

Developing and Testing Twelve-Step Facilitation for Adolescents with Substance Use Disorder: Manual Development and Preliminary Outcomes

John F. Kelly¹, Julie D. Yeterian¹, Julie V. Cristello¹, Yifrah Kaminer², Christopher W. Kahler³ and Christine Timko^{4,5}

¹Recovery Research Institute, Center for Addiction Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA.

²University of Connecticut Department of Psychiatry, Farmington, CT, USA. ³Center for Alcohol and Addiction Studies, Brown University School of Public Health, Providence, RI, USA. ⁴Center for Innovation to Implementation, VA Palo Alto Health Care System, Livermore, CA, USA. ⁵Stanford University School of Medicine, Stanford, CA, USA.

ABSTRACT: Adolescent substance use disorder treatment programs are often based on the 12-step philosophy of Alcoholics Anonymous and/or link adolescents to these free resources. Despite this, no studies have developed and rigorously tested a twelve-step facilitation (TSF) intervention for young people, leaving a significant evidence gap. This study describes the first systematic development of an outpatient adolescent TSF treatment. An integrated twelve-step facilitation (iTSF) treatment incorporated TSF, motivational enhancement therapy, and cognitive behavioral therapy elements and was developed in an iterative manner with weekly feedback provided by 36 adolescents (*M* age 17 years [*SD* = 1.4]; 52.8% white) with DSM-IV substance use disorder recruited from the community. Assessments were conducted at baseline and at three and six months. Participants completed 6 of 10 sessions on average (8 participants completed all 10). Notable treatment developments were the inclusion of “in-services” led by Marijuana Anonymous members, including parents in a portion of individual sessions to provide a rationale for TSF, and use of a Socratic therapeutic interaction style. Acceptability and feasibility of the treatment were excellent (treatment satisfaction was 4.29 [*SD* = 0.59] out of 5). In keeping with TSF theory, the intervention substantially increased 12-step participation, and greater participation related to greater abstinence. iTSF is a replicable manualized treatment that can be implemented and tested in outpatient settings. Given the widespread compatibility of iTSF with the current adolescent treatment, if found efficacious, iTSF could be relatively easily adopted, implemented, and sustained and could provide an evidence-based option that could undergird current practice.

KEYWORDS: 12-step, adolescent, Alcoholics Anonymous, Narcotics Anonymous, Marijuana Anonymous, self-help, mutual-help, mutual-aid, peer support, treatment, addiction, substance use disorder

CITATION: Kelly et al. Developing and Testing Twelve-Step Facilitation for Adolescents with Substance Use Disorder: Manual Development and Preliminary Outcomes. *Substance Abuse: Research and Treatment* 2016;10 55–64 doi: 10.4137/SART.S39635.

TYPE: Original Research

RECEIVED: March 04, 2016. **RESUBMITTED:** April 10, 2016. **ACCEPTED FOR PUBLICATION:** May 11, 2016.

ACADEMIC EDITOR: Gregory Stuart, Editor in Chief

PEER REVIEW: Three peer reviewers contributed to the peer review report. Reviewers' reports totaled 1,799 words, excluding any confidential comments to the academic editor.

FUNDING: This study was funded by a grant from the United States National Institute on Alcohol Abuse and Alcoholism (NIAAA) R01-AA019664. The authors confirm that the funder had no influence over the study design, content of the article, or selection of this journal.

COMPETING INTERESTS: Authors disclose no potential conflicts of interest.

CORRESPONDENCE: jkelly11@mgh.harvard.edu

COPYRIGHT: © the authors, publisher and licensee Libertas Academica Limited. This is an open-access article distributed under the terms of the Creative Commons CC-BY-NC 3.0 License.

Paper subject to independent expert blind peer review. All editorial decisions made by independent academic editor. Upon submission manuscript was subject to anti-plagiarism scanning. Prior to publication all authors have given signed confirmation of agreement to article publication and compliance with all applicable ethical and legal requirements, including the accuracy of author and contributor information, disclosure of competing interests and funding sources, compliance with ethical requirements relating to human and animal study participants, and compliance with any copyright requirements of third parties. This journal is a member of the Committee on Publication Ethics (COPE).

Published by Libertas Academica. Learn more about this journal.

Introduction

Alcohol and other drug misuse and related use disorders are the top causes of premature mortality and morbidity among young people in high-income countries, such as the United States.¹ Providing effective intervention for adolescents with substance use disorders (SUDs) has become a public health priority, yet it remains a clinical challenge.^{2–5} Professional treatment often produces significant salutary changes in adolescents' substance use,^{5–7} but by itself it may be inadequate to address the prodigious and chronic burden of disease attributable to alcohol and other drugs.^{8,9}

Peer-based mutual-help organizations (MHOs), such as Alcoholics Anonymous (AA), Narcotics Anonymous (NA), and Marijuana Anonymous (MA), have emerged and proliferated during the past 80 years in the US and in approximately

150 countries worldwide^{10,11} and provide a ubiquitous, free, community-based recovery resource that can aid recovery and help enhance treatment effects.^{10,12} Professional treatment, too, often includes 12-step MHO philosophy and practices^{10,13–15} and/or refers patients to community 12-step MHOs to help prevent relapse. In the US, nearly half of adolescent SUD treatment programs (47%) require participation in 12-step MHOs during treatment and 85% link adolescents with AA or NA groups as a continuing care resource.^{16–18} Several prospective observational studies suggest that 12-step MHO attendance is also safe and beneficial for young people.^{12,19–26} In one 8-year prospective study on adolescent inpatients, Kelly et al found that participants gained an average of two days of abstinence for each AA or NA meeting attended, over and above all other factors associated with better outcomes.²⁷



Another long-term outpatient study of adolescents found that AA/NA participation was strongly associated with abstinence during a three-year follow-up.²⁰ A 7-year prospective adolescent study found that 12-step participation was associated with significantly higher odds of abstinence as well as reduced health-care costs.²⁶

While the majority of these studies used covariate adjustments to estimate causal connections between 12-step MHO and improved outcomes, this statistical practice is not a substitute for randomized experimental studies. Because of the challenges of conducting experimental studies directly on MHOs, such as AA,^{28,29} 12-step treatment and related MHO effects have been studied using what has become known as “twelve-step facilitation” (TSF) interventions. Adult TSF interventions have been tested in many different formats and intensities including brief advice,^{30,31} pure, multisession TSF,^{32–34} combined cognitive behavioral therapy (CBT)-TSF hybrids³⁵ and group treatments,³⁶ and brief linkage procedures (typically using a current 12-step peer) following another treatment.^{37–40} Several randomized clinical trials have demonstrated the efficacy of TSF treatments among adults (eg, Refs. 33–36, 39, and 40), yet no published randomized controlled studies have examined the utility and efficacy of TSF approaches with adolescents. Given the widespread implementation of the 12-step-based treatment and related 12-step MHO referrals in the US, this represents a notable gap in the evidence base.

The common features across all of these different modes of TSF are education and discussion of what 12-step MHOs are and what they do, the nature of 12-step meetings and what to expect when attending, and the varying degrees of systematic encouragement to attend (eg, simple clinician recommendations through active linkage to a current AA/NA member). It is unclear whether direct implementation of these adult-oriented procedures with adolescents would yield similar benefits, as adolescents differ demographically and clinically from adults and face additional barriers to 12-step MHO attendance.

Compared to adults, adolescents typically have less severe and less complex clinical histories and possess far less intrinsic motivation to be in treatment, engage in continuing care, or change alcohol/drug use.⁶ Most also do not have independent transportation nor the freedom to attend 12-step meetings at will, even if they wanted to. They face barriers in becoming engaged with 12-step MHOs because the majority of members are significantly older. The average AA and NA members are 47 and 43 years old, respectively, with only 2% of members under the age of 21 years.^{41,42} This may present a formidable barrier to identification and a sense of belonging.^{43,44}

These demographic, clinical, and 12-step-specific challenges indicate that a developmentally tailored TSF outpatient intervention is needed to address adolescents' needs and barriers. To date, no such systematic adolescent TSF development studies have been conducted. The goal of the current study was to develop a youth-focused TSF intervention. Because

of the existing acceptance of 12-step philosophy among the majority of youth treatment programs in the US, a TSF intervention that was ultimately shown to be efficacious could be readily adopted, implemented, and maintained by adolescent SUD providers.⁴⁵ Herein, we describe the results of the first phase of a youth-focused integrated TSF (iTTSF) treatment development study. This includes a detailed description of the iterative process of how we developed and standardized a treatment manual that integrates TSF with existing empirically supported approaches (ie, motivational enhancement therapy [MET] and CBT), based on adolescent participants' feedback, therapists' clinical experience with implementing TSF, and existing adolescent and adult 12-step treatment evidence. Given the broad heterogeneity in clinical severity among adolescent outpatients, an integrated approach with TSF, MET, and CBT was chosen as we anticipated that less severely alcohol/drug-involved adolescent outpatients would be less motivated to attend continuing care resources such as AA or NA and, therefore, needed other forms of intervention to address their needs. In the current paper, we also present descriptive findings and, although not a major focus at this stage, some inferential statistical results of 12-step participation and substance use outcomes.

Methods

Participants. Participants were 36 adolescents from the community who were seeking treatment for a SUD. To be included, participants had to (1) be between the ages of 14 and 19 years at the time of study entry, (2) have a parent/guardian who was willing to consent to their child's participation (for those under 18 years), (3) meet past-year *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, text revised (DSM-IV-TR⁴⁶) criteria for alcohol or drug abuse or dependence, (4) have used alcohol or drugs in the past 90 days, and (5) be able to speak, read, and understand English. Adolescents were excluded from the study if, in addition to the absence of any of the eligibility criteria listed above, they were (1) actively psychotic or experiencing psychotic symptoms, (2) currently in another treatment program for SUDs, and (3) taking addiction treatment medications at the time of entry to the study.

From October 2011 through December 2012, participants were recruited through advertisements in the newspaper, Craigslist, and the public transportation system. Study staff also informed the juvenile justice system, as well as inpatient, outpatient, and additional adolescent recovery support services about the study. Of the recruited sample, 28% were referred by treatment facilities, 28% saw advertisements (eg, the public transportation system, the newspaper, study flyers, Craigslist), 17% were referred by the juvenile justice system, 17% did not know or report their referral source, 5% were referred by public schools, and 5% were referred by health and human services (eg, Department of Youth Services, Department of Children and Families). Recruitment materials (advertisements



and flyers) advertised a no cost outpatient treatment for adolescents using alcohol and other drugs and indicated that the participants would be compensated up to \$195. A study phone number and email address were provided. Potential participants were screened by telephone before completing the informed consent process and a baseline assessment.

This study was reviewed and approved by the Partners Healthcare Institutional Review Board, Boston, MA, USA. The research was conducted in accordance with the principles of the Declaration of Helsinki. For minors (under the age of 18 years), written informed consent was obtained from a parent/legal guardian and written consent was also obtained from the child. The trial was also registered on clinical trials.gov (NCT01449981).

Of the 67 participants screened, 15 did not meet inclusion/exclusion criteria, 9 met screening criteria but did not show up for their baseline interview, and 1 declined to participate after completing the telephone screen. Of the 42 baseline assessments completed, 6 individuals dropped out prior to receiving any treatment. Since those 6 individuals were not exposed to any treatment and did contribute to the manual development phase, results are based on a modified intent-to-treat sample of 36 participants.

Design and procedure. After completing a baseline assessment, all participants were scheduled to complete two individual treatment sessions and eight group sessions. In keeping with established MET and CBT protocols,⁴⁷ these two individual sessions were conducted to build rapport, enhance motivation for treatment, set treatment goals, and describe the group process. All participants were asked to provide feedback on session content after each treatment session. After treatment completion, participants completed an end-of-treatment assessment (ie, three-month follow-up) and a final assessment (ie, six-month follow-up). Participants were paid \$40 for completing the baseline assessment, \$5 for completing each weekly feedback form (up to \$50 total), \$45 for completing the three-month follow-up assessment, and \$45 for completing the 6-month follow-up assessment. If the follow-up assessments were completed within two weeks of their due date, participants received an additional \$10. Research staff collected saliva samples for drug testing and administered alcohol breathalyzer tests at the baseline assessment, groups 2, 4, and 7, and the 3- and 6-month follow-up assessments. Participants were not withdrawn from treatment based on results.

Each participant received a binder with treatment materials upon arrival. Additional treatment materials were added each week, and binders were stored in a locked cabinet during the duration of the study. Binders were kept at our treatment facility because adolescents would often forget to bring them for treatment sessions. All sessions were audiotaped, and audiotapes were used for training and quality control purposes.

Measures. *Perceptions of treatment.* Participants completed a weekly feedback form following each individual and group treatment session to assist with manual development.

The forms ranged from 9 to 17 questions asking how helpful each aspect of treatment was, or how much they understood each topic. The large range in the number of questions asked about patients' treatment perceptions reflects the varying stages and changes involved in the manual development. Participants rated items such as "how helpful was completing the Sober Activity Plan?" or "how helpful was hearing stories from Marijuana Anonymous members?" Participants rated how they felt on a Likert scale (1 = low score [no/not at all] to 5 = high score [yes/very much]). At the end of each form, participants were asked to document what they found most and least helpful about sessions, as well as what they wanted more information on.

Treatment satisfaction. Satisfaction with treatment was assessed at the three-month follow-up (end of treatment) with the Treatment Satisfaction Index (TSI⁴⁸). The TSI is a 14-item scale, where participants use a Likert scale (1 = *strongly disagree* to 5 = *strongly agree*) to rate how they feel about the treatment (eg, "staff and you agreed on what your problems were").

12-Step meeting attendance. Participants completed the Multidimensional Mutual-Help Activity Scale,⁴⁹ at all time points. This comprehensive interview measure assesses multiple aspects of 12-step MHO participation (eg, meeting attendance, working steps, speaking at meetings) for AA, NA, Cocaine Anonymous, and any other MHOs. It also asks about perceptions of importance and helpfulness of each 12-step program attended, as well as feelings of safety at meetings and whether attendance was required by the justice system. Variables were calculated to represent attendance at any type of mutual-help meeting, both in the participant's lifetime (at baseline) and in the past 90 days. Separate variables were created for (a) total attendance, (b) attendance while in an inpatient/residential SUD program, and (c) attendance while living in the community.

Percent days abstinent. The Timeline Follow Back (TLFB⁵⁰) and Form-90⁵¹ were used to determine percent days abstinent (PDA), as well as the longest period of time the participant did not use any drugs or alcohol (excluding nicotine). The TLFB and Form-90 were completed as interviews at each assessment, wherein the interviewer helped the participant recall their substance use during a specified time window (past 90 days), using a calendar to cue participants in to key dates (eg, holidays, school vacations). On the calendar, participants marked the days on which they used a substance and indicated which substance(s) they used. The days on which participants did not use any substances were counted and divided by the total number in the time window, yielding PDA.

Substance use and mental health diagnoses. Past-year DSM-IV-TR Axis I diagnoses were assessed with the Computerized Diagnostic Interview Schedule for Children, IV.⁵² Past-year DSM-IV-TR substance abuse/dependence was assessed using the Customary Drinking and Drug Use Record (CDDR⁵³).

Treatment providers. One male (JFK; a licensed clinical psychologist) and one female (JDY; a doctoral student



in clinical psychology) therapist provided treatment. The therapists each provided individual sessions and led groups together. Therapists followed a manualized treatment protocol during each session, which was changed based on clinical observations and discussions and patients' feedback to optimize iTSF group sessions.

Results

Process of iterative treatment and manual development. The iTSF treatment was developed in an iterative manner over the course of six-group cycles that were run over 17 months. Prior to the first cycle, a preliminary iTSF manual was created by the first author (JFK), incorporating elements from evidence-based treatments (TSF, MET, CBT^{35,36,54}), as well as clinical experience and research focused specifically on youth and 12-step programs.¹² This preliminary iTSF manual was then modified over time based on participant feedback and therapist impressions following each group. Therapists met weekly before and after each group to discuss session content and process including a discussion of participants' reactions to session material and ideas about how to incorporate 12-step-related content in a way that would be acceptable and helpful to adolescents.

Table 1 presents the session-by-session content of the preliminary iTSF manual (used in cycle 1) and the final iTSF manual that resulted from changes made over the six-group cycles. Changes were made to both session content and treatment delivery style. Depending on how participants reacted to particular topics, therapists either removed a topic altogether (ie, Problem Solving), combined similar topics into a single session (ie, Anger Management and Depression Management were combined into "Coping with moods, emotions, and feelings," Drug/Alcohol Refusal Skills and Communication Skills were combined into "Communication skills/drug and

alcohol refusal skills"), or maintained a topic as a full group, while relating it to 12-step meeting attendance or 12-step philosophy (ie, Coping with Urges and Cravings). Topics were removed or condensed over cycles to make more time for 12-step-specific programming, such as in-service visits from community 12-step group members.

As described in more detail below, the final result was a 10-session combination of MET-based individual sessions and a group-based integration of TSF strategies (eg, providing information about meetings, inviting speakers from 12-step programs) and CBT (eg, using a cognitive-behavioral behavior chain to understand the function of substance use). Each group session was 90 minutes long and followed a similar format (see below for additional details): (a) reading of the group preamble (1 minute), (b) check-in, including stating whether weekly goals were met, sharing of personal stories, and introduction of new group members (20 minutes), (c) discussion of a recovery-related topic (or listening to in-service presentations) and how attending 12-step meetings can help (40–50 minutes), (d) planning sober activities for the week ahead, sharing these with the group, and termination, when applicable (20 minutes), and (e) reading of the closing statement (1 minute).

The structure of sessions was also changed from a presentation-oriented format, where therapists *taught* new information and skills to participants, to a Socratic style, where therapists constantly pitched questions to the participants about treatment and treatment content (eg, "Why would an alcohol/drug treatment program focus on coping with urges and cravings?"; "Why would a treatment program encourage participation in 12-step groups?"). This was done in order to maintain attention and focus and keep patients actively cognitively processing the rationale and significance of the treatment's content.

Table 1. Comparison of session content in preliminary and final iTSF manuals.

SESSION TYPE	SESSION NUMBER	SESSION CONTENT	
		PRELIMINARY	FINAL
Individual	1	Motivation building	Motivation building and goal-setting
	2	Goal-setting	Review of goals and progress*
Group	3	Alcohol and drug refusal skills	What is addiction?
	4	Coping with urges and other thoughts about drinking	Coping with the challenges of sobriety and attending your first 12-Step meeting
	5	Problem solving	Marijuana Anonymous in-service
	6	Alcoholics Anonymous in-service	Risky people, places, and things: Changing social networks
	7	Anger Management	Coping with urges and cravings
	8	Marijuana Anonymous in-service	Narcotics Anonymous in-service
	9	Narcotics Anonymous in-service	Coping with moods, emotions, and feelings
	10	Planning for emergencies and coping with relapse	Communication skills/drug and alcohol refusal skills

Note: *In the final manual, the second individual session takes place directly before group 5.



The first two cycles were run as closed groups (ie, no new participants could enter the group after the first group session of the cycle) and the last four cycles were run as an open group (ie, participants could begin the group at any point in the cycle). Open group format was used in order to be consistent with real-world treatment delivery and the format of the upcoming pilot randomized clinical trial.

Intervention components. *Providing information about 12-step meetings.* Many adolescents enter treatment with no prior exposure to or knowledge of 12-step meetings, particularly in outpatient settings. Consequently, we provided information about what the organizations are, who they are for, and where to find them. This began in the first individual session, where the therapist inquired about the adolescent's knowledge of or experience with meetings and provided a brief overview of meetings and a recommendation to attend during treatment (beginning in cycle 3). Over time, we began encouraging patients to include attending 12-step meetings as a written *step to take* toward their treatment goal, so as to elicit a verbal and written commitment to attend during treatment.

In group 2, we provided the participants with a handout entitled "What to expect at your first meeting" and spent about 20 minutes discussing types of meetings, typical meeting format, and 12-step culture. Whenever group members attended meetings, we asked them to describe their experience during check-in, in order to provide a first-hand account to the other group members. Twelve-step concepts were also introduced in relation to group topics, so as to help participants understand the things they might hear at meetings. These included slogans (eg, "One day at a time," "This too shall pass"), sayings (eg, "If you sit in a barbershop long enough, you'll end up getting a haircut"), the Serenity Prayer, and the different meanings of *God* and *Higher Power* in 12-step programs.

Providing a rationale for attending 12-step meetings during and after treatment. In each session, we asked, "Why do we talk about attending 12-step meetings in this group?" and allowed participants to generate the rationale. We would then emphasize that it is because treatment is short term, and sustained recovery-specific social support is needed to maintain sobriety over time. We also discussed ways in which attending meetings could help with each group topic (ie, effective communication, social support, coping with urges and cravings, coping with feelings, and coping with the challenges of sobriety), to help participants draw connections and understand what they could gain by attending. For example, when discussing to avoid risky people, places, and things in recovery, we discussed how attending 12-step meetings can provide access to new sober supports and help avoid high-risk social situations or times of the week (eg, attending a meeting on a Friday night).

Enlisting parental support for meeting attendance. In order to facilitate adolescents' attendance at 12-step meetings during and after treatment, parents of minor participants were invited into the last 15 minutes of the individual treatment

sessions. During this time, therapists provided information about 12-step meetings, including correlational research findings showing that adolescents who attend tend to have better treatment outcomes, and asked if the parent would be willing to drive their child to 12-step meetings during treatment. The aim was to help parents understand the importance of their child's attendance at meetings and to enlist their support for providing transportation to meetings. We implemented this change in cycle 5.

In-house presentations by members of 12-step organizations. Members of 12-step organizations were invited into the group to share their stories of recovery and to provide exposure to young recovering role models. Study staff searched the website of each 12-step organization for regional contact information and inquired about members who would be willing to speak in a group. For NA and MA, regional directors found members who would be interested in volunteering and provided study staff with their contact information. Study staff then contacted these members and arranged for them to attend a group. After speaking to the group, if the 12-step members were interested in volunteering again, study staff contacted them directly. AA required that study staff submit a letter to their Central Committee one month in advance requesting speakers to be present at a group. This was a barrier to obtaining volunteers from AA because study staff were unable to have direct contact with the members, and the letter of request required a firm date and time, which was not always feasible. This is likely to vary by city and regions, so this could be easier or harder depending on a treatment program's location. Efforts were made to invite speakers who were young, so as to increase the chances that group members would relate to them and allow them to provide targeted information on being a young person in a 12-step program (eg, how to find young person's meetings).^{43,44} In these groups, check-ins and check-outs were completed as usual and the middle of the group (40–50 minutes) was devoted to listening to the speakers' stories (~30 minutes), Q&A from group members (~10 minutes), and debriefing after the speakers left (~5 minutes).

We experimented with different frequencies of in-services, ranging from one to three times per cycle. We determined that holding two in-services per cycle was most appropriate, as it provided a good amount of exposure to 12-step members, while also allowing ample time for other topics to be covered and for group members to talk about the issues they were facing. We determined that it was best to devote the entire group session to the in-services (apart from debriefing/Q&A, check-in/out), rather than try to cover other topics in the same group.

Incorporating elements of 12-step meetings. We employed several strategies in the group that mirrored 12-step meetings and informed participants of the similarities. For example, group members read aloud a *preamble* and *closing statement* at the start and end of each group, mirroring the preamble and closing statements or Twelve Promises read at actual



12-step community meetings. We also gave out *chips* or tokens for meeting attendance, in a way similar to the chips given at 12-step meetings for sobriety milestones (eg, 24 hours, 1 month, 60 days, 90 days, etc.). Members who were relatively new to the treatment group were asked to briefly tell “My Personal Story” during check-in by responding to a series of prompts on a written handout. We pointed out that this type of storysharing is typical of what they might hear at a meeting. This was also a way for group members to get to know more about other members including their history and why they were attending treatment. Finally, many elements of the in-services were similar to meeting format, such as the story-sharing, opportunities to express *identification* with the story (ie, looking for similarities and not differences), and the *no-crosstalk* rule while the speaker was talking.

Setting weekly sober activity goals. At the end of each group, participants set a goal to complete at least one sober activity in the following week. They wrote these on a worksheet and stated their goal aloud to the group. During check-in of the following group, each group member was asked to read and state whether they met their sober activity goal(s). Sober activity goals could fall under the category of “Do a fun activity with a sober friend,” “Attend a 12-step meeting,” or “Something else.” Thus, attending a meeting was a *choice* that participants could make. We experimented with different ways of encouraging between-session meeting attendance, including assigning meeting attendance, and found that participants were often resistant to attending a meeting when they were told to do so. In contrast, they appeared to appreciate having a choice of what sober activities to plan. Using the flexible sober activity plan also allowed participants who were not yet ready or willing to attend a meeting to use group time productively to think through what they wanted to accomplish in the week ahead.

Structured check-in. Beginning in the fourth group cycle, we introduced a structured check-in at the beginning of each group. First, a participant read the group preamble. Then, each group member read aloud their treatment goal from their worksheet, stated whether or not they had met their goal in the past week and briefly reflected on obstacles or things that were helpful. Each group member also read aloud their Sober Activity Plan from the prior week and stated whether or not they completed their planned activities.

The practice of reading goals (Treatment Goals and Sober Activity goals) aloud during check-in was used to encourage participants to be accountable to the group and to deter vague descriptions about the past week (eg, “It was fine”). We also implemented this change in order to ensure that check-in was completed in a timely fashion, as participants were responding to very concrete questions.

Use of Socratic therapeutic style by therapists. In typical CBT treatments, therapists provide a great deal of information to the participants in lecture style in order to teach skills. We quickly found that adolescents became disengaged from

the group when therapists spoke for long periods (ie, more than a few sentences), so we shifted the therapists’ style to be one of the consistent Socratic dialogs (ie, posing questions to patients), rather than lecturing. We found that, when given the opportunity, participants were almost always able to generate the information that the therapist would have provided. The therapist could always clarify or add information that the participants had missed. We also found that using this style helped participants to stay much more engaged in the group process, as they took an active role in generating the content throughout the group. This may have helped the members feel more empowered by making valid contributions to the group content and process.

Timing of individual TSF sessions. For the first four cycles, participants completed two MET sessions prior to entering the group, which is consistent with MET/CBT interventions.⁴⁷ However, we found that a number of participants (19% of the total sample) dropped out after completing one or both their individual sessions and did not join the group. In an attempt to minimize this, we switched the timing of the individual sessions beginning in cycle 5, such that participants completed just one individual session prior to entering the group and completed their second session at the mid-way point of their treatment. Doing this also allowed goal setting to occur in the first session (rather than the second) and for the second individual session to be used as a time to check in about whether the participant was making progress toward his or her treatment goal and touch base about other progresses, barriers, or concerns.

Incorporation of behavior chain model of substance use. CBTs often include a behavior chain model of substance use (ie, triggers – thoughts – feelings – behaviors – positive consequences – negative consequences) to help participants understand the function of their use (the “behavior” in the behavior chain). In this model, substance use is understood by contextualizing it within a chronological sequence of events, including the triggers, thoughts, and feelings that precede substance use and the positive and negative results that occur after substance use. This was introduced early in the treatment process. We found that participants readily understood this model and that it could be used to anchor all group topics, including those pertaining to the benefits of 12-step meetings, to different aspects of the behavior chain. Therefore, we incorporated it into most group sessions by asking participants, “Where does [group topic] fit on the behavior chain?” For example, when the topic was urges and cravings, participants would identify that urges and cravings can take the form of thoughts and feelings that precede substance use and are influenced by triggers and how 12-step activity might help.

Sample characteristics. Table 2 presents demographic information for the 36 participants who received some treatment.

Treatment attendance. Participants ($N = 36$) attended an average of 5.58 sessions ($SD = 3.18$) out of a possible 10 treatment sessions. Eight participants (21.1%) completed all



10 sessions. Of the 36 participants who began treatment, 27 (71.1%) completed their three-month follow-up assessment and 23 (60.5%) completed their six-month follow-up assessment. Of those missing a follow-up, nine participants missed both follow-ups and four participants missed one follow-up. Seven participants (87.5%) who completed all 10 treatment sessions also completed the six-month follow-up assessment.

Treatment satisfaction. On the TSI completed at the three-month follow-up assessment, participants reported a mean of 4.29 (SD = 0.59) on the 1–5 scale, indicating very high levels of satisfaction with treatment.

12-Step attendance and abstinence. At baseline, 23.8% of participants had previously attended a 12-step meeting, with 9.5% attending within the past three months. When excluding meetings that were attended as part of an inpatient/residential treatment program, these percentages dropped to 19% and 4.8%, respectively. During treatment, 40.2% of participants attended a 12-step meeting, with 33.3% attending outside of an inpatient/residential setting. Participants attended AA (22.2%), NA (18.5%), and MA (14.8%) meetings.

Participants' abstinent days increased significantly from baseline (M PDA = 25.27, SD = 30.74) to three-month follow-up (M = 40.29, SD = 32.58, t = -2.25, P = 0.03). There was a significant positive correlation between 12-step MHO attendance during treatment and PDA at three-month follow-up, both when considering total meetings (r = 0.42, P < 0.05) and non-inpatient meetings only (r = 0.39, P < 0.05). Attending a greater number of meetings was associated with more abstinent days.

Participants' reactions to 12-step in-services. Using a 1–5 scale, participants rated the MA (M = 3.96, SD = 0.78) and NA (M = 4.04, SD = 0.70) in-services as most helpful, and rated the AA in-services as less helpful (M = 2.75, SD = 0.71). This preference for MA and NA was reflected in participants' written comments on the weekly feedback measure (Table 3). Participants showed a clear preference for MA through their tendency to write positive comments about the MA speakers when asked what they found most helpful about the session. Of the 20 participants exposed to an MA in-service, 18 found it to be the most helpful part of the session. One participant wrote that it was helpful "Hearing from someone with similar problems as mine. Hearing that MA is more mellow than AA." Another stated "MA people knew what they were talking about. [I] connected with them. They were really chill." Participants' views on NA were more mixed, with 67% viewing it as the most helpful part of the session. Participants tended to view the AA in-service as unhelpful (80%). It is unclear whether this could be due to aspects related to the specific speakers themselves, since the younger AA speaker, on several occasions, was accompanied by a much older member who was a senior citizen.

Drug test results. Saliva test results conducted at the three-month follow-up assessment were correlated with self-reported drug use within the week prior to assessment completion. Although reports were somewhat concordant (65%),

Table 2. Sample demographics (N = 36).

	<i>M</i> (<i>SD</i>) OR%
Age	17.0 (1.4)
Range	14–19
Gender (% male)	75.0
Race (%)	
White	52.8
Hispanic	16.7
Black	13.9
Multiracial	8.3
Other	8.4
Who do you live with? (%)	
One biological parent ^a	38.9
Biological parents	36.1
Adoptive parents	8.3
School status (%)	
Enrolled in school ^b	77.8
Quit	11.1
Completed GED	8.3
Employment status (%)	
Not employed	80.5
Working ≤20 hrs/week	13.9
Working >20 hrs/week	5.6
Justice system involvement (%)	
No involvement	58.3
On probation	16.7
Awaiting a hearing	8.3
Child requiring assistance (CRA)	8.3
Religious background (%)	
Catholic	30.6
None	27.8
Christian	22.2
Jewish	11.1
Protestant	2.8
Past-year DSM-IV-TR SUD diagnoses (%)	
Cannabis dependence	69.4
Alcohol dependence	27.8
Cannabis abuse	22.2
Alcohol abuse	22.2
Opiate dependence	11.1
Past-year DSM-IV-TR Axis I diagnoses (%)	
Conduct disorder	41.7
Major depressive episode	25.0
Oppositional defiant disorder	16.7
ADD/ADHD	13.9

Notes: ^aIncludes one parent (33.3%) and biological mother and stepfather (5.6%). ^bIncludes public or private school (69%), on summer vacation (5.6%), and GED program (2.8%).



the actual level of marijuana metabolites was not provided in laboratory reports. Saliva tests were used to encourage accurate self-reporting (ie, through the *bogus pipeline* method); however, we could not verify for sure whether the individuals were abstinent or not through this bioassay because the length of time that marijuana can stay in the body varies among users and can be several weeks even after complete cessation of use.

Discussion

This study describes the rationale and iterative and cyclical processes involved in developing the first TSF manualized treatment for adolescent outpatients. Our approach was designed to be consistent with the phase I behavioral therapy development stage explicated by Ref. 55. This process resulted in the development of a new treatment that involved shifts in our treatment style and approach (eg, explicit and strategic use of the Socratic method), varying placement of individual sessions relative to group sessions; and the introduction of new or adaptation of existing treatment content (eg, parental involvement in a portion of the individual sessions; 12-step MHO in-services notably focused on drugs other than alcohol, such as cannabis and MA). These changes were based on iterations and feedback from participants and the experience of the clinicians. In keeping with the goal of 12-step treatments, participation in community-based 12-step meetings during treatment increased substantially and was associated with significantly better substance use outcomes. The result is a detailed treatment manual with demonstrated feasibility and acceptability and a high degree of reported treatment satisfaction among adolescents with SUD.

There were several broad modifications made to the initial treatment manual. These were: incorporating more 12-step content and mimicking aspects of 12-step meetings in treatment sessions and holding 12-step member in-services with a refocus on MA and NA rather than AA; partial parental inclusion for part of the first individual session to give the rationale for TSF; continuous use of the Socratic method; and, a change in the sequencing of individual treatment sessions. These innovations are described briefly below.

Twelve-step content, mimicking aspects of 12-step meetings, and holding 12-step member in-services focused on MA. In order to help adolescents learn what 12-step meetings are and do, and get participants used to differing aspects of community-based 12-step meetings, we included more educational content regarding 12-step principles, philosophy, and slogans; types of fellowships (eg, AA, MA, NA, etc.) and types of meetings (eg, speaker meetings, speaker discussion, literature-focused meetings, etc.); logistics and meeting etiquette; and what to expect at the first meeting. We also mimicked various aspects of these meetings including developing and reading a group preamble and a group closing statement, having adolescents briefly tell their own story, encouraging identification by suggesting that adolescents look for similarities and not differences between group members’ stories, and giving out tokens to reinforce meeting attendance.

A further modification to the treatment was inviting existing 12-step MHO members into group sessions to tell their story of addiction and recovery and answer questions from treatment participants. We began by inviting AA, NA, and MA fellowship members into sessions, but due to the preponderance of positive feedback for MA in particular, as well as NA, and negative feedback for AA, we chose to focus on bringing in MA and NA and excluding AA. Participants rated the MA and NA in-services as more helpful than the AA in-services, leading us to discontinue inviting AA members after cycle 3. This is perhaps not surprising since the vast majority of our sample had a primary cannabis use disorder (92.9%), while only half met criteria for an alcohol use disorder. Therefore, the final manual calls for inviting speakers from MA and NA, while also recognizing that if MA members are not available (or if a higher proportion of group members have alcohol or another substance as their primary drug), AA or NA members may be invited instead. Given the greater availability of AA and “Young Persons AA”, in particular, within the broad AA fellowship nationally, it could be prudent to try to invite young AA members to complete in-services whenever available, specifically young AA members with additional drug experiences (eg, with cannabis) similar to those of the majority of treatment group members.

Partial parental inclusion in individual sessions. Parents often provide instrumental support (eg, transportation) for young people to 12-step MHO meetings.⁵⁶ Consequently, parents were invited into the last portion of the individual session meetings to discuss 12-step participation and to provide the theoretical and empirical basis for the clinical recommendation to attend and participate in 12-step MHOs. This helped educate parents and motivate them to facilitate transportation to meetings. Overall, parents responded positively to this discussion and to learning more about the rationale and empirical basis for the treatment.

Continuous use of the Socratic method. A further significant development in the course of developing the iTSF treatment was the realization that these young patients needed something to hold their attention. This was achieved by the use of the Socratic method; specifically, rather than lecturing, the content was continually pitched as questions and the youth were asked why this particular topic was included in

Table 3. Responses to 12-step in-services.

TYPE OF IN-SERVICE	NUMBER OF TIMES OFFERED	TOTAL NUMBER OF PARTICIPANTS EXPOSED	NUMBER OF POSITIVE COMMENTS	NUMBER OF NEGATIVE COMMENTS
Marijuana Anonymous	6	20	18 (90%)	2 (10%)
Narcotics Anonymous	5	11	6 (67%)	3 (33%)
Alcoholics Anonymous	2	6	1 (20%)	4 (80%)



addiction treatment. This worked very well, garnering much greater attention, focus, and participation. Our impressions were that youth liked this aspect of the treatment process a great deal as they often would like to demonstrate their intellect and knowledge, given the opportunity.

Shifting the timing of individual sessions. Our shifting of one of the individual sessions to later in the course of treatment was helpful. Rather than having two consecutive individual sessions, we found one initial session to be sufficient to provide some brief MI, delineate some treatment goals, discuss MHOs, and educate parents about the treatment rationale. Having a second individual session later in the treatment to have a personal check-in was helpful to assess patients' progress, give them an opportunity to air their own views outside of the group context, and give individual encouragement and support regarding group and MHO participation.

Other innovations. The use of MET and CBT concepts and practices in the same context with TSF worked well for this population of adolescent outpatients. Outpatient adolescents are highly heterogeneous in their clinical histories and presentations, and the integration of practices from various empirically supported interventions meant that there were various therapeutic tools on offer from which the adolescents could pick to match their own degree of substance involvement and impairment and stage of recovery-related change.

Treatment outcomes, MHO participation, and MHO participation in relation to outcomes. In keeping with treatment process evaluations,^{57,58} the broad underlying theory of iTSF is that the intervention will increase community 12-step MHO participation and, in turn, this will lead to better substance use outcomes. A key proximal outcome of iTSF, therefore, is patients' participation in 12-step MHOs, and such participation should relate to better outcomes. While a minority of participants (40%) attended meetings, the during-treatment attendance rate represents a 4- to 7-fold increase over their past three-month attendance prior to entering this treatment. Furthermore, 12-step participation was associated with better substance use outcomes during and following treatment. This suggests that the theoretical causal chain in this iTSF treatment was supported even among these clinically less severe outpatient adolescents with generally low motivation for treatment engagement or abstinence.

Conclusion

This study represents the first systematic development of an outpatient 12-step-based treatment for adolescents with SUD. The outcome is a replicable treatment that can be implemented and tested in outpatient settings. Testing is currently underway in a randomized clinical trial. Given the widespread compatibility with current SUD treatment practices among youth treatment providers,^{16–18,27} if found efficacious, this treatment could be relatively easily adopted, implemented, and sustained and would provide an evidence-based option that could undergird current practice.

Acknowledgment

This study was funded by a grant from the United States National Institute on Alcohol Abuse and Alcoholism (NIAAA) R01-AA019664.

Author Contributions

Conceived and designed the experiments: JK, CK. Analyzed the data: JK, JY, JC. Wrote the first draft of the manuscript: JY, JC, JK. Contributed to the writing of the manuscript: JK, JY, JC, CK, YK, CT. Agree with manuscript results and conclusions: JK, JY, JC, CK, YK, CT. Jointly developed the structure and arguments for the paper: JK, JY, JC, CK, YK, CT. Made critical revisions and approved final version: JK, JY, JC, CK, YK, CT. All authors reviewed and approved of the final manuscript.

REFERENCES

1. Gore FM, Bloem PJJ, Patton GC, et al. Global burden of disease in young people aged 10–24 years: a systematic analysis. *The Lancet*. 2011;377(9783):2093–102.
2. Kaminer Y, Gordon AJ. It is getting late here early: youth substance abuse theory and practice. *Subst Abuse*. 2014;35(4):329–30.
3. Physician Leadership on National Drug Policy. *Adolescent Substance Abuse: A Public Health Priority*. Providence, RI: PLNDP Project Office, Brown University, Center for Alcohol and Addiction Studies; 2002.
4. Smith DC, Godley SH, Godley MD, Dennis ML. Adolescent Community Reinforcement Approach outcomes differ among emerging adults and adolescents. *J Subst Abuse Treat*. 2011;41(4):422–30.
5. Tanner-Smith EE, Wilson SJ, Lipsey MW. The comparative effectiveness of outpatient treatment for adolescent substance abuse: a meta-analysis. *J Subst Abuse Treat*. 2013;44(2):145–58.
6. Dennis M, Godley SH, Diamond G, et al. The Cannabis Youth Treatment (CYT) Study: main findings from two randomized trials. *J Subst Abuse Treat*. 2004;27(3):197–213.
7. Miller WR, Wilbourne PL. Mesa Grande: a methodological analysis of clinical trials of treatments for alcohol use disorders. *Addiction*. 2002;97(3):265–77.
8. Humphreys K, Tucker JA. Toward more responsive and effective intervention systems for alcohol-related problems. *Addiction*. 2002;97(2):126–32.
9. Kelly JF, White WL, eds. *Addiction Recovery Management: Theory, Research, and Practice*. New York, NY: Springer Science+Business Media; 2011.
10. Humphreys K. *Circles of Recovery: Self-Help Organizations for Addictions*. Cambridge: Cambridge University Press; 2004.
11. Kelly JF, Yeterian JD. Mutual-help groups for alcohol and other substance use disorders. In: McCrady BS, Epstein EE, eds. *Addictions: A Comprehensive Guidebook*. 2nd ed. New York: Oxford University Press; 2013:500–25.
12. Kelly JF, Myers MG. Adolescents' participation in alcoholics anonymous and narcotics anonymous: review, implications and future directions. *J Psychoactive Drugs*. 2007;39(3):259–69.
13. Kelly JF. Mutual-help for substance use disorders: history, effectiveness, knowledge gaps and research opportunities. *Clin Psychol Rev*. 2003;23(5):639–63.
14. Roman PM, Blum TC. *National Treatment Center Study (Summary 3)*. Athens, GA: University of Georgia; 1999.
15. Tonigan JS, Toscova R, Miller WR. Meta-analysis of the literature on Alcoholics Anonymous: sample and study characteristics moderate findings. *J Stud Alcohol Drugs*. 1996;57(1):65–72.
16. Kelly JF, Yeterian JD, Myers MG. Treatment staff referrals, participation expectations, and perceived benefits and barriers to adolescent involvement in twelve-step groups. *Alcohol Treat Q*. 2008;26(4):427–49.
17. Knudsen HK, Ducharme LJ, Roman PM, Johnson JA. Service Delivery and Use of Evidence-Based Treatment Practices in Adolescent Substance Abuse Treatment Settings; 2008 [Retrieved April 18, 2015]. Available at: <http://ntcs.uga.edu/reports/Adolescent%20Study%20Summary%20Report>
18. Knudsen HK, Ducharme LJ, Roman PM, Johnson JA. Service Delivery and Use of Evidence-Based Treatment Practices in Adolescent Substance Abuse Treatment Settings: Project Report: Robert Wood Johnson Foundation's Substance Abuse Policy Research Program (Grant No. 53130); Washington, D.C. 2008.
19. Alford GS, Koehler RA, Leonard J. Alcoholics Anonymous-Narcotics Anonymous model inpatient treatment of chemically dependent adolescents: a 2-year outcome study. *J Stud Alcohol Drugs*. 1991;52(2):118–26.



20. Chi FW, Kaskutas LA, Sterling S, Campbell CI, Weisner C. Twelve-Step affiliation and 3-year substance use outcomes among adolescents: social support and religious service attendance as potential mediators. *Addiction*. 2009;104(6):927–39.
21. Dow SJ, Kelly JF. Listening to youth: adolescents' reasons for substance use as a unique predictor of treatment response and outcome. *Psychol Addict Behav*. 2013;27(4):1122–31.
22. Hsieh S, Hoffmann NG, Hollister CD. The relationship between pre-, during-, post-treatment factors, and adolescent substance abuse behaviors. *Addict Behav*. 1998;23(4):477–88.
23. Kelly JF, Dow SJ, Yeterian JD, Myers M. How safe are adolescents at Alcoholics Anonymous and Narcotics Anonymous meetings? A prospective investigation with outpatient youth. *J Subst Abuse Treat*. 2011;40:419–25.
24. Kelly JF, Urbanoski K. Youth recovery contexts: the incremental effects of 12-step attendance and involvement on adolescent outpatient outcomes. *Alcohol Clin Exp Res*. 2012;36(7):1219–29.
25. Kennedy BP, Minami M. The Beech hill hospital/outward bound adolescent chemical dependency treatment program. *J Subst Abuse Treat*. 1993;10(4):395–406.
26. Mundt MP, Parthasarathy S, Chi FW, Sterling S, Campbell CI. 12-Step participation reduces medical use costs among adolescents with a history of alcohol and other drug treatment. *Drug Alcohol Depend*. 2012;126(1–2):124–30.
27. Kelly JF, Brown SA, Abrantes A, Kahler CW, Myers M. Social recovery model: an 8-year investigation of adolescent 12-step group involvement following inpatient treatment. *Alcohol Clin Exp Res*. 2008;32(8):1468–78.
28. Kelly JF, Yeterian JD. Mutual-help groups for alcohol and other substance use disorders. In: McCrady BS, Epstein EE, eds. *Addictions: A Comprehensive Guidebook*. New York: Oxford University Press; 2014:500–25.
29. McCrady BS, Miller WR, eds. *Research on Alcoholics Anonymous: Opportunities and Alternatives*. Piscataway, NJ: Rutgers Center of Alcohol Studies; 1993.
30. Kahler CW, Strong DR, Read JP. Toward efficient and comprehensive measurement of the alcohol problems continuum in college students: the brief young adult alcohol consequences questionnaire. *Alcohol Clin Exp Res*. 2005;29(7):1180–9.
31. Vederhus JK, Timko C, Kristensen Ø, Hjemdahl B, Clausen T. Motivational intervention to enhance post-detoxification 12-Step group affiliation: a randomized controlled trial. *Addiction*. 2014;109(5):766–73.
32. Litt MD, Kadden RM, Kabela-Cormier E, Petry N. Changing network support for drinking: initial findings from the network support project. *J Consult Clin Psychol*. 2007;75(4):542–55.
33. Litt MD, Kadden RM, Kabela-Cormier E, Petry NM. Changing network support for drinking: network support project 2-year follow-up. *J Consult Clin Psychol*. 2009;77(2):229–42.
34. Project MATCH Research Group. Matching alcoholism treatments to client heterogeneity: project MATCH posttreatment drinking outcomes. *J Stud Alcohol*. 1997;1–23.
35. Walitzer KS, Dermen KH, Barrick C. Facilitating involvement in Alcoholics Anonymous during out-patient treatment: a randomized clinical trial. *Addiction*. 2009;104(3):391–401.
36. Kaskutas LA, Ye Y, Greenfield TK, Witbrodt J, Bond J. Epidemiology of Alcoholics Anonymous participation. In: Galanter M, Kaskutas LA, eds. *Research on Alcoholics Anonymous and Spirituality in Addiction Recovery. Recent Developments in Alcoholism*. New York, NY: Springer Science + Business Media; 2008:261–82.
37. Sisson RW, Mallams JH. The use of systematic encouragement and community access procedures to increase attendance at Alcoholics Anonymous and AA-Anon meetings. *Am J Drug Alcohol Abuse*. 1981;8(3):371–6.
38. Timko C, DeBenedetti A. A randomized controlled trial of intensive referral to 12-step self-help groups: one-year outcomes. *Drug Alcohol Depend*. 2007;90(2–3):270–9.
39. Timko C, DeBenedetti A, Billow R. Intensive referral to 12-Step self-help groups and 6-month substance use disorder outcomes. *Addiction*. 2006;101(5):678–88.
40. Timko C, Sutkowi A, Cronkite RC, Makin-Byrd K, Moos RH. Intensive referral to 12-step dual-focused mutual-help groups. *Drug Alcohol Depend*. 2011;118(2–3):194–201.
41. Alcoholics Anonymous World Services. 2014 Membership Survey; 2014 [Retrieved September 25, 2015]. Available at: http://www.aa.org/assets/en_US/p-48_membershipsurvey.pdf
42. Narcotics Anonymous World Services. Narcotics Anonymous 2013 Membership Survey; 2013. Retrieved September 25, 2015. Available at: https://www.na.org/admin/include/spaw2/uploads/pdf/PR/NA_Membership_Survey.pdf
43. Kelly JF, Myers MG, Brown SA. The effects of age composition of 12-step groups on adolescent 12-step participation and substance use outcome. *J Child Adolesc Subst Abuse*. 2005;15(1):63–72.
44. Labbe AK, Slaymaker V, Kelly JF. Toward enhancing 12-step facilitation among young people: a systematic qualitative investigation of young adults' 12-step experiences. *Subst Abuse*. 2014;35(4):399–407.
45. Glasgow RE, Lichtenstein E, Marcus AC. Why don't we see more translation of health promotion research to practice? Rethinking the efficacy-to-effectiveness transition. *Am J Public Health*. 2003;93(8):1261–7.
46. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4th ed., text revision ed. Washington, DC: American Psychiatric Association; 2000.
47. Sampl S, Kadden R. *Motivational Enhancement Therapy and Cognitive Behavioral Therapy for Adolescent Cannabis Users: 5 Sessions, Cannabis Youth Treatment (CYT) Series, Volume 1. DHHS Pub. No. (SMA) 01–3486*. Rockville, MD: Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services Administration; 2001.
48. Conrad KM, Conrad KJ, Riley BB, Funk R, Dennis ML. Validation of the treatment satisfaction scale – Likert to the Rasch measurement model. *GAIN Methods Rep*. 2011;1:23–8.
49. Kelly JF, Urbanoski KA, Hoepfner BB, Slaymaker V. Facilitating comprehensive assessment of 12-step experiences: a multidimensional measure of mutual-help activity. *Alcohol Treat Q*. 2011;29(3):181–203.
50. Sobell LC, Sobell MB. Timeline follow-back: a technique for assessing self-reported alcohol consumption. In: Litten RZ, Allen JP, eds. *Measuring Alcohol Consumption: Psychosocial and Biochemical Methods*. Totowa, NJ: Humana Press; 1992:41–72.
51. Miller WR, Del Boca FK. Measurement of drinking behavior using the Form 90 family of instruments. *J Stud Alcohol Suppl*. 1994;12:112–8.
52. Shaffer D, Fisher P, Lucas CP, Dulcan MK, Schwab-Stone ME. NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *J Am Acad Child Adolesc Psychiatry*. 2000;39(1):28–38.
53. Brown SA, Myers MG, Lippke L, Tapert SF, Stewart DG, Vik PW. Psychometric evaluation of the Customary Drinking and Drug Use Record (CDDR): a measure of adolescent alcohol and drug involvement. *J Stud Alcohol*. 1998;59(4):427–38.
54. Garrett C, Kaminer Y. Integrated Motivational Enhancement and Cognitive Behavioral Therapies for Adolescent Alcohol and Substance Use Disorders (MET-2 and CBT-8). Modified from the Cannabis Youth Treatment (CYT) Series (Volumes 1 and 2); 2009.
55. Rounsaville BJ, Carroll KM, Onken LS. A stage model of behavioral therapies research: getting started and moving on from Stage I. *Clin Psychol Sci Pract*. 2001;8(2):133–42.
56. Kelly JF. Do adolescents affiliate with 12-step groups? A multivariate process model of effects. *Diss Abstr Int B*. 2001;62(3-B):1583.
57. Finney JW. Enhancing substance abuse treatment evaluations: examining mediators and moderators of treatment effects. *J Subst Abuse*. 1995;7(1):135–50.
58. Suchman EA. *Evaluative Research: Principles and Practice in Public Service and Social Action programs*. New York: Russell Sage Foundation; 1967.