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The Relationship between Electronic Goal Reminders and Subsequent Drug Use and Treatment Initiation in a Criminal Justice Setting

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Abstract

Introduction—Opportunities to influence behavior through the use of electronic reminders has not been examined in a criminal justice population. The purpose of this study was to assess probationer preferences for short-term goals from a web-based program and evaluate the role of voluntary electronic reminders (e.g., text messaging, email) in achieving early treatment and probation tasks.

Methods—We used data from drug-involved offenders ($n=76$) participating in a clinical trial of a 2-session motivational computer program. As part of the program, participants could choose to receive text or email reminders about their probation and treatment goals for the next month. Poisson regression models were utilized to evaluate goal and reminder selection in relation to the days of substance use and treatment attendance at two-month follow-up.

Results—The most common goals were related to probation and treatment tasks, relationships, and cognitive reappraisals. Forty-five percent of probationers elected to receive electronic goal reminders at Session 1 with a slight increase at Session two (49%). Probationers who opted to receive electronic goal reminders at Session one selected significantly more goals on average ($M = 4.4$, $SD = 2.1$) than probationers who did not want reminders ($M = 3.4$, $SD = 1.8$), ($t = 2.41$, $p = .019$). Reminder selection and total number of goals selected predicted days of substance use and

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Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Contributors

Authors Spohr, Walters, and Taxman contributed to the paper idea, and analysis plan. Spohr conducted the primary analyses. Spohr and Walters wrote initial drafts of the paper, which were revised by Taxman. All authors contributed to and have approved the final manuscript.

Conflict of Interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

treatment attendance at a two-month follow-up. Probationers who opted not to receive electronic reminders and those who only chose to receive reminders at one visit had more days of substance use compared to those who chose to receive reminders at both visits, 1.66 and 2.31 times respectively. Probationers who chose not to receive electronic reminders attended 56% fewer days of treatment compared to those who chose to receive reminders at both visits.

Conclusions—People's choice of short-term goals and reminders can provide advance notification of the likelihood of substance use and treatment initiation. Probation systems might use such information to triage at-risk probationers to a higher level of service, before problems have emerged.

Keywords

Criminal Justice; Substance Abuse; Technology; Goal-Setting; Reminders

1. Introduction

Over four million people were under community supervision in the United States in 2012 (Glaze & Herberman, 2013). Nearly two thirds of these people were estimated to be substance-involved (i.e., a history of illicit drug use that is sufficient enough to warrant involvement in treatment) (Taxman, Perdoni, & Caudy, 2013). Many of people involved in the justice system do not receive appropriate treatment, and consequently cycle through the system due to continued substance use and drug-related crime (Taxman, Perdoni, & Harrison, 2007). Garnick et al. (2014) found that offenders who were engaged in substance abuse treatment were less likely to be arrested compared to those who were unengaged. There is preliminary evidence that technology-based interventions may be a cost-effective way to affect behavior change in resource poor settings such as criminal justice (Chaple et al., 2014; Taxman, Walters, Sloas, Lerch, & Rodriguez, in press).

One potentially cost-effective way to improve treatment engagement is to use technology-based (e.g., web, mobile) interventions to supplement traditional face-to-face interactions with a caseworker or probation/parole officer. Technology-based interventions have been shown to be effective in promoting treatment adherence in a range of healthcare and community settings (Buhi et al., 2012; Cole-Lewis & Kershaw, 2010; Davies, Morriss, & Glazebrook, 2014; Free, Phillips, Galli, et al., 2013; Head, Noar, Iannarino, & Grant Harrington, 2013; Merriel, Andrews, & Salisbury, 2014; Spohr et al., In Press; Whittaker et al., 2009).

Technology is expanding exponentially each year, creating new opportunities to influence behavior. In healthcare research, technology-based reminders have been implemented to help people keep appointments and follow recommended immunizations (Free, Phillips, Watson, et al., 2013; Head et al., 2013; Odone et al., 2014). Mobile phone reminders have also been utilized to prompt physical activity changes with some success (Fry & Neff, 2009). For instance, in a sample of chronic obstructive pulmonary disease patients, mobile phone cues for improving physical activity increased activity levels 13% on average compared to an adjusted baseline level (Tabak, op den Akker, & Hermens, 2014). Prestwich et al. (2010) found a text messaging program increased physical activity and exercise

planning compared to a control condition. In addition, when supplementary goal reminders were used, participants had increased weight loss. Cue-to-action interventions have been found to be effective in many areas of health behavior change but have not been previously tested with behaviors that might affect criminal justice outcomes.

Many behavior change theories assume a cue-to-action is necessary to prompt behavior change (e.g., Health Behavior Model [HBM], Transtheoretical Model [TTM], and Social Cognitive Theory [SCT]). For example, the HBM states that perceptions of severity and susceptibility can change attitude but are insufficient to change behavior unless prompted by an external trigger (Rosenstock, 1974). Likewise, the TTM states that cues-to-action can help move people from contemplation to action to maintenance, and to avoid relapse (Prochaska, DiClemente, & Norcross, 1992). Indeed, triggers on their own are widely used to promote everyday behaviors such as stopping at a red light, keeping doctor appointments, and waking up in the morning. Similarly, social systems can make use of triggers to promote more complex behaviors. For example, people in the criminal justice system are expected to manage a variety of tasks (e.g., appointments, classes, avoiding high-risk people or situations, refraining from substance use, obtaining/maintaining employment), but the criminal justice system has not adopted systematic ways of reminding supervisees to complete these tasks.

Technology-based interventions are uniquely suited to provide behavioral triggers because of the nature of ‘always on’ devices (e.g., mobile phones), ease of use (e.g., setting alerts), ability to provide tailored information and feedback, and geospatial locating capabilities (Fogg, 2003). Web-based and text message interventions have been found to be more effective when messages are personalized and tailored to the specific person (Head et al., 2013; Webb, Joseph, Yardley, & Michie, 2010). Additionally, the importance of intervening in the moment is also recognized. Mobile phones in particular have become increasingly time and context aware (e.g., social networking, buying patterns, geospatial location), which has been demonstrated to assist people who are seeking to avoid substance use (Gustafson et al., 2014). This technological “awareness” will increasingly move behavioral triggers into the forefront of decision-making and behavior initiation.

Relatively few models have examined the integration of behavior change and technology. One model, the Fogg Behavior Model (FBM; Fogg, 2009) describes mechanisms of change in persuasive technology design. The FBM assumes that in order for a behavior to occur, a person must have the motivation and ability to engage in the behavior, followed by an effective cue-to-action. Similar to the HBM, the FBM suggests that motivation and ability affect cognitions, while triggers affect the occurrence of the behavior. While many face-to-face interventions target motivation and ability to engage in a behavior, the FBM suggests that technology may be particularly well suited to providing triggers or reminders in a person’s environment. Another model, behavioral intervention technology (BIT; Mohr, Schueller, Montague, Burns, & Rashidi, 2014) forms the development of technology intervention elements, characteristics, and workflow integrated with behavioral theory to provide the pathways between behaviors and treatment goals. The BIT model stresses the ability to break down larger treatment goals into manageable intervention aims that address the what, when, why, and how of the intervention. Models such as these can be used to

merge behavior change theories with technology implementation principles to effectively address substance use disorders.

One program that integrates behavioral theory with technology is the Motivational Assessment Program to Initiate Treatment (MAPIT). MAPIT is a two session web-based intervention for probationers targeting individual substance use and treatment initiation, which may reduce the burden on the probation officer to address these behaviors. In addition, MAPIT uses theory-based algorithms and a synthetic speech engine to deliver custom reflections, feedback, and suggestions. The program is intended to be completed near the start of probation, during a time in which clients are making critical decisions about early court-mandated tasks (Walters et al., 2013).¹ Probationer behaviors that are consistent with a successful probation outcome may include: attending classes and/or appointments, abstaining from substance use, avoiding high-risk environments, finding and maintaining employment, and managing anger and/or stress. MAPIT incorporates materials to: increase motivation (e.g., risk estimates), assist with planning (e.g., suggestions, referrals, scheduling), and remind clients about their goals (e.g., email or text reminders). MAPIT consists of two 45-minute sessions. Session one targets increasing motivation to complete probation, initiating treatment, and reducing substance use. Session two aims to help probationers develop concrete strategies to accomplish tasks such as goal-setting, managing high-risk situations, and identifying social supports. Both sessions allow participants to select goals for the following month, and to receive text or email reminders about those goals.

MAPIT is an example of a technology-based intervention that focuses attention on the probation and treatment related tasks needed to be successful in the probation system. The purpose of this study was to examine probationer engagement in a web-based motivational intervention to reduce substance use and initiate treatment, specifically related to goals and electronic reminders. This study had three aims: 1) Identify the most prevalent early probation and treatment goals; 2) Evaluate voluntary goal and electronic reminder selection; and 3) Assess the role of goal reminders for early substance abstinence and treatment attendance. We hypothesized that participants who elected to receive reminders would be more successful at completing their selected goals, consequently reducing substance use and increasing treatment attendance at a two-month follow-up.

2. Materials and Methods

MAPIT was tested in a three-arm randomized controlled trial (RCT). MAPIT compared an in-person vs. computer condition for increasing motivation to initiate positive changes related to substance use, treatment initiation, and other behaviors related to probation success (See Taxman et al., in press). To be eligible, participants were 18 years old or older, newly on probation (within 30 days of their sentence date), and self-reported illicit drug use

¹Samples of the program can be viewed at:

<http://youtu.be/9yV6bTn1tVE>
<http://youtu.be/XEZ5o48WwTg>
<http://youtu.be/u2SHWG0QXe8>
<http://youtu.be/wMShVdPpcsw>

or heavy alcohol use within the previous 90 days. Participants completed a baseline assessment and follow-up interviews at two- and six-months. If participants were randomized to the computer condition (described here as MAPIT), they completed the first intervention visit immediately following the baseline assessment, and the second intervention visit approximately 30 days later. To examine the impact of goals and/or reminder selections on early substance use outcomes, we included participants who had completed both computer intervention visits, as well as the two-month follow-up assessment. We only included participants who received the entire intervention package to get the complete picture of the intervention capabilities related to the progression of goal-setting and reminders from Session one to reports of progress made in Session two.

2.1. Intervention Procedure

Participants accessed MAPIT on a laptop computer and had the option of receiving electronic reminders via text messaging (SMS) or email. Study staff provided computers to participants to complete the intervention at each session. The electronic reminders were a voluntary part of the program, therefore participants were not required to have a cell phone or email account to participate in the MAPIT program. Participants in our analyses completed both MAPIT intervention visits. At the end of each visit, participants used the web-based program to select probation and treatment specific goals for the next month. Four standard goals were suggested for each area: probation and treatment. (Standard goals were generated from earlier conversations with probation officers and treatment providers about behaviors that were indicative of positive probation progress.) In addition, participants could type in up to three custom goals in each of the two areas. Clients were required to select a minimum of two goals, one probation and one treatment related at each session with a maximum of 14 goals combining both standard and custom goals. Participants were then given the option of receiving electronic reminders of the goals they selected. Participants could 'drag and drop' goals onto a calendar to indicate a delivery day and time, which would trigger an automatic text message or email reminder to be sent at the selected time.

2.2. Measures

2.2.1. Timeline Followback—We used the timeline followback method (TLFB; Sobell & Sobell, 1996) to measure the frequency of use of nine substances in the first 60 days post baseline assessment: alcohol, marijuana, opiates, cocaine, hallucinogens, barbiturates, inhalants, amphetamines, and prescription pain pills. Alcohol use was measured in daily standard drinks (i.e., 12 ounce beer, 5 ounce glass of wine, and 1.5 ounces of liquor), while illicit drug use was measured as frequency of daily use of any illicit drug. The TLFB demonstrates acceptable convergent and discriminant validity compared to other substance use measures (Fals-Stewart, O'Farrell, Freitas, McFarlin, & Rutigliano, 2000).

2.2.2 Criminal Risk Level—The criminal risk score was derived from a set of justice involvement items that have been found to predict future risk (Taxman, Cropsey, Young, & Wexler, 2007a). The criminal risk score considers prior areas of justice involvement such as history of juvenile and adult offenses, arrests, convictions, incarcerations, and community supervision violations. Criminal risk scores were categorized into three groups: low risk (0 – 2), medium risk (3 – 5), and high risk (6 – 9).

2.3. Outcome Variables

TLFB data was used to determine substance use and treatment attendance for the first 60 days post baseline assessment. A day of substance use consisted of a self-reported heavy drinking episode (i.e., 5 drinks for men or 4 drinks for women) or any illicit drug use (i.e., cocaine, methamphetamines, barbiturates, prescription pain pills, hallucinogens, sedatives/hypnotics). A day of treatment attendance included attending at least one treatment or self-help group session (e.g., anonymous/self-help groups, group or individual counseling sessions, residential treatment, inpatient/outpatient treatment).

These outcome variables were assessed while controlling for participant gender, age, and criminal risk level. Probationers were categorized into low/moderate risk and high risk. We also controlled for days of substance use in the 60 days prior to the baseline assessment (including heavy drinking episodes and illicit drug use as defined above) and whether or not the participant was mandated to attend treatment as part of their probation sentence.

2.4. Analysis Plan

We examined frequency and descriptive statistics to determine probationer preferences for goal and reminder selection. After assessing the distribution of each variable and transforming when necessary, we conducted bivariate t-tests to measure the association between reminder selection and number of goals by each visit and overall. We then conducted a generalized estimating equation (GEE) Poisson regression to evaluate the number of goals set by time and reminder selection as fixed factors with subject as a random factor. Time was entered as a continuous variable in which Session one was day zero and Session two was the number of days between Session one and two. We used generalized linear model (GLM) Poisson regressions to evaluate the relationship between reminder selection frequency (i.e., none, one visit, or both visits) and total number of goals selected in relation to days of substance use and days of treatment attendance at a two-month follow-up, controlling for probationer gender, age, and criminal risk level. All analyses were conducted in SPSS Version 20.

3. Results

The sample consisted of substance-using probationers ($N = 76$) in Dallas, TX and Baltimore City, MD. Probationers were primarily African American males. Ages ranged from 19 to 62 ($M = 36.3$, $SD = 12.1$). Probationers were somewhat evenly distributed across criminal risk levels with slightly more low risk participants. Half of participants reported marijuana use in the 60 days prior to the baseline assessment, while 40% reported heavy drinking episodes and 42% reported use of illicit hard drugs such as cocaine, opiates, or amphetamines. These categories were not mutually exclusive; participants could report use of one or all three substances. About 35% of probationers reported being mandated to treatment as a condition of probation.

3.1. Goal Selection

Table 2 shows the number of probationers selecting common, system-generated goals related to treatment and probation. In Session one the standard, system-generated goals

accounted for 89.5% of the total goals selected. However, in Session two probationers were more likely to enter their own custom goals; the standard, system-generated goals only accounted for 45.3% of all goals selected. Common themes in the custom goals related to improving relationships, reappraisal of substance use, and general planning efforts. Relationship goals included spending more time with family and recognizing how substance use affects relationships. Reappraisal goals targeted thoughts and behaviors such as evaluating how substance use had negatively affected one's life and recognizing urges to use. General planning efforts related to finding employment, financial planning, and avoiding people and environments where drug use was more likely to occur.

3.2. Reminder and Goal Selection and Completion

Forty-five percent of probationers elected to receive electronic goal reminders at Session one, including text reminders ($n = 21$, 29.6%), and email reminders ($n = 11$, 15.5%) versus no reminders ($n = 39$, 54.9%). At Session two, there was a slight increase in the percent of probationers selecting to receive electronic goal reminders: text reminders ($n = 28$, 36.8%), and email reminders ($n = 9$, 11.8%) versus no reminders ($n = 39$, 51.3%). Due to the small sample in the email reminder group, text and email reminders were collapsed into one reminder category.

At Session one, probationers who opted to receive electronic goal reminders selected significantly more goals on average ($M = 4.4$, $SD = 2.1$, range 2 – 10) than probationers who did not want reminders ($M = 3.4$, $SD = 1.8$, range 2 – 8), ($t = 2.41$, $p = .019$). At Session two, probationers who opted to receive electronic goal reminders selected marginally more goals on average but this was not significantly different ($M = 8.4$, $SD = 4.1$, range 2 – 16) than probationers who did not want reminders ($M = 6.7$, $SD = 3.4$, range 2 – 16), ($t = 1.68$, $p = .098$).

Reminder selection and length of time between Session one and two ($M = 28.6$ days, $SD = 14.7$, range 12 – 60) significantly predicted the number of goals probationers selected (see Table 3). When time was held constant, probationers who opted not to receive the electronic reminders selected 27% fewer goals compared to those who opted to receive reminders. The number of goals selected increased from Session one to Session two when reminder type was held constant. There was a 1.2% increase in the average number of goals selected as each day passed between Session one and two regardless of reminders. For example, for the average number of days between sessions (i.e., 29) we saw a 41% (95% CI = 26, 54) increase in number of goals selected. We did not find a significant interaction between reminder and time (not shown).

3.3. Reminder and Goal Selection and Two-Month Outcomes

Reminder frequency and total number of goals selected significantly predicted days of substance use ($M = 9.3$, $SD = 18.0$, range 0 – 60) (i.e., heavy drinking days and illicit drug use) at two-month follow-up when controlling for participant gender, age, criminal risk level, and baseline substance use ($M = 19.3$, $SD = 22.0$, range 0 – 60) (see Table 4). Probationers who chose not to receive any reminders and those who only chose to receive reminders at one session had more days of substance use compared to those who received

reminders at both sessions, 1.66 and 2.31 times respectively. For each unit increase in goals selected, days of substance use increased approximately 6%. Probationer gender, age, risk level, and baseline substance use also predicted days of substance use at the two-month follow-up.

Also, reminder selection and total number of goals significantly predicted days of treatment attendance ($M = 3.6$, $SD = 11.2$, range 0 – 60) at the two-month follow-up when controlling for participant gender, age, criminal risk level, and whether the participant was court ordered to attend treatment (see Table 5). Probationers who chose not to receive any reminders attended 56% fewer days of treatment compared to those who chose to receive reminders at both visits. There was no significant difference in days of treatment attendance between participants who selected reminders at one or both visits. For each unit increase in the number of goals selected, days of treatment attendance increased 23%. Probationer age and risk level also predicted days of treatment attendance at the two-month follow-up. There was no significant difference in treatment attendance between probationers who were mandated to treatment compared to those who were not.

4. Discussion

This study assessed the role of electronic reminders for probation and treatment related goals in predicting early positive substance use outcomes (i.e., days of substance use and treatment attendance). To our knowledge, this is the first study to assess feasibility and user engagement in a technology-based reminder program for a criminal justice sample. Common goal themes related to probation, treatment, relationships, reappraisal, and general planning efforts. Our results suggest that text and email messages and reminders can effectively stimulate short-term change efforts. The number of goals increased slightly from Session one to Session two regardless of reminder selection; however, those who chose reminders tended to also choose more goals. The average time between sessions was 29 days; for each daily increase between visits goals increased 1.2%. This may indicate that providing probationers with brief, easily accomplished goals that improve their motivation and ability to accomplish tasks can be beneficial for short-term outcomes (Fogg, 2009). This may be particularly relevant for task-based social control situations in order to keep up the momentum between sessions. It is noteworthy that the number of custom goals increased from Session one to Session two. Rather than selecting the standard, system-generated goals, participants were more likely to create their own goals at Session two, possibly indicating more intrinsic insight and value in future goal setting. This may reflect an internalizing of the change process, which was a target of the intervention.

Our results also identify early indicators of positive user responses to a computerized intervention and subsequent two-month follow-up substance use and treatment attendance. We found that about half of probationers voluntarily elected to receive electronic goal reminders at either visit. Overall, probationers who chose to receive reminders had more positive outcomes compared to those who chose not to receive reminders. Probationers who did not chose to receive reminders and those who only chose reminders at one visit had significantly more days of substance use at follow-up, compared to those who chose reminders at both visits. Compared to probationers who chose reminders at both visits,

probationers who chose no reminders attended 56% fewer days of treatment. Also, probationers who chose a greater number of goals tended to have better two-month outcomes. Assuming that these reminders serve as a cue-to-action, it may account for some of the success we observed in this sample.

Our results suggest that it might be possible to use people's goal selections to identify those who are at risk of poor outcomes. Probationers who do not select reminders in an automated intervention might require a more intensive intervention for behavior change to occur. If a system can identify probationers who are less likely to respond to the computerized intervention early enough, it can quickly route that individual into a more intensive intervention. Stepped care strategies allow for individual treatment tailoring as well as efficient use of available intervention services, which may be particularly useful in resource poor settings such as community corrections (Bower & Gilbody, 2005).

Previous research has identified the importance of attending treatment and/or avoiding drugs in determining criminal justice outcomes (Dunigan et al., 2014; Garnick et al., 2014). Our findings suggest the MAPIT intervention goal reminders can reduce substance use and increase probationer engagement in early treatment efforts. The findings indicate that goal reminders might be particularly well suited to criminal justice populations who sometimes have difficulty with self-regulation (Day, 2009; DeLisi & Vaughn, 2014). Electronic reminders may play a role in helping people succeed on probation, not only in terms of increasing motivation and ability but also including triggers that increase the likelihood of behavioral action.

4.1. Limitations

This study had several limitations that must be considered when interpreting the results. This study only assessed substance use and treatment initiation at a two-month follow-up. We did not assess more distal criminal justice outcomes, such as recidivism. Future research should examine the effect of program elements over a longer follow-up period in relation to other criminal justice outcomes, such as arrests or recidivism. Also, our primary outcome variables (i.e., substance use and treatment initiation) were self-report as obtained from the TLFB, which may be subject to recall bias. However, the TLFB is generally valid when compared to other biochemical and collateral substance use measures (Fals-Stewart et al., 2000). Finally, it is important to note that goal reminder selection was voluntary and thus no randomization occurred. Despite controlling for relevant factors in our statistical analyses, it is possible that probationers who selected more goals or opted to receive reminders were somehow different than people who did not select reminders. Future research might examine the utility of reminders in a randomized design. Finally, this sample only included participants who completed both intervention visits, which limits our ability to generalize the findings to those who did not complete the MAPIT program.

The reminder component of the intervention also had some limitations in its design. First, the program required participants to select one probation and one treatment related goal. This could have inflated the number of goals selected by probationers, particularly for probationers who showed signs of non-responding in other intervention areas. It is possible the people in our study who chose the fewest goals would not have selected any goals if

given the option. Second, each reminder was only sent once; the program was not designed for reoccurring reminders. However, in this study text messages and emails had the advantage of being asynchronous, in which message content could be accessed at a personally convenient time.

5. Conclusions

This study provides preliminary support for the use of a technology-based reminder program for use in a criminal justice sample. Approximately half of probationers in this sample chose to receive electronic reminders about their goals. Those who chose a greater number of goals and those who chose to receive goal reminders were more successful in reducing substance use and increasing early treatment efforts at a two-month follow-up. Electronic reminders may be a promising, cost-effective intervention for use in criminal justice samples due to the unique needs of offenders and resource-poor correctional systems.

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Highlights

- Common goals related to probation and treatment tasks and improving relationships.
- Nearly half of probationers volunteered to receive electronic goal reminders.
- The number of goal selected significantly increased between Visit 1 and 2.
- Those who opted for reminders had fewer days of substance use at follow-up.
- Those who opted for reminders had more days of treatment attendance at follow-up.

Table 1

Participant Characteristics.

	N (%)
Male	49 (64.5)
Race	
African American	50 (65.8)
Caucasian	21 (27.6)
Other	5 (6.6)
Criminal Risk Level	
Low	32 (42.1)
Medium	19 (25.0)
High	25 (32.9)
Substance Use 60 days Pre-Baseline	
Binge Drinking	30 (39.5)
Marijuana Use	40 (52.6)
Illicit Drug Use (Opiates, cocaine, etc.)	32 (42.1)
Mandated to Attend Treatment	27 (35.5)

Note: N=76.

Table 2

Most Prevalent Goals Selected by Intervention Visit.

	N (%)
Session one	
Make a list of some things I could do to stay sober.	63 (58)
Get a binder or folder to keep all of my probation documents in.	60 (55)
Write down the date and time of my first PO meeting.	57 (52)
Put a number in phone of someone I could call if I needed to talk.	50 (46)
Session two	
Make a list of my goals and plans for the next year.	52 (48)
Call a supportive person and let them know how I am doing.	50 (46)
Make a list of positive people in my life that I can spend time with.	45 (41)
Rearrange my schedule so that I can attend treatment.	37 (34)

Table 3

GEE Poisson Regression of Number of Goals Selected by Reminder and Time.

	Wald χ^2	Sig.	Exp(B)	95% CI
Intercept	521.55	.000	5.15	4.48, 5.93
Reminder Selection				
No Reminder	8.08	.002	0.73	0.60, 0.89
Reminder	.	.	Reference	.
Time	39.76	.000	1.01	1.01, 1.02
Gender				
Male	1.78	.182	0.87	0.71, 1.07
Female	.	.	Reference	.
Criminal Risk Level				
Low/Mod	3.19	.074	0.83	0.67, 1.02
High	.	.	Reference	.
Age	0.01	.915	1.00	0.99, 1.01

Note. N = 76.

Table 4

GLM Poisson Regression of Days of Substance Use by Reminder and Number of Goals.

	Wald χ^2	Sig.	Exp(B)	95% CI
Intercept	18.54	.000	0.29	0.16, 0.51
Frequency of Reminder				
No Reminder	18.32	.000	1.66	1.31, 6.09
Reminder at One Visit	55.77	.000	2.31	1.85, 2.88
Reminder at Both Visits	.	.	Reference	.
Total Number of Goals	48.79	.000	1.06	1.05, 1.04
Gender				
Male	34.98	.000	0.58	0.48, 0.69
Female	.	.	Reference	.
Criminal Risk Level				
Low/Mod	7.78	.005	1.45	1.12, 1.89
High	.	.	Reference	.
Age	80.21	.000	1.04	1.03, 1.04
Days of Use at Baseline	298.62	.000	1.03	1.03, 1.04

Note. N = 67.

Table 5

GLM Poisson Regression of Days of Treatment Attendance by Reminder and Number of Goals.

	Wald χ^2	Sig.	Exp(B)	95% CI
Intercept	85.24	.000	0.00	0.00, 0.01
Frequency of Reminder				
No Reminder	12.58	.000	0.44	0.28, 0.69
Reminder One Visit	2.85	.091	1.43	0.94, 2.18
Reminder Both Visits	.	.	Reference	.
Total Goals	133.33	.000	1.23	1.19, 1.27
Gender				
Male	1.13	.288	0.80	0.53, 1.21
Female	.	.	Reference	.
Criminal Risk Level				
Low/Mod Risk Level	7.26	.007	0.51	0.31, 0.83
High Risk Level	.	.	Reference	.
Age	119.05	.000	1.13	1.11, 1.16
Court Ordered Treatment				
No	1.12	.289	1.31	0.80, 2.16
Yes	.	.	Reference	.

Note. N = 64.