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Mary Clair

University of Rhode Island

L.A.R. Stein

University of Rhode Island, larstein@uri.edu

See next page for additional authors

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Authors

Mary Clair, L.A.R. Stein, Shayna Soenksen, Rosemarie A. Martin, Rebecca Lebeau, and Charles Golembeske



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Ethnicity as a moderator of motivational interviewing for incarcerated adolescents after release

Mary Clair, Ph.D.^{a,b,*}, L.A.R. Stein, Ph.D.^{a,b,c}, Shayna Soenksen, M.S.^a, Rosemarie A. Martin, Ph.D.^c, Rebecca Lebeau, Ph.D.^a, and Charles Golembeske, Ph.D.^b

Mary Clair: mclair@uri.edu

^aSocial Sciences Research Center, University of Rhode Island, Kingston, RI 02881, USA

^bThe Rhode Island Training School, Cranston, RI 02920, USA

^cCenter for Alcohol and Addiction Studies, Brown University, Providence, RI 02906, USA

Abstract

Motivational interviewing (MI) has been found to be an effective treatment for substance using populations, including incarcerated adolescents. Although some studies suggest MI is more successful with individuals from minority backgrounds, the research remains mixed. The current study investigated the impact of ethnicity on treatment in reducing alcohol and marijuana use among incarcerated adolescents. Adolescents (14–19 years of age) were recruited from a state juvenile correctional facility and randomly assigned to receive MI or relaxation therapy (RT) ($N=147$; 48 White, 51 Hispanic, and 48 African American; 126 male; 21 female). Interviews were conducted at admission to the facility and 3 months after release. Results suggest that the effects of MI on treatment outcomes are moderated by ethnicity. Hispanic adolescents who received MI significantly decreased total number of drinks on heavy drinking days (NDHD) and percentage of heavy drinking days (PHDD) as compared to Hispanic adolescents who received RT. These findings suggest that MI is an efficacious treatment for an ethnic minority juvenile justice-involved population in need of evidence-based treatments.

Keywords

Adolescents; Incarceration; Motivational interviewing; Ethnicity; Alcohol

1. Introduction

1.1. Adolescent crimes and substance use

Crimes committed by adolescent offenders are often connected to alcohol and other drug use (Mulvey et al., 2010; National Institute of Justice, 1997; 2003). Among juvenile offenders, lifetime prevalence rates of alcohol and marijuana use have been found to be as high as 80 and 85% respectively, with 40% reporting alcohol use and 57% reporting marijuana use in the past 6 months (Mulvey et al., 2010). Furthermore, substance use is positively associated with the rate and severity of offending (Greenwood, 1992; Lipsey & Derzon, 1998; Sealock et al., 1997). Perhaps most alarming is the relationship between substance use and violent crime that exists within this population (Mulvey et al., 2010). Alcohol use in particular has

consistently been found to be associated with violent crime among incarcerated juveniles (Lennings et al., 2003).

1.2. Ethnic differences in substance use

Despite a clear connection between substance use and crimes, there is little understanding of the nature of substance use and its contributing factors across ethnic groups involved in the juvenile justice system (Feldstein Ewing et al., 2012). When compared to their White counterparts, minority adolescent offenders have been found to have lower rates of substance use and other risk factors but greater levels of impairment following their involvement with the justice system (Feldstein Ewing et al., 2011). It is important to look at factors that influence substance use, such as individual characteristics, across ethnic groups. For example, one recent study found that compared to White adolescents, higher lifetime substance use among Hispanic adolescents was mediated by negative expectancies and resistance self-efficacy (individual factors). Compared to White adolescents, lower lifetime substance use among Asian adolescents was mediated by positive and negative expectancies and resistance self-efficacy (individual factors) (Shih et al., 2010). Given these findings, treatment approaches that target substance use expectancies and self-efficacy with incarcerated adolescents, such as motivational interviewing (MI), should be investigated as they may differentially impact ethnic populations.

1.3. Motivational interviewing with offenders

One efficacious intervention for adolescent and adult offenders is MI (Feldstein & Ginsburg, 2006; McMurran, 2009). Studies with offenders have found that MI increases motivation and confidence to reduce substance use (Mendel & Hipkins, 2002; Slavet et al., 2005; Vanderberg, 2003). Specifically among adolescent offenders, MI has been found to reduce negative treatment engagement, (Stein et al., 2006b), risky behaviors (Rosengard et al., 2007; Stein et al., 2006a; Stein et al., 2011), and substance use (Stein et al., 2011). Further, a group intervention of motivational enhancement therapy for detained adolescents found that self-efficacy is an important mechanism of change (Schmiege et al., 2009). Self efficacy is related to behavioral intentions, which significantly predicts later risky sexual behavior (Schmiege et al., 2009).

1.4. Motivational interviewing with ethnic minority groups

Approximately 61% of juvenile offenders in custody are members of an ethnic minority group; 28% identify as Black, 19% Hispanic/Latino, 2% Asian, and 2% Indian (Snyder & Sickmund, 2006). Evidence supporting the efficacy of MI among ethnic minority groups remains mixed. Some studies have found support for the efficacy of MI with non-incarcerated Hispanic/Latino adults and adolescents whose primary substance was alcohol (Carroll et al., 2009; D'Amico et al., 2008). Furthermore, a meta-analysis conducted by Hettema et al. (2005) concluded that MI produces significantly larger effects for minority samples than for non-minority White samples. A more recent meta-analysis similarly found MI to be more successful with individuals from minority ethnic groups (Lundahl et al., 2010). Among minority ethnic adolescents, MI has produced reductions in binge drinking episodes, frequency of alcohol and marijuana use, affiliation with substance using peers, and alcohol related consequences (D'Amico et al., 2008; Gil et al., 2004; Schmiege et al., 2009; Walton, et al., 2010). The success MI among minority populations may be attributed to the person-centered approach of the intervention which may make it more compatible and attractive to groups who have experienced societal rejection (Lundahl et al., 2010).

However, results from other studies suggest that MI is not advantageous for African Americans (Befort et al., 2008; Lundahl et al., 2010; Tonigan et al., 2003) or Hispanic/Latino Americans (Arroyo et al., 2003). Some suggest certain ethnic groups may want to

receive help from an expert, may prefer client–therapist power differentials, or may not feel comfortable with a strong person-centered approach (Hays, 2009; Lopez Viets, 2007; Miller et al., 2010). Moreover, mechanisms of change may differ across ethnic groups. For example, one ethnic group may find community-oriented cognitions (e.g., ability to navigate peer influences) salient while another group may find individual-oriented internal cognitions (e.g., motivation for change) more important (Feldstein Ewing et al., 2011).

Such divergent findings suggest it is important to examine how treatment approaches such as MI may differentially impact substance use among ethnic populations in the juvenile justice system. The purpose of the current study was to investigate the influence of ethnicity on treatment in reducing alcohol and marijuana use among incarcerated adolescents after release. We know of no studies to date focusing on the potential moderating effects of ethnicity when examining the impact of MI on substance use for incarcerated youth. This represents an underserved and diverse population in great need. These data were collected as part of a parent study examining the impact of MI on substance use.

2. Materials and methods

2.1. Participants

The participants were recruited over a 5 year period at a state juvenile correctional facility in the Northeast (April, 2001 to March, 2006). Potential participants were identified immediately after adjudication if they were between the ages of 14 and 19 years (inclusive) and were sentenced to the facility for between 4 and 12 months (inclusive). Substance use inclusion criteria included: (1) in the year prior to incarceration they (1a) used marijuana or drank regularly (at least monthly), or (1b) they binge-drank (5 standard drinks for boys; 4 for girls) at least once; (2) they used marijuana or drank in the 4 weeks before the offense for which they were incarcerated; or (3) they used marijuana or drank in the 4 weeks before they were incarcerated.

There were 189 adolescents who completed the baseline assessment. Of these, 181 participants completed the 3-month post-release follow-up; five could not be located for follow-up, and three adolescents withdrew from the study prior to completion of the 3-month follow-up. Most of the sample was male (85.7%) with a mean age at baseline of 17.12 years (standard deviation, $SD = 1.10$). In the previous year, most had a marijuana diagnosis (89%; 16% abuse and 73% dependence), and over half (59%) had an alcohol diagnosis (24% abuse and 35% dependence). The median number of times adolescents had been previously incarcerated was 2.

There were no differences between those who completed the 3 month follow-up and those who did not on gender, ethnic status, or mother's education (a marker for socio-economic status). Adolescents who did not complete the 3-month follow-up were significantly older ($M = 18.13$, $SD = 0.90$) than those who completed the follow-up ($M = 17.07$, $SD = 1.09$), $t(187) = 2.71$, $p < .01$. Adolescents in a controlled environment for 50% of days during the baseline or 3 month-follow-up period were removed from analyses ($n = 19$) and 15 participants did not identify with White, African-American, or Hispanic ethnic backgrounds, leaving a sample of $N = 147$ [note: the term Hispanic was used consistent with the United States Census, which uses Hispanic to refer to “a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race” (Rastogi et al., 2011)]. Of this sample, 48 were White, 51 were Hispanic, and 48 were African American.

2.2. Procedures

Initial screening was based on record review for age and sentence length, followed by screening the potential participant for the substance use criteria described above. Institutional review board approval for all procedures was obtained as well as consent from legal guardians and assent from adolescents (adolescents 18 years or older provided consent). Guardians and adolescents were given the limits of confidentiality. (i.e., except for plans to escape, hurt self or others, reports of child abuse and/or neglect). After the participant was recruited, the baseline assessment was conducted, and the adolescent was randomly assigned to a single session of individual treatment, either MI or relaxation therapy (RT). After treatment, the adolescents enrolled in standard facility substance use programming (see Stein et al., 2011 for a full description of the facility and the standard substance use programming). Approximately 2 weeks before facility discharge, they received booster intervention (MI or RT). Research staff blind to treatment assignment conducted a follow-up assessment 3 months after release from the facility. Randomization was accomplished via random numbers table in advance and placed in an envelope by the project coordinator. Following baseline assessment, treatment providers opened the envelope to learn of intervention assignment.

2.3. Assessment

Trained bachelor's (BA/BS) or master's (MA)-level research assistants conducted the 60–90 minutes of private interview assessments. Interview format was used due to concerns about reading levels of the participants. Research assistants' training and supervision are detailed elsewhere (Stein et al., 2006a; Stein et al., 2011). Record reviews were completed following completion of the baseline assessments. Follow-up assessments were conducted 3 months after release from the facility with adolescents receiving a \$60 gift certificate and a \$10 bonus if they completed the interview within 1 week of the scheduled date.

2.4. Study interventions

Shortly after the baseline assessment, adolescents were randomly assigned to and received intervention (MI or RT), in order to prepare them for the standard facility substance use programming. Research counselors were two men and two women, all four were Caucasian, one had an MA degree and three had BA/BS degrees. Each research counselor conducted both intervention types and received about 56 hours of manualized training with 2 hours of group and 1 hour of individual supervision per week. To maintain fidelity to treatment, in vivo observations were conducted by a licensed clinical psychologist. Interventions were about 90 minutes at baseline and about 60 minutes at booster.

2.4.1. Motivational interviewing—Miller and Rollnick's (2002) principles of MI were the basis of the intervention protocol. The protocol included developing rapport, exploration of motivation (pros and cons), personalized assessment feedback, imagining the future with and without change, and establishing goals. Handouts were provided, including goal sheets. The intervention focused on reducing alcohol and/or marijuana use and associated risky behaviors and consequences of use (e.g., injuries while drunk/high).

2.4.2. Relaxation training—RT was designed to control for the effects of attending an individual intervention. Participants were instructed in progressive muscle relaxation and use of imagery to produce a sense of calm. Adolescents received feedback in the use of the techniques, and they were provided handouts on progressive muscle relaxation. Research counselors maintained rapport and provided general advice to stop risky activities involving alcohol and marijuana use. The rationale for RT was that these techniques can reduce the

stress that can lead to substance use such as alcohol and marijuana; thus, these techniques may lead to reduced substance use and their associated risky behaviors and consequences.

2.5. Measures

2.5.1. Record review—Adolescents were informed at the start of the study that records would be reviewed at baseline assessment to verify self-reports of alcohol/marijuana use and illegal activity.

2.5.2. Background questionnaire—At baseline assessment, socio-demographic information was recorded including age, gender, ethnicity, number of years of school completed, and parent/guardian educational level.

2.5.3. Timeline followback (TLFB)—Time-line follow-back is a calendar-assisted approach that measures participants' recollection of their substance use over a specified period of time (Sobell & Sobell, 1992). It has been used to assess substance use (Bardone et al., 2000; Midanik et al., 1998; Sobell & Sobell, 1992; Stein et al., 2011). TLFB has been shown to have excellent reliability (α 's = .79 to .98; Sobell et al., 1979) and strong content, criterion, and construct validity. A 90 day TLFB measuring alcohol and marijuana use was collected at baseline and at follow-up after release.

2.6. Analyses

Analysis of covariance (ANCOVA) was used to determine the impact of ethnicity on treatment to reduce alcohol and marijuana use. Tests were conducted using Bonferroni hypothesis-wide adjusted alpha levels of .025 (.05/2 dependent variables per substance). Alcohol and marijuana use variables were log-transformed to correct skewness (no transformation was needed for percentage of days used marijuana). Dependent marijuana use variables (DV's) at 3-months post-release assessment were average number of joints smoked on smoking days (MJSD) and percentage of days used marijuana (PDM). Since the focus of this study is on heavy drinking, total number of drinks on heavy drinking days (NDHD) and percentage of heavy drinking days (PHDD) were alcohol use dependent variables. Heavy drinking was defined as four or more for girls and five or more for boys. For each ANCOVA, the covariate was the corresponding baseline measure of the DV, and the independent variables (IVs) were intervention condition and ethnicity along with the interaction of intervention condition and ethnicity. The baseline value of the DV was included in analyses to balance groups on covariates. Adjusting for these covariates improves the efficiency of the analysis and provides stronger evidence of the treatment effect (Assmann et al., 2000).

3. Results

No significant differences were found between treatment groups on relevant baseline variables including gender, age, ethnicity, or mother's education level. Randomization of ethnic groups to treatment was equal ($\chi^2 = 2.317, p = .314$). Significant differences were found between ethnic groups at baseline for the transformed alcohol variables. White teens drank significantly more total drinks on heavy drinking days ($M = 2.13, 95\%, CI [1.94, 2.33]$) than African American teens ($M = 1.58, 95\%, CI [1.32, 1.85]$) and had a higher percentage of heavy drinking days ($M = 1.03, 95\%, CI [.86, 1.20]$) than African American teens ($M = .4586, 95\%, CI [.30, .62]$) and Hispanic teens ($M = .72, 95\%, CI [.55, .89]$). No other differences were significant between ethnic groups. No significant results were found for any of the marijuana TLFB variables in terms of main outcomes or interaction effects so these analyses are not presented. Means and standard deviations for baseline alcohol and marijuana use variables are presented in Table 1.

Significant main effects and the interactions are presented in Table 2. Significant main effects were found for ethnicity on total number of drinks on heavy drinking days (NDHD), but no main effects were found for ethnicity on percentage of heavy drinking days (PHDD). There was a significant treatment by ethnicity interaction for total number of drinks on heavy drinking days (NDHD) and percentage of heavy drinking days (PHDD) (Figs. 1 and 2).

Table 3 presents results of simple-effects tests for significant interactions. Hispanic adolescents who received MI significantly decreased total number of drinks on heavy drinking days (NDHD) and percentage of heavy drinking days (PHDD) as compared to Hispanic adolescents who received RT.

4. Discussion

The present study investigated the moderating effects of ethnicity on treatment outcomes for substance-using, incarcerated adolescents. Significant treatment by ethnicity interactions were found. Hispanic adolescents who received MI reported a significant decrease in the total number of drinks consumed on heavy drinking days and the percentage of heavy drinking days compared to Hispanic adolescents who received RT. These findings are consistent with earlier research that found MI to be efficacious among Hispanic populations (Carroll et al., 2009; D'Amico et al., 2008; Drenner, 2009; Henslee et al., 2009; Ritamarie, 2010; Robles et al., 2004).

Contrary to expectations, ethnicity was not found to moderate the effects of treatment on marijuana use outcomes. This lack of significant findings may result from both treatments working equally well for marijuana. However, the present study findings are consistent with previous research that found MI to be differentially effective for Hispanic individuals with alcohol use problems (Carroll et al., 2009; D'Amico et al., 2008). Additional research is needed to further elucidate the differential impact of MI on alcohol and marijuana use outcomes among Hispanic populations.

The success of MI with Hispanic populations has been hypothesized to result from the congruence between MI principles and cultural-specific Hispanic values. Añez et al. (2008) propose that personalismo (preference for a relationship with individuals rather than institutions), respeto (respect), and confianza (trust and intimacy in a relationship) are significant constructs in the daily lives of Hispanic culture. The compatibility between these constructs and MI principles suggest that MI is a culturally congruent treatment for this ethnic minority population. Further, some findings indicate that Hispanic adolescent substance use is mediated by expectancies and self-efficacy (Shih et al., 2010). Since MI often targets negative and positive expectancies for substance use and aims to improve self-efficacy, this intervention may be efficacious for juvenile justice-involved Hispanic adolescents.

Findings should be interpreted with caution due to several limitations. The sample consisted of incarcerated adolescents, most of whom were male. This may limit the generalizability of the findings. Also, the study did not include measures of acculturation, which may have helped to refine the ethnic categories. Further, the study relied primarily on self-report methods; however, research suggests such methods are generally accurate (Babor et al., 2002). In addition, Stein et al. (2011) demonstrated that this sample generally reported accurately when examining self-report against biological testing and record review. Although the present study is limited by the relatively brief follow-up period, this is common when treatment effects are initially being established. Furthermore, baseline differences between groups, even when controlled statistically, can affect outcomes. For example, African American youths drank less at baseline and thus have much less room to

improve with treatment, making differential treatment effects difficult to detect. Future research may consider replicating these findings with a larger sample that includes more females and a longer follow-up period. Also, these are secondary analyses that need replication in a study powered to study interactive effects. Despite these limitations, the present study findings remain significant as they are among the first to suggest that MI is an efficacious treatment for an ethnic minority juvenile justice-involved population in need of evidence-based interventions.

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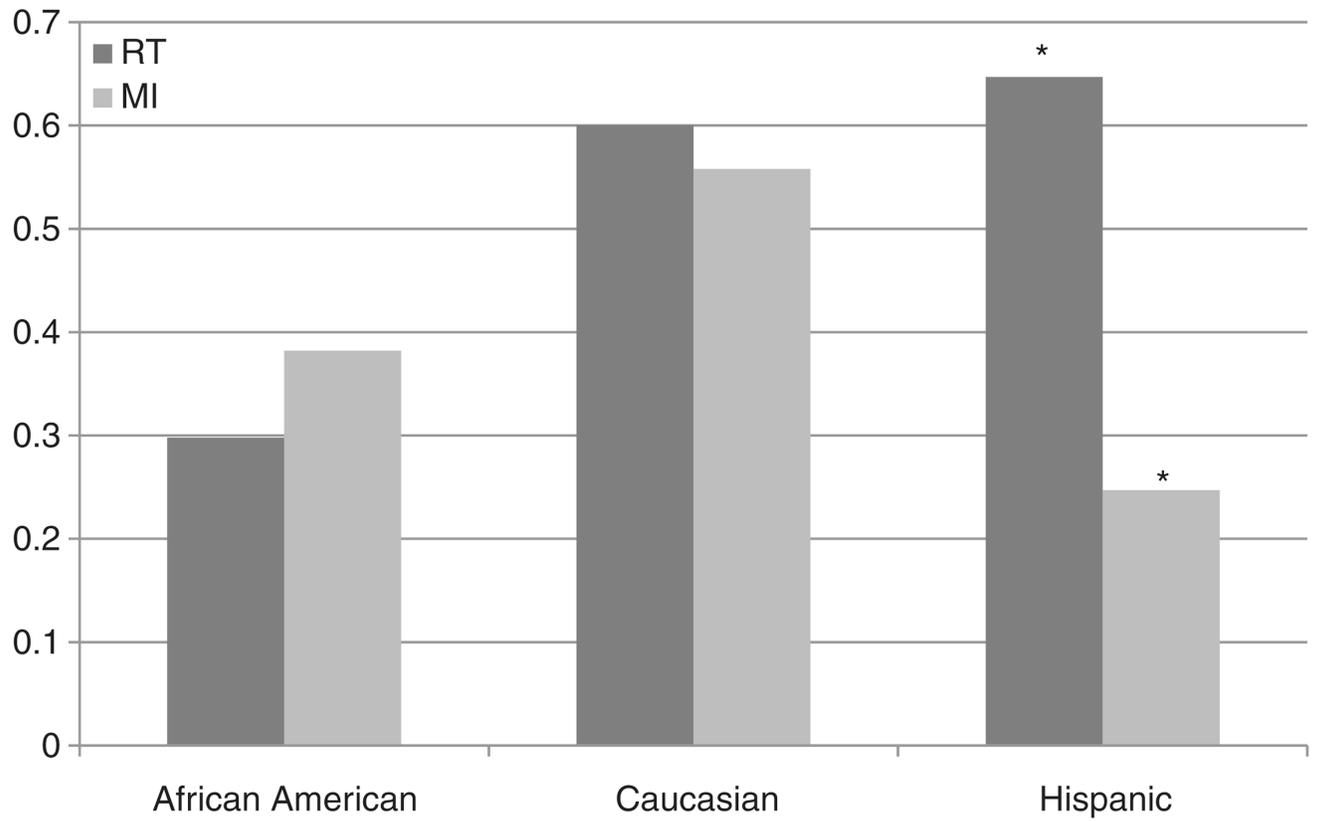


Fig. 1. Treatment by ethnicity interaction for percentage of heavy drinking days (PHDD; log-transformed) at 3-month follow-up. RT = relaxation therapy; MI = motivational interviewing; * $p < .05$.

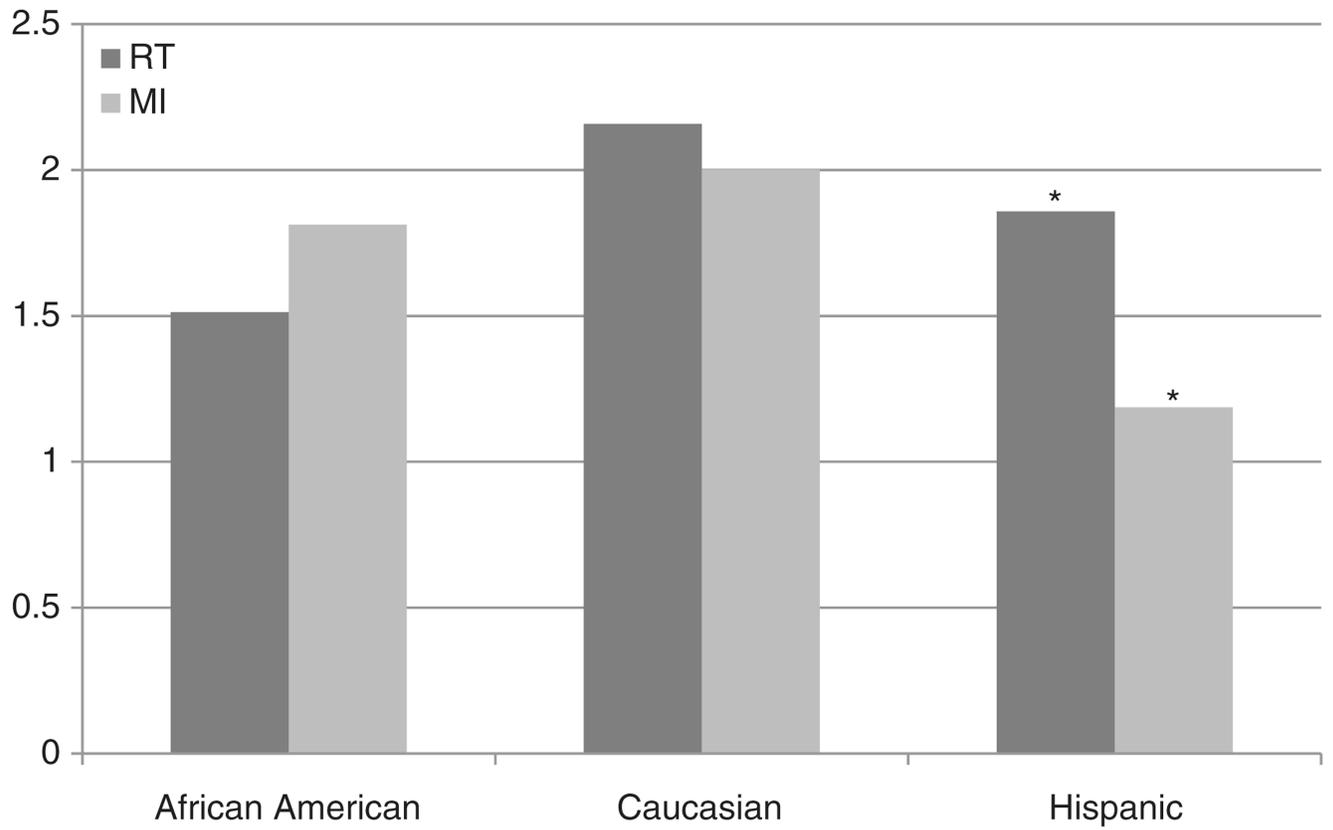


Fig. 2. Treatment by ethnicity interaction for total number of drinks on heavy drinking days (NDHD; log-transformed) at 3-month follow-up. RT = relaxation therapy; MI = motivational interviewing; * $p < .05$.

Table 1

Means and standard deviations for covariates at baseline.

Variable	Race/ethnicity								
	African American		Caucasian		Hispanic				
	M	SD	n	M	SD	n			
NDHD	137.92 ^a	198.58	25	354.07 ^a	520.40	40	176.01	223.96	38
PHDD	8.70 ^b	18.75	46	22.74 ^b	28.50	45	12.59	18.21	51
MJSD	7.59	6.55	44	6.64	6.25	40	9.55	9.85	47
PDM	66.35	36.23	46	66.62	38.20	45	72.75	39.28	51

Notes: Data shown are not log transformed. NDHD = total number of drinks from heavy drinking days; PHDD = percentage of heavy drinking days; MJSD = average number of joints smoked on smoking days; PDM = percentage of days used marijuana. Means with common letters are significantly different.

Table 2

Main effects and interaction effects for treatment condition and ethnicity on outcomes.

Variable	Tx effects		Ethnicity effects		Tx by ethnicity effects	
	<i>F</i> ^a	η^2	<i>F</i> ^a	η^2	<i>F</i> ^a	η^2
NDHD	1.57 (1, 60), <i>p</i> = .216	.025 ^b	7.84 (2, 60), <i>p</i> < .001	.207 ^c	3.71 (2, 60), <i>p</i> < .05	.110 ^c
PHDD	2.340 (1, 140), <i>p</i> = .128	.016 ^b	2.778 (2, 140), <i>p</i> = .066	.038 ^b	3.520 (2, 140), <i>p</i> < .05	.048 ^d

Notes: η^2 is partial η^2 . Tx = treatment. NDHD = total number of drinks from heavy drinking days; PHDD = percentage of heavy drinking days.

^a *F*-statistic provided with degrees of freedom and associated *p* levels.

^b Small effect size (Cohen, 1988).

^c Large effect size. Tests were conducted using Bonferroni hypothesis-wide adjusted alpha levels of .025 (.05/2 dependent variables per substance).

^d Medium effect size.

Table 3

Follow-up tests comparing ethnicity within treatments.

Variable	MI vs. RT		
	African American	Caucasian	Hispanic
NDHD			
F^a	.943 (1, 60), p .335	.640 (1, 60), p .427	10.27 (1, 60) p .05
η^2	.015 ^b	.011 ^b	.146 ^c
PHDD			
F^a	.364 (1, 140), p .547	.097 (1, 140), p .756	9.314 (1, 140), p .003
η^2	.003 ^b	.001 ^b	.062 ^d

Notes: η^2 is partial η^2 ; MI = motivational interviewing; RT = relaxation therapy; NDHD = total number of drinks from heavy drinking days; PHDD = percentage of heavy drinking days.

^a F statistic provided with degrees of freedom and associated p levels.

^bSmall effect size (Cohen, 1988).

^cLarge effect size.

^dMedium effect size.