Journal of Substance Abuse Treatment 69 (2016) 28–34

Contents lists available at ScienceDirect

Journal of Substance Abuse Treatment

Moderators of brief motivation-enhancing treatments for alcohol-positive adolescents presenting to the emergency department

Sara J. Becker, Ph.D. [a,*], Richard N. Jones, Ph.D. [b], Lynn Hernandez, Ph.D. [a], Hannah R. Graves, Sc.M. [b], Anthony Spirito, Ph.D. [b]

[a] Center for Alcohol and Addictions Studies, Brown University School of Public Health
[b] Department of Psychiatry and Human Behavior, Brown University Medical School

ARTICLE INFO

Article history:
Received 8 March 2016
Accepted 27 June 2016
Available online xxxx

Keywords:
Adolescent
Motivation-enhancement therapy
Moderator
Emergency department

ABSTRACT

A 2011 randomized controlled trial compared the effectiveness of two brief motivation-enhancing therapy (MET) models among alcohol-positive adolescents in an urban emergency department: adolescent MET-only versus MET + Family Check-Up (FCU), a parent MET model. Results indicated that among the 97 adolescents completing the 3-month assessment, both conditions were associated with reduced drinking and MET + FCU was associated with lower rates of high volume drinking than adolescent MET-only. The goal of this study was to identify predictors and moderators of high volume drinking in the original trial. Seven candidate variables were evaluated as moderators across three domains: demographic characteristics, psychological factors, and socio-contextual factors. Analyses of covariance models identified one significant predictor and one significant moderator of outcome. Older adolescents had significantly worse drinking outcomes than younger adolescents regardless of MET condition. Adolescents whose parents screened positive for problematic alcohol use at baseline had significantly worse drinking outcomes in the MET + FCU condition than the MET-only condition. Results indicate that alcohol-positive adolescents presenting to the emergency department may respond better to MET models if they are under the age of 16. Involving parents who have problematic alcohol use in a parent-focused MET may have negative effects on adolescent high volume drinking.

1. Introduction

Integrating alcohol and other drug use interventions for adolescents into traditional medical settings has been recognized as an area of public health importance (Addiction Technology Transfer Center Workgroup, 2015). The emergency department (ED) visit offers a unique opportunity to screen adolescents for alcohol problems and offer brief intervention, due to extremely high rates of alcohol-related problems in this setting (D'Onofrio et al., 2012; McDonald, Wang, & Camargo, 2004).

Two recent systematic reviews by Tanner-Smith and Lipsey (2015) and Mitchell, Gryczynski, O'Grady, and Schwartz (2013) identified a total of seven randomized controlled trials that have evaluated brief interventions incorporating motivational enhancement therapy (MET) principles among adolescents under the age of 18 in the ED (Bernstein et al., 2009, 2010; Cunningham et al., 2012; Johnston, Rivara, Droesch, Dunn, & Copass, 2002; Spirito et al., 2004; Spirito et al., 2011; Walton et al., 2010). Since these reviews were published, another randomized controlled trial by Cunningham and colleagues (2015) tested three conditions among adolescents age 14 to 20 presenting to the ED: MET delivered by a therapist, MET delivered by computer, and brief assessment.

Of the eight randomized clinical trials that included participants under the age of 18, seven focused specifically on alcohol use outcomes, five compared MET to brief assessment, and three compared MET to active comparison conditions. The pattern of results across these studies generally indicated that all of the conditions – MET, brief assessment, and active control - were associated with significant reductions in drinking frequency and drinking-related consequences. Only one of the five studies comparing MET and brief assessment (Spirito et al., 2004) found any evidence indicating that the MET condition was associated with superior drinking outcomes; over the 12 month follow-up period, MET was associated with lower rates of overall drinking days and high volume drinking days (i.e., days of 4 drinks for females and 5 drinks for males) than brief assessment, but only among the subgroup of adolescents who screened positive for problematic alcohol use at baseline.

In an attempt to enhance the performance of MET in the ED setting, Spirito and colleagues conducted a subsequent 2011 trial examining whether MET delivery could be improved by the addition of the Family Check-Up (FCU; Dishion & Kavanagh, 2003). The FCU is an assessment and feedback intervention, consistent with an MET approach, designed to enhance parental recognition of youth risk behaviors and increase parental motivation to reduce these behaviors and associated risk factors

* Corresponding author at: Center for Alcohol and Addictions Studies at Brown University School of Public Health, 121 South Main Street | 5th Floor, Providence, RI 02903. Tel.: +1 401 863 6604.
E-mail address: sara_becker@brown.edu (S.J. Becker).

http://dx.doi.org/10.1016/j.jsat.2016.06.014
0740-5472/

(Dishion, Kavanagh, Schneiger, Nelson, & Kaufman, 2002). It consists of a family assessment task followed by a feedback session with the parent. The FCU was developed to target specific parent risk and protective factors linked to adolescent alcohol and drug use such as parental substance use, parental monitoring of peer substance involvement, and the nature of the parent–teen relationship (Dishion, Nelson, & Kavanagh, 2003; Dishion et al., 2002).

Using a two-group design with three follow-up points (3-, 6-, and 12-months), the Spirito et al. (2011) trial randomly assigned 125 adolescents aged 13 to 17 who presented to the ED for an alcohol-related event to either adolescent MET only or MET + FCU. Consistent with other trials testing two active conditions, results indicated that both conditions were associated with reductions in drinking across all three follow up points, with the strongest effects at the 3-month follow-up. At 3 months, there was a main effect favoring MET + FCU in the proportion of adolescents reporting any high-volume drinking days over the past 90 days, with rates of 14.6% in MET + FCU versus 32.1% in MET only ($p < .05$). At both 6 and 12 months, rates of adolescents reporting high volume drinking over the past 90 days were significantly lower than at baseline but there was no significant difference between the two conditions (6 months: 27.0% MET + FCU vs. 43.6% MET; 12-months: 48.6% MET + FCU vs. 58% MET). These findings provided preliminary indication of the acute benefits of adding a parent FCU to adolescent MET.

Detecting treatment differences at the group level represents only the first step in understanding the effects of the two MET models among adolescents presenting to the ED. A critically important remaining question is which treatment approach (adolescent MET only or MET + FCU) is optimal for which adolescent presenting to the ED. Addressing this question requires the identification of moderator variables, defined as variables that are present before treatment, are independent of treatment assignment, and have an interactive effect with treatment condition (see Kraemer, Wilson, Fairburn, & Agras, 2002; Wallace, Frank, & Kraemer, 2013). In contrast to predictor variables, which indicate which teens are most likely to respond to any treatment, moderator variables indicate which adolescents are most likely to benefit from a specific treatment approach and have prescriptive value (see Baron & Kenny, 1986). Identifying which ED patients are most likely to benefit from a specific intervention can support empirically informed triaging decisions, which in turn promotes more judicious allocation of services in this resource constrained environment.

1.1. Selection of candidate variables

The purpose of this article was to conduct analyses of predictors and moderators of 3-month treatment outcome among the 97 alcohol-abusing adolescents in the Spirito et al. (2011) study who received one of the two MET models and were included in the acute outcome analysis. We focus on predictors and moderators of outcome at the 3-month assessment because: a) both MET conditions had their maximum effects at 3-months; b) the 3-month outcome was the only timepoint at which treatment differences were found; and c) other randomized clinical trials in the ED have similarly found that brief MET interventions have their maximum effects at 3-months.

Identifying moderators of treatment outcome requires at least two treatment conditions and larger sample sizes than are often recruited for efficacy studies (see Kraemer et al., 2002). Consequently, prior research on moderators of adolescent substance use treatment outcome is relatively scant (see Strada, Donohue, & Lefforge, 2006). A 2011 review by Becker, Curry, and Yang identified 14 variables that had been shown to significantly predict or moderate adolescent substance use post-treatment. These variables were organized into four broad categories: adolescent biological/demographic status, adolescent psychological factors, family factors, and social network factors. A more recent review by Hernandez, Lavingne, Wood, and Weirs (2015) grouped potential moderators into three domains based on developmental theory: biological/demographic factors, psychological factors, and socio-contextual factors. The biological/demographic and psychological domains were identical to those discussed by Becker and colleagues (2011), whereas the socio-contextual domain encompassed both family and social network factors. We used the three domains identified in the more recent integrative review by Hernandez et al. (2015) to guide the current analysis of predictors and moderators.

To avoid spurious results that capitalize on chance, we limited our testing to one candidate variable per 10–15 subjects for a total of seven putative moderators (see Curry et al., 2006). We selected at least two candidate variables from each of the three categories, based on those measures that were available in the initial dataset. For the demographic category, we selected three variables: sex, age, and Hispanic ethnicity. Sex and age were selected because they have been found to differentially influence adolescents' response to treatment in more than one trial (e.g., Henggeler, Pickrel, & Brondino, 1999; Kaminer, Burleson, & Goldberger, 2002). Hispanic ethnicity was also included because it is a frequently examined moderator that has mixed support. For instance, Clair et al. (2013) found that Hispanic adolescents responded better to an MET model than relaxation therapy, while other studies and literature reviews (e.g., Becker, Stein, Curry, & Hersh, 2012; Strada et al., 2006) have failed to find evidence that race/ethnicity moderated adolescent treatment outcome. For psychological factors, we focused on severity of alcohol use and depressed mood. Baseline alcohol use severity has consistently been found to be a significant predictor of treatment outcome (Coatsworth, Santisteban, McBride, & Szapocznik, 2001; Tamm et al., 2013), and was found to moderate treatment outcome in the Spirito et al. (2004) trial. Meanwhile, depressed mood is common among adolescent substance users (Grant et al., 2006; Kandel et al., 1999) and has demonstrated a mixed relationship with treatment outcome depending on the characteristics of the sample and the intervention (see Hersh, Curry, & Kaminer, 2014). Finally, for the socio-contextual domain, we included one measure of family factors and one measure of peer factors, as both have been independently associated with adolescent substance use outcomes (Kiesner, Poulin, & Dishion, 2010; Van Ryzin, Fosco, & Dishion, 2012). We selected problematic parent alcohol use as our indicator of family factors and peer substance involvement as our indicator of peer factors.

Although these analyses were designed to be exploratory, a few specific hypotheses were postulated. For predictors, we expected baseline alcohol use and depressed mood to be associated with poorer treatment response across both conditions. For moderators, we expected adolescents with higher levels of parental alcohol use and peer substance involvement to have better outcomes in the MET + FCU condition, due to the FCU's emphasis on promoting parental awareness and monitoring (Dishion et al., 2002). We did not have specific hypotheses about the three demographic variables.

2. Method

The study participants, procedures, and treatment conditions have been described in detail previously (Spirito et al., 2011) and are briefly summarized below.

2.1. Participants

Adolescents were recruited in an urban level I trauma center in the Northeast United States. To be eligible, adolescents needed to self-report drinking of alcohol in the six hours before the ED visit or exhibit a positive blood alcohol concentration as tested using blood, breath, or saliva. Forty-two alcohol-positive adolescents were not approached to participate due to experiencing severe traumatic injury (n = 21), being actively suicidal (n = 17), or not speaking English or Spanish as the primary language (n = 4). Of 264 adolescents who were approached, 125 (47%) agreed to participate. Intoxication was the primary reason for admission in the majority (74%) of participants,