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Engagement and Retention of Ethnically Diverse Adolescents to a Voluntary, School-Based
Alcohol Use Intervention

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Abstract

Increasing access to and utilization of alcohol use services for ethnically diverse adolescents remains an important public health concern. This study examined whether a voluntary, school-based, developmentally-tailored alcohol use intervention (i.e., Project Options) engaged and retained ethnically diverse participants across three cities. The role of group and school diversity characteristics (i.e., ethnic diversity, ethnic congruence of individual and context) in engagement and retention was explored. A total of 596 participants across six schools were included in analyses. Overall, the intervention engaged and retained ethnically diverse participants consistent with each school context (79.7% returned for additional sessions). Mixed-effects logistic models demonstrated that Black/African American participants were more likely to return to the intervention compared to Non-Hispanic White, Asian/Pacific Islander, and Hispanic participants. Group and school diversity characteristics did not impact participants' return to the intervention. Findings provide initial evidence that Project Options is adaptable to the sociocultural context of different implementation sites.

Introduction

Although alcohol use and drunkenness have declined among youth, alcohol remains the most commonly used drug among adolescents.¹ By 12th grade, 66% of students have used alcohol and 50% of youth have been drunk in their lifetime.¹ Given the myriad of potential problems associated with alcohol use for youth (e.g., drunk-driving,, interpersonal problems, involvement with the legal system, etc.), the utility of multiple intervention approaches for reducing such problems has been evaluated (including clinic-, community-, and school-based programs) yielding mixed success.²⁻⁴

Only a small proportion of adolescents in need utilize traditional clinic-based programs,⁵ and service utilization rates are even lower among economically disadvantaged and ethnic minority youth.⁶ While limited research exists on ethnic differences in adolescents' intentions to use alcohol-related services,⁷ some studies suggest that Black and Hispanic adolescents continue to be less likely to seek services compared to non-Hispanic White teens.⁷⁻⁹ However, no ethnic differences in specific strategies to quit have been identified.¹⁰ Thus, developing and implementing developmentally sensitive alcohol use services that are accessible and attract adolescents of diverse backgrounds is paramount to addressing this major public health concern.

School-based, brief behavioral interventions (BIs) represent one alternative to the traditional model of substance use treatment that affords the opportunity to reach many students with varying demographic and substance use characteristics.¹¹ Given the disparities in service utilization among ethnic minority teens, school-based BIs have the potential of reaching youth who might not typically receive services.^{6, 12} Importantly, the school setting also represents a key social context for adolescents. Teens spend a large majority of their time in school with their peers, who have increased influence during this developmental period.¹³ School-based BIs,

especially those that utilize motivational techniques,¹⁴ have been found to be effective in reducing adolescent alcohol use.¹⁵

Project Options is a school-based, voluntary, brief behavioral intervention developmentally tailored for adolescents.¹⁶ Based on a cognitive social learning model of youth alcohol use self-change,¹⁷ Project Options takes into consideration central neurocognitive, behavioral, and social developmental processes¹⁸⁻²⁰ that encourage personal choice, fit developmentally specific interests and cultural context, optimize student engagement, are perceived as socially acceptable and helpful, and support motivation for social connection and independent decision making.^{17, 21, 22} Developed and tested in the San Diego Metropolitan area, Project Options was found to successfully attract ethnically diverse adolescents,^{23, 24} appeal to participants as evidenced by high intervention satisfaction ratings²⁴ and facilitate efforts to change alcohol use among participants.¹⁶ Specifically, Project Options was found to facilitate attempts to cut-down or quit alcohol use in high-frequency drinkers.¹⁶ Additionally, compared to the general student population, participants were found to improve their accuracy of peer alcohol use frequency estimations over the course of the year. Moreover, within Project Options, participants who more accurately estimated peer alcohol use decreased their maximum number of drinks consumed per drinking episode; average drinks per drinking episode; and number of binge episodes.²² The heaviest drinking participants whose accuracy of estimating peer alcohol use improved were those who experienced the greatest decrements in all alcohol use outcome measures at follow-up.²²

Project Options is currently being tested in three cities across the country (Miami, FL; Minneapolis, MN; Portland, OR) in an ongoing efficacy/effectiveness hybrid trial^{25, 26}. It is important to investigate whether this program is implemented in a manner congruent with the

social and cultural context of these settings. For instance, key ecological aspects of the school and intervention setting may play a role in intervention utilization. In order to meet the needs of underserved youth, ethnically diverse students embedded within these different environments must be voluntarily engaged and retained.

Ecological characteristics such as ethnic congruence of adolescents within a given setting and the degree of ethnic diversity in an environment have been found to impact the overall well-being and mental health outcomes of ethnic minority youth.²⁷⁻³⁰ As the peer group becomes increasingly important during adolescence,¹³ there is a heightened awareness of others' opinions related to the self.³¹ Further, the tendency to align with others that are racially or ethnically similar occurs in childhood and continues to develop over time.³² Thus, the ethnic composition of a school may influence the homogeneity or heterogeneity of student social networks.

Research on ethnic diversity has demonstrated that high classroom and school ethnic diversity are associated with Latino and African American adolescents feeling safer in school, less harassed by peers, and less lonely.²⁸ Consistent with a "person-fit" model, ethnic congruence, described as having a critical mass of individuals who share the same ethnicity,³³ at the school level has been negatively associated with emotional and behavioral problems.²⁷ In concert, ethnic diversity and ethnic congruence are important characteristics that play a role in adolescent well-being. Whether these factors have an effect on the implementation of school-based interventions is unknown. School setting characteristics and social acceptability are key for successful implementation of voluntary, school-based interventions. Consequently, examining the impact of these ecological characteristics (i.e., ethnic congruence with the intervention and the school; diversity of the intervention and the school) on the ability of school-based interventions to voluntarily engage and retain ethnic minority adolescents is necessary.

The aims of this study were to (1) test the extent to which ethnic minority youth voluntarily engage with Project Options across three different ethnically diverse school contexts, (2) examine how group characteristics (group ethnic diversity, ethnic congruence between the individual and the group) encountered by participants on their first attendance affect retention, and (3) explore the impact of school environment (ethnic diversity, ethnic congruence between the individual and the school, socioeconomic status) on voluntary engagement and retention of participants in Project Options.

Method

Participants. A total of 671 high school students in grades 9-12 voluntarily self-selected into Project Options from Spring semester 2013 to Fall semester 2014 in three cities: Miami, FL, Minneapolis, MN, and Portland, OR. The intervention was implemented across six schools (two schools per site). Hereafter, numbers (Schools 1-6), instead of names, will be used to distinguish each school to protect confidentiality. Approximately 59% of participants identified as female, 28% were in 9th grade, 20% in 10th grade, 20% in 11th grade, and 32% were in 12th grade. On average, participants were 16 years old ($SD = 1.4$). Table 1 illustrates the distribution of participant ethnicity by school, as well as for each corresponding school's student body. Across sites, 25% of participants identified as African American/Black, 5% as Asian/Pacific Islander, 35% as Hispanic, 25% as non-Hispanic White, 6% as Mixed, and, 3% as Other.

Procedure. Each site's corresponding Institutional Review Boards, school districts, and individual high schools approved all procedures.

Parental consent and adolescent assent. Written parental consent was required for adolescent participation, with varying strategies used to maximize student access to Project Options (e.g., making presentations at parent events and student classrooms, mailings to parents

using school registries, school principals emailing information and consent forms to parents, etc.). Parents could send a signed consent form with their student or via email to Project Options staff or designated school staff. A list of students with parental consent was regularly updated and checked prior to student participation in the intervention. Adolescent participants provided assent prior to attending their initial Project Options session.

Participant engagement. At each site, flyers, posters, student newspaper ads, and classroom presentations were designed to appeal to students of diverse backgrounds and levels of experience with alcohol and/or other substances. Similar announcements also appeared in school websites and newsletters.

School tailoring. The content of Project Options sessions and engagement strategies were tailored to the language and culture of each school without changing the core content or session process. Prior to implementation, interviews with staff and students were conducted at each site to identify unique stressors and concerns at each school, examples of situations where students commonly used alcohol, student efforts to decrease or stop drinking alcohol, any problems implementing these efforts, and administration preferences (classroom location, time, etc.).

Intervention. Project Options is a voluntary, developmentally-tailored, school-based, secondary prevention program that uses a motivational enhancement approach (ME) designed for youth with alcohol or other drug experience to address adolescent preferences and reduce barriers to participation.¹⁶ In the ongoing multi-site trial, an ME condition is being compared with a didactic approach in a randomized (i.e., block randomization by school) controlled trial with a multiple cross-over design resulting in a 3:1 ratio of ME to didactic approach. The content of the intervention remained the same across conditions; the only difference is the delivery approach utilized by interventionists. Students self-selected into the intervention and

independently determined the frequency with which they attended sessions. Project Options was offered twice per week during lunch at each school by interventionists trained in motivational interviewing techniques. Project Options was developed as a secondary intervention to facilitate adolescent self-change efforts (Brown et al., 2005). As such, protocol content was based on prior adolescent self-change alcohol intervention research where session topics reflected student interests identified from focus groups: 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. A novel aspect of the intervention is its voluntary nature; all students are welcome to participate in the program whether or not they have experience with alcohol. As such, students were invited to attend up to six times, but are not required to attend all six sessions.

Incentives. Participants received a \$5 gift card of their choice after completing an initial assessment during their first session as well as free lunch (e.g., pizza) during each session.

Measures.

Ethnicity and race. Participants endorsed if they were Hispanic (yes/no) and indicated whether they identified with one or more of the following groups: White, African American, Native African, Caribbean Black, Haitian, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, Asian, or Other. For the purposes of these analyses, those who identified as Hispanic were categorized as Hispanic regardless of their race. Given the low base rates of some of these groups, participants were categorized as follows: participants who identified as African American, Caribbean Black, Haitian, and Native African were classified as Black/African American, those who endorsed Hawaiian or Pacific Islander or Asian were characterized as Asian/Pacific Islander, and those who identified as American Indian or Alaskan Native were

grouped with those who self-identified as “Other.” Participants who endorsed more than one racial category were considered Mixed.

Session satisfaction. Participants rated their first 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 consistent with previous studies.²⁴ The average session satisfaction was 7.17 ($SD = 1.50$) and exhibited good internal consistency (Chronbach’s $\alpha = .85$).

Group size. Consistent with prior research on group dynamics (e.g. Garcia et al., 2015), a group was defined as a session attended by at least three participants. Accordingly, only individuals who attended groups with at least three participants during their first visits were selected for analyses. Only seven groups were composed of less than three participants; the average number of participants in each group was 8 and ranged from 3-12.

Lifetime alcohol experience. Participants reported the number of days they drank alcohol in their lifetime. A dichotomous variable was derived, such that those who reported one or more drinking days were classified as drinkers (61.55%) and those who did not endorse any drinking days were considered non-drinkers.

Group and school ethnic congruence. Two indices of ethnic congruence were estimated for each participant by calculating the percentage of each ethnic group present in each context (i.e., group and school) and assigning the percentage corresponding to each participant’s ethnic background. At the group level, the ethnic congruence of each participant was calculated based on the ethnic background of those who were present at the group first attended by each participant. For example, the group ethnic congruence for a Hispanic student in a group where 7

out of 10 participants identify as Hispanic would be 70%. At the school level, the ethnic congruence of each participant corresponded to the percentage of students who shared their ethnic background at the school level (obtained from data made publicly available by districts for each school). For instance, the school ethnic congruence for a non-Hispanic White student in a school where 65% of the student population identifies as non-Hispanic White would be 65%. Average group and school ethnic congruence are illustrated in Table 1.

Group and school diversity. Diversity indices were calculated using a formula that considers the number of ethnic groups present as well as their relative representation^{28, 34} normed for the number of categories used in the calculation³⁵: $D_C = \frac{C}{(C-1)} (1 - \sum_{i=1}^C P_i^2)$. Wherein D_C represents the diversity of the group and the school, C is the number of ethnic backgrounds present, and P_i is the proportion of individuals who self-identify as being part of the target ethnic group i . Normalized diversity indices range from 0 to 1 with ascending proportions indicating greater diversity. The group diversity index used information based on the ethnic background of group members who were present at each participant's first intervention session; whereas the school diversity index was calculated based on the overall ethnic distribution for each school (Table 1).

School socioeconomic status (SES). The percentage of students receiving free or reduced lunch at each school, as obtained from publicly available information through school district websites, was used to approximate school SES. Percentage of students receiving free/reduced lunch ranged from 10.5% to 87.5% across schools.

Analytic Plan

To examine whether Project Options effectively attracted ethnic minority participants self-selecting into the intervention at each site, χ^2 goodness of fit tests were conducted comparing

the ethnic distribution of Project Options participants to the ethnic composition of each corresponding school. To test whether individual characteristics (ethnicity, gender, grade, lifetime experience with alcohol), group diversity dimensions (group congruence, group diversity, condition), and school characteristics (school congruence, school diversity, school SES) were associated with participants' likelihood of returning to Project Options (i.e., attendance greater than 1), mixed-effects logistic models were conducted collapsed across sites, while controlling for individual student satisfaction and group size (i.e., greater than 3 participants). Due to the ethnic distribution of intervention participants, students in the four largest ethnic groups (i.e., Asian/Pacific Islanders, Black/African Americans, Hispanic, and Non-Hispanic Whites) were selected for these analyses ($n = 596$). Individual characteristics, individual participant satisfaction ratings, ethnic group congruence, group diversity, group size, condition, and ethnic school congruence were modeled as fixed effects at Level-1. School diversity and SES were modeled as a fixed effect at Level-2. Schools were modeled as random effects. Analyses were conducted using Stata 13.1.³⁶

Results

Self-Selection Into Intervention

Project Options participants, as well as the school contexts in which the intervention was offered, were ethnically diverse (Table 1). To correct for multiple comparisons, significance level for χ^2 goodness of fit tests was set to .0083 ($p = .05 / 6$ planned comparisons). Examination of the χ^2 tests indicated that the ethnic distributions of intervention participants in Schools 2 ($\chi^2 = 18.68, p = .000$), 3 ($\chi^2 = 27.38, p = .000$), and 4 ($\chi^2 = 22.14, p = .000$) were different from their corresponding schools. In School 2, where the ethnic majority was Hispanic, the proportion of Black/African American participants was higher than expected, whereas the percentage of non-

Hispanic White participants was lower. Similarly, for School 3 representation of Black/African American intervention participants was higher than expected, whereas the proportion of non-Hispanic White and Hispanic participants was lower. Among School 4 participants, the percentage of Asian/Pacific Islander participants was lower than expected. On the other hand, the ethnic distributions of participants from Schools 1 ($\chi^2 = 10.03, p = .02$), 5 ($\chi^2 = 0.93, p = .82$) and 6 ($\chi^2 = 3.3, p = .35$) were similar to the respective ethnic distribution within each school.

Retention

Overall, 79.7% of participants voluntarily returned to Project Options for at least a second visit. On average, students attended approximately three to four sessions. A model including individual participant characteristics, group dimensions, and school characteristics predicted significantly whether intervention participants were likely to return for a second Project Options session (Wald $\chi^2 = 28.39, p = .028$). There were differences by ethnic background ($\chi^2 = 13.19, p = .0042$), such that Black/African American participants were 3.43 times more likely to return for at least a second visit compared to non-Hispanic White participants ($z = 2.71, p = .007$), 3.20 more likely to return than Hispanic participants ($z = 2.98, p = .002$), and 4.97 times more likely to return than Asian/Pacific Islander youth ($z = 3.20, p = .003$). There were no differences in likelihood to return between Hispanic youth and non-Hispanic White as well as Asian/Pacific Islander participants. Similarly, there were no differences between Asian/Pacific Islander participants and non-Hispanic White youth in return to the intervention. Neither gender, grade, nor lifetime alcohol experience were associated with returning for another session.

Individual satisfaction, ethnic group congruence, and group diversity at students' first session were not associated with participants' likelihood to attend additional sessions ($ps > .05$).

The size of intervention groups was negatively associated with likelihood to return ($OR = .90$, $z = -2.00$, $p = .046$). Intervention condition (ME vs. didactic) and school characteristics (ethnic school congruence, school diversity, school SES) were not associated with participants' return to Project Options ($ps > .05$) for a second session.

Discussion

The purpose of this brief report was to examine whether a voluntary, school-based alcohol use intervention can effectively attract and retain an ethnically and geographically diverse cross-section of youth. We also explored the influence of diversity characteristics across implementation settings on engagement and retention. Findings indicated that an ethnically diverse sample of adolescents self-selected into Project Options across different sociodemographic school contexts, suggesting that there were no observable barriers to participation for ethnic minority adolescents. In fact, Black/African American youth were more likely to return to Project Options sessions than non-Hispanic White and Hispanic adolescents. Neither the ethnic diversity of intervention groups and the schools nor participants' ethnic congruence at the intervention and school levels were associated with participants' likelihood of returning to Project Options. These findings represent a first step in establishing the utility of a voluntary school-based intervention in addressing the needs of increasingly diverse student bodies and demonstrating that this approach represents an important avenue to improve access to and utilization of services for underserved adolescent populations.

Project Options appealed to ethnically diverse youth across different geographic and school settings. Participating school sites differed in degree of diversity as well as students' ethnic backgrounds, consistent with the Project Options efficacy trial in the San Diego Metropolitan area¹⁶ where the intervention was shown to attract ethnically diverse participants.^{23,}

²⁴ As the intervention continues to scale up (i.e., increase the program's impact while maintaining fidelity),³⁷ it is important to demonstrate that this intervention can be effectively integrated within the varying sociocultural environments of the different schools in which it is implemented. Consistent with an efficacy-effectiveness hybrid design and practical clinical trials,^{25,26} Project Options was able to voluntarily engage diverse youth from different geographic and socioeconomic backgrounds.

In addition to attracting a diverse sample of youth from different ethnic contexts to Project Options, participants with varying sociodemographic characteristics were retained in the intervention. Overall, almost 80% of participants voluntarily returned for at least a second visit, which supports the appeal of this developmentally and contextually tailored approach to early intervention. Further, Black/African American students were more likely to return than their Hispanic, Asian/Pacific Islander, and non-Hispanic White counterparts, even when considering school and intervention diversity and ethnic context characteristics. Given the importance of sociodemographic characteristics in relation to adolescents' mental health and well-being,^{27-30, 38} it is interesting that these were not associated with participants' return to Project Options; neither the diversity of the groups and school, nor the degree of ethnic congruence of the participant with the group and school, were related to whether or not participants returned to future sessions. Despite these null findings, it is critical that both of these dimensions are considered in future studies given their relationship to one another in characterizing the ethnic context of a group or school. For example, as the diversity of student bodies continues to increase, the congruence of an individual student with their ethnic context (i.e. how similar they are) will decrease. Specific to this study, effects for these contextual dimensions may not have emerged due to the sample size of this study and warrant further study. Conceivably, the voluntary nature of the program

and the shifting group composition across sessions may have impeded the formation of ethnic homophily. Nonetheless, findings indicate that these characteristics appeared to have less influence than anticipated among participants' in the present study.

The primary purpose of this brief report was to begin to examine whether ethnically diverse adolescents across different contexts engage and return to Project Options. At this time, the particular mechanisms by which a diverse set of students were voluntarily engaged and retained in Project Options are unknown. Potentially, the local adaptations (i.e., advertising, style of materials, local language, etc.) to each implementation setting as well as the intervention content and process likely played a role in participants' return for further visits. In addition, given the lack of research on contextual ethnicity factors in relation to implementation issues, we can only speculate why Black/African-American participants were more likely to return for future visits compared to other youth. It is possible that the incentives (i.e., pizza, gift cards) offered for participation were more salient for students of lower socioeconomic status and that these students were more likely to be African-American. However, we do not have individual-level data on SES and cannot test this hypothesis here. Nevertheless, consistent with standards of intervention implementation,³⁷ it is possible that by engaging stakeholders at different levels, Project Options was able to adapt to the sociocultural context of each school without targeting any specific group.

Despite this study's strengths, the findings should be interpreted in light of its limitations. While the focus of the study was to examine whether the intervention effectively engages ethnic-minority adolescents, low base rates resulted in some groups being excluded from analyses (e.g., American Indian) or aggregated across race (e.g., Caribbean Black, Haitian, African) or ethnicity (e.g., Cuban, Mexican descent). Consequently, results cannot be generalized to all racial/ethnic

groups. Immigrant generational status²⁷ and ethnicity identity formation,³⁹ important factors in predicting emotional and behavioral problems in adolescents, were not considered and should be the focus of later retention research. Further, the use of publically available data on school demographics might have limited the congruence estimates as the actual demographics of each school likely shifted somewhat across time.

Implications for Behavioral Health

Study findings have important implications for behavioral health. Project Options, a voluntary, school-based, developmentally tailored, alcohol use intervention, is adaptable to the sociocultural context of different implementation sites and can reach a wide variety of adolescents that otherwise may not receive services, particularly Black/African American and Hispanic teens.^{6, 8, 12, 40} Further studies will examine whether intervention outcomes and posited mechanisms of change vary for ethnically diverse teens. Given the mixed success of treatment avenues for adolescents in general and ethnic minority teens in particular, Project Options represents a novel and effective approach to voluntarily engage teens from diverse settings in alcohol use services.

Conflict of Interest Statement

The authors declare no conflict of interests, including financial, personal, or other relationships with organizations or companies that might influence the interpretation of the findings in this paper.

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