



Published in final edited form as:

J Subst Abuse Treat. 2016 June ; 65: 13–19. doi:10.1016/j.jsat.2015.09.003.

The Impact of Motivational Interviewing on Delinquent Behaviors in Incarcerated Adolescents

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Abstract

The impact of Motivational Interviewing (MI) on risky behaviors of incarcerated adolescents and adults have been investigated with promising results. Findings suggest MI reduces substance use, improves motivation and confidence to reduce use, and decreases risky behaviors. The current study investigated the impact of MI on general, alcohol-related, and marijuana-related delinquent behaviors in incarcerated adolescents. Participants in the study were incarcerated adolescents in a state correctional facility in the Northeast region and were assessed as part of a larger randomized clinical trial. Adolescents were randomly assigned to receive MI or relaxation therapy (RT) (N=189) treatment. Delinquent behaviors and depressive symptomatology were measured using the Delinquent Activities Scale (DAS; Reavy, Stein, Paiva, Quina, & Rossi, 2012) and the Center for Epidemiological Studies-Depression scale (CES-D; Radloff, 1991) respectively. Findings indicate depression moderated treatment effects. Compared to RT, MI was better at reducing predatory aggression and alcohol-related predatory aggression 3 months post-release when depressive symptoms were low. Identifying an efficacious treatment for these adolescents may benefit society in that it may decrease crimes against persons (i.e., predatory aggression) post release.

1. Introduction

Juvenile offenders' crimes are often connected to alcohol and drug use (Mulvey, Schubert, & Chassin, 2010; National Institute of Justice [NIJ], 1997; 2003), and lifetime prevalence of alcohol and marijuana use among juvenile offenders is 80% and 85% respectively, with 40% consuming alcohol and 57% using marijuana in the past 6 months (Mulvey et al., 2010).

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Additionally, greater use of substances is related to increased rates of offending, severity of the offense, and the duration of delinquent behaviors (Greenwood, 1992; Lipsey & Derzon, 1998; Sealock, Gottfredson, & Gallagher, 1997). Of particular concern is the relationship between substance use and violent crime that exists within this population (Mulvey et al., 2010). Among incarcerated juveniles, alcohol use is significantly and consistently associated with violent crime, including acts of predatory aggression (i.e., crimes against a person such as aggression involving a weapon) (Lennings, Copeland, & Howard, 2003).

Adolescents with substance use disorders commonly suffer from depression (Colder & Chassin, 1997; Myers, Aarons, Tomlinson, & Stein, 2003; Shoal & Giancola, 2003; Stice, Myers, & Brown, 1998). This comorbidity is associated with progression to problematic substance use (Rhode, Lewinsohn, & Seeley, 1996), failure in school, and increased risk of attempted suicide (Lewinsohn, Rhode, & Seeley, 1995). Adolescents involved in the juvenile justice system experience depression at a high rate (29.6%; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002), and the comorbidity of depression and substance use is also high among these adolescents (Esposito-Smythers, Penn, Stein, Lacher-Katz, & Spirito, 2008; Turner, Larimer, Sarason, & Trupin, 2005), ranging from 21–73% (Abram, Teplin, McClelland, & Dulcan, 2003).

Riggs and colleagues (2008) reviewed three studies investigating the use of pharmacotherapy in adolescents with comorbid psychiatric disorders (including depression) and substance use disorders with results suggesting that some medications may be safe and effective for adolescents but are not likely to impact substance use without behavioral therapy (Geller et al., 1998; Riggs, Hall, Mikulich-Gilbertson, Lohman, & Kayser, 2004; Riggs, Mikulich-Gilbertson, Lohman, Klein, Stover, 2007). Similarly, Cornelius and colleagues (2005a, 2005b, 2009, 2011a, 2001b, 2013) found acute and long-term efficacy for Motivational Enhancement Therapy/Cognitive-Behavioral Therapy (MET/CBT) but not fluoxetine for treating depressive symptoms and alcohol use with substance-abusing youth. This body of work strongly suggests that behavioral intervention is an important aspect of treating depressive symptoms in substance abusing youth.

More recently, Hersh and colleagues (2014) reviewed the literature to investigate the impact of depression on adolescent substance abuse treatment retention and outcomes, and the findings were varied. Seven studies found a positive association with depression and retention or outcomes (Becker, Curry, & Yang, 2011; Deskovitz, Key, Hill, & Franklin, 2004; Hersh, Curry, & Becker, 2013; Pagnin, de Queiroz, & Saggese, 2005; Stein et al., 2011a; Stein et al., 2011b; Tapert et al., 2003) while five studies found a negative relationship with depression and retention or outcomes (Cornelius et al., 2004; Stein et al., 2011b; Tapert et al., 2003; Vourakis 2005; White et al., 2004), and yet six studies found that depression did not have any influence on retention or outcomes (Becker, Curry, & Yang, 2011; Crowley, Mikulich, MacDonald, Young, & Zerbe, 1998; deDios, 2007; Tapert et al., 2003; White et al., 2004; Whitmore, Mikulich, Ehlers, & Crowley, 2000; note: some studies reported interactions or multiple outcomes so they are identified in more than one category). Given the inconclusive findings regarding the relationship of depression and substance use treatment outcomes, Hersh and colleagues (2014) suggested this relationship be further examined.

Motivational Interviewing (MI) is a client centered approach directed at exploring and resolving ambivalence in making a behavior change (Miller and Rollnick, 2002), and several meta-analysis indicate a strong evidence base in the areas of addictive health behaviors (Burke, Arkowitz, Menchola, 2003; Hettema, Steele, Miller, 2005; Lundahl et al., 2013; Lundahl, & Burke, 2009; Lundahl, Kunz, Brownell, Tollefson, & Burke 2010). A recent review of evidence-based outpatient treatment for adolescent substance users (Hogue, Henderson, Ozechowski, & Robbins, 2014) found little support for MI-based stand-alone interventions (Baer, Garrett, Beadnell, Wells, & Peterson, 2007; Gmel, Venzin, Marmet, Danko, & Labhart, 2012; Walker et al., 2011; Walker, Roffman, Stephens, Berghuis, & Kim, 2006). However, some relatively recent meta-analyses of adolescent substance use outpatient treatment studies found support for MI-based interventions (Bender, Tripodi, Sarteschi, & Vaugn, 2011; Jensen, Cushing, Aylward, Craig, Sorell, & Steele, 2011; Tanner-Smith, Wilson, & Lipsey, 2013). Regarding justice-involved adolescents, MI-based interventions have been found to increase motivation and confidence to reduce substance use and risky behaviors, increase rates of retention and treatment, and decrease negative treatment engagement (McMurrin, 2009; Osilla, Miles, Pedersen, Ortiz, Houck, & D'Amico, 2015; Sinha, Easton, Renee-Aubin, & Carroll, 2003; Slavet et al., 2005; Stein et al., 2006b; Stein & Lebeau-Craven, 2002). Importantly, among these youth, MI-based interventions have been found to decrease alcohol and other substance use (D'Amico, Hunter, Miles, Ewing, Osilla, 2013; Stein et al., 2011b) and risky behaviors related to alcohol and marijuana use (Schmiege, Broaddus, Levin, & Bryan, 2009; Stein et al., 2011a; Stein et al., 2006a).

Some findings also suggest MI-based interventions may work well with adolescents and adults with emotional dysregulation such as anger (Barrett, Slenick, Brody, Turner, & Peterson, 2001-adolescents; Karno & Longabaugh, 2004-adults) and depression (Colby et al., 1998; Connell & Dishion, 2008; Cornelius et al., 2013). Within a juvenile-justice population, MI reduced rates of alcohol and marijuana use at follow-up compared to relaxation training with evidence of moderating effects of depression; at low levels of depression, MI resulted in lower rates of use (Stein et al., 2011b) 3 months after release. Similarly, adolescents low in depressive symptoms that received MI had lower rates of risky behaviors (e.g., drinking and driving and risky sexual behaviors while using marijuana and alcohol) 3 months post release compared to those adolescents that received Relaxation Therapy (RT) (Rosengard et al., 2007; Stein et al., 2006b)

Giving these findings, it seems possible that mood may influence treatment response in incarcerated juveniles. The combination of incarceration and low depressive symptoms may assist in eliciting ambivalence about their behaviors associated with delinquency and incarceration (Stein et al., 2006b) while more severe depressive symptoms may hinder the capability to attend to the intervention or mobilize resources. Thus, the current study investigated potential moderation effects of depressed mood on treatment in reducing alcohol- and marijuana-related delinquent behaviors among incarcerated adolescents after release. Specifically, we hypothesized that compared to RT, MI will be better at reducing alcohol- and marijuana-related delinquent behaviors when depressive symptoms are low. This study adds to the literature and our own line of research in that the outcome of interest is involvement in crime. We know of no other studies examining this in incarcerated youth.

2. Methods

These data were collected as part of a parent study that examined the impact of MI on substance use (Stein et al., 2011b) and although the methodology for this study are described below, additional information can be found in Stein et al. (2011b).

2.1 Procedures

Adolescents were recruited from a state juvenile correctional facility in the Northeast over a five-year period. Immediately upon adjudication, adolescents were identified as potential participants, via record review, if they were 14 to 19 years of age and sentenced to the facility for 4 to 12 months. Next, adolescents were approached individually to determine eligibility based on meeting any of the following substance use criteria: 1) in the year prior to incarceration they 1a) used marijuana or drank at least monthly, or 1b) they binge-drank (5 standard drinks for boys, 4 for girls) at least once; 2) they used marijuana or drank in the 4 weeks before the offense for which they were incarcerated; or 3) they used marijuana or drank in the 4 weeks before they were incarcerated.

After guardian consent and adolescent assent (<18 years of age) were obtained, a baseline assessment was conducted, followed by random assignment to treatment (MI or RT), which occurred within about 4 days of the assessment. Adolescents then enrolled in the facility's standard of care substance use programming (a detailed description of this programming can be found in Stein et al., 2011b). Approximately 2 weeks prior to release, participants received a booster intervention (MI or RT). Follow-up assessment occurred 3 months post-release. Average length of incarceration was approximately 6 months ($M=188$ days, $SD=80$), average length of time between baseline intervention and 3 month follow-up was approximately 8 months ($M=244.64$, $SD=91.33$), and average length of time from booster intervention to 3 month follow-up was approximately 4 months ($M=122.51$, $SD=52.33$). Institutional Review Board approval from Brown University was obtained. Figure 1 illustrates screening, recruitment, and retention (i.e., CONSORT diagram).

2.2 Participants

The participants were sentenced at the state's sole juvenile correctional facility where charges range from truancy to murder. At baseline, 189 adolescents completed the assessment. At 3-month post-release follow-up, 181 were re-interviewed; five could not be located for follow-up and three withdrew from the study prior to follow-up (see CONSORT diagram). Almost 86% were boys, the mean age at baseline was 17.12 years ($SD = 1.10$), and participants identified with the following racial/ethnic backgrounds: 32.8% White, 29.1% Hispanic, 28.0% African American, 3.7% Native-American, 3.2% Asian-American, and 3.2% "other." Almost 90% met criteria for a marijuana use disorder and 63% met criteria for an alcohol use disorder in the previous year.

2.3 Assessments

The baseline and 3 month follow-up assessment consisted of 60–90 minute interviews conducted by a trained bachelor's or master's-level research assistant. Research assistants received approximately 20 hours of training with 1 hour of individual and 1 hour of group

supervision per week. In-vivo observations were conducted by a licensed psychologist and assessment data was reviewed by a licensed psychologist or master's level project member. Participants received a \$60 gift card at follow-up and a bonus \$10 gift card if it was completed within one week of its scheduled date.

2.4. Interventions

After the baseline assessment (approximately 4 days later), adolescents were randomly assigned via random numbers table to one of two treatment conditions, MI (N=99) or RT (N=90), to prepare them for the facility standard care substance abuse treatment. Each intervention (either MI or RT) was delivered during one session (90 minutes) before entering standard care substance use programming and one follow up booster session (60 minutes) approximately 2 weeks prior to release. For both interventions (MI and RT), research counselors had about 56 hours of manualized training with two hours of group and one hour of individual supervision per week. Research counselors were two men and two women; all were Caucasian; one had an MA degree and three had BA/BS degrees. Each research counselor conducted intervention types, MI and RT.

The MI intervention was based on the basic principles of MI (Miller and Rollnick, 2002) and focused on four components: establishing rapport, assessing motivation to change alcohol and marijuana use, enhancing motivation to change, and establishing goals to assist in making changes. Elements of the MI included developing rapport, decisional balance, personalized assessment feedback, imagining the future with and without change, and establishing goals. The intervention targeted reducing alcohol and/or marijuana use and associated risky behaviors and related consequences (e.g., injuries while using alcohol and/or marijuana).

The RT intervention was designed to control for the effects of attending an individual intervention. Participants were instructed by research counselors in progressive muscle relaxation and use of imagery to produce a sense of calm. Research counselors maintained rapport and provided generalized advice to stop risky activities involving substances including alcohol and marijuana use. The rationale for RT provided to the adolescents was that these techniques can reduce the stress that often leads to substance use and may ultimately lead to reduced substance use and the associated delinquent behaviors.

2.5 Intervention fidelity

Counselors received manualized training, treatment manuals, regular supervision, regular file reviews, and random in-vivo observations by a licensed clinical psychologist to maintain intervention fidelity. The psychologist completed an observer fidelity measure (see O'Leary-Tevyaw and Monti, 2004 for additional details), and every session the counselor and adolescent independently and privately completed similar fidelity measures (see Stein et al., 2011b for a detailed description of these fidelity procedures and measures).

2.6 Measures

At baseline assessment, a background questionnaire was administered that included gender, age, ethnicity/race, and mother's education level (a marker for socio-economic status).

The Center for Epidemiological Studies-Depression scale (CES-D; Radloff, 1991) was administered. Reliability coefficients on the CES-D for alcohol abusers range from .85–.90, and it is reliable and valid for use with adolescents (Radloff, 1991). Scores of 16 or greater indicate presence of significant depressive symptomatology (Radloff, 1977).

The Delinquent Activities Scale (DAS; Reavy et al., 2012) is a 37-item questionnaire based on the works of Dembo and colleagues (1992; 1993), Elliott and colleagues (1983), and on symptoms of conduct and antisocial personality disorders as found in the Diagnostic and Statistics Manual-IV-TR (American Psychiatric Association, 1994). At baseline, adolescents were asked the number of times each crime or misbehavior was committed over the 12 months prior to incarceration. These behaviors ranged from truancy to forced sexual activity. Adolescents were also asked the number of times each was committed while under the influence of alcohol or to obtain alcohol; this procedure was repeated for marijuana. Six scales assessed delinquent behaviors and included: Alcohol-related Predatory Aggression (i.e., crimes against a person such as aggression involving a weapon while under the influence of alcohol); alcohol-related Stealing/Delinquency (e.g., ran away from home overnight while under the influence of alcohol); marijuana-related Predatory Aggression (i.e., crimes against a person such as aggression involving a weapon while under the influence of marijuana); marijuana-related Stealing/Delinquency (e.g., ran away from home overnight while under the influence of marijuana); general Predatory Aggression (i.e., crimes against a person such as using a weapon); and general Stealing/Delinquency (e.g., ran away from home overnight). These scales evidence good concurrent and predictive validity and internal consistencies ranging from .422 to .843 (Reavy et al., 2012).

Substance abuse or dependence diagnoses were made using the criteria of the Structured Clinical Interview for DSM-IV Axis I Disorders - Patient Edition (First, Spitzer, Gibbon, & Williams, 1995), administered by trained research staff.

In an effort to enhance honesty about self-reported alcohol/marijuana use and illegal activities, at the onset of the study participants were informed that records would be reviewed to verify self-report, and urinalysis was conducted at 3 month follow-up to assess marijuana and alcohol use.

2.7 Analyses

Moderation analyses to determine the impact of depressed mood on treatment to reduce predatory aggression and stealing/delinquency in general and associated with alcohol and marijuana use specifically followed (Edwards & Lambert, 2007; Preacher, Rucker, & Hayes 2007) using the PROCESS macro for SPSS (Hayes, 2012). The six MBQ scales at 3 month follow-up were the dependent variables in separate moderation models. Treatment group and the moderator were centered. The PROCESS model included the corresponding baseline measure of the MBQ scale DV, treatment group, CES-D, and the treatment by CES-D interaction. Following a significant moderator by treatment interaction, simple slopes analyses (Cohen, Cohen, West, & Aiken, 2003) examined effects of treatment on the dependent variables (predatory aggression and stealing/delinquency at follow-up) at low (–1SD below the mean), average (mean) and high (+ 1 SD from the mean) levels of depressed mood.

3. Results

3.1 Preliminary results

Almost 90% of participants met criteria for a marijuana use disorder and 63% met criteria for an alcohol use disorder in the previous year. Table 1 presents participant demographics and depression variables at baseline and substance use at baseline and 3 month follow-up. No significant differences were found between treatment groups on baseline variables including gender, age, ethnicity/race, or mother's education level (a marker for socio-economic status).

A review of facility records found no discrepancy between self-reported-marijuana non-use and the chart and only 1% discrepancy for self-reported alcohol non-use and the chart. Over 20% of adolescents self-reported marijuana and alcohol use that was not found in the chart. Less than 5% of adolescents that indicated they did not use marijuana in the previous month had positive urine screens while about 8% self-reported marijuana use but had negative urine screens.

3.2 General delinquent behaviors

Table 2 presents results of the models assessing depressed mood as a moderator of treatment and general stealing/delinquency and predatory aggression. Models predicting general stealing/delinquency found no significant main effects for treatment or depression or treatment by depression interaction. Models predicting predatory aggression found no significant main effects for treatment or depression. The treatment by depressive symptoms interaction significantly predicted 3 month general predatory aggression. Predatory aggression differed for RT versus MI when depressive symptoms were below the mean, but not at the mean or above the mean. Compared to RT, MI is better at reducing predatory aggression when depressive symptoms are low.

3.3 Delinquent behaviors under the influence of alcohol

Table 2 presents results of the models assessing depressed mood as a moderator of treatment and alcohol-related stealing/delinquency and alcohol-related predatory aggression. Models predicting alcohol-related stealing/delinquency found no significant main effects for treatment. The main effect for depression was significant such that higher depression was associated with less alcohol related stealing/delinquency. The interaction of treatment by depression was not significant. Models predicting alcohol-related predatory aggression found no significant main effect for treatment. The main effect for depression was significant such that higher depression was associated with less alcohol related stealing/delinquency. The treatment by depressive symptoms interaction was significant. Results indicate alcohol-related predatory aggression differed for RT versus MI when depressive symptoms were below the mean, but not at the mean or above the mean. Compared to RT, MI is better at reducing alcohol-related predatory aggression when depressive symptoms are low.

3.4 Delinquent behaviors under the influence of marijuana

Table 2 presents results of the models assessing depressed mood as a moderator of treatment and marijuana-related stealing/delinquency and marijuana-related predatory aggression. Models predicting marijuana-related stealing/delinquency found no significant main effects for treatment or depression or treatment by depression interaction. Models predicting marijuana-related predatory aggression found no significant effect for treatment or treatment by depressive symptoms interaction. There was a significant main effect for depression such that higher depression was associated with less marijuana related predatory aggression.

4. Discussion

Incarcerated adolescents who used alcohol and marijuana were recruited for this study. They received a baseline assessment that was followed by a brief intervention of either MI or RT. At 3 month follow-up, adolescents low in depressive symptoms who received MI exhibited significantly less predatory aggression compared to those that received RT; however, no differences were observed among adolescents with mean or high levels of depressive symptoms.

These findings are consistent with several recent findings on the positive effects of MI with adolescents (Jensen et al., 2011). The moderating effect of depression on treatment efficacy found in the present study extends our work and is consistent with previous findings from these data. MI reduced alcohol and marijuana use and risky behaviors, but only in adolescents low in depressive symptoms (Rosengard et al., 2007; Stein et al., 2011b). No treatment effects were found for adolescents high in depressive symptoms. Results from other studies support an association between depressive symptoms and poor substance use outcomes (Cinciripini et al., 2003; Subramaniam, Stitzer, Clemmey, Kolodner, & Fishman, 2007; Walker, Cole, & Logan, 2008; Kranzler, Del Boca, & Rounsaville, 1996). Furthermore, Chambers and colleagues (2008) suggest that certain cognitive factors may impact offenders' responsiveness to treatment. These factors include self-esteem, self-efficacy, and an internal locus of control. Adolescent offenders reporting greater depressive symptoms may experience lower levels of these cognitive factors, thus impeding their ability to engage in treatment and initiate and sustain behavior change. Taken together, these findings may explain why adolescents in the present study who reported greater depressive symptomatology and received MI continued to demonstrate poorer alcohol-related outcomes, despite the efficacy MI has shown in reducing substance-related outcomes in other studies.

The current findings may have significant clinical and societal implications. To our knowledge, these are the first findings to suggest identifying adolescents' level of depressive symptoms early in incarceration may inform which type of intervention to employ in order to reduce some delinquent behaviors post-release, as well as substance use post-release (Stein et al., 2011b). Furthermore, results suggest that assessing and treating depression prior to engagement in interventions (i.e., MI) designed to decrease delinquent behaviors and/or substance use may be necessary for more optimal outcome(s) post-release. This may have significant societal implications as it may result in lower rates of adolescent violent crimes against persons (i.e., predatory aggression).

The current study is not without its limitations. For example, the study sample was comprised of incarcerated adolescents, most of whom were male. This may limit the generalizability of the findings. Although reliance on self-report is often considered a limitation, there are findings that support the use and accuracy of this type of reporting (Babor, Webb, Bureson, & Kaminer, 2002), especially with adolescents. Interestingly, when self-report is compared to their urine screens, adolescents have been found to report more marijuana use. Similarly, they have also been found to self-report more problematic behaviors as compared to their parents' reports of their behavior (Dennis et al., 2002). As indicated in our results section, a review of facility records found no discrepancy between self-reported-marijuana non-use and the chart and only 1% discrepancy for self-reported alcohol non-use and the chart. Over 20% of adolescents self-reported marijuana and alcohol use that was not found in the chart. Less than 5% of adolescents that indicated they did not use marijuana in the previous month had positive urine screens while about 8% self-reported marijuana use but had negative urine screens. Additionally, the measure of depressive symptoms only assessed symptomology during the past week at baseline. High levels of depressive symptoms may reflect adolescents' response to current stressors and/or more chronic depressive disorders. Also, depressive symptoms were not measured at follow-up, preventing any pre-post comparison. Further, this study examined behaviors associated with alcohol and did not measure consumption of alcohol. Interventions to reduce alcohol-related violence often reduce violence but does not impact drinking (Walton et al., 2010; Watt, Shepherd, & Newcombe, 2008). Lastly, the present study has a limited follow-up period of 3 months, although a brief follow-up is not unusual when initially establishing treatment effects. Future research may want to include replication with a larger sample, assessment of both lifetime and current major depressive disorder, and a follow-up of longer duration.

Acknowledgments

This work was supported by grants from the National Institute on Drug Abuse, R01-13375 (PI, Stein) and the National Institute on Drug Abuse/ National Institute on Alcohol Abuse and Alcoholism R01-18851 (PI, Stein).

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Highlights

Depression moderated the effects of MI on delinquent behaviors 3 months after treatment.

Compared to meditation, MI is better at reducing predatory aggression when depressive symptoms are low.

Compared to meditation, MI is better at reducing alcohol-related predatory aggression when depressive symptoms are low.

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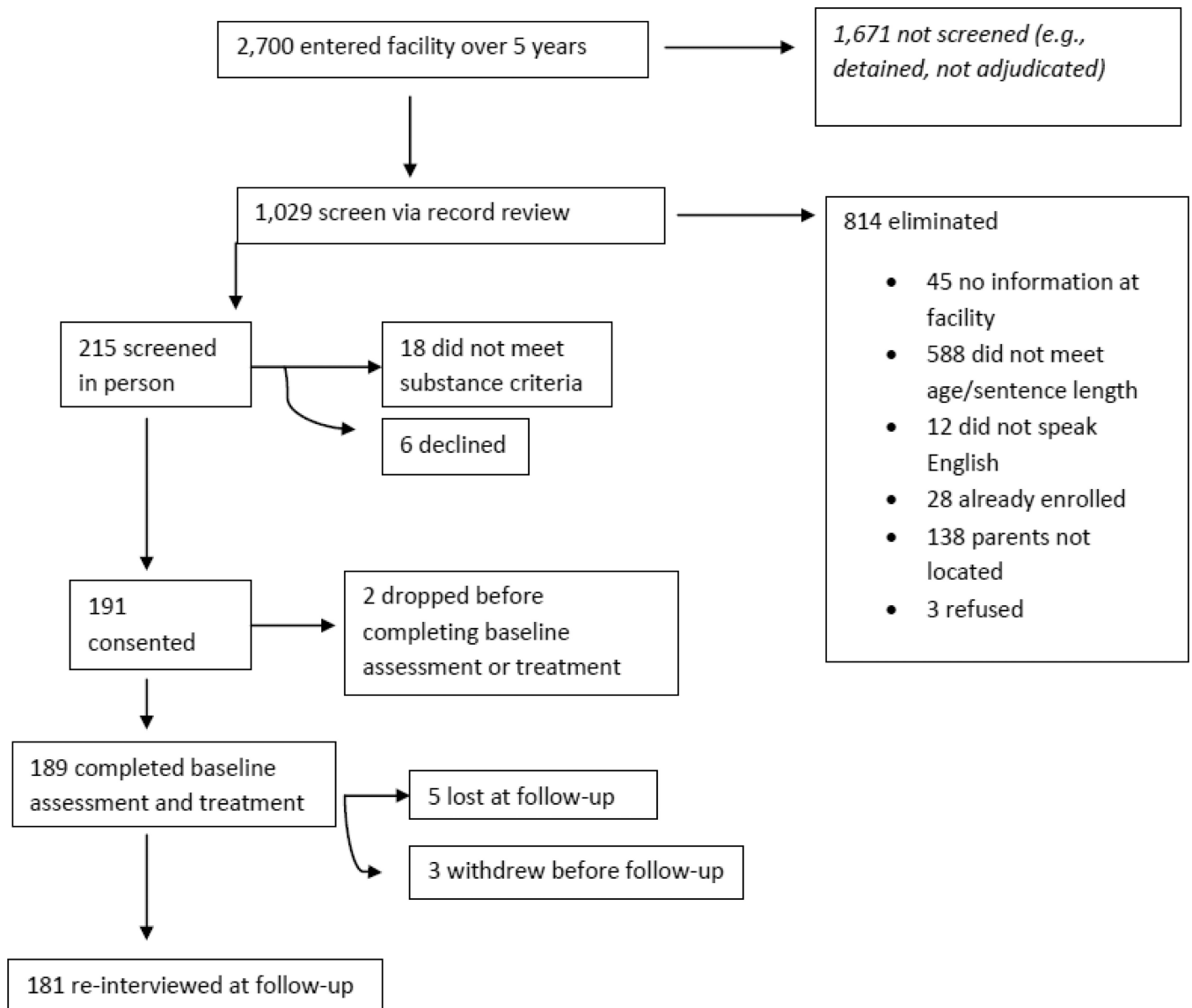


Figure 1.
CONSORT DIAGRAM

Table 1

Participant Characteristics and Substance Use. N=181

Variable	Baseline Mean (SD) or %	3-Month Follow- up Mean (SD) or %	t (df)
Age in years	17.11 (1.10)		
Education (years)	9.22 (1.26)		
CES-D	20.96 (10.28)		
Race – white	32.8%		
Race – black	28.0%		
Race – Native American	3.7%		
Race – Asian American	3.2%		
Race – other	3.2%		
Hispanic	29.1%		
Male	85.7%		
% drinking days	18.62 (23.64)	8.48 (14.58)	4.23 (161)*
% heavy drinking days	13.91 (22.49)	6.49 (13.84)	5.22 (161)*
% marijuana use days	69.32 (37.76)	39.93 (41.02)	8.89 (161)*

CES-D = Center for Epidemiological Studies – Depression Scale

Baseline N=181

3-Month substance use N=162

*
p .001

Table 2
Moderation model for predicting general, alcohol related, and marijuana related stealing/delinquency and predatory aggression at 3 month follow-up.
N=181

	B	SE	95% Confidence Interval	t	p-value
General Stealing/Delinquency					
Intercept	.23	.13	-.14 1.29		
Pretreatment Stealing/Delinquency	.17	.04	.21 .42	4.69	.001
Treatment group	.18	.15	-.11 .47	1.22	.22
CES-D	-.01	.02	-.03 .01	1.55	.12
Treatment X CES-D	.01	.01	-.02 .03	.30	.77
General Predatory Aggression					
Intercept	.57	.36	-.14 1.29		
Pretreatment predatory aggression	.31	.05	.21 .42	5.85	.001
Treatment group	-.20	.35	-.89 .50	.57	.57
CES-D	-.03	.02	-.06 .01	1.73	.08
Treatment X CES-D	.08	.03	.01 .15	2.38	.02
Simple slopes tests of Treatment X CES-D:					
Effect of treatment group at -1SD mean CES-D	-1.04	.51	-2.05 -.04	2.06	.04
Effect of treatment group at mean CES-D	-.20	.35	-.89 .50	.57	.57
Effect of treatment group at +1SD mean CES-D	.64	.49	-.32 1.61	1.31	.19
Alcohol Stealing/Delinquency					
Intercept	.22	.10	.02 .42		
Pretreatment alcohol stealing/delinquency	.15	.02	.10 .20	6.22	.001
Treatment group	-.01	.15	-.07 .95	.07	.94
CES-D	-.03	.02	-.03 .01	2.45	.02
Treatment X CES-D	.02	.01	-.01 .05	1.34	.18

	B	SE	95% Confidence Interval	t	p-value
Alcohol Predatory Aggression					
Intercept	.10	.12	-.15 .34		
Pretreatment alcohol related predatory aggression	.19	.04	.12 .26	5.27	.001
Treatment group	-.31	.19	-.69 .07	1.63	.10
CES-D	-.02	.01	-.04 .01	2.12	.04
Treatment X CES-D	.04	.02	.01 .08	2.04	.04
Simple slopes tests of Treatment X CES-D:					
Effect of treatment group at -1SD mean CES-D	-.71	.27	-1.25 -.17	2.58	.01
Effect of treatment group at mean CES-D	-.31	.19	-.69 .07	1.63	.10
Effect of treatment group at +1SD mean CES-D	.08	.27	-.45 .62	.30	.76
Marijuana Stealing/Delinquency					
Intercept	.32	.12	.09 .54		
Pretreatment marijuana stealing/delinquency	.12	.03	.06 .18	3.97	.001
Treatment group	.01	.03	-.29 .30	.05	.96
CES-D	-.01	.01	-.03 .01	1.74	.08
Treatment X CES-D	.02	.01	-.01 .05	1.21	.23
Marijuana Predatory Aggression					
Intercept	.25	.11	.04 .47		
Pretreatment marijuana predatory aggression	.15	.04	.06 .23	3.26	.001
Treatment group	-.18	.14	-.45 .09	1.32	.19
CES-D	-.02	.01	-.03 .01	2.33	.02
Treatment X CES-D	.01	.01	-.01 .04	1.05	.30