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Impact of Ethnic Composition on Mechanisms of Change in School-based Substance Use Intervention Groups

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Abstract

Delivering alcohol use intervention services in the school setting represents a key approach to engaging youth of all backgrounds, particularly underserved populations, in such programming. Relative progress has been made toward implementing culturally responsive services for youth; however, little is known about the role of ethnic composition on group processes purported to underlie mechanisms of change. We examined associations between ethnic group composition and therapeutic processes within a voluntary, school-based alcohol use intervention at seven schools across three cities (N groups = 353). Ethnic composition was characterized as: group ethnic diversity on a continuum, group ethnic homogeneity (i.e. where at least 66% of participants shared the same ethnicity), and comparing groups where one of the three largest ethnicities in the sample reached the majority (i.e. African-American vs. Hispanic vs. non-Hispanic White). Ratings on group processes were obtained from participants (satisfaction; belonging), facilitators (empathy;

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b. Disclosure of potential conflicts of interest

The authors declare that they have no conflict of interest.

c. Research involving Human Participants

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Compliance with Ethical Standards

d. Informed consent

Informed consent was obtained from all individual participants and their parents included in the study.

rapport), and coders (engagement; responsiveness). Mixed-effects models revealed that students in groups with African-American and Hispanic majorities reported a higher sense of satisfaction compared to groups with non-Hispanic White majorities. Facilitators endorsed expressing empathy more frequently with majority African-American and Hispanic groups than with non-Hispanic White groups. Study findings highlight the importance of considering different dimensions of ethnic composition when examining mechanisms of change in group intervention research.

Keywords

group processes; group ethnic composition; school-based interventions

Alcohol remains the most widely used substance by high school students, with two thirds of seniors (66%) reporting lifetime drinking and over a third (37%) drinking in the past month (Miech, Johnston, O'Malley, Bachman, & Schulenberg, 2015). Non-Hispanic White youth reported a higher incidence of drinking and drunkenness but similar past month drug use rates when compared with African American and Hispanic adolescents (Miech et al., 2015). While ethnic minorities evidence substantially higher rates of substance-related problems (e.g., legal troubles, drinking and driving, and experiencing violence; Center for Disease Control and Prevention, 2010; Feldstein Ewing, Wray, Mead, & Adams, 2012; Lopez-Viets, Aarons, Ellingstad, & Brown, 2003), minority youth with substance use problems were less likely to receive intervention than their non-Hispanic White counterparts (Alegria, Carson, Goncalves, & Keefe, 2011), due to decreased access (Institute of Medicine, 2002) and utilization of services (Garland et al., 2005; Wagner, Tubman, & Gil, 2004). Ethnic minority youth also have lower substance use intervention completion rates (Becker, Stein, Curry, & Hersh, 2012; Saloner, Carson, & Le Cook, 2014).

School-based Substance Use Services

One strategy for reaching and engaging youth of all backgrounds, particularly underserved groups, is to offer intervention and prevention services at schools (Wagner et al., 2004). Compared to more traditional, clinic-based substance use interventions, school-based programs take services directly to youth in their daily environment, thereby offering greater access to information and care to those who need it. The delivery format of these services is most commonly group based (D'Amico, Feldestein Ewing, Engle, Hunter, Osilla, & Bryan, 2010) as they are cost-effective (Kilmer, Burgdorf, D'Amico, Miles, & Tucker, 2011), afford convenient access to services, and may attract students before they develop serious substance use problems (Brown, Anderson, Schulte, Sintov, & Frissell, 2005).

Given the increasing diversity of schools, efforts have been made to improve the cultural responsiveness of school-based programs targeting alcohol and other drug use. Strategies include modifying existing protocols initially developed for non-Hispanic White groups (Botvin, Griffin, Diaz, & Ifill-Williams, 2001a, 2001b) and developing culturally-specific approaches for particular groups (Marsiglia, Ayers, Gance-Cleveland, Mettler, & Booth, 2012). The most effective adolescent substance use prevention programs incorporate aspects of the youth's culture and learning styles into their content and format (Hecht et al., 2003), and program content developed with youth input is more likely to appeal to diverse ethnic

groups (D'Amico et al., 2005). Although relative strides have been made in developing and delivering school-based, culturally-responsive intervention services (Castro & Alarcon, 2002; Hecht et al., 2003; Marsiglia et al., 2012;), little is known about the mechanisms of change in group-based interventions and whether group ethnic composition factors influence such mechanisms.

Group Ethnic Composition and Group Processes

Group processes impact the behavior and performance of groups in all contexts/settings in which they exist- work groups, educational/school groups, friendship circles, and therapeutic/treatment groups. One challenge in conducting research on the role of ethnic composition in group process research is the numerous strategies employed to operationalize this construct. Techniques include: (a) identifying the proportion of group members who belong to different ethnic group categories and examining group members' behavior or outcome depending on their majority or minority status within the group (Hallinan & Teixeira, 1987; Rodkin, Wilson, & Ahn, 2007), (b) considering ethnic diversity on a continuum from homogeneity (where at least 66% of group members are part of the same ethnic group) to heterogeneity (Moreland & Levine, 1992), (c) identifying the probability that two individuals in a group share the same ethnicity (Budesco & Budesco, 2012), and (d) examining which ethnicity represents a majority in groups (e.g., Black, Hispanic, non-Hispanic White).

Previous findings across different settings suggest both negative (O'Reilly, Williams, & Barsade, 1998; Pelled, Eisenhardt, & Xin, 1999) and positive (Antonio et al., 2004; Gottfredson et al., 2008; Hurtado, 2005; Nemeth & Wachtler, 1983) group processes as a function of group ethnic composition. Studies of groups in work settings have found high ethnic diversity to be associated with fairly high emotional conflict (Pelled, Eisenhardt, & Xin, 1999), less attachment to the organization (Tsui, Egan, & O' Reilly, 1992), and generally negative group outcomes (O'Reilly et al., 1998). However, other findings suggest that homogeneous groups provided fewer opportunities for divergent thinking and new ideas (e.g., Nemeth, 1992), while diversity in groups can lead to better problem solving (e.g., Nemeth & Wachtler, 1983) and perceived novelty of ideas by group members (Antonio et al., 2004). In student populations, ethnic diversity in the classroom has been linked to better learning outcomes (e.g., Hurtado, 2005) and cognitive openness (Gottfredson et al., 2008). In sum, though ethnic group composition seems to be an important consideration for group processes, conclusions drawn from the extant literature vary greatly on the basis of the definition used to characterize ethnic group composition, setting (e.g., school vs. work), age of participants, and time cohort of participants (e.g., 1990's vs. mid 2000's). Despite the variety of findings and sub-disciplines investigating ethnic group composition, it is important to note that research on ethnic group composition and group processes is in its infancy.

Mechanisms of Change

Mechanisms of change are group process characteristics that are evidenced to be related to behavior change. As such, several group process factors have been identified as important

mechanisms of change in the group therapy literature. Specifically, group cohesion (Burlingame, McClendon, & Alonso, 2011; Harris, Brazeau, Clarkson, Brownlee, & Rawana, 2012), client program satisfaction (Sobell, Sobell, & Agrawal, 2009), and group leader empathy (Engle, Macgowan, Wagner, & Amrhein, 2010; Johnson, Burlingame, Olsen, Davies, & Gleave, 2005) are key group processes that predict positive behavior change. However, very little is known about group process factors associated with successful voluntary school-based intervention programs or whether these processes are affected by the group's ethnic composition.

To date, only two potential group process factors have been assessed in voluntary school-based alcohol and other drug prevention programs: program satisfaction and motivations for participating in the program. Kia-Keating, Brown, Schulte, and Monreal (2009) found youths' satisfaction with a high school alcohol-prevention program correlated with participation in more groups, current drinkers and nondrinkers differed in their satisfaction ratings of specific session topics, and satisfaction ratings did not differ by students' race/ethnicity. Edelen et al. (2015) assessed middle school students' motivations for participating in a voluntary after school prevention program, barriers to participation among those who did not participate, and tested for demographic differences between program participants and non-participants. Group leaders' demeanor (extent to which group leaders "were nice" and "can be trusted") was the most important motivation endorsed by youth who participated, which is consistent with group treatment research (e.g., Engle et al., 2010). In sum, group cohesion, client/participant satisfaction, and therapist/leader disposition toward the group are key group mechanisms of change.

Group Ethnic Composition and Mechanisms of Change

Very little research has examined the role of ethnic group composition on mechanisms of change in group treatment. In fact, only two therapeutic group treatment studies could be identified that directly measured how group ethnic composition impacted mechanisms of change. For example, Johnson, Connolly Gibbons, and Crits-Christoph (2011) randomized African American and non-Hispanic White adult men and women to group therapy for cocaine dependence. A gender by ethnicity interaction was evidenced whereby African American women (the smallest group proportionally) exhibited lower levels of group participation and lower perceived therapeutic alliance compared to White women and men of both ethnic backgrounds (Johnson et al., 2011). In the second study, Paulus and colleagues (2015) examined the impact of ethnic diversity measured on a continuum and ethnic majority/minority status (i.e. White-Majority and non-White-Minority) on individual and group level outcomes of a cognitive behavioral treatment for anxiety disorders. Ethnic diversity was negatively related to treatment outcome such that highly diverse groups evidenced the poorest improvement (Paulus et al., 2015). Although no conclusions regarding the role of ethnic group composition and therapeutic processes can be made, these studies suggest that understanding how ethnic group composition is related to mechanisms of change may have important consequences for treatment outcomes of ethnically diverse groups.

The therapeutic approach or treatment modality may also have an impact on the role of ethnic group composition in mechanisms of change. For example, studies suggest that motivational enhancement approaches may be particularly well suited for ethnic minority youth (Cordaro, Tubman, Wagner, & Morris, 2012; D'Amico, Miles, Stern, & Meredith, 2008; Feldstein-Ewing et al., 2012; Gil, Wagner, & Tubman, 2004). In a study of a brief one-on-one motivational interviewing intervention for substance abuse conducted with predominately Hispanic adolescents, objective coder ratings of therapist warmth and friendliness and client involvement/engagement predicted treatment completion (Cordaro et al., 2012). In addition, past ME interventions conducted with predominately Hispanic and African American substance-abusing adolescents led to positive treatment outcomes (D'Amico, Miles, Stern, & Meredith, 2008; Feldstein Ewing et al., 2012; Gil, Wagner, & Tubman, 2004).

The Present Study

The current study sought to improve our understanding of the influence of ethnic group composition on mechanisms of change (i.e. group processes purported to be related to positive behavior change), within a school-based alcohol use intervention (Project Options; Brown et al., 2005). Project Options uses a motivational enhancement (ME) approach and employs normative feedback and skills training to facilitate personal change efforts. Mechanisms of change were examined using data from three sources: participants, facilitators, and objective raters who observed sessions in vivo. Based on the literature, the mechanisms of change analyzed were: participant session satisfaction and sense of belonging, interventionist empathy and rapport, as well as overall group engagement and responsiveness. As definitions of group ethnic composition vary greatly in the literature, we compared three approaches: group ethnic diversity as a continuum, group ethnic homogeneity (where at least 66% of participants shared the same ethnic background regardless of ethnic category), and group ethnic majority (where one of the three largest ethnic groups in the sample reached the majority: Black/African-American vs. Hispanic vs. non-Hispanic White).

Based on the scant and limited literature on the relationships between group ethnic diversity and homogeneity with mechanisms of change, we based the following hypotheses on the two most recent treatment studies in the area (Johnson et al., 2011; Paulus et al., 2015). Accordingly, it was hypothesized that ethnic diversity as assessed on a continuum would negatively correlate with participant, facilitator, and coder ratings of mechanisms of change. Similarly, homogeneous groups were expected to endorse more positive ratings of mechanisms of change than more heterogeneous groups. Consistent with findings of ME groups for Hispanic and African-American youth (e.g. Cordero et al., 2012; D'Amico, Miles, Stern, & Meredith, 2008; Feldstein-Ewing et al., 2012; Gil, Wagner, & Tubman, 2004), it was expected that intervention groups with majority Hispanic and African American participants would report higher ratings on all metrics of group processes compared to groups with majority non-Hispanic White students.

Method

Participants

A total of 591 students self-selected into Project Options, a developmentally tailored, voluntary, school-based alcohol use intervention (Brown, 2001; Brown et al., 2005). The intervention was offered to high school students (9th–12th grade) in seven schools across Miami, FL, Minneapolis, MN, and Portland, OR between 2013–2015. For this study, groups randomized to the motivationally-enhanced protocol, whose groups were comprised of three or more participants, and where all participants reported their ethnic background were selected for analyses (N groups = 353). This multi-site trial of the intervention also included an education control condition not evaluated here. Across sites, 36% of participants identified as male, 28% were in 9th grade, 17% were in 10th grade, 24% were in 11th grade, and 31% were in 12th grade. Participants were 16 years old ($SD = 1.40$) on average. Approximately, 31% of participants identified as African American/Black, 5% as Asian/Pacific Islander, 36% as Hispanic, 19% as non-Hispanic White, 7% as Mixed, and, 2% as Other.

Procedure

Each site's corresponding individual high schools, school districts, and Institutional Review Boards, approved all procedures. At each site, flyers, posters, student newspaper ads, classroom presentations, school websites, and newsletters, were designed to appeal to students of diverse backgrounds and levels of experience with alcohol and/or other substances. Students voluntarily self-selected into Project Options and independently determined the frequency with which they attended sessions. Only students with written parental consent were allowed to attend sessions. Participants received a \$5 gift card of their choice after completing an initial assessment during their first session, as well as free lunch (i.e., pizza) during session.

Project Options protocol consisted of six different topics, based on prior adolescent self-change alcohol intervention research (Brown et al., 2005): Perceived vs. Actual Alcohol Use Norms; Expectancy Effects/Balanced Placebo Studies; Managing Common & Uncommon Stress; Your Decisions/Consequences; Alternative Ways to Have Fun; Communicating in Tough Situations. Students could participate in any session in no specific order. Student focus groups were used to adapt the style of materials and specific language used at each site. To maximize student access and reduce impact on instructional time, this brief intervention (up to 30 minutes) was offered during lunch twice per week at each school by interventionists not affiliated with the schools. Interventionists were trained in motivational interviewing techniques by Motivational Interviewing Network Trainers (MINT-certified) to deliver the intervention. A licensed clinical psychologist at each site supervised facilitators weekly.

Measures

Group ethnic composition

Group ethnic diversity: Ethnic diversity within groups was calculated using a formula that accounts for the number of ethnic groups present, as well as their relative representation

(Juvonen, Nishina, & Graham, 2006; Simpson, 1949): $D_C = \frac{c}{(c-1)}(1 - \sum_{i=1}^c P_i^2)$. Where D_C represents the diversity of the group, C is the number of ethnic groups present, and P_i is the proportion of individuals who self-identify as being part of the target ethnic group i . Diversity indices range from 0 to 1 with ascending proportions indicating greater diversity. The average group ethnic diversity was 0.51 ($SD = 0.20$) and ranged from 0 to 0.91.

Group homogeneity: Homogenous groups ($n = 144$) were those groups in which there was an identifiable ethnic majority (i.e., 66% of one ethnic group was present) in the group. Classroom-based studies have consistently used 66% as the cutoff for determining classrooms that had ethnic majorities (e.g., Hallinan & Teixeira, 1987; Kistner, Metzler, Gatlin, & Risi, 1993), therefore this was the cutoff used in the current study.

Group ethnic majority: The three largest ethnic groups in the sample were Black/African-American, Hispanic, and non-Hispanic White. Groups where one ethnic group reached the majority were identified in two steps. First, groups falling below the diversity index median (less than 0.54) were selected. Second, the ethnic majority among these less diverse groups was identified by whether at least 66% of students shared the same ethnic background. For example, in groups of three students (the smallest possible group size) the ethnic majority was chosen if the same ethnicity was shared by two of the three participants. That is, African-American groups were those where more than 66% of participants identified as Black/African American ($n = 62$), majority Hispanic groups were those with more than 66% of Hispanic participants ($n = 60$), and majority non-Hispanic groups were those with more than 66% of non-Hispanic participants ($n = 31$).

Group characteristics

Group size: Only groups where three or more participants were present were selected for analyses. The average number of participants in each group was 6.51 ($SD = 2.43$) and ranged from 3–12 members.

Gender: Participants self-reported their gender. In addition, an index of gender distribution was generated for each group by calculating the percent of participants who self-identified as female. On average, groups were 57% female.

Session topic: Session content was dummy coded and entered in all models as a covariate.

Average number sessions attended: The number of sessions attended was calculated for each participant. The number of attended sessions across participants averaged 7.35 ($SD = 2.43$) sessions and ranged from 3 to 12. The number of attended sessions was also averaged across participants in each group. The group average number of session attended was 5.57 ($SD = 2.23$) and ranged from 2.16 to 15.75 sessions.

Mechanisms of change

Session satisfaction: Participants rated each session on a 9-point scale (from 1 = “Not at all” to 9 “Extremely”) on whether (1) the discussion was helpful, (2) they could use the

information, (3) liked this type/style of meeting, and (4) interventionists were helpful. A session satisfaction composite was computed from the average of these four items ($\alpha = 0.87$) consistent with previous studies (Kia-Keating et al., 2009) with higher scores indicating more satisfaction. Participant average session satisfaction was 7.52 ($SD = 1.42$). Participant ratings were also averaged at the group level for each session ($M = 7.69$; $SD = 0.69$).

Sense of belonging: Participants endorsed whether they felt part of the group using a single item indicator that ranged from 1 (“not at all”) to 9 (“extremely”). Individual participant sense of belonging was 7.62 ($SD = 1.67$) on average. Participants’ responses were also averaged at the group level ($M = 7.76$; $SD = 0.72$).

Interventionist empathy and rapport: Each interventionist rated how often they (1) established rapport and (2) expressed empathy on a 5-point scale (from 1 “Very Often” to 5 “Not Often”) following each group session. Interventionists’ ratings were averaged across each item. On average, interventionist empathy scores were 1.63 ($SD = 0.62$) and rapport ratings were 1.53 ($SD = 0.64$).

Group engagement and responsiveness: One or two trained coders observed the sessions and rated the overall engagement level of the group as a whole and the extent to which the group was responsive to interventionists’ questions and comments. Group engagement and responsiveness were rated on a 7-point scale that ranged from 1 (“not at all”) to 7 (“very much”). When two coders were present, ratings from one coder were chosen at random. The average group engagement was 5.41 ($SD = 1.05$) and the mean group responsiveness was 5.42 ($SD = 1.13$).

Analytic Plan

Mixed-effects models were used for all analyses to account for the nesting of participants within each school. Models predicting participant level outcomes (session satisfaction, sense of belonging) were estimated using three-level (individual, session, and school), cross-classified mixed-effects models to account for the fact students were clustered across different sessions (participants could attend sessions in no particular order). Participant gender and number of sessions attended were modeled as Level-1 fixed effects. Group ethnic diversity, homogenous groups, ethnic majority groups, and group size were modeled as Level-2 fixed effects whereas schools were modeled as Level-3 random effects. Since facilitators and coders rated groups not individuals, these outcomes were modeled using two levels: session and group. All groups were included in the analyses of ethnic diversity and homogenous groups ($n = 353$). A subset of groups was selected to examine ethnic majority groups ($n = 153$). Group ethnic diversity, homogenous groups, and ethnic majority groups were modeled as Level-1 fixed effects. Group session topic, group size, group average number of sessions attended, and proportion of female participants were entered in all models as fixed-effects covariates at Level 1. Schools were modeled as Level-2 random effects. Analyses were conducted using Stata 13.1 (StataCorp, 2013).

Results

Group Ethnic Diversity

The model analyzing the association between degree of group ethnic diversity measured on a continuum and participant session satisfaction was significant ($Wald \chi^2(9) = 61.67, p < .001$). Participant session satisfaction varied by topic ($\chi^2(5) = 28.03, p < .001$), and the number of sessions attended was positively related to session satisfaction ($z = 4.91, p < .001$), while the association between group size and session satisfaction approached significance ($z = -1.95, p = .051$). There were no main effects of ethnic diversity or gender. The model examining whether degree of ethnic diversity was associated with participant sense of belongingness did not converge. None of the models examining the relationships between ethnic diversity and facilitator or coder ratings were statistically significant.

Homogeneous versus Heterogeneous Groups

The model analyzing whether group homogeneity predicted participant session satisfaction was significant ($Wald \chi^2(4) = 62.22, p < .001$). Neither group homogeneity nor participant gender related to participant session satisfaction. Session topic significantly predicted session satisfaction ($\chi^2(5) = 27.40, p < .001$). Number of sessions attended was positively related to session satisfaction ($z = 4.88, p < .001$), whereas group size was negatively associated with session satisfaction ($z = -2.16, p = .031$). The model testing the relationship between group ethnic homogeneity and participant sense of group belongingness did not converge. None of the models examining whether group ethnic homogeneity was associated with facilitator or coder ratings were significant.

Groups with Different Ethnic Majorities

The model testing whether students in different ethnic majority groups and group differed in session satisfaction was significant (Table 1; $Wald \chi^2 = 43.07, p < .001$). Participant session satisfaction differed depending on the ethnic majority of the group they attended ($\chi^2(2) = 8.31, p = .016$). Participants in majority Black/African-American groups ($z = 2.70, p = .007$) and majority Hispanic groups ($z = 2.61, p = .009$) reported greater session satisfaction compared to participants in majority non-Hispanic White groups. There were no statistical differences in session satisfaction between participants in Black/African American majority groups and Hispanic groups. Participant session satisfaction differed by session topic ($\chi^2(5) = 20.86, p = .0009$). Number of attended sessions ($z = 3.04, p = .002$) was positively related to participant session satisfaction. Conversely, group size ($z = -2.13, p = .033$) was negatively associated with participant satisfaction. Participant gender was not related to session satisfaction. The model estimating whether ethnic majorities differed in belongingness did not converge.

The model testing whether different ethnic group majorities were related to interventionists' self-reported expression of empathy was significant (Table 1; $Wald \chi^2 = 53.88, p < .001$). Interventionists' frequency of expressing empathy differed by group ethnic majority ($\chi^2(2) = 28.87, p < .001$) with more frequent expressions reported in majority African-American/Black groups ($z = -4.39, p < .001$) and majority Hispanic groups ($z = -5.27, p < .001$) as compared to majority non-Hispanic White groups. There were no differences in

interventionists' expression of empathy between African-American/Black and Hispanic majority groups. Group size was negatively associated with interventionists' empathy ($z = 2.62, p = .009$). Session topic, group mean number of sessions, and proportion of female participants were not associated with interventionists' empathy.

The models analyzing whether different ethnic majorities were related to interventionists' self-reported rapport with the group, or coder ratings of and group responsiveness and engagement were not significant.

Discussion

Offering substance use interventions in the school setting represents a strategic approach to improve access to and engagement in services for youth of all backgrounds. Although relative strides have been made to design and implement culturally responsive services for youth (Castro & Alarcon, 2002; Hecht et al., 2003; Marsiglia et al., 2012;), little is known about the potential role of group ethnic composition on important group processes purported to underlie mechanisms of change. This study examined the relationships between group ethnic composition and key mechanisms of change in a voluntary school-based alcohol use intervention implemented in three diverse sociodemographic contexts (Miami, FL; Minneapolis, MN; Portland, OR). To capture the dynamics of mechanisms of change, ratings from three different sources with varying levels of group involvement were used: participant group experience (session satisfaction and sense of group belongingness), facilitator self-reports of therapeutic behaviors (empathy and rapport), and objective coder ratings of the transactions between group members and facilitators (engagement and responsiveness). Given that the definition of group ethnic composition is inconsistent across the extant literature, the present study characterized group ethnic composition in three ways (group diversity, group homogeneity, group ethnic majorities).

The association between ethnic group composition and group mechanisms of change processes differed as function of how ethnic group composition was operationalized. Specifically, no significant differences were identified in change processes associated with group ethnic diversity measured on a continuum or between homogeneous and non-homogeneous groups. However, comparisons of group change processes among the three ethnic majority groups indicated that students in groups with either African-American/Black or Hispanic majorities reported a higher sense of session satisfaction compared to students in groups where the majority was non-Hispanic White. Further, there were no differences in group satisfaction between students in groups with African-American/Black and Hispanic majorities. Similarly, facilitators endorsed more frequent expression of empathy with majority African-American/Black and majority Hispanic groups than with majority non-Hispanic White groups. However, facilitator empathy ratings did not differ between African-American/Black and Hispanic majority groups. Interestingly, none of the characterizations of ethnic group composition were associated with coders' ratings of the average engagement and responsiveness of intervention groups.

This pattern of results speaks to the complexity of the role of ethnic group composition in mechanisms of change. On the one hand, it highlights that neither the diversity of a group

nor a cut off point of “homogeneity” appear to impact change processes as assessed by participants, facilitators, and independent coders. These are encouraging findings as they signal that this voluntary intervention seems to elicit similar responses regardless of the degree of group ethnic diversity in or homogeneity of a group. On the other hand, the higher student session satisfaction ratings observed in majority Black/African American and Hispanic groups compared to White groups provide additional support to the literature demonstrating the effectiveness of ME techniques for these populations (Feldstein Ewing et al., 2012; Godley et al., 2011). In addition, the higher self-reported expression of facilitator empathy when leading Black/African-American and Hispanic majority groups may reflect a positive dynamic between these groups and interventionists, also evidenced by participant higher session satisfaction. It is important to note that participant belongingness, facilitator rapport, and coder perceptions of group responsiveness and engagement did not differ across majority group ethnicity. These similarities further highlight that, despite some differences in change processes by ethnicity of the majority present in a group, this voluntary school-based intervention seems to foster a positive environment across ethnic groups.

In addition to ethnic group composition, group size and number of sessions attended were two robust characteristics related to group processes. Larger group size predicted lower ratings of participant satisfaction and lower facilitator empathy ratings. This finding might be expected, as groups with more members afford fewer opportunities for students to contribute to session discussion. Likewise, larger groups can be less intimate and facilitators may not feel they are connecting with participants as much as in smaller groups. In contrast, the average number of sessions attended by group members predicted higher ratings of satisfaction and belongingness, which is consistent with prior findings (Kia-Keating et al., 2009), and indicates that youth who enjoy the intervention are more likely to continue to attend sessions. Although no gender differences were identified in any of the processes examined over and above ethnic group composition, it is an important factor than needs to be taken into consideration given its importance to therapeutic group dynamics (Garcia, Bacio, Tomlinson, Ladd, & Anderson, 2015).

Study Limitations

Study findings should be couched within its limitations. First, there are a number of unmeasured factors that may better account for the relationships we observed between ethnic composition and mechanisms of change (e.g., ethnic identity, country of ancestry, acculturation level, and immigrant generation). While school-based services are meant to improve access for underserved populations, the high rates of school drop out among African-American and Hispanic adolescents may impact the generalizability of study findings. In addition, measurements of participant group belonging and coder ratings of group engagement and responsiveness were only single item indicators, potentially affecting the stability of these estimates. This may also account for the fact that the model predicting participant sense of group belonging at the individual level did not converge. Further, the ratings across participants, facilitators, and coders were skewed, thus ceiling effects may have also impacted model estimates. An additional methodological limitation is that the homogeneity in facilitator ethnicity in the present study (most were non-Hispanic White) prevented us from examining whether ethnic congruence between facilitators and group

members influenced study findings. Nevertheless, in diverse groups, there will not be ethnic congruence between facilitator and all group members. Further, it is unclear if ethnic congruence is an important factor in group therapy with diverse participants given the mixed evidence for its importance in the therapeutic process (Karlsson, 2005). Conclusions cannot be made about whether the characterizations of ethnic group composition analyzed in this study impacts intervention outcomes. Finally, this study could not account for outside factors that may increase or decrease the relative importance of ethnic group composition. For example, the broader relationships among the different ethnicities present in the group (e.g. existing school or community conflicts) were not assessed.

In spite of these limitations, the present study also has notable strengths. First, the data was culled from a multi-site intervention implemented in three geographically and culturally diverse cities. Characterization of ethnic diversity of the schools and intervention groups presented elsewhere (Bacio, Garcia, Anderson, Brown & Myers, under review) illustrated that, schools ranged on their level of ethnic diversity. Most importantly, the distribution of ethnic composition of groups generally reflected that of the school in which the intervention was delivered (Bacio et al., under review). Consequently, the diversity of these research sites and schools allowed for the characterization of ethnic group composition in multiple ways in the analyses presented in this study. In addition, the use of multiple informants to capture mechanisms of change through group processes allowed us to start to disentangle aspects of change process and perception that may have been unclear or unknown if only one level of assessment was used (e.g., coded behavior only).

In sum, this study suggests that the associations between ethnic group composition and purported mechanisms of change largely depend on how the former is defined. These results suggest that broad characterizations of ethnic group composition (i.e. diversity on a continuum; dichotomous index of homogeneity) are less relevant to mechanisms of change. On the other hand, a finer description of group composition (i.e. comparing specific majorities) may be more instrumental in understanding the role of these characteristics in group processes. Given the variability of findings, future studies should use multiple strategies to examine ethnic group composition. Specific to this intervention, study findings support that this voluntary, school-based alcohol intervention can be implemented in disparate schools with diverse populations.

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Table 1

Multilevel model estimates of associations between ethnic group majorities and participant session satisfaction and interventionist empathy

<i>Participant Session Satisfaction</i>	
Fixed Effects	
Predictor	Coefficient (SE)
Participant gender ^a	-.13 (.12)
Participant number of sessions attended	.08 (.03) **
Session topic	
Expectancy Effects/Balance Placebo Studies ^b	.28 (.13) *
Managing Common & Uncommon Stress ^b	.41 (.14) **
Your Decisions/Consequences ^b	.37 (.13) **
Alternative Ways to Have Fun ^b	.57 (.14) ***
Communicating in Tough Situations ^b	.46 (.13) ***
Group size	-.04 (.02) *
Group ethnic majority	
Majority African-American/Black ^c	.54 **
Majority Hispanic ^c	.55 **
Random-Effects	Variance (SE)
School	.02 (.03)
Session	.35 (.03)
Participant	.98 (.11)
<i>Interventionist Empathy</i>	
Fixed Effects	
Predictor	Coefficient (SE)
Percent of females in group	.09 (.16)
Group average number of sessions attended	.05 (.03) **
Session Topic	
Expectancy Effects/Balance Placebo Studies ^b	.09 (.15)
Managing Common & Uncommon Stress ^b	-.24 (.16)
Your Decisions/Consequences ^b	-.20 (.15)
Alternative Ways to Have Fun ^b	-.18 (.16)
Communicating in Tough Situations ^b	-.19 (.15)
Group size	.05 (.19) **
Group ethnic majority	
Majority African-American/Black ^c	-.54 (.12) ***
Majority Hispanic ^c	-.67 (.12) ***

Random-Effects	Variance (SE)
School	6.52 ^{e-18} 12 ^{e-16}

Note:

^a Male vs. female;

^b compared to session on Perceived vs. Actual Alcohol Use Norms;

^c compared to non-Hispanic Majority groups;

* $p < .05$;

** $p < .01$;

*** $p < .001$

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