



# HHS Public Access

Author manuscript

*J Subst Abuse Treat.* Author manuscript; available in PMC 2022 August 01.

Published in final edited form as:

*J Subst Abuse Treat.* 2019 February ; 97: 75–83. doi:10.1016/j.jsat.2018.11.012.

## Randomized effectiveness trial of a parent and youth combined intervention on the substance use norms of Latino middle school students

Flavio F. Marsiglia,

Shiyu Wu,

Stephanie Ayers\*,

Arianna Weide

Southwest Interdisciplinary Research Center, School of Social Work, Arizona State University, United States of America

### Abstract

This article advances knowledge about the effectiveness of applying a community-based efficacious parenting intervention in parallel with an efficacious preadolescent intervention in changing substance abuse norms among preadolescent Latino youth. The study employed a longitudinal, randomized control group design comparing three groups: (1) Parent intervention combined with a Youth intervention: Parent/Youth; (2) Parent intervention without a Youth intervention: Parent Only; and (3) Treatment as usual: Comparison. In the comparison group, parents participated in a standard parenting program delivered by the community partner, and the youth received the usual drug use prevention programming offered in their schools. Data from both parents and youth at the 19 participating schools were collected at pre-test, immediate post-test (4 months after pre-test), and two follow-up (8 & 20 months after the pre-test). The total sample includes 532 families (parent-child dyads). The parent-child dyads consisted of one parent and one youth ages 12–14. The retention rates for both parents and preadolescent were high across the different waves of data collection (79%–96%). Regression results of youth substance use norms were calculated based on three permutations of data: (a) original data, with no imputation and no propensity score matching; (b) imputed data but no propensity score matching; and (c) imputed data plus propensity score matching. Compared to the Comparison group, the Parent/Youth condition was the most effective in changing youth's norms, closely followed by the Parent Only condition. These findings make a significant contribution in advancing knowledge on family/youth substance use prevention for Latinos in a community environment. Although the study took place in a specific urban center in the Southwest US, its findings can be generalized to other urban communities of similar characteristics across the country.

---

\*Corresponding author at: Southwest Interdisciplinary Research Center, School of Social Work, Arizona State University, 411 N. Central Ave, Suite 720, Phoenix, AZ 85004, United States of America. Stephanie.L.Ayers@asu.edu (S. Ayers).

Declaration of interest  
None.

## Keywords

Latino youth; Parenting; Drug abuse prevention

---

## 1. Introduction

Use and misuse of alcohol, tobacco and other drugs in adolescence and their negative effects on psychological and physical development are recognized as significant public health concerns in the U.S. (Casey & Jones, 2010). In general, Latino adolescents report the highest rates of illicit drug use, largely due to considerable increases in marijuana use (Johnston et al., 2018). Among adolescents in 8th grade, Latino youth have the highest 30-day prevalence rates for alcohol, binge drinking, and inhalant use compared to White and African American adolescents (Johnston et al., 2018). These behaviors are associated with multiple negative health outcomes, including sexually risky behaviors, heart disease, externalizing behavioral problems, family problems, and unemployment (CDC, 2018; Windle, 2016). Because of the disproportionate burden of poverty and educational disadvantage experienced by many Latino families, there is a disproportional vulnerability to preventable health conditions such as substance abuse (Collins, 2016).

Developing interventions to address substance abuse prevention among Latino youth is critically important. Not only are people of Latino origin one of the nation's largest ethnic or racial minority group, but Latinos are also a young population, with approximately 10 million Latino students in U.S. public schools (Fry & Gonzales, 2008). Eliminating or reducing risk factors and enhancing protective factors through comprehensive and multidimensional interventions constitute a known efficacious public health approach substance abuse prevention (Domitrovich, Durlak, Staley, & Weissberg, 2017).

This article reports on the outcomes of a community-based effectiveness research study conducted between 2012 and 2017 with Latino preadolescents in 7th grade and their parents (Marsiglia, Kiehne, & Ayers, 2018). This effectiveness study originated as a response to prevention needs identified by the local community in partnership with the research team: to refine and test innovative delivery approaches that increase parent's and children's access to efficacious culturally-specific prevention interventions. Because these prevention interventions are designed to target preadolescents prior to engaging in substance use, the research question leading the study was if culturally-grounded substance use prevention interventions targeting Latino parents and their middle school child could bolster preadolescents' antecedents to substance use through strengthening anti-substance norms.

### 1.1. Influencing norms to reduce risks and enhance protective factors for substance use

Substance use norms are one factor that serve as a precursor to substance use behaviors (Keyes et al., 2012; Marsiglia, Ayers, Baldwin-White, & Booth, 2016). Strengthening and enhancing anti-drug norms among youth can reduce subsequent substance use and abuse (Marsiglia et al., 2016). Conversely, weak and unclear norms regarding substance use can increase the likelihood of partaking in substances (Andrews, Hops, & Duncan, 1997;

Walden, Iacono, & McGue, 2007). In early adolescence, youth are still malleable and developing their social norms, which makes intervention during this developmental period critical for influencing substance use norms (Onrust, Otten, Lammers, & Smit, 2016).

Three types of norms - personal, injunctive and descriptive - are the focus of this study. Personal norms are adolescent's own internalized norms of right and wrong, and in this case, internalized beliefs about whether the adolescent values a substance-free life (Kam & Wang, 2015; Miller-Day, Alberts, Hecht, Trost, & Krizek, 2014). For Mexican/Mexican American adolescents, personal norms been shown to be a salient factor for substance use, particularly for marijuana (Elek, Miller-Day, & Hecht, 2006).

While personal norms are internalized, injunctive and descriptive norms are externalized norms imposed by others, like parents and peers (Kam & Wang, 2015). For adolescents, having strong external norms can assist in shaping their own internal personal norms and influence actual substance use behaviors (Kam & Wang, 2015; Miller-Day et al., 2014). Injunctive norms proscribe individual's perceptions about the acceptability of behaviors (Cialdini, Kallgren, & Reno, 1991). Specifically, injunctive norms are the anticipated approval/rewards or disapproval/punishment of a behavior. These norms can extend to parents, family, and friends (Jiloha, 2009). For example, adolescents might base their decision to drink alcohol or smoke marijuana based on whether or not they believe their parents or peers would applaud or condemn the behavior. One of the best predictors of adolescents' substance use is friends' tolerance and approval of use (Ford & Hill, 2012). Peer injunctive pro-drug norms can predict current and future substance use behaviors, even after controlling for actual substance use (Jackson et al., 2014; Kam, Matsunaga, Hecht, & Ndiaye, 2009). Similarly, parents can transmit normative behaviors around substance use through modeling substance use behaviors and communicating expectations regarding substance use (Andrews et al., 1997; Davidson & Cardemil, 2009;). When parents model substance use behaviors and fail to communicate to their adolescent about substance use, youth are more likely to use substances (Walden et al., 2007).

Descriptive norms are an individual's perception of how most people behave in given situations (Cialdini et al., 1991; Kulis et al., 2005). Adolescent alcohol and drug use tend to conform to the perceived values and norms within a peer group (Duan, Chou, Andreeva, & Pentz, 2009). Adolescents, however, tend to perceive peer substance use at higher rates than actual peer use (Henry, Kobus, & Schoeny, 2011). For example, adolescents who perceive substance use to be high within the peer group (regardless of the accuracy of the perception) have a higher likelihood of engaging in heavy drinking and drunkenness, earlier initiation of alcohol and marijuana, and overall involvement with drugs (Elek et al., 2006; Litt & Stock, 2011).

## 1.2. Theoretical approach

Pre-adolescence and adolescence are critical periods for the adoption of behaviors relevant to health. Health norms, beliefs, and values established during this period are likely to continue throughout life. Ecodevelopmental Theory broadly characterizes the antecedents (e.g., norms) of adolescent risk and resiliency through multiple groups of influencers and across multiple systems (Perrino, González-Soldevilla, Pantin, & Szapocznik, 2000;

Szapocznik & Coatsworth, 1999). For adolescents, parents, peers, schools, and community are the groups most influencing adolescent development, risk, and resiliency.

These multiple groups of influencers are located with and across multiple systems – microsystem, mesosystem, exosystem, and macrosystem. Within the microsystem, the adolescent has direct interactions and contact with parents, peers, schools, and neighborhood. These interactions (e.g., parent-youth communication, substance use behaviors among peers) exert direct influence on adolescent behaviors. The mesosystem refers to the ways in these multiple groups of influencers interact with each other (e.g., parental engagement in school activities, parental monitoring of peers' behaviors). More distal is the exosystem. These are broader factors and contexts that do not directly involve the adolescent but can indirectly exert influence on youth behavior (e.g., parental social support, parental well-being). The macrosystem includes the overarching cultural and social factors that influence the values, norms, and behaviors of the adolescent, as well as, of the parents, peers, schools, and neighborhood (e.g., cultural values and beliefs in parenting practices). These multiple groups of influencers within these multiple systems can exert direct or indirect impacts on adolescent health (Martinez, Huang, Estrada, Sutton, & Prado, 2017). When these systems are supportive, adolescent health behaviors are positive and beneficial, however systems that are negative will facilitate adolescent behavioral problems, including substance use.

### 1.3. Family-based and Community-based prevention programs

In order for interventions to be most effective, these multiple groups and multiple systems should be considered. Substance abuse prevention research that includes both parents and youth are not new (Austin, Macgowan, & Wagner, 2005), but there is a lack of evidence about how, where, and for whom the interventions work best. Family-based prevention programs emphasize the manner in which parenting practices and family interaction patterns can affect adolescent substance use and other problem behaviors. These programs work with parents to help adjust family patterns, like parental monitoring and parent-child communication, in order to create a positive change within the family and the adolescent (Van Ryzin, Roeth, Fosco, Lee, & Chen, 2016). These changes in the family can reduce the risk levels for adolescent substance use (Van Ryzin et al., 2016).

Family-based prevention interventions that focus on bolstering family functioning and enhancing pro-social parenting have shown to effectively curb adolescent problem behaviors, including drug use (Perrino et al., 2016). Some family intervention proponents argue that family-based interventions have demonstrated more robust and longer lasting effects than individual-based interventions (Copello, Velleman, & Templeton, 2005; Slesnick & Prestopnik, 2005). Family-based interventions appear to be efficacious and cost-effective in preventing alcohol-use and other drug use among youth (Spath, Gyll, & Day, 2002). The recognition of families as a key influence on youth outcomes has translated into prevention efforts that focus on and parent-youth skill development and training - like the one presented in this article (Kaftarian & Kumpfer, 2000).

Community-based interventions can be delivered by trained community members and have the potential to reach a greater number of people (especially adults). Community-based

programs can be offered to working adults as evening or weekend programs (CDI Study Group, 2010) and can engage facilitators who live in the community and share ethnicity, language, and life experiences with those they serve, enhancing a sense of ownership and the sustainability of the programs (Spencer, Gunter, & Palmisano, 2010). When community-based programs deliver an extensive and encompassing prevention messages from multiple ecodevelopmental systems, adolescent alcohol and drug use can be deterred (Griffin, Scheier, Acevedo, Grenard, & Botvin, 2011). A community-based synchronized parent/youth delivery approach has the potential of lowering barriers to prevention interventions that Mexican heritage youth and their parents often experience (Marsiglia et al., 2018).

#### 1.4. *kiR* and *FPNG* - two efficacious interventions

Drawing from the Ecodevelopmental Theory, *keepin' it REAL (kiR)* is a school-based, evidence-based substance use prevention program for preadolescents. The goals of this culturally-based program are to encourage preadolescents and their classmates to adopt anti-drug attitudes and norms and to expand communication skills related to effectively resisting alcohol and drugs (Marsiglia & Hecht, 2005). The 10-lesson, 10-week manualized curriculum is delivered by classroom teachers and develops anti-drug attitudes and norms, as well as, drug resistance strategies through the acronym REAL – Refuse, Explain, Avoid, and Leave. Through the identification of values and norms, youth learn how to recognize risk factors and practice how to make pro-social choices that support their values and norms. By strengthening these norms, choices, and resistance strategies, youth become prepared to communicate comfortably and assertively in risky situations, ultimately preventing substance use (Marsiglia & Hecht, 2005). Through guided activities, *kiR* is designed to give students opportunities to share with other students the culture in their families and communities and to discuss why these cultural components are important to them (Parsai, Castro, Marsiglia, Harthun, & Valdez, 2011). *kiR* is designed to specifically account for influences the microsystem (e.g., peer substance use behavior) while drawing upon strengths in the macrosystem (e.g., cultural beliefs, values, and norms in adolescent decision making).

*Families Preparing the New Generation (FPNG)* is an 8-lesson, 8-week facilitated curriculum developed as a complementary parenting program to *kiR*. The overarching goal of *FPNG* is to empower parents to assist their youth in resisting drugs and alcohol using the REAL strategies, to strengthen family functioning and communication skills, to build a parental support network, and to integrate culture into parenting practices (Parsai et al., 2011). *FPNG* is designed as a facilitated learning curriculum, which provides parents opportunities to learn from other parents through a variety of activities, including role playing, small group discussion, and reflection exercises (Williams, Ayers, Baldwin, & Marsiglia, 2016).

The *FPNG* curriculum was developed, adapted, and revised through a culturally-grounded community-based participatory research methodology. Separate focus groups were held with key stakeholders, including school personnel, community educators, and parents. Parents provided information regarding challenges they face as a Latino parent (e.g., acculturation issues, parent-child gaps in communication, and social isolation as a monolingual Spanish-speaking parent), as well as the cultural strengths they draw upon to maintain family

functioning and parenting practices (e.g., cultural traditions and culturally-based methods of guiding and assisting their children). These were integrated into the lessons, activities, and homework throughout the curriculum (for full details, see Parsai et al., 2011).

*FPNG* was designed to influence multiple ecodevelopmental systems throughout the curriculum: the microsystem (e.g., parent-youth communication); the mesosystem (e.g., parental monitoring of peers' behaviors); the exosystem (e.g., parental social support); and the macrosystem (e.g., cultural values and beliefs in parenting practices). For example, one of the key components throughout *FPNG* is for parents to identify their family and cultural values and norms, link rules and consequences to these norms and values, and practice with other parents regarding ways to talk to their youth about norms, values, rules, consequences in relation to risky behaviors. Table 1 illustrates how the *FPNG* and *kiR* curricula share core elements across the different modules.

Large Randomized Control Trials (RCTs) found *FPNG* and *kiR* to be efficacious. Parents participating in *FPNG* effectively increased positive parenting practices (Marsiglia, Williams, Ayers, & Booth, 2014) and strengthened open parent-child communication (Williams, Ayers, Garvey, Marsiglia, & Castro, 2012). When *FPNG* was combined with *kiR*, preadolescents strengthened their anti-drug norms (Marsiglia et al., 2016) and delayed initiation and use of alcohol, cigarettes, marijuana, and inhalants (Marsiglia, Ayers, & Kiehne, in press; Williams et al., 2016). For *kiR*, findings showed that youth who received *kiR* had lower use of alcohol, tobacco, and marijuana and increased anti-drug attitudes and personal norms compared to the control group (Hecht et al., 2003; Kulis et al., 2005). These findings were particularly strong for Latino youth - in this case mostly Mexican-heritage youth (Marsiglia, Kulis, Wagstaff, Elek, & Dran, 2005). Based on these findings, the Substance Abuse and Mental Health Services Administration (SAMHSA) (2014) named *kiR* a National Model Program (Schinke, Brounstein, & Gardner, 2002). Although the efficacy evidence was strong for the two interventions separately and together, university researchers led all the studies. The present study aims to test the feasibility and effectiveness of implementing the two programs at the community-level by community implementers.

### 1.5. Purpose

This study employs a longitudinal, randomized control group design comparing three groups: (1) Parents receive *FPNG*, and youth receive *kiR* = Parent/Youth condition (PY); (2) Only the parents receive *FPNG*, and the youth receive the school's substance use prevention programming (treatment as usual) = Parent Only condition (PO); and (3) Parents receive a comparison curriculum, "Escuela de Padres," that is designed to help parents become better partners with schools in the education of their adolescent with the long-term goal of preparing the adolescent for college. Youth received the school's substance use prevention programming (treatment as usual) = Comparison condition (C). The purpose of this study is to explore if prevention interventions that rely on multiple groups and multiple systems within the Ecodevelopmental Theory can increase preadolescents' anti-substance use norms. The main hypothesis leading this study is that participating in interventions involving multiple groups and multiple systems (e.g., PY condition and PO condition) will result in

significantly stronger youth anti-drug norms than interventions that do not involve multiple groups or systems in substance use prevention programming (C condition).

## 2. Material and methods

### 2.1. Effectiveness trial: a community-led effort

Data come from three cohorts of parent and youth participating in a longitudinal randomized control effectiveness trial. The eligible sample was drawn from middle schools ( $n = 19$ ) receiving Title I funding and had a large number ( $> 100$ ) and percentage ( $> 60\%$ ) of Latino 7th grade students. We randomized schools into three conditions through a three-block stratification procedure by percentage of Latino students. We randomized all eligible schools prior to the schools agreeing to participate.

Because this was a community-led effectiveness trial, the researchers relied heavily on the community partner, a local multi-site, and deep-rooted community program that engages lay bilingual and bicultural personnel as facilitators of its programming. Its demonstrated record of successfully recruiting, retaining, and educating over 33,000 Mexican heritage and other Latino parents and youth made it an ideal partner in this effectiveness trial. The community partner recruited the schools, parents, and youth and used bilingual and bicultural facilitators to deliver the 8-week parenting curricula (*FPNG* and “Escuela de Padres”) in both English and Spanish. The parenting curricula were delivered by the community-based facilitators in the school the parent's child attended and were most often delivered in the morning, early evening or on the weekend. *kiR* was delivered in partnerships with the schools. The regular 7th grade teachers delivered the 10-week curriculum to their students in the classroom. Fidelity observations made by members of the research team occurred during Lessons 3 and 6 of *FPNG* and assessed the community facilitator's ability to faithfully follow the lessons plan, quality of delivery of his/her instruction, and parent's responsiveness to the curriculum and facilitator. In general, facilitators “mostly” to “completely” followed the curriculum lesson plans and demonstrated quality of delivery of instruction. Parents tended to be “highly engaged” in the lesson content.

### 2.2. Consenting procedures

Following approved human subject protocols, the community partner recruited parents through telephone calls and flyers at the schools. At the beginning of the first parenting program workshop, parents provided consent for themselves and their child. The consent emphasized the voluntary and confidential nature of participation, including survey administration. If consented, youth then assented. The overall consent rate for the study was 9% for youth and 11% for parents as calculated from the total number of 7th grade students in the 19 schools. The final sample size is based on those parents and youth who both completed a pre-intervention survey to create a matched dyad ( $n = 532$ ).

### 2.3. Survey completion

Youth and parents completed four surveys on a similar schedule. In the fall (September) of the student's 7th grade school year, a pre-intervention questionnaire (T1) was administered before any intervention (if applicable) was delivered. In January of the same school year,

approximately one month after the completion of the intervention, a short-term questionnaire was completed (T2; 4 months after T1). The T3 survey was administered in May of 7th grade (8 months after T1). The T4 survey was administered in May of the following school year – the youth's 8th grade year (20 months after T1). The questionnaires took between 30 and 45 min to complete and collected information on sociodemographic characteristics and substance use behaviors, as well as substance use norms, expectancies, resistance skills, and intentions. All surveys were available in English and Spanish and all measures were collected at all four time points.

#### 2.4. Measures - dependent variables

Measures of personal, parental injunctive, peer injunctive, and descriptive anti-drug norms were based on those used in the efficacy trial of *kiR* (see Kulis et al., 2005). All scales ranged from 1 = weak anti-drug norms to 4 = strong anti-drug norms. To assess the anti-drug personal norm scale, youth were asked: “Is it OK for someone your age to...” “drink alcohol,” “smoke cigarettes,” or “smoke marijuana.” These three questions created a mean scale with high internal consistency (T2:  $\alpha = 0.92$ ; T3:  $\alpha = 0.92$ ; T4:  $\alpha = 0.91$ ). Injunctive norms assessed separately how their parents and best friends would react if the youth used substances through three questions (e.g., “How angry would your parents be if they found out you drank alcohol?”). Internal consistency was high for the parental injunctive norms (T2:  $\alpha = 0.96$ ; T3:  $\alpha = 0.94$ ; T4:  $\alpha = 0.91$ ) and peer injunctive norms (T2:  $\alpha = 0.94$ ; T3:  $\alpha = 0.94$ ; T4:  $\alpha = 0.94$ ). Finally, descriptive norms gauged the youth's perceptions of substance use behaviors of the kids in their school (e.g., “About how many kids in your school would you guess have used alcohol, cigarettes or marijuana at least one?”). This two-item mean scale had high internal consistency (T2:  $\alpha = 0.70$ ; T3:  $\alpha = 0.71$ ; T4:  $\alpha = 0.62$ ).

#### 2.5. Measures - independent variables

The intervention variable was treated as a categorical variable with three intervention conditions (0 = C group; 1 = PY group; and 2 = PO group). About 35% of participants were in PY group ( $n = 188$ ); 30% were in PO group ( $n = 160$ ); and 35% were in C group ( $n = 184$ ). Variables at T1 controlled for youth's *age* (continuous), *gender* (1 = male; 0 = female), *receipt of a free lunch at school* (1 = yes; 0 = no), and *number of years in the U.S.* (recoded as four binary variables: < 5 years [reference group], 5 to 10 years, 1- to 15 years, and whole life). At the parental level, we controlled parent's gender (female = 1; male = 0), *age* (continuous), *marital status* (married = 1; other = 0), *education level* (coded as three dummy variables: less than high school [reference group], high school, and college or above). At the household level, control variables included *household size* (total number of people living in the same household), annual household total income level (coded as three dummy variables: *low* [less than \$10,000; reference group], middle [\$10,000–\$30,000], and high [higher than \$30,000]), and whether or not the family had been in the U.S. for > 10 years (yes = 1; no = 0).

#### 2.6. Analytic strategies: a three-fold analysis strategy

To examine the intervention effects at different time points, we conducted separate regressions on T2, T3, and T4 controlling for the T1 demographic variables at individual, parental, and household levels. For each regression model, we also controlled the d outcome



variables at T1. Although the original study design was a cluster randomized controlled trial, the attrition and missing data may have caused violation of the randomization, therefore, we adopted a three-fold analysis strategy to triangulate the results. First, we present the regression results based on raw data. Then, we present the regression results based on imputed data, and last, we present the regression results based on imputed and propensity score full matched data.

## 2.7. Missing data analysis

The overall retention rate for youth between T1 and T4 was 90% (C = 88%; PY = 93%; PO = 90%). As shown in Table 2, most of the variables had some missing values (missingness rate ranges from 1% to 14%). Therefore, we used multiple imputation (MI) to estimate those values for each variable using Stata 15.0. Stata syntax “mi” was used to impute missing values by chained equations, and 20 imputed files were created for the subsequent analyses.

## 2.8. Multi-group propensity score matching (PSM) Analysis

Given the potential violation of randomization, we also adopted the PSM method to reduce the sample selection bias and the probability of each participant been assigned into PY, PO, or C groups (Guo & Fraser, 2014). To investigate whether the PY and the PO groups had different effects on changing substance abuse norms compared with the C group, we conducted a multi-group PSM analysis (Guo & Fraser, 2014; McCaffrey et al., 2013). A categorical variable of with three values (0 = C; 1 = PY; and 2 = PO) were created.

To conduct the multi-group PSM analysis (Guo & Fraser, 2014; Imbens, 2000), first we used a multinomial logit model to generalize a propensity score for each participant's probability of having been assigned to each group, with controlling for the observed covariates. For each participant, the model produced three generalized propensity scores because three intervention groups (C, PY, and PO) were used in the analysis. Then, we generated inverse propensity scores and treated the inverse scores as sampling weights in the outcome analysis. Last, we checked the balance on the covariates among the three groups using a similar weighted modeling, which treated each covariate as a dependent variable and the group variable as an independent variable.

We conducted the PSM process on each imputed file separately. For the post-matching analyses (e.g., OLS regression), we aggregated the regression results based on the matched samples of the 20 imputed files. Finally, we used a three-fold analysis strategy to allow comparisons of the differences and to triangulate the results. We present the regression results based on three permutations of data: (a) the original data, with no imputation and no PSM; (b) the imputed data but no PSM; and (c) the imputed data plus PSM.

## 3. Findings

### 3.1. Sample descriptions

Table 2 presents the descriptive statistics for all the variables based on raw data and on the 20 imputed data files. Overall, there were minimal differences between the means of the raw data compared to the means of the imputed data (*Mr-Mi*). Using the imputed

data, on average, the four substance use norms remained fairly stable and strong across the four waves. Participants had an average personal norms score of 3.74 (range from 3.71–3.77) across the four waves, indicating very strong and stable personal anti-drug norms. Descriptive anti-drug norms were slightly weaker and to some extent, showed more variation over time. The average score was 3.24 across the four waves and ranged from 3.15–3.34. Parental injunctive anti-drug norms were also stable and very strong, ranging from 3.69–3.79, with a four-wave average of 3.76. Peer injunctive anti-drug norms tended to decrease slightly over time from 4.31 at T1 to 4.20 at T4, with an overall average across the four waves of 4.28. Figs. 1-4 graphically represent the four substance use norms over time by condition. In general, participants in the C condition had the weakest anti-drug norms (personal, descriptive, parental, and peer) at T4.

Descriptive statistics are also presented for the covariates at the parental, household, and youth levels. At the parental level, the majority were female (90%), the average age of the parents was about 40 years old, and 78% were married. One-third (33%) of the parent's education level was less than high school, and 40% reported a high school degree. In terms of household characteristics, the average household size was five. The majority (62%) had an annual household income between \$10,000 and \$30,000. The majority of the families (87%) had been in the U.S. for > 10 years. At the youth level, the sample had slightly more males (53%) than females. The age of the youth at the end of the trial ranged from 14 to 19 years of age. Most of them (91%) received free lunch at school. The majority of youth (69%) have lived in the U.S. all of their life, with only 10% living in the U.S. for < 5 years.

### 3.2. Intervention effects by groups

Table 3 presents the regression models examining the intervention effects on changing the four substance use norms. We report results using three different approaches to test the intervention effects: (a) using raw data; (b) using MI data; (c) using MI + PSM data. We treated results based on (c) MI data with PSM as the main analytical results.

There were no significant differences in changing *personal anti-drug norms* or *changing parental norms* between the PY and C groups or between the PO and C groups at any time point. For *descriptive anti-drug norms*, however, there were significant differences in both the PO and PY groups compared to the C group at T4. At T2, participants in the PO group had marginally stronger descriptive anti-drug norms than the C group ( $p = .062$ ), and by T4, these changes were statistically significant ( $p = .017$ ). For the PY group, significantly stronger descriptive anti-drug norms were seen only at T4 ( $p = .016$ ) when compared to the C group. These results for descriptive anti-drug norms are stable across models for the raw, MI, and MI + PSM data.

For *peer anti-drug norms*, at T2, preadolescents in the PY group perceived marginally stronger peer anti-drug norms than the C group ( $p = .058$ ), and by T4, peer anti-drug norms for the PY group were significantly stronger when compared to the C group ( $p = .017$ ). Preadolescents in the PO group perceived marginally stronger peer anti-drug norms only at T4 ( $p = .056$ ). These results for peer anti-drug norms were more limited in the stability between the raw, MI, and MI + PSM data. There are differences between the raw and MI + PSM data in the PY group at T2, and differences between the raw/MI data and the

MI + PSM data in the PO group at T4. There were no significant intervention effects on descriptive or peer anti-drug norms at T3.

## 4. Discussion

The findings support the main hypothesis of the study as the norms of the youth in both the PY and PO conditions changed in the desired direction, significantly more than the youth in the C condition. There were also differences between the types of norms and across the two experimental conditions. Descriptive anti-drug norms and peer anti-drug norms (Cialdini et al., 1991) showed the strongest effects, and the combined effects of the youth and parenting interventions (PY) got stronger overtime. Most of the effects emerged with descriptive norms (what youth think other youth are doing) and with the peer norms (would my friends get upset if they knew I was using drugs) and not at the individual or parental normative levels. This micro versus mesosystem difference may reflect the less individualistic and more collectivistic cultural approach often identified with Latino communities (Arevalo, So, & McNaughton-Cassill, 2016). From an Ecodevelopmental perspective (Szapocznik & Coatsworth, 1999), these findings support the notion of intervening simultaneously at the micro and mesosystem in order to achieve higher levels of effectiveness in preventing Latino youth substance use.

As youth participants in the comparison group got older, their anti-drug norms weakened at a faster rate than their counterparts in the PO and PY conditions. These results confirm existing developmental research findings regarding youth changes in norms as they transition from preadolescence into adolescence (Onrust et al., 2016). Our findings add some nuance by showing that interventions can slow down the trend towards pro-drug norms.

The effects were more consistent and stronger across waves for students assigned to the PO condition. Intervening at the parent or family-level alone produced stronger desired effects for this sample of Latino students. The intervention seems to have strengthened the parenting skills needed to bridge the complex acculturation differences between the adults and their children (Prado et al., 2010). On the other hand, intervening at the child and parent level simultaneously did not produce stronger effects as parents may have relied on the school and teacher's role and consequently became less involved in their prevention role (Davidson & Cardemil, 2009). These findings merit further research about school-home synchronization and communication with recent immigrant Latino families.

### 4.1. Limitations

There are several limitations related to the study. Only youth who were attending school were eligible to participate, and only parents who volunteered to participate were involved. Because the study compared parent-child dyads, we did not have information about the parents who did not volunteer or their children. There is a possible selection bias, which we control to some degree by having a comparison group. In addition, the sample included mostly first generation immigrant parents from Mexico and their children mostly born in the US. Thus, there are some limitations about our ability to generalize the findings to the broader population, but it provided opportunities to advance knowledge about intervening with families of divergent acculturation statuses. Although this study adopted propensity

score analysis to control for selection bias on the intervention effects based on the observed variables, this analytic approach is vulnerable to unobserved heterogeneity. In other words, PSM cannot rule out hidden selection bias by missing indicators that may affect the intervention effects on substance use norms.

#### 4.2. Generalizability

Findings from this effectiveness trial are generalizable not only to other Latino communities, but also to those interested in community-based prevention interventions. First, the effectiveness trial provided further evidence about the usefulness of a family-centered approach with a facilitated learning model with Latino families and youth (Andrews et al., 1997). While the majority of the parents in this study were Mexican who had lived in the U.S. for < 10 years, the *FPNG* curriculum was purposefully designed to apply across Latino cultures and families. Because of the facilitated learning design, parents learn from each other rather than from an “expert” teacher. This design means that it is not specific to one Latino cultural group or to one geographic location. However, future study should include out-of-school youth, youth from rural areas, and recent immigrant youth and their families to test the generalizability of *FPNG*. Second, the findings advance translational and dissemination research science and support the notion that Latino communities are able to implement efficacious interventions that benefit their youth. Community members took ownership of the intervention and implemented it with only tangential support from the research team. Any research team interested in engaging minority communities to engage in research should allow the local community to participate equitably and in partnership. Third, these results highlight the need to deliver this kind of community-based interventions at flexible hours in order to make it possible for community members to participate and sustain the interventions. Strengthening the impact of prevention efforts by involving families can lower the cost of treating youth as they age, as youth not exposed to prevention programs may develop serious health conditions associated with the early onset of alcohol, tobacco and other drugs use (Schulenberg & Maslowsky, 2009). The results provide further evidence that programs that address risk and protective factors of substance use and misuse can positively influence substance use norms (Jackson et al., 2014). Anti-drug norms in turn will prevent substance use initiation, harmful use, and substance use-related problems (Johnston et al., 2016).

### 5. Conclusion

This study makes a significant contribution in advancing our understanding on how to translate efficacious youth and parenting prevention interventions “from bench to bedside.” An already efficacious parent/child intervention (Williams et al., 2016) now implemented by community members in their own community achieved the desired results in terms of strengthening the youth's antidrug norms. The results also generated knowledge on how to implement a parenting program and a youth program simultaneously at the community-level and by the community. The findings also shed light on the strengths of culture and on the importance of culturally-grounded interventions as means to make interventions feasible and more efficacious. Empowered Latino parents can make a difference.

## Acknowledgments

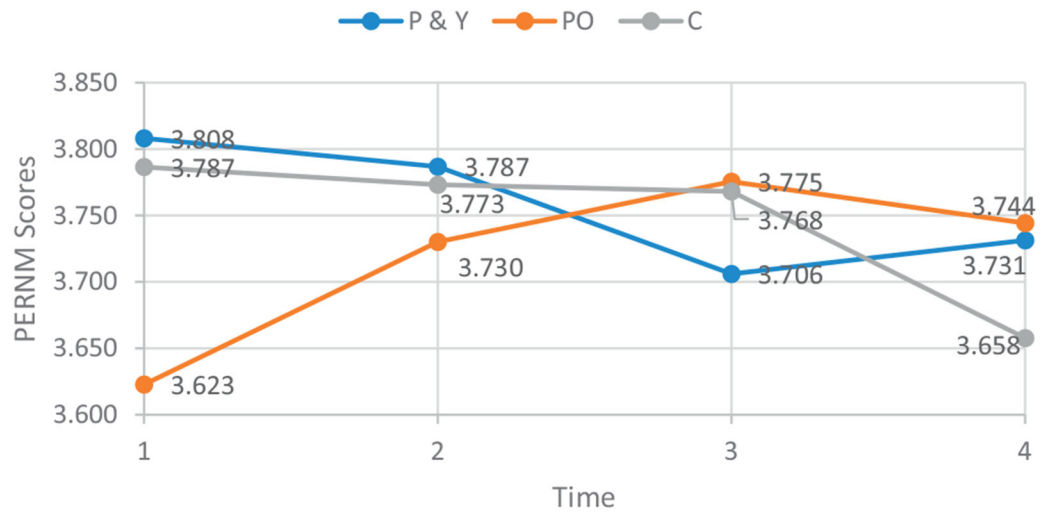
This research was supported by funding from the National Institutes of Health/National Institute on Minority Health and Health Disparities (NIH/NIMHD), awards P20 MD002316 (F. Marsiglia, P.I.) and U54 MD002316 (F. Marsiglia, P.I.). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIMHD or the NIH.

## References

- Andrews J, Hops H, & Duncan S (1997). Adolescent modeling of parent substance use: The moderating effect of the relationship with the parent. *Journal of Family Psychology*, 11(3), 259–270.
- Arevalo I, So D, & McNaughton-Cassill M (2016). The role of collectivism among Latino American college students. *Journal of Latinos and Education*, 15(1), 3–11.
- Austin A, Macgowan M, & Wagner E (2005). Effective family-based interventions for adolescents with substance use problems: A systematic review. *Research on Social Work Practice*, 15(2), 67–83.
- Casey BJ, & Jones RM (2010). Neurobiology of the adolescent brain and behavior: Implications for substance use disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, 49(12), 1189–1201. 10.1016/j.jaac.2010.08.017. [PubMed: 21093769]
- CDI Study Group (2010). Community-directed interventions for priority health problems in Africa: Results of a multi-country study. *Bulletin of the World Health Organization*, 88(7), 509.
- Centers for Disease Control and Prevention, & National Center for Chronic Disease Prevention and Health Promotion (2018). *Alcohol and public health*. Washington, DC: Author.
- Cialdini RB, Kallgren CA, & Reno RR (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. *Advances in Experimental Social Psychology*, Vol. 24, 201–234 (Elsevier).
- Collins SE (2016). Associations between socioeconomic factors and alcohol outcomes. *Alcohol Research: Current Reviews*, 38(1), 83–94. [PubMed: 27159815]
- Copello AG, Velleman RD, & Templeton LJ (2005). Family interventions in the treatment of alcohol and drug problems. *Drug and Alcohol Review*, 24(4), 369–385. [PubMed: 16234133]
- Davidson T, & Cardemil E (2009). Parent-child communication and parental involvement in Latino adolescents. *Journal of Early Adolescence*, 29(1), 99–121.
- Domitrovich CE, Durlak JA, Staley KC, & Weissberg RP (2017). Social-emotional competence: An essential factor for promoting positive adjustment and reducing risk in school children. *Child Development*, 88(2), 408–416. [PubMed: 28213889]
- Duan L, Chou CP, Andreeva VA, & Pentz MA (2009). Trajectories of peer social influences as long-term predictors of drug use from early through late adolescence. *Journal of Youth and Adolescents*, 38(3), 454–465.
- Elek E, Miller-Day M, & Hecht M (2006). Influences of personal, injunctive, and descriptive norms on early adolescent substance use. *Journal of Drug Issues*, 36(1), 147–171.
- Ford JA, & Hill TD (2012). Religiosity and adolescent substance use: Evidence from the national survey on drug use and health. *Substance Use & Misuse*, 47(7), 787–798. [PubMed: 22443107]
- Fry R, & Gonzales F (2008). *One in five and growing fast: A profile of Hispanic public school students*. Washington, D.C.: Pew Hispanic Center.
- Griffin KW, Scheier LM, Acevedo B, Grenard JL, & Botvin GJ (2011). Longterm effects of self-control on alcohol use and sexual behavior among urban minority young women. *International Journal of Environmental Research and Public Health*, 9(1), 1–23. [PubMed: 22470274]
- Guo S, & Fraser MW (2014). *Propensity score analysis*. Vol. 12. Sage.
- Hecht ML, Marsiglia FF, Elek E, Wagstaff DA, Kulis S, Dustman P, & Miller-Day M (2003). Culturally grounded substance use prevention: An evaluation of the keepin'it REAL curriculum. *Prevention Science*, 4(4), 233–248. [PubMed: 14598996]
- Henry D, Kobus K, & Schoeny M (2011). Accuracy and bias in adolescents' perceptions of friends' substance use. *Psychology of Addictive Behaviors*, 25(1), 80–89. [PubMed: 21244119]
- Imbens GW (2000). The role of the propensity score in estimating dose-response functions. *Biometrika*, 87(3), 706–710.

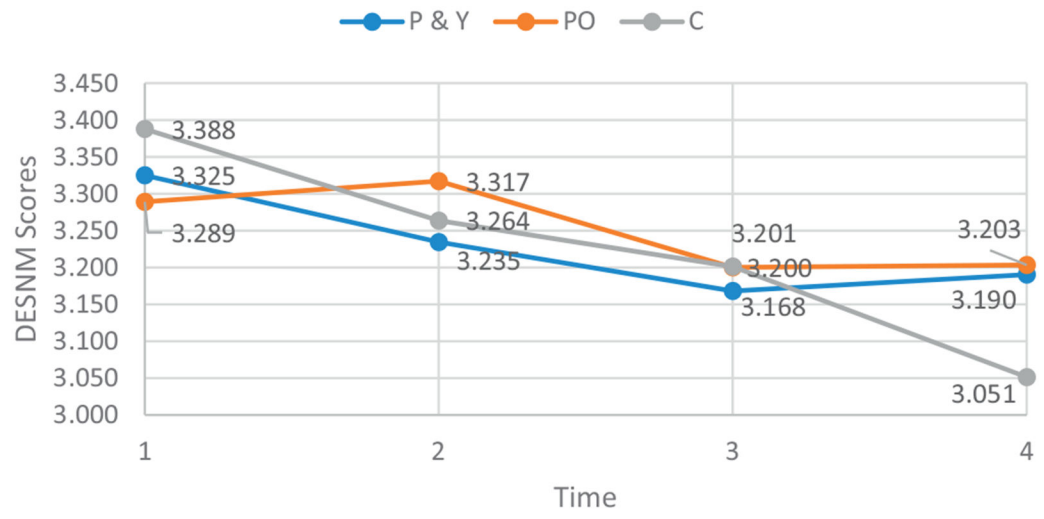
- Jackson KM, Roberts ME, Colby SM, Barnett NP, Abar CC, & Merrill JE (2014). Willingness to drink as a function of peer offers and peer norms in early adolescence. *Journal of Studies on Alcohol and Drugs*, 75(3), 404–414. [PubMed: 24766752]
- Jiloha RC (2009). Social and cultural aspects of drug abuse in adolescents. *Delhi Psychiatry Journal*, 12, 167–175.
- Johnston LD, Miech RA, O'Malley PM, Bachman JG, Schulenberg JE, & Patrick ME (2018). Monitoring the future: National results on adolescent drug use, 1975–2017: Overview, key findings on adolescent drug use. Ann Arbor-MI: University of Michigan.
- Johnston LD, O'Malley PM, Schulenberg JE, Bachman JG, Miech RA, & Patrick ME (2016). The objectives and theoretical foundation of the Monitoring the Future study (Monitoring the Future Occasional Paper No. 84). Ann Arbor, MI: Institute for Social Research.
- Kaftarian S, & Kumpfer K (2000). Special issue: Family-focused research and primary prevention practice. *The Journal of Primary Prevention*, 21(2), 169–184.
- Kam JA, Matsunaga M, Hecht ML, & Ndiaye K (2009). Extending the theory of planned behavior to predict alcohol, tobacco, and marijuana use among youth of Mexican heritage. *Prevention Science*, 10(1), 41–53. [PubMed: 18985451]
- Kam JA, & Wang N (2015). Longitudinal effects of best-friend communication against substance use for Latino and non-Latino White early adolescents. *Journal of Research on Adolescence*, 25(3), 534–550.
- Keyes KM, Schulenberg JE, O'Malley PM, Johnston LD, Bachman JG, Li G, & Hasin D (2012). Birth cohort effects on adolescent alcohol use: The influence of social norms from 1976 to 2007. *Archives of General Psychiatry*, 69(12), 1304–1313. [PubMed: 22868751]
- Kulis S, Marsiglia FF, Elek E, Dustman P, Wagstaff DA, & Hecht ML (2005). Mexican/Mexican American adolescents and keepin' it REAL: An evidence-based substance use prevention program. *Children and Schools*, 27(3), 133–145. [PubMed: 21359122]
- Litt DM, & Stock ML (2011). Adolescent alcohol-related risk cognitions: The roles of social norms and social networking sites. *Psychology of Addictive Behaviors*, 25(4), 708–713. 10.1037/a0024226. [PubMed: 21644803]
- Marsiglia FF, Ayers SL, Baldwin-White A, & Booth J (2016). Changing Latino adolescents' substance use norms and behaviors: The effects of synchronized youth and parent drug use prevention interventions. *Prevention Science*, 17(1), 1–12. [PubMed: 26103920]
- Marsiglia FF, Ayers SL, & Kiehne E (2018). Reducing inhalant use in Latino adolescents through synchronized parent-adolescent interventions. *Journal of Prevention & Intervention in the Community* (in press).
- Marsiglia FF, & Hecht M (2005). *Keepin'it REAL*. ETR Associates: Santa Cruz-CA.
- Marsiglia FF, Kiehne E, & Ayers SL (2018). Re-examining the acculturation gap: The relationship between the bidimensional parent-adolescent gap and risky behavior among Mexican-heritage adolescents. *Journal of Early Adolescence*, 38, 581–605.
- Marsiglia FF, Kulis S, Wagstaff DA, Elek E, & Dran D (2005). Acculturation status and substance use prevention with Mexican and Mexican-American Youth. *Journal of Social Work Practice in the Addictions*, 5(1–2), 85–111. [PubMed: 21660128]
- Marsiglia FF, Williams LR, Ayers SL, & Booth JM (2014). Familias: Preparando la Nueva Generación: A randomized control trial testing the effects on positive parenting practices. *Research on Social Work Practice*, 24(3), 310–320. [PubMed: 25506185]
- Martinez MJ, Huang S, Estrada Y, Sutton MY, & Prado G (2017). The relationship between acculturation, ecodevelopment, and substance use among Hispanic adolescents. *Journal of Early Adolescence*, 37(7), 948–974. [PubMed: 28798506]
- McCaffrey DF, Griffin BA, Almirall D, Slaughter ME, Ramchand R, & Burgette LF (2013). A tutorial on propensity score estimation for multiple treatments using generalized boosted models. *Statistics in Medicine*, 32(19), 3388–3414. [PubMed: 23508673]
- Miller-Day MA, Alberts J, Hecht ML, Trost MR, & Krizek RL (2014). Adolescent relationships and drug use. Psychology Press.

- Onrust SA, Otten R, Lammers J, & Smit F (2016). School-based programs to reduce and prevent substance use in different age groups: What works for whom? Systematic review and meta-regression analysis. *Clinical Psychology Review*, 44, 45–59. [PubMed: 26722708]
- Parsai MB, Castro FG, Marsiglia FF, Harthun ML, & Valdez H (2011). Using community based participatory research to create a culturally grounded intervention for parents and youth to prevent risky behaviors. *Prevention Science*, 12(1), 34–47. [PubMed: 21107693]
- Perrino T, Brincks A, Howe G, Brown CH, Prado G, & Pantin H (2016). Reducing internalizing symptoms among high-risk, Hispanic adolescents: Mediators of a preventive family intervention. *Prevention Science*, 17(5), 595–605. [PubMed: 27154768]
- Perrino T, González-Soldevilla A, Pantin H, & Szapocznik J (2000). The role of families in adolescent HIV prevention: A review. *Clinical Child and Family Psychology Review*, 3(2), 81–96. [PubMed: 11227063]
- Prado G, Huang S, Maldonado-Molina M, Bandiera F, Schwartz SJ, de la Vega P, ... Pantin H (2010). An empirical test of ecodevelopmental theory in predicting HIV risk behaviors among Hispanic youth. *Health Education & Behavior*, 37(1), 97–114. [PubMed: 20130302]
- Schinke S, Brounstein P, Gardner S, & Substance Abuse and Mental Health Services Administration (2002). *Science-Based Prevention Programs and Principles, 2002. Effective Substance Abuse and Mental Health Programs for Every Community*. S.I Distributed by ERIC Clearinghouse.
- Schulenberg JE, & Maslowsky J (2009). Taking substance use and development seriously: Developmentally distal and proximal influences on adolescent drug use. *Monographs of the Society for Research in Child Development*, 74(3), 121–130. [PubMed: 19930536]
- Slesnick N, & Prestopnik JL (2005). Ecologically based family therapy outcome with substance abusing runaway adolescents. *Journal of Adolescence*, 28(2), 277–298. [PubMed: 15878048]
- Spencer MS, Gunter KE, & Palmisano G (2010). Community health workers and their value to social work. *Social Work*, 55(2), 169–180. [PubMed: 20408358]
- Spoth RL, Guyll M, & Day SX (2002). Universal family-focused interventions in alcohol-use disorder prevention: Cost-effectiveness and cost-benefit analyses of two interventions. *Journal of Studies on Alcohol*, 63(2), 219–228. [PubMed: 12033699]
- Substance Abuse and Mental Health Services Administration (2014). *Prevention of substance abuse and mental illness*. Retrieved from <https://www.samhsa.gov/prevention>.
- Szapocznik J, & Coatsworth JD (1999). An ecodevelopmental framework for organizing the influences on drug abuse: A developmental model of risk and protection. In Hartel MDGCR (Ed.). *Drug abuse: Origins & interventions* (pp. 331–366). Washington, DC, US: American Psychological Association.
- Van Ryzin MJ, Roseth CJ, Fosco GM, Lee YK, & Chen IC (2016). A component-centered meta-analysis of family-based prevention programs for adolescent substance use. *Clinical Psychology Review*, 45, 72–80. [PubMed: 27064553]
- Walden B, Iacono W, & McGue M (2007). Trajectories of change in adolescent substance use and symptomatology: Impact of paternal and maternal substance use disorders. *Psychology of Addictive Behaviors*, 21(1), 35–43. [PubMed: 17385953]
- Williams L, Ayers S, Baldwin A, & Marsiglia F (2016). Delaying youth substance-use initiation: A cluster randomized controlled trial of complementary youth and parenting interventions. *Journal of the Society for Social Work and Research*, 7(1), 177–200.
- Williams LR, Ayers SL, Garvey MM, Marsiglia FF, & Castro FG (2012). Efficacy of a culturally based parenting intervention: Strengthening open communication between Mexican-heritage parents and adolescent children. *Social Work Research*, 3(4), 296–307.
- Windle M (2016). Drinking over the lifespan: Focus on early adolescents and youth. *Alcohol Research: Current Reviews*, 38(1), 95–101. [PubMed: 27159816]

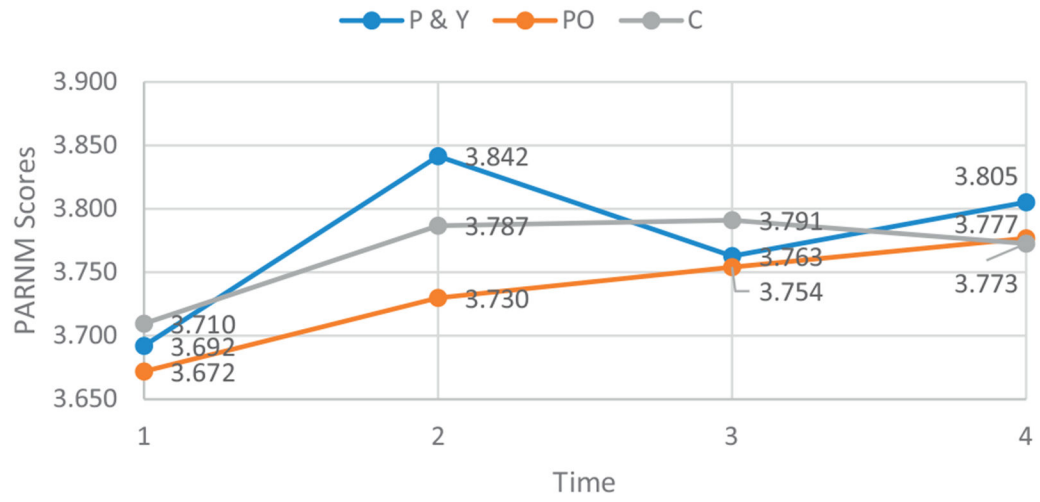


**Fig. 1.**  
Personal norms.

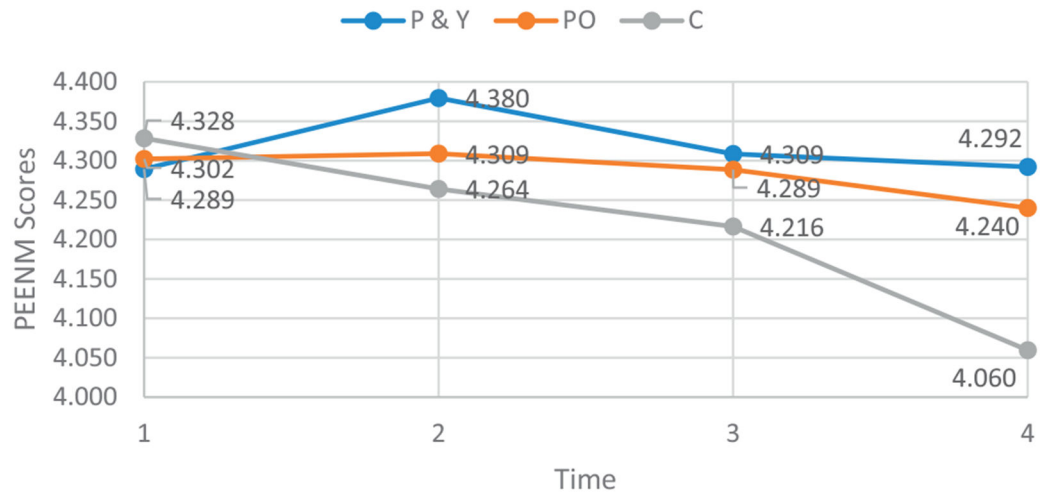




**Fig. 2.**  
Descriptive norms.



**Fig. 3.**  
Parental norms.



**Fig. 4.**  
Peer norms.

**Table 1**

*FPNG* and *kiR* intervention content.

Lesson	<i>FPNG</i>	<i>kiR</i>
1	You are not alone (eco map, social support systems, goals for the child)	Options and Choices (consequences to our choices, goals for the future)
2	Introduction to <i>kiR</i> ( <i>kiR</i> strategies, ABCD problem solving method)	Risks (daily risk, consequences)
3	Knowing your Child's World (adolescent development, diversity in adolescence)	Communication and Conflict (handling conflict, communication skills, I-statements)
4	Communicating with your Child (effective and positive communication, I-statements)	Refuse (saying no, verbal and nonverbal communication)
5	Giving and Receiving Support (supportive relationships, learning how to ask for help)	Explain (communication skills to explain)
6	Managing your Child's Behavior Effectively (monitoring, supportive parent-child relationships)	Avoid (ABCD problem solving method)
7	Talking with Teens about Risky Behaviors (consequences of drug use and risky sex, harm reduction)	Leave (applying REAL strategies to avoid engaging in risky behaviors)
8	Putting it all Together (review of REAL strategies and all lessons)	Personal Health Views and Beliefs (demonstrating respect for others, personal values and norms about SU)
9		Feelings (using communication skills to describe personal health views, beliefs and intended actions)
10		Support Networks (eco-map)

**Table 2**

Distribution of Variables before and after imputation.

Variable	Raw data			Imputed data (n = 532)			Mr-Mi
	n	Missingness	Mean	SD	Mean	SE	
<b>Dependent variables</b>							
Personal Norms - T1	508	5%	3.74	0.64	3.74	0.03	0.00
Personal Norms - T2	485	9%	3.77	0.55	3.77	0.03	0.00
Personal Norms - T3	493	7%	3.75	0.57	3.75	0.03	0.00
Personal Norms - T4	478	10%	3.72	0.56	3.71	0.03	0.01
Descriptive Norms - T1	510	4%	3.33	0.72	3.34	0.03	-0.01
Descriptive Norms - T2	482	9%	3.29	0.70	3.27	0.03	0.02
Descriptive Norms - T3	489	8%	3.19	0.73	3.19	0.03	0.00
Descriptive Norms - T4	477	10%	3.16	0.69	3.15	0.03	0.01
Parental Norms - T1	512	4%	3.69	0.80	3.69	0.04	0.00
Parental Norms - T2	484	9%	3.80	0.63	3.79	0.03	0.01
Parental Norms - T3	491	8%	3.78	0.62	3.77	0.03	0.01
Parental Norms - T4	478	10%	3.79	0.53	3.79	0.02	0.00
Peer Norms - T1	512	4%	4.31	0.95	4.31	0.04	0.00
Peer Norms - T2	483	9%	4.33	0.94	4.32	0.04	0.01
Peer Norms - T3	491	8%	4.26	0.95	4.27	0.04	-0.01
Peer Norms - T4	476	11%	4.22	0.95	4.20	0.04	0.02
<b>Covariates</b>							
<b>Parental level</b>							
Female	525	1%	0.90	0.30	0.90	0.01	0.00
Age	517	3%	40.11	6.46	40.11	0.28	0.00
Married	525	1%	0.78	0.41	0.78	0.02	0.00
<b>Education levels</b>							
Less than high school	509	4%	0.34	0.47	0.33	0.02	0.01
High school	509	4%	0.39	0.49	0.40	0.02	-0.01
College and higher	509	4%	0.27	0.44	0.27	0.02	0.00

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

	Raw data			Imputed data ( <i>n</i> = 532)			<i>Mr-Mi</i>
	<i>n</i>	Missingness	Mean	<i>SD</i>	Mean	<i>SE</i>	
Household level							
Size	516	3%	5.25	1.53	5.26	0.07	-0.01
Annual income levels:							
Low ( \$10 K)	458	14%	0.17	0.38	0.18	0.02	-0.01
Middle (\$10 K-\$30 K)	458	14%	0.62	0.49	0.62	0.02	0.00
High (> \$30 K)	458	14%	0.21	0.40	0.20	0.02	0.01
Stay in U.S. > 10 years	522	2%	0.87	0.33	0.87	0.01	0.00
Youth level							
Male	532	0%	0.53	0.50	0.53	0.02	0.00
Age	532	0%	17.63	0.96	17.63	0.04	0.00
Received free lunch	523	2%	0.91	0.29	0.91	0.01	0.00
Years in U.S.:							
< 5 years	527	1%	0.10	0.30	0.10	0.01	0.00
5-10 years	527	1%	0.09	0.29	0.09	0.01	0.00
10-15 years	527	1%	0.13	0.33	0.13	0.01	0.00
All the time	527	1%	0.69	0.46	0.69	0.02	0.00

**Table 3**  
Regression results using different datasets of the intervention effects on changing substance abuse norms.

	Time 2			Time 3			Time 4			
	Coef.	SE	P	Coef.	SE	P	Coef.	SE	P	
Personal norms	PY	-0.008	0.062	0.894	-0.093	0.079	0.256	0.088	0.113	0.451
	PO	-0.057	0.100	0.574	0.058	0.051	0.267	0.114	0.144	0.439
	RAW									
(b)	PY	0.017	0.060	0.779	-0.058	0.073	0.435	0.080	0.101	0.442
	PO	0.003	0.071	0.971	0.060	0.056	0.303	0.112	0.108	0.319
	MI									
(c)	PY	0.029	0.061	0.641	-0.059	0.071	0.415	0.097	0.098	0.336
	PO	-0.001	0.065	0.989	0.066	0.053	0.236	0.122	0.097	0.226
	MI + FSM									
Descriptive norms	PY	0.066	0.140	0.642	-0.065	0.095	0.503	0.200	0.084	<b>0.029</b>
	PO	0.129	0.071	<b>0.084</b>	-0.020	0.055	0.714	0.210	0.093	<b>0.037</b>
	RAW									
(b)	PY	0.016	0.110	0.884	-0.006	0.084	0.940	0.170	0.075	<b>0.038</b>
	PO	0.108	0.061	<b>0.096</b>	0.031	0.056	0.586	0.192	0.088	<b>0.045</b>
	MI									
(c)	PY	0.038	0.118	0.753	0.003	0.081	0.969	0.183	0.068	<b>0.016</b>
	PO	0.118	0.058	<b>0.062</b>	0.056	0.064	0.396	0.214	0.079	<b>0.017</b>
	MI + FSM									
Parental norms	PY	0.116	0.052	<b>0.039</b>	-0.018	0.060	0.770	0.067	0.053	0.226
	PO	-0.064	0.060	0.301	-0.036	0.080	0.661	0.026	0.078	0.744
	RAW									
(b)	PY	0.099	0.051	<b>0.073</b>	0.002	0.051	0.969	0.062	0.077	0.436
	PO	-0.014	0.052	0.791	-0.006	0.062	0.923	0.031	0.078	0.691
	MI									
(c)	PY	0.097	0.055	0.101	0.003	0.054	0.953	0.060	0.073	0.427
	PO	-0.021	0.051	0.691	0.000	0.053	0.997	0.025	0.073	0.737
	MI + FSM									
(a)	PY	0.208	0.072	<b>0.010</b>	0.136	0.113	0.245	0.331	0.121	<b>0.014</b>
	PO	0.124	0.092	0.194	0.088	0.103	0.402	0.217	0.199	0.292
	RAW									
(b)	PY	0.156	0.077	<b>0.061</b>	0.128	0.098	0.212	0.280	0.114	<b>0.026</b>
	PO	0.070	0.084	0.417	0.092	0.077	0.250	0.212	0.148	0.173
	MI									
(c)	PY	0.155	0.075	<b>0.058</b>	0.134	0.105	0.223	0.301	0.111	<b>0.017</b>
	PO	0.068	0.079	0.406	0.114	0.073	0.142	0.279	0.135	<b>0.056</b>
	MI + FSM									

Note. Regressions controlled for all covariates listed in Table 2; 95% confidence intervals are shown in brackets. Number of imputed files = 20.