



Increasing Readiness to Change Alcohol Use in Young Adults: A Text-Messaging Intervention

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ABSTRACT

We tested the feasibility and effectiveness of an alcohol counseling intervention delivered via personalized text messages for college students with problem alcohol use. Students who screened positive were invited to be randomized to intervention (n=8) or control groups (n=10) and were assessed at one month past baseline. The intervention group received between four and six text messages daily for four days that required participant responses lasting approximately 1 minute during the week following the web-based baseline assessment. Results found that the intervention group increased in Readiness to Change from baseline to follow-up compared with the control group (p<.01). Results indicate that the automated texting platform developed works well with college students and that utilizing text messaging interventions are promising.

BACKGROUND

Among full-time college students in 2011, 60.8 percent were current drinkers, 39.1 percent were binge drinkers, and 13.6 percent were heavy drinkers (Dawson, Grant, & Li, 2005; Substance Abuse and Mental Health Services Administration, 2010).

Mobile phone-based interventions are a promising approach towards addressing problem drinking in this population.

Given the challenges of reaching and retaining young adults into interventions, combining mobile phone interventions with motivational interviewing and social network counseling may serve as a stimulus to increase contemplation about current and future use.

OBJECTIVE

The goals of this study were to, a) test the feasibility of a computer program delivered text-messaging intervention, and b), test the effectiveness of motivational interviewing integrated with social network counseling, delivered via personalized text messages for young adults.

METHODS

Participants

An online survey measuring personal drinking habits and readiness to change was administered to students enrolled in undergraduate psychology courses at large southeastern university.

Of a total of 663 participants, 18 individuals (3%), aged 18-25, who met the criteria for “problem drinking”, as per the Alcohol Use Disorders Identification Test, were enrolled into the text-message intervention study.

Participants were randomized to either the control (N = 10), or treatment conditions (N=8).

Table 1. Description of Motivational Interviewing Integrated with Social Network Counseling-Text Version

Day	Texts	Approach & MI Focus	Model Components
1	6 texts	Rapport buildng	Asked about general well-being
			Asked about difficulty to stop/reduce drinking
2	4 tests	Presenting feedback	Asked what they like and dislike about drinking
			Drinking is reviewed & compared to national norms
3	5 texts	Presenting information & feedback	Asked to reflect and consider fuure in light of current drinking
			Information about social networks is presented
4	4 texts	Summary of session	Personal social network quality is reviewed
			Asked to reflect on their social network
			Texts are summarized
			Reflect on possible small adjustments to network

Table 2. Text Messages by day and Booster Messages

Day	Automated Personalized Text Messages
Day 1	Message 1 "Hi SUBJECT_NAME. This is the XXX Psych Study. What up? How U feeling today? Txt back: good, ok, bad."
	Message 2 "B-4 we start, do U think it will be hard for U to reduce or stop drinkin? Txt back: no way, maybe, or def."
	Message 3 "Let's talk about sum of your responses from the survey. U reported drinkin NUMBER_OF_DAYS days in past 30 days. Can U tell me what U like about drinkin?"
	Message 4 "OK, thanks I appreciate it. Can U also tell me what U dislike about drinkin?"
	Message 5 "Sometimes there are pluses & minuses to drinkin. What are U doing now?"
	Message 6 "Thanks for your responses. I appreciate it. I hope U can think over what we discussed. Bye. Need some extra support? Txt: boost"
Day 2	Message 1 "Hey SUBJECT_NAME. How are U feeling? Txt back: good, ok, bad."
	Message 2 "Let's talk more about ur drinkin. Did U know that ALCOHOL_USE_% of other 18-23 year olds drink less than you? How's that for you? Txt: surprised, unsure, upset."
	Message 3 "Can U tell me how U see your life in light of your current drinkin?"
	Message 4 "Ok, thanks for Ur response, I really appreciate it. Need some extra support? Txt: boost"
Day 3	Message 1 "Hey SUBJECT_NAME. How r u doing? Txt back: good, ok, bad. Then, let's talk about your friends."
	Message 2 "Your network is RISK_LEVEL risk to affect your drinkin. How do U feel about Ur network? Txt back: ok, need to change, need lots of change."
	Message 3 "How would U rate Ur craving right now? Txt back: Intense, pretty strong, under control."
	Message 4 "Remember, very small adjustments in ur network can have big effects w/ ur drinkin. What are U doing now?"
	Message 5 "K, thx. I hope U can think over what we discussed. Hang in there, bye. Need some extra support? Txt: boost"
Day 4	Message 1 "Hey SUBJECT_NAME. Howz life? Txt back: good, ok, bad."
	Message 2 "Based on what we have been texting about, would U consider making any small adjustments to Ur drinking at this time?"
	Message 3 "An option is to spend slightly more time with non-drinkers and less with drinkers, and spending more time at non-drinking locations. What do U think?"
	Message 4 "What do you think U would like to do about your drinkin?"
	Message 5 "Thx for Ur texts. Hope U can think over what we discussed. Questions? EMAIL_CONTACT PHONE_CONTACT. Complete follow-up survey in 1 mnth & get \$20"
PRN	Boost 1 "Ask for support from a non-drinking friend, find out what they are doing tonight."
	Boost 2 "Mix up Ur routine so U won't be tempted to drink, do different things."
	Boost 3 "Try to spend less time at places that remind U of drinking. U can do this!"
	Boost 4 "Hang in there, U are doing great! Go work out, see a movie, have a meal."
	Boost 5 "Go to a coffee shop, go to a bookstore, study, improve Ur GPA!"
	Boost 6 "Hang in there, there are lots of students who are interesting, fun, cool, and sober, like U!"

METHODS CONTINUED

Text-message Intervention

The intervention was delivered over four consecutive days with 4 to 6 messages being sent daily, requiring a response lasting no more than 1 minute.

Upon conclusion of the study, participants were debriefed, given information about local resources for mental health and substance use treatment, and paid.

All participants were asked to complete a follow-up, online assessment one month after they received their last text message.

Analytic Plan

Descriptive statistics were calculated on participants' characteristics, including texting behaviors as well as on alcohol use and readiness to change drinking behavior.

To determine the effect of the intervention, analysis of covariance (ANCOVA) models examining posttest (Time 2) scores with pretest (Time 1) scores entered as covariates were used to obtain estimated marginal means and effect sizes for comparisons of MISN versus control group outcomes.

RESULTS

The automated and individualized text messaging protocol was successful in delivering text messages to the correct individual (97%), in the correct sequence (100%), with appropriate responsiveness to each participant's replies (98%).

The sequencing of text messages was accurate in the day sequence as well as within day interactive texts based upon participant response.

A strong negative correlation ($r = -.816, p < .05$) was found between our Day 1 text item "Do you think it will be hard to stop drinking?", and the item, "how ready are you to change your alcohol use?"

A strong positive correlation was found between our Day 3 text item "how do you feel about your network?", coded as 1=ok, 2=need to change, 3=need lots of change and the BSI Anxiety scale, with higher scores indicating more anxiety ($r = .764, p < .05$).

On analysis of posttest scores, the intervention group increased in readiness to change from time 1 to time 2 and the control group decreased in readiness to change from time 1 to time 2.

In a repeated measures ANOVA, the interaction term for condition X readiness to change was significant, $F(1, 16) = 13.69, p < .01$, suggesting that the intervention increased readiness to change.

Further, the effect size for this intervention on this variable was large, with a Cohen's d of 1.37, indicating a very strong effect on the readiness to change construct within the treatment condition compared to the control condition.

The intervention group had increased intentions to reduce alcohol use in the next 3 months and the control group had decreased intentions to reduce alcohol use in the next 3 months ($p > .05$).

Similarly, the intervention group increased (slightly) in taking steps to reduce alcohol use and the control group decreased in taking these steps ($p > .05$).

Table 3. Intervention and Control Group Changes from Baseline on Key Outcomes

Key Outcomes	Intervention (n=8)		Control (n=10)		Cohen's d
	Baseline mean, (SD)	Follow-up mean, (SD)	Baseline mean, (SD)	Follow-up mean, (SD)	
AUDIT Total	14.1 (4.0)	9.7 (5.4)	10.6 (2.7)	5.9 (2.4)	0.9
Drinks past week	11.1 (5.7)	8.3 (9.9)	8.0 (6.8)	3.6 (5.2)	0.6
Drinks, last occasion	7.0 (5.0)	6.8 (5.4)	5.4 (3.0)	3.6 (1.2)	0.8
Maximum drinks past month	11.4 (6.3)	9.2 (7.1)	8.1 (3.1)	5.9 (3.6)	0.6
Average drinks per occasion last month	4.9 (2.2)	4.1 (2.5)	4.3 (1.6)	3.5 (2.1)	0.3
Alcohol expectations	33.2 (5.6)	30.5 (4.8)	31.4 (4.0)	30.3 (4.4)	0
Readiness to change drinking	1.60 (0.97)	2.70 (1.42)	2.25 (1.04)	1.25 (0.46)	1.37**
Importance of changing	1.90 (1.29)	1.80 (1.14)	2.00 (0.93)	1.38 (0.74)	0.4
Confidence in ability to change	4.10 (1.10)	4.60 (0.52)	4.50 (0.93)	4.13 (1.6)	0.4
Intentions to reduce alcohol use	2.30 (1.16)	3.00 (1.05)	2.75 (1.28)	2.25 (1.04)	0.7
Taking steps to reduce alcohol use	18.50 (8.70)	18.80 (9.20)	19.38 (9.87)	13.38 (6.00)	0.7

**p < .01

CONCLUSIONS

Our automated computer program that can accurately remind, send, respond, track, and maintain a text-messaging intervention is a promising.

Reaching large populations of interest at an extremely low cost has implications for prevention.

Another promising finding is the significant increase in the readiness to change and the large effect size.

These results may mean that the intervention activated participants' motivation for change by assisting in consciousness raising and re-evaluation of their drinking behavior.

In all, this trial piloted an innovative study that produced promising results to warrant further study.