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Targeting Youth's Motivation to Change Substance Use Behaviors:
Feasibility and Preliminary Outcomes from an Open Trial of the Free Talk Program in a Short-
Term Juvenile Detention Facility

A Thesis

Presented to the Faculty of the

Department of Psychology

West Chester University

West Chester, Pennsylvania

In Partial Fulfillment of the Requirements for the

Degree of

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By

Cassidy L. Tenny

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Abstract

Juvenile offenders who use substances are at an increased risk for multitude of negative outcomes, including substance use problems in adulthood and recidivism. Interventions that are effective in community settings or long-term juvenile justice settings may not be well suited for implementation in short-term juvenile detention facilities. Free Talk (FT; D'Amico, Chan Osilla, & Hunter, 2010) is a brief motivational intervention that targets motivation to change substance use. The current study aimed to determine whether youth participating in FT within a short-term juvenile detention center reported expected changes in motivation to change substance use. Additionally, we aimed to assess whether individual differences at baseline, like depression and substance use, were associated with variance in treatment outcome.

The youth ($N=49$) detained in a short-term juvenile detention facility participated in FT. Motivation was assessed at baseline and following the last session using the University of Rhode Island Change Assessment (URICA; DiClemente, Schlundt, & Gemmel, 2004) and the Modified Contemplation Ladder (Biener & Abrams, 1991; Slavet et al., 2006). At post-treatment, participants reported statistically significant decreases in motivation on the URICA but did not report significant changes in motivation on the Contemplation Ladder.

Although motivation decreased overall, results indicate higher levels of baseline substance use and baseline depression predicted greater increases in motivation. Although findings did not provide support for including FT as part of a general curriculum within short-term detention centers, results suggest that FT may be beneficial for those who report problematic substance use or depressive symptoms. Results are discussed in terms of feasibility and suggested adaptations.

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Introduction

Substance use is a growing problem within the United States, with rising rates of substance use disorders (SUDs) placing substance use and addiction at the forefront of research and policy. In a 2016 national survey of substance use, over 28.6 million people or 10.6% of the population aged twelve or older endorsed recent participation in illicit drug use (SAMHSA, 2017). On the same survey, an even larger number of individuals endorsed recent alcohol consumption (175 million people or 65.7% of the population) and 66 million people (24.9%) endorsed recent binge drinking (SAMHSA, 2017). The consequences of these alarming rates of substance use have become evident through increasing governmental expenditures and harsh punitive policies for drug crimes.

This growing rate of SUDs has amounted to enormous economic consequences, costing an estimated 400 billion in lost productivity, law enforcement, incarceration, and health care expenses (U.S. Department of Health and Human Services, 2016). Furthermore, only a small proportion (7.5%) of those meeting the diagnostic criteria for a substance use disorder receive any type of treatment (SAMHSA, 2017). This growing addiction epidemic and limited access to treatment has led to a disproportionate number of individuals being incarcerated for drug-related crimes. According to the Federal Bureau of Prisons (2020), almost half (45.3%) of incarcerated adults are charged with drug offenses. It is, therefore, imperative to increase accessibility of prevention programs and interventions to treat SUDs, for those in both the general population and within the criminal justice system who are struggling with substance use.

The prevalence of substance use extends beyond adults and also effects younger generations for whom some substance use might be normative. For example, in a national survey conducted by SAMSHA in 2016, 2.3 million adolescents reported recent alcohol use and 1.6

million adolescents reported recent marijuana use (SAMSHA, 2016). Similarly, a 2017 national survey of high schoolers' substance use found that 30% of high schoolers endorsed having one or more drink(s) of alcohol in the 30 days before the survey and 36% of high schoolers reported having used marijuana once or more times in their life (CDC, 2017).

Despite its widespread prevalence among teens, substance use in adolescence can be detrimental. Substance use departs from the norm and is considered substance abuse when it impairs everyday function and relationships. The majority of adolescents with substance use problems or SUDs do not receive treatment (SAMSHA, 2017) and for many of these youth, substance use problems persist into adulthood. Englund, Egeland, Oliva, and Collins (2008) found that alcohol use at age 16 was associated with increased drinking in early adulthood. Gil, Wagner, and Tubman (2004) found adolescents who used substances were 1.5 times more likely to abuse alcohol, 2 times more likely to abuse marijuana, and 2 times more likely to have a SUD as young adults. In order to prevent these long-term consequences of substance use, it is necessary to integrate evidence-based interventions into settings where the youth who need them may easily access them.

Substance use in adolescence also contributes to an increased risk for a variety of other negative trajectories, including delinquency and involvement with the juvenile justice system. In fact, an earlier onset of SUDs places adolescents at a further increased risk of criminal charges. For instance, young men with SUD onset before age 16 were four times more likely to be incarcerated by early adulthood for substance-related charges and twice as likely to be incarcerated by early adulthood for non-substance related charges than peers without SUDs, even when controlling for conduct problems as well as demographic and other variables (Slade, Stuart, Salkever, Karakus, Green, & Ialongo, 2008). Similarly, Fergusson, Horwood, and Swain-

Campbell (2002) found that adolescents who used cannabis regularly had a higher risk of cannabis-related charges than young adults who were also regular cannabis users. The relationship between early substance use initiation and involvement with the juvenile justice system has led to a concentration of adolescents with substance use problems within the juvenile justice system.

The high prevalence of substance use within the juvenile justice system has been consistently demonstrated in research. For example, a survey of substance use disorders in incarcerated youth reported that half of incarcerated boys and almost half of incarcerated girls met the diagnostic criteria for a SUD (Teplin, Abram, McClelland, Dulcan, & Mericle, 2002). Welty and colleagues (2017) found that 81.4% of these youth met the diagnostic criteria for a SUD and, for many of these youth, SUDs persisted into adulthood. Despite the abundance of evidence demonstrating the relationship between early substance use and criminal justice system involvement, the temporal relationship between delinquency and substance use remains unclear.

Not only are justice-involved youth who use substances more likely to have substance use problems in adulthood, justice-involved youth who use substances are also at an increased risk for recidivism. In an analysis of reoffending data of incarcerated juveniles, van der Put, Creemers, and Hovee (2014) found that substance using youth within the juvenile justice system, especially those with substance use problems, have fewer protective factors and more risk factors for criminal recidivism than detained youth who abstain from substance use. Additionally, substance use independently predicted criminal recidivism for these youth regardless of other risk and protective factors. The reciprocal relationship between substance use problems and criminal justice system involvement negatively impacts the development of many youth who are at risk, particularly those who face socioeconomic disadvantage. These youth may encounter

barriers to substance use treatment and are disproportionately represented within the juvenile justice system.

While involvement with the justice-system may create a risk for continued problems with SUDs, it is also possible that involvement with the juvenile justice system facilitates an opportunity for underserved youth to access treatment for these difficulties in a setting where regular environmental risk factors for substance use are not present. Intervention science has established several effective approaches for treating SUDs among youth. One such approach is Motivational Interviewing (MI; Miller & Rolnick, 2012). MI is a promising approach to reducing substance use and increasing motivation for other health related behaviors in adolescents.

Motivational interviewing is a collaborative, goal-oriented conversation style for building a person's motivation and commitment to change (Miller & Rolnick, 2012). Unlike many other interventions that operate under the presumption that individuals are ready for change at the start of treatment, MI acknowledges that individuals might not yet be motivated to change their behavior and may need to resolve ambivalence surrounding behavior change. Rather than externally imposing change, MI helps build intrinsic motivation for change by approaching these discussions collaboratively and without judgment. This approach may be particularly helpful for juvenile-justice involved youth who may be less likely to respond to more directive approaches (Clair-Michaud, Martin, Stein, Bassett, Lebeau, & Golembeske, 2016). The use of MI has been widely investigated in adult populations, but there is less research on the effectiveness of MI when utilized with adolescents who use substances.

The few existing studies of MI approaches to reduce adolescent substance use have yielded promising results. A meta-analytic review by Jensen and colleagues (2011) found that MI as either a standalone intervention or in conjunction with cognitive behavioral therapy (CBT)

for adolescents consistently yielded small but consistent effect sizes in reducing use of several types of substances, including alcohol, marijuana, and tobacco. Studies have also demonstrated the effectiveness of MI as a stand-alone intervention for substance use. For example, D'Amico, Miles, Stern, and Meredith (2008) found that adolescents participating in a motivational intervention reported less marijuana use compared to care as usual in a sample of 42 high-risk adolescents in a primary care clinic. Monti and colleagues (1999) found that brief MI was more effective at reducing alcohol-related problems than standard care in a sample of 94 adolescents in an emergency room.

Furthermore, few studies have investigated MI as an intervention to reduce substance use in incarcerated adolescents. Stein and colleagues (2011) found that a brief MI reduced risks associated with marijuana use and alcohol-related predatory aggression in a sample of 189 incarcerated adolescents. Stein and colleagues (2006) have also demonstrated that MI can effectively increase treatment engagement following a brief MI in a sample of 120 incarcerated youth. These promising findings warrant additional investigation into the effectiveness of brief motivational interventions for incarcerated youth.

In addition to the high prevalence of substance use disorders among justice-involved youth, justice-involved youth have also been found to have a high prevalence of substance use disorders co-morbid with other psychiatric disorders, particularly depression (Abram et al., 2003). Research investigating the relationship between depressive symptoms and substance use treatment outcomes for adolescents have been mixed. For example, in a residential psychiatric facility, depression was associated with poorer outcomes for adolescents in substance use treatment (Subramaniam, Stitzer, Clemmey, Kolodner, & Fishman, 2007), but in a primary care setting, youth who endorsed substance use with depressive symptoms reported higher motivation

to change substance use than youth without depressive symptoms (Stevens, McGeehan, & Kelleher, 2010). Furthermore, Stein and colleagues (2011) found a trend towards reduced risk behavior post-release for youth with depressive symptoms who participated in a motivational intervention to reduce substance use and risk behavior while incarcerated. Given the high prevalence of co-occurring substance use disorders and depression within the juvenile justice system, it is necessary to consider whether depressive symptoms may be associated with treatment outcomes.

To increase treatment access and lower treatment costs within the juvenile justice system, it is critical to investigate the effectiveness of group interventions. Group interventions are more cost-effective than individual therapy and can further extend the reach of treatment while minimizing costs (French et al., 2008). Furthermore, research has demonstrated in outpatient samples that group-based substance use interventions are as effective as individual substance use treatment and require significantly less therapist time (Sobell, Sobell, & Agrawal, 2009). Group interventions can increase the number of individuals that are able to receive treatment with the limited staff availability and limited funding often present within criminal justice facilities.

At the same time, for some outcomes, group-based interventions are contraindicated. Dishion et al., (1994) found networking with peers who display deviant and delinquent behavior can influence the socialization of youth and contribute to iatrogenic treatment effects. This process, referred to as “deviancy training,” takes place when youth are reinforced for their deviant behavior in interactions with peers. Interacting with peers who display delinquent behavior predicts a multitude of negative outcomes that can persist throughout development, including an increased probability of beginning marijuana, alcohol, and tobacco use in adolescence (Dishion, Capaldi, Spracklen, & Li, 1995). Deviancy training not only occurs within

the context of social interactions but can also contribute to iatrogenic effects during some group interventions, with youth who are moderate to high-risk for delinquent behavior (Dishion, McCord, & Poulin, 1999). Taken together, group interventions can be a cost-effective way to extend services to more youth who need them, but, for some outcomes, group approaches could yield iatrogenic effects. It is important that research evaluates group interventions within the juvenile justice system in order to provide treatments that are effective, economical, and available for the many youth who need them.

Although more youth are detained within short-term detention facilities than long-term facilities (Sawyer, 2019) much of the previously reviewed studies on interventions within the juvenile justice system focus on long-term detention facilities and there is a dearth of research investigating interventions within short-term juvenile detention facilities. Short-term juvenile detention facilities for pre-adjudicated youth pose additional challenges for evidence-based intervention and differ from long-term facilities for adjudicated youth in many ways. Pertaining to treatment planning, long-term detention facilities allow staff a longer timeframe to assess the needs of detained youth, and treatment can be planned around a known length of stay. Many evidence-based treatments require several sessions that may not be feasible in the context of short-term detention settings. Therefore, it may be necessary to adapt longer evidence-based programs in order for them to be implemented in short term settings. Still, it is unclear whether these adaptations will result in the same expected outcomes as observed in other studies in which the standard protocol is implemented.

The nature and environment of short-term juvenile detention facilities pose many additional barriers and challenges to implementing evidence-based programming, including lack of resources, diverse needs of incarcerated youth and rapid changes in the detained population

(Koyoma, 2012). Short-term juvenile detention facilities provide a unique therapeutic point-of-contact to improve outcomes both for youth that will re-enter the community on probation or in diversion programs, as well as for youth that will be adjudicated to long-term detention facilities. It is, therefore, critical to evaluate low-cost, evidence-based programming as implemented in short-term settings to determine whether these programs yield the expected results when adapted for short-term settings.

One brief group intervention that may be suitable for use within short-term juvenile detention facilities is the “Free Talk” program. “Free Talk” (FT; D’Amico, Chan Osilla, & Hunter, 2010) is a six-session manualized MI intervention that aims to increase motivation for substance use cessation. FT uses a motivational interviewing approach to stress the importance of identifying harm-reduction strategies and utilizes a developmentally appropriate therapy style for adolescents. Focusing on the adolescents’ strengths and an emphasis on autonomy allows youth who may be distrustful of authority to speak up about their opinions and frustrations in a therapeutic manner. Sessions focus on various topics including the stages of change, myths and realities about substance use, substance use leading to other risk behaviors and the effects of substance use on the brain. Since adolescents may vary in their readiness for change, FT allows ample opportunities for group leaders to identify the participants’ readiness for change and to provide normative feedback to participants. This facilitates group leaders tailoring the program to each individual.

FT was developed for at-risk adolescents participating in a diversion program with a first-time drug charge. D’Amico and colleagues (2012) conducted a preliminary evaluation of FT in a sample of at-risk adolescents participating in a diversion program with a first-time drug charge and found that delinquency and substance use was reduced at three months for adolescents who

participated in FT. A 12 month follow up demonstrated promising results of long-term gains, with lower, although statistically non-significant, recidivism rates for adolescents who participated in FT compared to usual care.

Existing studies investigating interventions within the juvenile justice setting have primarily focused programs for adjudicated youth detained in long-term juvenile detention facilities, but there is a continued need for effective treatments in short-term juvenile justice settings. FT has been found to reduce recidivism when implemented in first-time adolescent offenders in the community who were charged with a drug-related crime. The brevity of the program may make FT well suited for implementation in short-term detention centers. Still, it is unknown whether the results that have been found among other groups of youth will also be supported for youth in short-term detention who are learning about substances as part of the regular health curriculum.

The current open-trial implementation study aimed to evaluate the feasibility of FT in a short-term juvenile detention facility as part of regular health curriculum. The current study also aimed to determine whether incarcerated youth participating in FT within the juvenile detention center reported expected changes in motivation to change substance use. Additionally, we aimed to assess whether individual differences at baseline, like depression and substance use, were associated with variance in treatment outcome. Based on existing literature supporting the effectiveness of motivational interventions for substance use in adolescents, we hypothesized:

- 1) Youth would report increased motivation to change substance use after participating in FT.
- 2) Baseline substance use would significantly predict unique variance in post-intervention motivation to change substance use above and beyond the variance accounted for by baseline motivation to change substance use.

- 3) Baseline depression/anxiety would significantly predict unique variance in post-intervention motivation to change substance use above and beyond the variance accounted for by baseline motivation to change substance use scores.

Method

Approval to conduct this study was provided by the university's Institutional Review Board (IRB) and the juvenile detention facility. The study was conducted in strict adherence to the approved protocol.

Setting

This study took place in collaboration with a level-5 secure juvenile detention center located in an urban setting in the Mid-Atlantic region of the United States. This facility is a short-term facility for youth charged with a variety of infractions and awaiting juvenile court proceedings (i.e. pre-adjudicated).

Participants

All youth ($N=49$) who were detained in the juvenile detention facility between May 14, 2019 and June 08, 2019 participated in FT as part of their normal health curriculum. Their data were collected for program evaluation purposes and shared with the research team as de-identified data. The youth were between the ages of 12 and 18 (M age = 15.31, SD = 1.56) and predominantly male-identified (83.7%). As for racial and ethnic identities, 83.7% of the sample self-identified as African American, 12.2% self-identified as Caucasian, and 4.1% self-identified as Latinx.

Procedures

FT Implementation. Youth attended FT sessions at their regularly scheduled class time for 6 sessions, unless they were unable to attend their class session due to visitation, changes in schedule, or being off-site (e.g., for specialty medical care or court appointments). Youth who attended less than 2 sessions were excluded from data analysis. The implementation occurred

over a 5-week period. See table 1 for a list of session topics and descriptions from the FT manual.

Table 1

Free Talk Session Topics and Descriptions

Session Topic	Description
1: What are Teens Doing?	Provides adolescents with normative information about alcohol and drug use among their peers as it compares to their own use. Introduces an explanation of the stages of change. Discussion about pros and cons of substance use.
2: Myths About Substance Use	Describes the balanced placebo effect and provides a game-like format to discuss facts about substance use.
3: What Happened to You Last Night?	Discusses substance use as a coping mechanism, triggers for use, and addiction. Re-emphasizes normative information about teen substance use and provides opportunities to practice ways to resist substances through role playing.
4: Emotions and Communication	Explains interpersonal communication and its relationship to emotions and behavior. Teens practice and identify different communication styles.
5: The Brain and Addiction	Discusses the effects of alcohol and other drugs on the brain.
6: What Can Happen When People Use Alcohol and Drugs	Highlights risky behavior that may happen while under the influence of substances. Has teens think about their goals and how alcohol and drug use may affect reaching those goals.

Regularly scheduled sessions were led by a male clinical psychology doctoral student under the supervision of a licensed psychologist who was employed by the detention center and trained in MI by the Motivational Interviewing Network of Trainers (MINT). The doctoral

student clinician was also trained in MI by the MINT and was certified in FT. In addition to clinical supervision, prior to each session, the student consulted with a different licensed psychologist who had experience in implementing research-supported therapy protocols in samples of juvenile justice-involved youth.

Sessions were held flexibly in accordance with the detention center school schedule which fluctuated from day-to-day between 1-2 class periods. Due to the detention center schedule, conflicting visit schedules, and the fluctuation of youth in and out of the detention center, many students did not attend all 6 sessions (M session attendance=3.78, SD =1.51). Makeup sessions were held to accommodate youth that had been absent from sessions. Makeup sessions were offered to youth although not all youth attended makeup sessions due to date of entry or scheduling conflicts. Makeup sessions were led by the detention center staff psychologist or the detention center staff youth rehabilitation counselors. Youth rehabilitation counselors attended a training on MI and were encouraged to access the online FT training materials.

Research Design. Since FT has not been previously evaluated in a juvenile detention center, we selected an open trial design in which data were collected before and after youth participated. While causality cannot be inferred without a control condition, an open trial design is useful to examine feasibility and preliminary outcomes in a particular setting. Additionally, offering FT universally as open trial was a requirement of the juvenile justice setting.

Data Collection Procedures. Upon youths' arrival to the juvenile detention facility, detention center staff members administered assessments of demographics, substance use, and mental health status. Youth also completed self-report assessments before and after each FT session for the purposes of clinical monitoring. A member of the research team read all items on

the self-report measures aloud due to varying levels of reading comprehension. Data were de-identified following each session. Researchers received these de-identified data from the detention center at the conclusion of the study.

Measures

Baseline Substance Use and Depression. Baseline substance use and depression were measured via the Massachusetts Youth Screening Inventory–Second Edition (MAYSI-2; Grisso & Barnum, 2003) alcohol and drug use scale and the MAYSI-2 depression/anxiety scale. The MAYSI-2 is a 52-item self-report assessment to identify youth in the juvenile justice system with mental health needs. The MAYSI-2 has well-established internal consistency (α ranging from .84 to .87 for the substance use scale; α ranging from .72 to .74 for the depression/anxiety scale), test-retest reliability, and concurrent reliability (Grisso et al. 2001; Archer, Vauter Stredny, Mason, & Arnau, 2004). Two MAYSI-2 scales were of particular interest to this study: the substance use scale and the depression/anxiety scale. These scales each consist of seven yes-or-no items. The substance use scale ($\alpha=.80$) and the depression/anxiety scale ($\alpha=.71$) had good internal consistency in the present sample. The MAYSI-2 was computer-administered to youth upon intake to the detention facility and not again in the study since youth did not have access to substances during the course of FT. The research team received this archival data from the detention center.

Motivation to Change Substance Use. Motivation to change substance use was assessed with two measures—the Modified Contemplation Ladder (Biener & Abrams, 1991; Slavet et al., 2006) and The University of Rhode Island Change Assessment (URICA; DiClemente, Schlundt, & Gemmel, 2004). Both the Modified Contemplation Ladder and the URICA are stages of change measures that assess motivation to change health behavior based on the Transtheoretical

Model (TTM; Prochaska, DiClemente, & Norcross, 1992). This model has been applied in the context of treatment for several health behaviors, including alcohol, substance use, and tobacco. The TTM consists of 5 stages of change: pre-contemplation, contemplation, preparation, action, and maintenance. Youth completed the URICA and the Modified Contemplation Ladder following each session of FT.

The Modified Contemplation Ladder is a 1-item self-report visual analog measure with scores from 0 to 10 that is used to assess level of motivation for behavior change, which in turn can be used to assess where the patient is in the TTM's stages of change. The Modified Contemplation Ladder has been validated in adolescent incarcerated populations and has been shown to have predictive validity in measuring incarcerated adolescents' marijuana use post-release (Slavet et al., 2006). The Modified Contemplation Ladder was adapted for this study in order to assess motivation to change substance use in general, rather than a specific substance such as marijuana or alcohol.

The URICA is a 24-item self-report measure that assesses motivation for change. Respondents use a 5-point Likert scale where 1 = *Strongly Disagree* and 4 = *Strongly Agree*. Items are summed to create four scales that correspond to 4 of the TTM's stages of change: precontemplation, contemplation, action, and maintenance. To compute each scale score, items assigned to each scale are summed and averaged. To compute a readiness for change score, the averages of the contemplation, action, and maintenance scales are summed and the precontemplation scale average is subtracted. In the present sample, the precontemplation subscale ($\alpha=.96$), contemplation scale ($\alpha=.99$), action scale ($\alpha=.98$), and maintenance scale ($\alpha=.99$), indicating that all had high internal consistency.

Data Analytic Plan

Data were double entered and verified prior to analyses. Person-mean imputation was utilized to account for missing data when 20% of data was missing at the item-level. About 50.1% of session data were missing at the item-level. Pearson's bivariate correlations were computed to determine preliminary associations between variables. For youth who participated in two or more sessions, a pre-post intervention change score was computed for each measure by subtracting scores at the first session from scores at the last session. Change scores were coded based on outcome (0=decrease in motivation or no change, 1=increase in motivation). Code frequencies were analyzed to determine the percent of youth that experienced change. Paired samples *t*-tests were used to assess pre-post intervention change in motivation. A two-step hierarchical regression was conducted to determine whether baseline substance use accounted for unique variance in post-intervention motivation to change substance use. A second two-step hierarchical regression was conducted to determine whether depressive symptoms accounted for variability in post-intervention motivation to change substance use.

Results

Preliminary Analyses

Descriptive statistics including means and standard deviations for each variable are reported in Table 2. Correlations among variables are reported in Table 3.

Table 2
Descriptive Statistics for all Continuous Variables

Variable	<i>N</i>	<i>M</i>	<i>SD</i>
Number of Sessions	36	3.78	1.51
Contemplation Ladder Change	21	0.10	1.58
URICA Change	24	-.97	1.47
MAYSI Depression/Anxiety Scale	49	1.76	1.88
MAYSI Alcohol/Drug Use Scale	49	1.90	2.14
Age	49	15.3	1.56
URICA-last session	36	5.66	2.63
URICA-first session	24	6.71	2.74
Contemplation Ladder-last session	26	7.58	3.56
Contemplation Ladder-first session	24	7.92	3.20

Table 3
Pearson Bivariate Correlations for all Continuous Variables

Variable	<i>N</i>	1	2	3	4	5	6	7	8
1. Number of Sessions	36	1							
2. MAYSI Depression/Anxiety Scale	49	-0.174	1						
3. MAYSI Alcohol/Drug Use Scale	49	-0.020	.429**	1					
4. Age	49	0.108	0.083	0.010	1				
5. URICA-last session	36	-0.154	.423*	.488**	.476**	1			
6. URICA-first session	24	0.074	.427*	0.365	.658**	.869**	1		
7. Contemplation Ladder-last session	26	0.142	-0.146	0.043	0.217	0.299	0.436	1	
8. Contemplation Ladder at first session	24	0.123	0.053	0.118	0.077	0.194	.487*	.854**	1

* $p < .05$ (2-tailed), ** $p < .01$ (2-tailed)

Pre-Post Change

The first aim of the study was to evaluate pre-post change in motivation to reduce substance use. It was predicted that that youth would report increased motivation to reduce substance use after participating in FT. A paired samples t test compared motivation for change between the pre-treatment and post-treatment conditions. The pre-treatment ($M=8.10$, $SD=2.86$) and post-treatment ($M=8.19$, $SD=2.96$) Modified Contemplation Ladder scores did not differ significantly, $t(20)=-0.28$, $p=.785$, $d=0.33$. However, there was a significant difference between URICA scores for the pre-treatment ($M=6.71$, $SD=2.74$) and the post-treatment ($M=5.74$, $SD=2.95$) scores, $t(23)=3.23$, $p=.004$, $d=0.35$ (small effect). Counter to our hypothesis, the youth experienced a significant decrease in motivation to change on URICA from pre-treatment to post-treatment. On the URICA, 16.7% ($n=4$) of youth reported an increase (positive change) in motivation, while 83.3% ($n=24$) reported no change in or a decrease (negative change) in motivation. An increase is defined as On the Modified Contemplation Ladder, 23.8% ($n=5$) of youth reported an increase (positive change) in motivation, while 76.2% ($n=16$) reported no change in or a decrease (negative change) in motivation.

The second aim of the study was to evaluate whether the youths' post-intervention motivation to change substance use was predicted by individual characteristics at baseline. Specifically, it was predicted that baseline substance use and depression/anxiety would significantly contribute to unique variance in post-intervention motivation.

Baseline Substance Use. A two-step hierarchical multiple regression was conducted to determine whether baseline substance use contributed to unique variance in post-intervention motivation. Baseline motivation was entered at step 1 to control for baseline motivation to

reduce substance use. Baseline substance use was entered at step 2. The hierarchical multiple regression revealed that at step 1, baseline motivation to change substance use significantly contributed to the regression model ($F(1,22)=68.09, p=.000; R_2=.756$). Introducing the baseline substance use variable at step 2 explained an additional 6.4% of variance in post-intervention motivation to reduce substance use and this change in R_2 was significant; $F(2,21)=47.87, p=.000; R_2=.820$. Both baseline intervention URICA scores ($b=.83, p=.000$) and baseline substance use scores ($b=.36, p=.012$) were significant predictors in the model. Consistent with our hypothesis, baseline substance use contributed to unique variance in post-intervention motivation to change substance use.

Depression/Anxiety. A two-step hierarchical multiple regression was conducted to determine whether baseline substance use contributed to unique variance in post-intervention motivation. Baseline motivation was entered at step 1 to control for baseline motivation to reduce substance use. Baseline depression/anxiety was entered at step 2. The hierarchical multiple regression revealed that at step 1, baseline motivation to change substance use contributed significantly to the regression model ($F(1,22)=68.09, p=.000; R_2=.756$). Introducing the baseline depression/anxiety variable at step 2 explained an additional 6.7% of variance in post-intervention motivation to reduce substance use and this change in R_2 was significant ($F(2,21)=48.84, p=.000; R_2=.823$). Both baseline intervention URICA scores ($b=.80, p=.000$) and baseline depression/anxiety scores ($b=.47, p=.01$) were significant predictors in the model. Consistent with our hypothesis, baseline depression/anxiety contributed to unique variance in post-intervention motivation to change substance use. Since youth did not experience significant change in motivation on the Modified Contemplation Ladder Scale, regression analyses were not conducted using this scale.

Discussion

The purpose of this study was to determine the feasibility of implementing a brief, motivational intervention Free Talk (FT) to increase motivation to change substance use among youth who were detained. We hypothesized that (a) youth would report increased motivation to reduce substance use after participating in FT, (b) baseline substance use would significantly predict unique variance in post-intervention motivation to change substance use, and (c) baseline depression/anxiety would significantly predict unique variance in post-intervention motivation to change substance use.

Contrary to the hypothesis, results suggest that, on average, most youth participating in FT did not experience a significant change in motivation to reduce substance use. Although unexpected, this finding provides valuable information that could inform future implementations of FT. Specifically, existing literature suggests that substance use is common among youth involved in the juvenile justice system (Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Welty et al., 2017). The base rates of substance use problems in juvenile justice settings may motivate some juvenile justice facilities, like the detention center in which the current study was conducted, to implement FT to all youth. Still, not all youth who are involved in the juvenile justice system have substance use *problems* and assessment of such problems could be important in determining for whom programs like FT are likely to be useful.

The results from the current study provide no evidence to suggest that FT is a helpful program when offered to all youth in the detention center. In fact, it may be that when FT is implemented as a universal program it *negatively* impacts youth's thoughts about changing substance use. For example, it is plausible that youth participating in FT learn more about their

peers' substance use while participating in the group. This knowledge could provide a standard by which youth contrast their own use to determine whether their use is problematic. For youth with high levels of problematic substance use, peers with lower levels of problematic substance use might facilitate the identification of their own use as problematic. Conversely, for youth with low levels of problematic substance use, the presence of peers with higher levels of substance use might serve to normalize their own use and make them less likely to view their use as problematic in contrast. Such an interpretation is consistent with other research that suggests iatrogenic effects of some treatments that are implemented in group formats with youth who have a high level of externalizing problems. Future studies can examine group composition (in terms of substance use severity) and examine the processes occur during group therapy focused on substance use to determine whether teens participating in group treatment targeting substance use compare their own use to the use of their peers and, if so, the potential outcome of these comparisons.

However, consistent with hypotheses 2 and 3, we found that baseline substance use and depression each significantly contributed to unique variance in treatment outcome when controlling for baseline motivation. This finding is consistent with the other literature suggesting that motivational interventions may be more useful to youth with substance use problems (Jensen et al., 2011) and that youth with depressive symptoms who use substances may have more motivation to change their substance use (Stevens, McGeehan, & Kelleher, 2010). It may also be that youth with depressive symptoms benefit from the group format of FT due to the social support it provides (Nardi, Masei, Arimatea, & Moltedo-Perfetti, 2016).

Additionally, a significant positive correlation was found between age and both pre- and post-motivation scores in the URICA measure, which may indicate that youth who are older

have higher motivation. It is interesting that number of sessions attended were not significantly correlated with post-test scores. This could be that due to little variation in outcomes or little variation in number of sessions. This could also indicate that 6 sessions are not needed to get better results, consistent with existing literature demonstrating that change can occur in as little as one session for youth participating in brief interventions (Schleider, Dobias, Sung, & Mullarkey, 2019).

Current findings extend the existing literature by showing detained youth in a short-term juvenile justice setting experience change during FT. Unlike previous trials of FT, due to the nature of the juvenile justice setting we were unable to measure long-term substance use outcomes following release. Although findings did not provide support for including FT as part of universal curriculum within short-term detention centers, the findings of this study suggest that FT may help improve motivation to change for those who report problematic substance use or depressive symptoms.

Feasibility

Support for implementation of the intervention varied within the detention center. The plan for an external doctoral student to co-lead the group with a detention center staff member changed after the implementation had begun, and the absence of familiar staff members to co-lead groups led to a barrier of rapport building between youth and the therapist. Rapport is a crucial aspect of building a therapeutic alliance between the clinician and those participating in the intervention. Therapeutic alliance is critical component of effective treatment, as it is related to better substance use treatment outcomes for youth (Bentham et al., 2020) and for young adults (Urbanoski, Kelly, Hoepfner, & Slaymaker, 2012). Planning for future implementations should ensure that a trusted staff member is trained in delivering the intervention and available to lead

groups. If an external clinician is delivering the intervention, a detention center staff member should co-lead the intervention in order to facilitate the rapport-building and therapeutic alliance between youth and group leaders.

Additionally, a comprehensive schedule and protocol for sessions should be developed and shared between the clinical/research team and detention center staff prior to implementation that details the session schedule, makeup sessions, session leaders, and session attendance. The schedule at the facility changed on a daily basis, and detention center staff were not able to share the schedule prior to the day of the session. This resulted in inconsistent time for group sessions, and inadequate time to prepare for abbreviated sessions. Groups took place during visitation and many youth were absent for varying amounts of time during sessions. Due to these conditions and the rapidly shifting population within short-term detention centers, a majority of youth (55.3%) participated in less than four sessions. These conditions threatened the treatment fidelity and internal validity of the study. Still, it should be noted that these conditions may be hard to avoid in “real world” practice. Implementation research can help to identify ways in which these barriers can be circumvented. Additionally, future trials of the FT program should endeavor to measure dose and implementation fidelity.

Although it is necessary to maintain implementation fidelity, it is also important to adapt the intervention for the setting in which it is being implemented. Currently, FT focuses on discussing the use of a variety of different substances, some of which youth did not endorse using. It may be beneficial to narrow the focus of FT to only discuss substances that youth participating in groups endorse using or that adolescents typically endorse using, such as alcohol, marijuana, and tobacco. Although FT requires several clinical materials for games and activities during sessions, the treatment manual does not include these materials which creates another

significant barrier to sustainability. In the current implementation, the evaluation team spent several hours creating clinical materials necessary for FT sessions such as board games, posters, flash cards, and game pieces based on a brief description of the material. It may be beneficial to include instructions for creating these materials or for these materials to be available for download in a printable format with the program manual. Adapting programs is a common practice in implementation research, and the suggested adaptations may improve the feasibility of implementing FT in short-term juvenile justice settings.

Limitations

Findings should be considered in light of limitations of the study design. We designed our open trial as a first step to understanding whether FT could be successfully implemented in a short-term juvenile detention center. Without a comparison group, we do not know whether the change in motivation on the URICA that we observed in youth with high levels of SUDs was due to FT or to some other factor (e.g., natural change over time). Reliance on self-report data did not allow for measuring long-term outcomes or the predictive validity of the intervention. Due to the small sample size and abundance of missing data, this study may have been underpowered to detect effects. Additionally, the current sample is predominately African American, but only 14% of youth within the juvenile justice system in the U.S. were African American in 2018 (Puzzanchera, Sladky, and Kang, 2019). Female participants were also overwhelmingly underrepresented in this study although girls made up about half of the juvenile justice population in 2018 (Puzzanchera, Sladky, and Kang, 2019).

While FT implementation fidelity was monitored through supervision and consultation with an external expert, fidelity of the implementation was not tracked. This is a significant limitation in the study especially because there were numerous challenges to implementation.

One major challenge was that youth were inconsistently available for sessions and time allotted for sessions varied. As a result of these limitations, an abundance of self-report data was incomplete or deemed invalid. It is unknown whether these implementation challenges will differ at other short-term juvenile detention centers with different samples. Despite these limitations, the study offered an evaluation of preliminary outcomes and feasibility of implementing a manualized program in a short-term juvenile justice setting with an apparent need for such a program. To minimize the gap between science and practice, it would be advisable to conduct clinical research in the real settings where clinical work is likely to occur.

Clinical Implications and Future Directions

Suggested adaptations for future implementation include a consistent availability of the same trained staff members for each group. Additional suggestions include screening for youth who endorse substance use on the MAYSI-2 and using the suggested “caution” cutoff scale scores of 4 or higher as inclusion criteria for groups, collecting data on substance use from a variety of informants (e.g. collecting both parent/guardian reported substance use as well as youth self-report), only including youth who self-refer to participate, and providing reinforcements to youth for active participation in group and completion of measures. It may also be beneficial to provide additional reassurance of confidentiality by trusted staff members and the research team in order to inform the youth of their legal protections against self-incrimination during treatment. Furthermore, it may be beneficial to utilize a tiered system of care where those who do not respond to group treatment subsequently participate in individual sessions.

Building upon these preliminary findings, future research might employ randomized control designed that could support attributing findings of increased motivation during FT to the program itself. In future studies, long-term follow up would be warranted to examine outcomes

including substance use and recidivism following release. Gender effects should also be examined in implementations of this intervention in juvenile justice settings, as females were underrepresented in the present study. Future research should continue to strive to understand how brief interventions like FT can best be implemented in short-term juvenile justice settings to improve outcomes for the many at-risk and underserved youth who come into contact with these settings.

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Appendix A

WCU IRB Approval Form



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Protocol ID # 20190225A
This Protocol ID number must be used in all communications about this project with the IRB.

TO: Stevie Grassetti
FROM: Nicole M. Cattano, Ph.D.
Co-Chair, WCU Institutional Review Board (IRB)
DATE: 2/17/2019

Project Title:**Notification of Initial Study Exemption Determination** **Exempt From Further Review**

This Initial Study submission meets the criteria for exemption per the regulations found at 45 CFR 46.101(b)(4). As such, additional IRB review is not required.

The determination that your research is exempt does not expire, therefore, annual review is not required and no expiration date will be listed on your approval letter. If changes to the research are proposed that would alter the IRB's original exemption determination, they should be submitted to the WCU IRB for approval, using the IRB application form (check off I.G. Revision).

Your research study will be archived 3 years after initial determination. If your Exempt study is archived, you can continue conducting research activities as the IRB has made the determination that your project met one of required exempt categories. The only caveat is that no changes can be made to the application. If a change is needed, you will need to submit a NEW Exempt application. Please see www.wcupa.edu/research/irb.aspx for more information.

However, it is very important that you close-out your project when completed or if you leave the university. Faculty mentors are responsible for oversight of student projects and should ensure exempt studies are completed and closed-out before the student leaves the university.

The Principal Investigator and/or faculty mentor is responsible for ensuring compliance with any applicable local government or institutional laws, legislation, regulations, and/or policies, whether conducting research internationally or nationally. Please contact the WCU Office of Sponsored Research and Programs at irb@wcupa.edu with any questions.

Sincerely,

Co-Chair of WCU IRB

WCU Institutional Review Board (IRB)

IORG#: IORG0004242

IRB#: IRB00005030

FWA#: FWA00014155