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Introduction

- College-student drinking remains a significant problem on campuses across the nation.
- It is estimated that 38-44% of college students report drinking five (four for women in some studies) or more drinks on one occasion (often defined as "binge" drinking) during the past two weeks.
- Heavy episodic drinking has been shown to predict significant alcohol-related physical, social, and legal problems.
- Recent research on the effectiveness of oral and intramuscular Naltrexone for the treatment of alcohol dependence indicates that Naltrexone reduces craving for alcohol and significantly reduces the number of heavy-drinking days among adolescents and adults.
- Further, studies suggest that Naltrexone may be more effective at reducing drinking than maintaining abstinence and that intramuscular and targeted oral treatment (medication taken only on days when heavy drinking is anticipated) are more effective at reducing heavy drinking than daily oral treatments.
- Given that the majority of problematic drinking among college students is episodic heavy drinking and that significantly more college students are interested in reducing their drinking than in abstaining, intramuscular or targeted oral Naltrexone treatment may be particularly suitable.
- However, little is know about how receptive college students are to pharmacological interventions aimed at helping them reduce or stop drinking.
- The current study was designed to determine how open a general population of college students would be to alcohol treatment options.

Method

- Our sample included 2,394 college students at a large Midwestern university and was predominantly female (61%), and Caucasian (90%) with a mean age of 21 at the time of the study.
- In an online survey, participants were asked to indicate which of eight treatment options (self-help book, self-help computer program, self-help group, group therapy, individual therapy, monthly injection, targeted oral, or daily oral medication) they would be willing to consider if they were going to cut down on or stop drinking.
- In addition, measures of typical drinking patterns (frequency of binge drinking, getting high, and getting drunk), interest in cutting down or stopping drinking (measured on a 7-pt. Likert scale, with 4 anchored by "maybe"), importance of self-reported reasons for abstaining or limiting drinking (RALD; measured on a 3-pt. Likert scale), and personality traits were assessed.

Analyses

- Descriptive analyses were conducted on dichotomized variables to determine whether sex differences might exist on measures of interest in cutting down on or stopping drinking and receptiveness to alcohol treatment options.
- To explore the possibility that latent classes of receptiveness existed in our sample, a series of latent class analyses were conducted.
- Finally, a series of multinomial logistic regressions were used to examine correlates of the latent classes of receptiveness.
  - Covariates were examined in blocks by variable type: demographics, personality, interest in cutting down on or stopping drinking, heavy drinking and alcohol consequences, and RALD.
  - Non-significant covariates were dropped, and the final set of analyses contained all variables within a block with at least one significant comparison among the five classes.

Table 1. Sex Differences in Receptiveness to Treatment Options and Alcohol-related Variables

	Men *n*=661-942	Women *n*=1240-1452§	Total *n*=1901-2394§
	N (%)		
Interested in cutting down (>3 on Likert scale)***	**158 (18.3)**	**150 (11.0)**	308 (13.8)
Interested in stopping (>3 on Likert scale)*	**60(7.0)**	**67 (4.9)**	127 (5.7)
Openness to different treatment options			
Self-help book***	**173 (18.4)**	**384 (26.5)**	557 (23.3)
Self-help computer program	100 (10.6)	150 (10.3)	250 (10.4)
Self-help group*	**161 (17.1)**	**297 (20.5)**	458 (19.1)
Group therapy**	**128 (13.6)**	**274 (18.9)**	402 (16.8)
Individual therapy***	**251 (26.7)**	**555 (38.2)**	806 (33.7)
Monthly injection	55 (5.8)	94 (6.5)	149 (6.2)
Targeted oral medication	111 (11.8)	186 (12.8)	297 (12.4)
Daily oral medication	66 (7.0)	86 (5.9)	152 (6.4)
Alcohol-related Measures			
Paternal history of alcohol problems**	**73 (11.0)**	**193 (15.6)**	266 (14.0)
Alcohol dependence proxy (≥3 symptoms)**	**216 (24.0)**	**259 (18.3)**	475 (20.5)
History of arrest for drunk driving***	**68 (7.7)**	**42 (3.0)**	110 (4.8)
	Mean (*SD*)		
Heavy drinking composite***	**1.8 (1.4)**	**1.3 (1.2)**	1.5 (1.3)
Dependence (proxy) symptom count***	**1.5 (1.8)**	**1.2 (1.5)**	1.3 (1.6)
Reasons for abstaining or limiting drinking			
Upbringing RALD**	**2.9 (3.6)**	**3.3 (3.5)**	3.1 (3.5)
Loss of Control RALD	1.6 (2.5)	1.6 (2.4)	1.6 (2.4)
Consequences RALD***	**5.2 (3.7)**	**7.0 (3.7)**	6.3 (3.8)

§ *n*'s vary as a function of wave of measurement and randomly missing data; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Figure 1. Probability of Receptiveness to Treatment Options by Latent Class

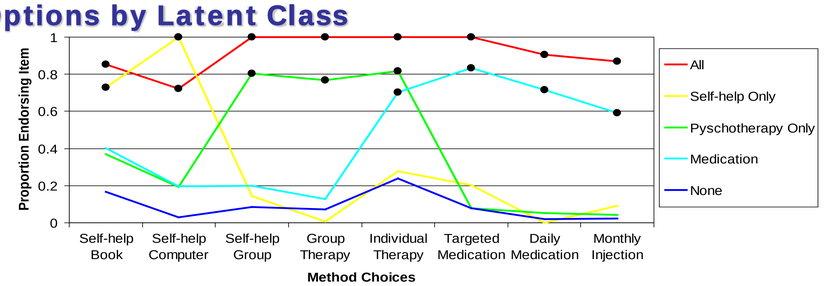

Table 2. Odds Ratios Comparing None (n=1293, 78%) to all other Latent Classes of Treatment Receptiveness

	All Options *n*=29 (2%)	Self-help Options *n*=71 (4%)	Psychotherapy Options *n*=211 (13%)	Medication Options *n*=50 (3%)
	OR (95% CI)			
Block 1: Demographics				
Male[B, I]	1.006 (0.54, 1.89)	0.694 (0.41, 1.18)	**0.448 (0.32, 0.64)**	1.011 (0.59, 1.73)
Block 2: Personality				
Neuroticism[F, G]	1.036 (0.99, 1.08)	1.004 (0.97, 1.04)	**1.029 (1.01, 1.05)**	1.038 (0.99, 1.09)
Extroversion	1.005 (0.94, 1.07)	0.959 (0.92, 1.01)	0.999 (0.97. 1.03)	1.047 (0.99, 1.11)
Openness	1.037 (0.98, 1.10)	0.997 (0.96, 1.04)	**1.055 (1.03, 1.08)**	0.984 (0.94, 1.03)
Agreeableness	1.004 (0.93, 1.08)	1.015 (0.97, 1.06)	**1.068 (1.03, 1.11)**	1.020 (0.97, 1.07)
Conscientiousness	0.987 (0.93, 1.05)	1.024 (0.98, 1.07)	1.002 (0.97, 1.04)	1.016 (0.96, 1.08)
Novelty Seeking[C, E, H]	**0.801 (0.69, 0.94)**	1.019 (0.91, 1.14)	0.954 (0.89, 1.02)	1.019 (0.90, 1.16)
Block 3: Interest in Changing Drinking				
Interest in Cutting Down[C,D]	0.547 (0.17, 1.76)	**2.185 (1.12, 4.26)**	0.804 (0.49, 1.33)	0.352 (0.06, 2.20)
Interest in Stopping	**3.235 (1.00, 10.45)**	1.277 (0.45, 3.63)	0.836 (0.37, 1.88)	1.205 (0.17, 8.73)
Block 4: Heavy Drinking and Consequences				
Heavy Drinking[D]	0.789 (0.58, 1.07)	1.044 (0.88, 1.24)	**0.836 (0.74, 0.95)**	1.043 (0.85, 1.28)
History of DUI[C, E, H]	---	0.739 (0.21, 2.60)	0.907 (0.38, 2.17)	0.767 (0.18, 3.31)
Block 5: Reasons for Abstaining or Limiting Drinking				
Upbringing[A]	1.079 (0.98, 1.19)	0.956 (0.89, 1.03)	1.012 (0.96, 1.07)	0.931 (0.83, 1.05)
Negative Consequences	1.044 (0.90, 1.21)	1.024 (0.93, 1.13)	**0.918 (0.85, 0.99)**	1.052 (0.93, 1.20)
Perceived Costs[E, H]	0.982 (0.89, 1.08)	**1.090 (1.01, 1.18)**	**1.121 (1.07, 1.18)**	**1.128 (1.03, 1.24)**

Additional Significant Odds Ratios indicated by superscripts: [A] All > SH; [B] All > Tx; [C] SH > All; [D] SH > Tx; [E] Tx > All; [F] Tx > SH; [G] Tx > Rx; [H] Rx > All; [I] Rx > Tx.

Results

- Men were more likely to express interest in cutting down (18%) and stopping (7%) than women (11% and 5% respectively; Table 1), while women expressed more receptiveness than men to half of the treatment options (Table 1).
- Fit statistics and interpretability of classes suggested that a 5-class solution offered the best synthesis of the eight treatment options (Figure 1).
- Class 1 (All Options) consisted of participants with a high probability of receptiveness to all treatments.
  - Participants with a high likelihood of being in the All Options class expressed more interest in stopping drinking (compared to the None class; Table 2); less interest in cutting down on drinking and higher levels of Upbringing RALD (compared to the Self-help class); lower levels of Perceived Costs RALD (compared to both the Psychotherapy Options and Medication Options classes); and lower levels of Novelty Seeking (compared to the other four classes).
- Class 2 (Self-help Options) consisted of participants with a high probability of receptiveness to self-help books or self-help computer programs.
  - Participants with a high likelihood of being in the Self-help Options class tended to express more interest in cutting down on drinking, higher levels of Novelty Seeking, lower levels of Upbringing RALD, and were less likely to report a history of DUI arrest (compared to the All Options class); more interest in cutting down on drinking, heavier drinking, and lower levels of Neuroticism (compared to the Psychotherapy Options class); and higher levels of Perceived Costs RALD (compare to the None class; Table 2).
- Class 3 (Psychotherapy Options) consisted of participants with a high probability of receptiveness to self-help group and group and individual psychotherapy.
  - Participants with a high likelihood of being in the Psychotherapy Options class were more likely to be female, report less heavy drinking, be higher in Neuroticism, Openness, and Agreeableness, report lower levels of Negative Consequences RALD and higher levels of Perceived Costs RALD (compared to the None class; Table 2); and less interest in cutting down on drinking, less heavy drinking, and higher levels of Neuroticism (compared to the Self-help class).
- Class 4 (Medication Options) consisted of participants with a high probability of receptiveness to individual psychotherapy and all three medication treatments.
  - Participants with a high likelihood of being in the Medication Options class were more likely to be male and report lower levels of Neuroticism (compared to the Psychotherapy class); report higher levels of Novelty Seeking and Perceived Costs RALD and are more likely to report a history of DUI arrest (compared to the All Options class); and report higher levels of Perceived Costs RALD (compared to the None Class; Table 2).
- Class 5 (None) consisted of participants with a low probability of receptiveness to any of the treatments and are described in Table 2.

Conclusions

- A surprisingly high number of college students (17%) expressed receptiveness to pharmacological treatment options to help them reduce or stop drinking.
- Further, 18% of men expressed interest in cutting down on their drinking, warranting serious attention from campus health providers.
- Increasing options for students who are interested in reducing or stopping drinking via pharmacological interventions such as Naltrexone, could provide for an important unmet need among college students, and perhaps especially among young men.