a non-problem drinker across all time points ($n(\%)=104$ (69.8%)). For the current analyses, we were particularly interested in those individuals who transitioned from identifying as a problem drinker to identifying as a non-problem drinker within the first year of the study ($n=15$; 10.0%). We were also interested in individuals who transitioned from identifying as non-problem drinkers to identifying as problem drinkers. However, given that only 2 individuals made this transition in the current study, we were unable to examine how this identity transition was associated with hazardous drinking. The two-year time frame was

selected to allow for sufficient time to assess changes in alcohol use following the change in drinker identity.

Alcohol-Related Treatment and Diagnostic Assessment—At each assessment, participants were asked about any alcohol-related treatment that occurred during the time since the previous assessment and individuals were excluded if they had any form of help seeking during the two-year study. AUD was assessed at baseline using the Computerized Diagnostic Interview Schedule for DSM-IV (Robins et al., 2000; Robins et al., 1988). Although participants were screened for an AUD, participants were not provided with diagnostic feedback.

Analytic Plan

We used latent growth curve modeling with a robust maximum likelihood estimator (the MLR estimator in Mplus) to examine the change in proportion of heavy drinking days over the course of the 2-year study period. We were particularly interested in changes in the proportion of heavy drinking days over the course of the two-year study as predicted by change in identity status (from problem drinker to non-problem drinker over the first 12 months of the study). We also controlled for current AUD, given findings from Witkiewitz et al (2014) which found current AUD predicted latent trajectory classes. Latent trajectory classes were regressed on change in identity status (from problem drinker to non-problem drinker) and current AUD to test whether identity status and/or current AUD predicted classes of proportion of heavy drinking days over time. We also examined the differences in latent trajectory classes using a multiple groups modeling approach whereby we estimated the latent trajectory classes by the identity status variable using a “knownclass” model in Mplus.

Results

Descriptive Statistics

As shown in Table 1 and reported previously (Dearing et al., 2013; Witkiewitz et al., 2014), the frequency of heavy drinking decreased over time in the total sample. At baseline, individuals in the total sample of non-treatment seekers were engaging in heavy drinking on more than one-third of days and they decreased their frequency of heavy drinking to only one-quarter of days at the 24-month follow-up. The standard deviations (parentheses in Table 1) of the proportion of heavy drinking days variable indicated some non-normality, although skewness of the proportion of heavy drinking days variable was in an acceptable range (all values skewness less than +2; Tabachnick & Fidell, 2013). Table 1 also shows the frequency of heavy drinking by those who did and did not transition from a problem drinker to a non-problem drinking identity. Individuals who transitioned from identifying as a problem drinker at baseline to not identifying as a problem drinker during the first year of the study were drinking heavily on more than half of days at baseline (54% percent of days were heavy drinking days) and reduced their frequency of heavy drinking to less than 20% of days by the 24-month follow-up.

Latent Growth Mixture Models

The best model was represented by three trajectory classes as determined by a lower BIC (-493.18) and a significant BLRT of the three-class model ($p < 0.001$), as compared to the two-class model (BIC = -466.30). Entropy of the three-class model indicated good classification precision (entropy = 0.929). The four-class model fit slightly better than the three-class model based on a lower BIC (-497.88) and the BLRT was significant ($p < 0.001$), however the four-class model also resulted in a non-positive definitive covariance matrix due to negative residual variances. Given the modest decrease in BIC, the problems with the four-class model, and general concerns in the field about over-extraction (i.e., extracting too many classes than necessary to characterize the observed data) in growth mixture modeling (Bauer & Curran, 2003), we retained the three-class model as the optimal class solution. As shown in Figure 1, the three latent classes of the three-class model could be described as (1) frequent heavy drinking trajectory with only a modest decrease in the frequency of heavy drinking (Class 1, approximately 9.7% of the sample), (2) a rapidly decreasing heavy drinking trajectory with a very large decrease in the frequency of heavy drinking (Class 2, approximately 13.2% of the sample), and (3) an infrequent heavy drinking trajectory with a modest decrease in the frequency of heavy drinking (Class 3, approximately 77.1% of the sample).

The association between problem drinker identity status and probability of class membership indicated that transitioning from identifying as a problem drinker to a non-problem drinker in year 1 predicted a significantly greater likelihood of expected membership in Class 2 (“rapidly decreasing heavy drinking”) versus Class 3 (“infrequent heavy drinking trajectory”; $B(SE) = 1.952(0.84)$, $p = 0.02$; Odds ratio = 7.042). In other words, individuals who transitioned from a problem drinker to a non-problem drinking identity had a 7 times greater likelihood of membership in the rapidly decreasing heavy drinking class. Identity status did not differentiate Classes 1 and 2 ($B(SE) = 1.08(1.18)$, $p = 0.36$) or Classes 1 and 3 ($B(SE) = 0.87(1.04)$, $p = 0.40$). Likewise, current alcohol abuse or dependence diagnosis did not predict expected class membership in any of the classes (all $p > 0.08$). Next, we examined the same latent growth mixture model with transitioning from a problem drinker to a non-problem drinker identity as a grouping variable. As shown in Figure 2, individuals who transitioned from problem drinking to non-problem drinking (identity status = 1, grey lines) during the first year of the study showed the greatest changes in proportion heavy drinking days over time, with greater decreases (more negative slopes) in the trajectories of proportion heavy drinking days over time in all three classes than those who did not make the same transition (identity status = 0, black lines).

Discussion

The current study found that non-treatment seeking heavy drinkers who reported a transition in identification from a problem drinker to a non-problem drinker experienced greater reductions in heavy drinking (54% of days engaging in heavy drinking at baseline to 20% at 24-month follow-up) compared to those who did not report making the same identity transition (37% of days engaging in heavy drinking at baseline to 26% at 24-month follow-up). Although these findings are consistent with one would expect to find among non-

treatment seekers who no longer identify as a problem drinker, the current study makes a substantive contribution by highlighting that change in the subjective appraisal of one's problem drinking identity is an important indicator of change in drinking behavior, a construct which has received scant research attention.

Given the exclusion of treatment seekers in the current analyses, it is unclear why participants' identity shifted from a problem drinker to a non-problem drinker or what motivated participants to reduce their heavy drinking frequency. Two possible explanations may be the engagement in a cost-benefit analysis and self-regulation theory. It may be that the subset of participants who identified as a problem drinker at baseline but who identified as a non-problem drinker at 12-month follow-up engaged in a cost-benefit analysis within this period of time and determined that the benefits of changing their alcohol use behavior outweighed the costs of changing this behavior (Goldberg, Halpern-Felsher, & Millstein, 2002). Related to self-regulation (i.e., which has been used to explain change in addictive behaviors; Baumeister & Vohs, 2007; Miller & Brown, 1991), the lack of engagement, or ability, to weigh the benefits and disadvantages of changing one's alcohol behavior may be associated with decreased motivation to regulate alcohol use behavior or the inability to define a drinking goal (Carey, Purnine, Maisto, Carey, & Barnes, 1999; Magar, Phillips, & Hosie, 2008); thus, it is important for future studies to identify individual-level factors (e.g., health, financial) related to the benefits and costs associated with changing drinking behavior among individuals who no longer view themselves as problem drinkers and determine the extent to which these factors are related to their problem drinking identity.

Clinical Implications

With respect to treatment seekers, motivational interviewing may be particularly well suited to examine individual-level factors to change drinking behavior with emphasis being placed on a client's problem drinking identity. For example, a clinician might ask a client, "You identified yourself as a problem drinker, tell me more about how you arrived at this conclusion." Questions such as these may provide valuable insight into factors that are salient when a client explains why they identify as a problem drinker, factors that a clinician can work with to help promote increased motivation to change drinking behavior. At first glance, findings from the current study seem to conflict with the Alcoholics Anonymous (AA) literature, namely that AA encourages the adoption of the view that "once an alcoholic, always an alcoholic" or the stability of an alcoholics' identity in the promotion of abstinence (Valverde & White-Mair, 1999). It may be that the utility of this view is associated with bringing increased attention to the past costs associated with drinking and, in turn, the benefits associated with current abstention from drinking. Regarding the examination of identity change among treatment seekers, it is clear that identity change among treatment seekers who experience positive recovery outcomes is greatly needed as identity change may be a transdiagnostic mechanism of change that clinicians can target to help clients reduce their substance use behavior. With respect to the relationship between current alcohol abuse or dependence diagnosis and expected class membership which trended towards significance in the current study, it is likely that receiving an AUD diagnosis may impact the perceived malleability of a problem drinking identity during recovery.

Research is needed to compare transitions in problem drinking identity among those with and without an AUD diagnosis.

Understanding individual differences at multiple levels (e.g. self-report, cognitive, social, neural) that increase the likelihood of identifying as a problem drinker will be important for developing a mechanistic model of how incremental changes in this self-identification process leads to changes in drinking. For example, working memory capacity appears to moderate the relationship between implicit and explicit attitudes and engagement in relevant behavior (Hofmann, Gschwendner, Friese, Wiers, & Schmitt, 2008). At a neural level, self-reflective processes appear to rely on functioning of the medial prefrontal cortex, posterior cingulate cortex, and insula (Schmitz & Johnson, 2007); whether activity in these regions during tasks assessing self-referential processing could be predictive of behavior change has yet to be studied.

Limitations and Future Directions

Limitations in the current study include that problem drinking identity was assessed using a subjective, one-item measure; thus, two participants who engage in similar drinking behavior could potentially classify themselves differently with respect to being a problem drinker. That is, among self-identified non-problem drinkers in the current study, it is unclear whether they were actually non-problem drinkers or that they did not want to perceive themselves as being a problem drinker; thus, future research should probe reasons for identifying as a problem and non-problem drinker. Nonetheless, our interest was in participants' self-perception as a problem drinker, rather than use of an objective standard criterion. Regarding the creation of groups based on problem drinking identity, approximately 10% of the sample made the transition from problem drinker identity to non-problem drinker identity during the first year of the study; thus, a majority of the participants did not make the transition in identification from a problem drinker to non-problem drinker. The recruitment of a larger sample of non-treatment seekers is needed to ensure more adequate representation of those who transitioned from a self-reported problem drinker to a non-problem drinker as well as other permutations of problem identity transitions to elucidate the extent to which identity transitions are associated with the initiation/re-establishment (e.g., non-problem to problem drinker) and cessation (e.g., problem to non-problem drinker) of problematic drinking behavior. Moreover, findings which approached significance (e.g., relationship between dependence diagnosis and expected class membership) may have reached statistical significance in a larger sample.

Participants who reported a transition in identification from a problem drinker to a non-problem drinker reported greater reductions in heavy drinking frequency relative to participants who did not make this transition. Moreover, participants who reported a transition in identification from a problem drinker to a non-problem drinker were 7 times more likely to be in the latent class associated with a rapidly decreasing heavy drinking trajectory across the two-year study. Taken together, these findings suggest that the transition in identification from a problem drinker to a non-problem drinker is associated with a substantial reduction in heavy drinking and may be a useful construct for informing AUD prevention and intervention approaches.

Acknowledgments

Research reported in this publication was supported by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) at the National Institutes of Health (NIH) under award number T32AA018108 (Montes; PI McCrady), R01AA023665 (MPI: Claus/Witkiewitz), and K01AA014865 (PI: Dearing). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIAAA or the NIH.

References

- Bauer DJ, Curran PJ. Distributional assumptions of growth mixture models: implications for overextraction of latent trajectory classes. *Psychological Methods*. 2003; 8(3):338–363. <http://doi.org/310.1037/1082-1989X.1038.1033.1338>. [PubMed: 14596495]
- Baumeister RF, Vohs KD. Self-Regulation, ego depletion, and motivation. *Social and Personality Psychology Compass*. 2007; 1(1):115–128. <http://doi.org/110.1111/j.1751-9004.2007.00001.x>.
- Carey KB, Purnine DM, Maisto SA, Carey MP, Barnes KL. Decisional balance regarding substance use among persons with schizophrenia. *Community Mental Health Journal*. 1999; 35(4):289–299. <http://doi.org/210.1023/A:1018705722246>. [PubMed: 10452697]
- Connor JP, Haber PS, Hall WD. Alcohol use disorders. *The Lancet*. 2016; 387(10022):988–998. [http://doi.org/910.1016/S0140-6736\(1015\)00122-00121](http://doi.org/910.1016/S0140-6736(1015)00122-00121).
- Dawson DA, Grant BF, Stinson FS, Chou PS, Huang B, Ruan W. Recovery from DSM-IV alcohol dependence: United States, 2001–2002. *Addiction*. 2005; 100(3):281–292. <http://doi.org/210.1111/j.1360-0443.2004.00964.x>. [PubMed: 15733237]
- Dearing RL, Witkiewitz K, Connors GJ, Walitzer KS. Prospective changes in alcohol use among hazardous drinkers in the absence of treatment. *Psychology of Addictive Behaviors*. 2013; 27(1): 52–61. <http://doi.org/10.1037/a0028170>. [PubMed: 22612252]
- Dingle GA, Stark C, Cruwys T, Best D. Breaking good: Breaking ties with social groups may be good for recovery from substance misuse. *British Journal of Social Psychology*. 2014; 54(2):236–254. <http://doi.org/210.1111/bjso.12081>. [PubMed: 25209252]
- Goldberg JH, Halpern-Felsher BL, Millstein SG. Beyond invulnerability: the importance of benefits in adolescents' decision to drink alcohol. *Health Psychology*. 2002; 21(5):477–484. <http://doi.org/410.1037/0278-6133.1021.1035.1477>. [PubMed: 12211515]
- Grant BF, Goldstein RB, Saha TD, Chou SP, Jung J, Zhang H, Huang B. Epidemiology of DSM-5 alcohol use disorder: results from the National Epidemiologic Survey on Alcohol and Related Conditions III. *JAMA Psychiatry*. 2015; 72(8):757–766. <http://doi.org/710.1001/jamapsychiatry.2015.0584>. [PubMed: 26039070]
- Hofmann W, Gschwendner T, Friese M, Wiers RW, Schmitt M. Working memory capacity and self-regulatory behavior: Toward an individual differences perspective on behavior determination by automatic versus controlled processes. *Journal of Personality and Social Psychology*. 2008; 95(4): 962–977. <http://doi.org/910.1037/a0012705>. [PubMed: 18808271]
- Lindgren KP, Gasser ML, Werntz A, Namaky N, Baldwin SA, Teachman BA. Moderators of implicit and explicit drinking identity in a large US adult sample. *Addictive Behaviors*. 2016; 60:177–183. <http://doi.org/110.1016/j.addbeh.2016.1004.1022>. [PubMed: 27156218]
- Lindgren KP, Neighbors C, Teachman BA, Wiers RW, Westgate E, Greenwald AG. I drink therefore I am: Validating alcohol-related implicit association tests. *Psychology of Addictive Behaviors*. 2013; 27(1):1–13. <http://doi.org/10.1037/a0027640>. [PubMed: 22428863]
- Lindgren KP, Ramirez JJ, Olin CC, Neighbors C. Not the same old thing: Establishing the unique contribution of drinking identity as a predictor of alcohol consumption and problems over time. *Psychology of Addictive Behaviors*. 2016; 30(6):659–671. <http://doi.org/610.1037/adb0000195>. [PubMed: 27428756]
- Magar EC, Phillips LH, Hosie JA. Self-regulation and risk-taking. *Personality and Individual Differences*. 2008; 45(2):153–159. <http://doi.org/110.1016/j.paid.2008.1003.1014>.
- Maisto SA, Witkiewitz K, Moskal D, Wilson AD. Is the construct of relapse heuristic, and does it advance alcohol use disorder clinical practice? *Journal of Studies on Alcohol and Drugs*. 2016; 77(6):849–858. <http://doi.org/810.15288/jsad.12016.15277.15849>. [PubMed: 27797685]

- Miller W, Brown J. Self-regulation as a conceptual basis for the prevention and treatment of addictive behaviours. *Self-control and the addictive behaviours*. 1991:3–79.
- National Institute on Alcohol Abuse and Alcoholism. Helping patients who drink too much: A clinician's guide. 2005. Retrieved from http://pubs.niaaa.nih.gov/publications/practitioner/CliniciansGuide2005/clinicians_guide.htm
- Robins, LN., Cottler, LB., Bucholz, KK., Compton, WM., North, CS., Rourke, KM. Diagnostic Interview Schedule for the DSM-IV (DIS-IV). St. Louis, MO: Washington University; 2000.
- Robins LN, Wing J, Wittchen HU, Helzer JE, Babor TF, Burke J, Regier DA. The composite international diagnostic interview: An epidemiologic instrument suitable for use in conjunction with different diagnostic systems and in different cultures. *Archives of General Psychiatry*. 1988; 45(12):1069–1077. <http://doi.org/10.1001/archpsyc.1988.01800360017003>. [PubMed: 2848472]
- Schmitz TW, Johnson SC. Relevance to self: A brief review and framework of neural systems underlying appraisal. *Neuroscience and Biobehavioral Reviews*. 2007; 31(4):585–596. <http://doi.org/510.1016/j.neubiorev.2006.1012.1003>. [PubMed: 17418416]
- Smart, RG. Natural recovery or recovery without treatment from alcohol and drug problems as seen from survey data. In: Klingemann, H., Sobell, LC., editors. *Promoting self-change from addictive behaviors*. Boston, MA: Springer US; 2007. p. 59-71.
- Sobell, LC., Sobell, MB. Timeline follow-back: A technique for assessing self-reported alcohol consumption. In: Litten, RZ., Allen, JP., editors. *Measuring alcohol consumption: Psychosocial and biochemical methods*. Totowa, NJ: Humana Press; 1992. p. 41-72.
- Sobell LC, Sobell MB, Toneatto T, Leo GI. What triggers the resolution of alcohol problems without treatment? *Alcoholism: Clinical and Experimental Research*. 1993; 17(2):217–224. <http://doi.org/210.1111/j.1530-0277.1993.tb00752.x>.
- Tabachnick, B., Fidell, LS. *Using Multivariate Statistics*. 6. Boston: Pearson; 2013.
- Valverde M, White-Mair K. One day at a time'and other slogans for everyday life: the ethical practices of Alcoholics Anonymous. *Sociology*. 1999; 33(2):393–410. <http://doi.org/310.1177/S0038038599000231>.
- Witkiewitz K, Dearing RL, Maisto SA. Alcohol use trajectories among non-treatment-seeking heavy drinkers. *Journal of Studies on Alcohol and Drugs*. 2014; 75(3):415–422. <http://doi.org/410.15288/jsad.12014.15275.15415>. [PubMed: 24766753]

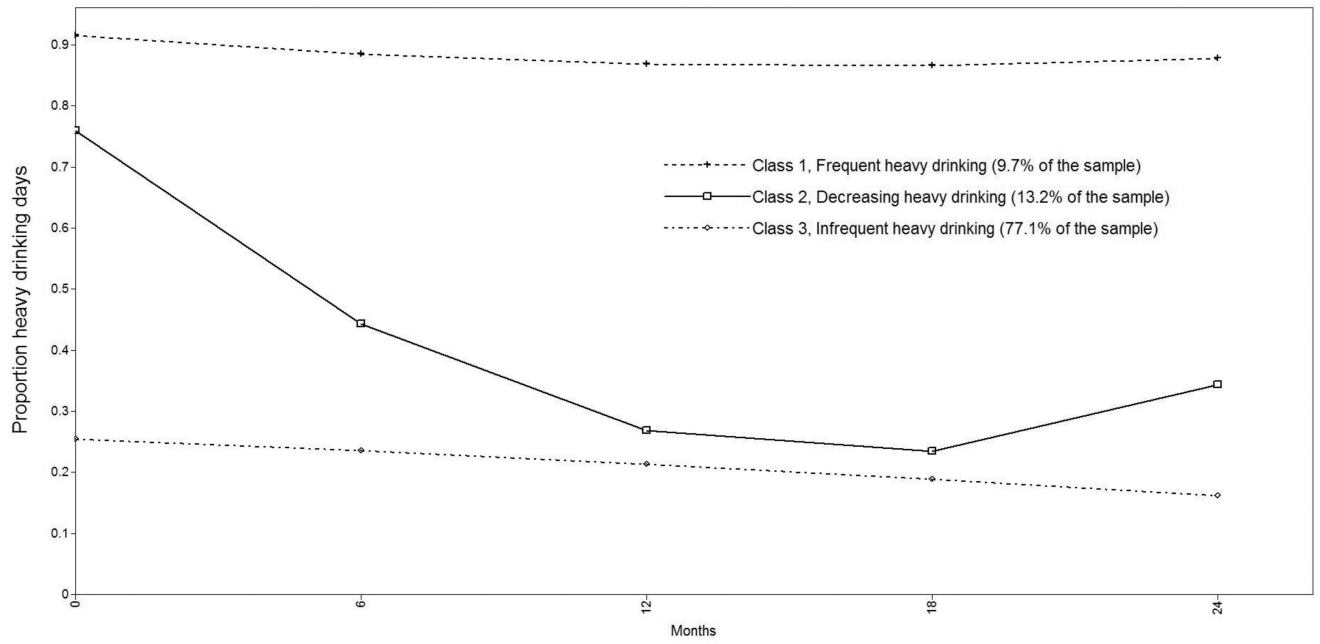


Figure 1. Estimated trajectories for three-class latent growth mixture model of proportion heavy drinking days ($n = 149$).

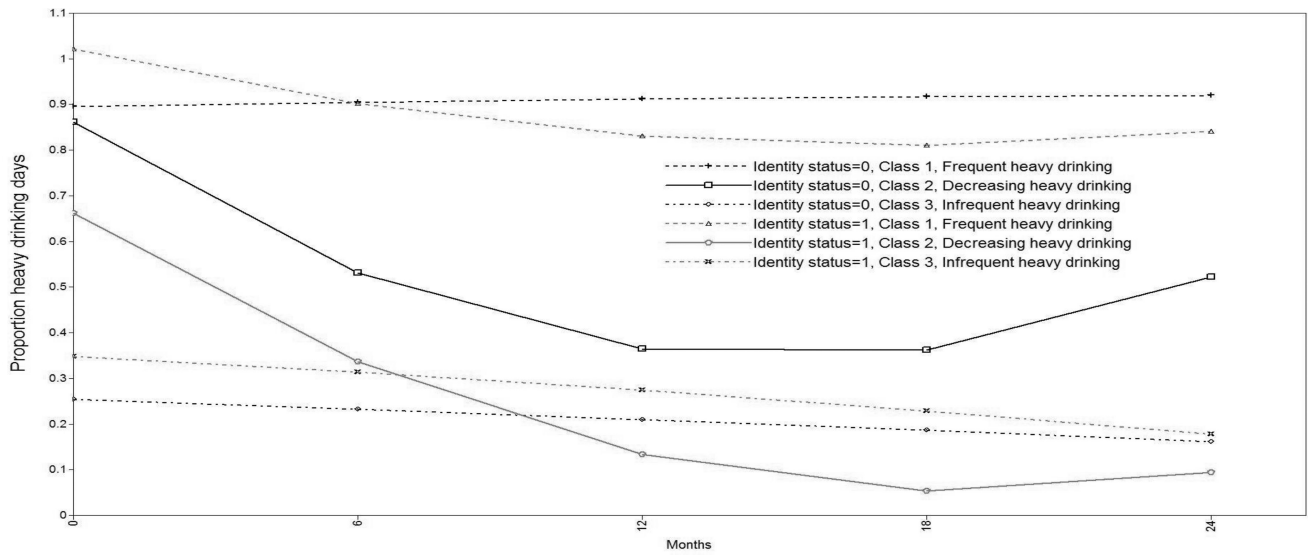


Figure 2. Estimated trajectories for three-class latent growth mixture model of proportion heavy drinking days ($n = 149$) by identity status. Identity status = 0 (black lines) are those who maintained identification as non-problem drinkers, problem drinkers, or those who transitioned to problem drinking identity. Identity status = 1 (gray lines) are those who transitioned from problem drinking identity to non-problem drinking identity during the first year of the study. *Note.* Estimated trajectory slightly exceeded 1.0 in Identity Status 1, Class 1 as the sample mean of the proportion heavy drinking days in this class was very close to 1.0.

Table 1
Average Percent Heavy Drinking Days (PHDD) by the Total Analysis Sample (n = 149) and Identity Groups

Percent Heavy Drinking Days (PHDD) Means (SD)				
Baseline PHDD	Month 6 PHDD	Month 12 PHDD	Month 18 PHDD	Month 24 PHDD
38.61% (29.1%)	32.21% (26.7%)	29.34% (27.4%)	26.54% (25.1%)	25.35% (27.2%)
Percent Heavy Drinking Days (PHDD) Means (SD)				
Baseline PHDD	Month 6 PHDD	Month 12 PHDD	Month 18 PHDD	Month 24 PHDD
Transition from Problem to Non-Problem Drinker During Year 1 (n = 15)	39.26% (27.5%)	31.74% (30.5%)	20.58% (23.2%)	19.67% (23.7%)
Did not Transition from Problem to Non-Problem Drinker Identity (n = 134)	31.39% (26.6%)	29.03% (27.1%)	27.27% (25.4%)	25.80% (27.6%)