



Efficacy of a Brief Intervention to Reduce Substance Use and Human Immunodeficiency Virus Infection Risk Among Latino Youth

Yannine Estrada, Ph.D.^{a,*}, Alexa Rosen, M.P.H.^a, Shi Huang, Ph.D.^a, Maria Tapia, L.C.S.W.^a, Madeline Sutton, M.D., M.P.H.^b, Leigh Willis, Ph.D., M.P.H.^b, Ana Quevedo, M.A.^c, Cecilia Condo, M.A.^c, Denise C. Vidot, Ph.D.^a, Hilda Pantin, Ph.D.^a, and Guillermo Prado, Ph.D.^a

^aDepartment of Public Health Sciences, University of Miami, Miami, Florida

^bDivision of HIV/AIDS Prevention, Centers for Disease Control and Prevention, Atlanta, Georgia

^cDepartment of Social Work, Universidad Católica de Santiago de Guayaquil, Guayaquil, Ecuador

Abstract

Purpose—Familias Unidas is an efficacious and effective family-based intervention for preventing and reducing substance use and unsafe sexual behaviors among Latino youth. To facilitate its dissemination, Familias Unidas was shortened from a 12-week intervention to a 6-week intervention and evaluated. We hypothesized that brief Familias Unidas would be efficacious in reducing substance use and unsafe sexual behaviors relative to a comparison condition.

Methods—We randomized 160 ninth-grade Latino adolescents and their families to brief Familias Unidas or a community practice control condition. Adolescents were surveyed at baseline and 6, 12, and 24 months after baseline.

Results—At 24 months, youth randomized to brief Familias Unidas had a significantly lower sexual initiation rate (34.0%) relative to control (55.0%), $p = .02$. Brief Familias Unidas also increased positive parenting. Moderation analyses revealed that brief Familias Unidas was significantly associated with decreased substance use initiation among girls (30.4% vs. 64.0%, respectively; $p = .02$), but not boys (28.0% vs. 26.7%, respectively; $p = .91$). Brief Familias Unidas was also significantly associated with reduced unsafe sex among adolescents aged 15 years or less ($p < .001$), but not among older adolescents ($p = .37$). Moderating effects were also found for family-level variables.

Conclusions—Brief Familias Unidas was efficacious in reducing sex initiation and improving positive parenting. Moderation analyses suggested that brief Familias Unidas was efficacious in reducing substance use initiation and unsafe sex for certain Hispanic adolescent subgroups,

*Address correspondence to: Yannine Estrada, Ph.D., Department of Public Health Sciences, University of Miami, Miami, FL 33136. yestrada@miami.edu (Y. Estrada).

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highlighting the importance of conducting moderation analyses, and of targeting interventions for specific subgroups.

Compared with non-Hispanic whites, Latino adolescents in the United States are highly vulnerable to HIV infection and drug use. Latino eighth and tenth graders report the highest lifetime and annual rates of licit or illicit drug use (with the exception of amphetamines [1]), compared with other racial/ethnic groups. Among sexually active youth, Latinos are least likely to report having used a condom during their last sexual intercourse (58.4%) compared with non-Hispanic white (59.5%) and black/African-American (65.3%) youth [2]. HIV infection, a potential consequence of drug use and unsafe sexual behavior, is higher among Latino adolescents than that in non-Hispanic white adolescents [3].

Despite the urgent public health need to reduce racial and ethnic disparities in substance use and HIV infection, there are few prevention interventions for Latinos, the largest and fastest growing racial/ethnic minority group in the nation [4]. Only four of the 54 interventions listed in the National Registry of Evidence-Based Programs and Practices have been evaluated for use with Latino youth [5]. Among them is Familias Unidas, a prevention intervention with proven efficacy and effectiveness in reducing substance use and sexual risk behaviors that can lead to HIV infection [6,7].

Familias Unidas is a culturally informed, efficacious, family-based intervention that has been tested with different populations of Latino youth. It incorporates Latino cultural values and norms to improve processes occurring within the family unit, such as family functioning. The full intervention consists of eight parent group sessions and four family visits. Previous Familias Unidas trials demonstrated a positive impact on family functioning, behavior problems [6], unsafe sexual behavior [7], illicit drug use, and externalizing behaviors [8]. In fact, improved family functioning (e.g., parental involvement, positive parenting, and parent–adolescent communication) mediated the relationship between intervention effects and main outcomes [9,10].

In an era of limited resources and escalating needs, the efficacy of preventive interventions should be tested in ways that are acceptable to and deliverable by the community systems for which they are designed [11,12]. The number of intervention sessions, which are directly related to the resources required to implement prevention programs, may affect the sustainability of preventive interventions for vulnerable youth in community settings. Thus, the central goal of this study was to test the efficacy of a shortened intervention, brief Familias Unidas, to prevent substance use and HIV-related unsafe behaviors among Latino youth.

Methods

Participants

The sample consisted of Latino adolescents and their primary caregivers recruited through four Miami-Dade County public high schools (Figure 1). The University of Miami's Institutional Review Board and the research review committee at Miami-Dade County Public Schools (MDCPS) approved the study.

Procedures

Adolescents and their primary caregivers were consented at the school attended by the adolescent participant. To avoid coercion, adolescents signed assents separately from primary caregivers. If the adolescent declined to participate, the family was informed that they did not meet study criteria. Adolescents and their primary caregivers completed assessments on study-provided computers using the Audio Computer–Assisted Self-Interview Program [13]. Assessments were completed in the participant's preferred language (English or Spanish) with most caregivers choosing Spanish (89.4%) and adolescents choosing English (73.1%). Measures were translated and back translated from previous Familias Unidas trials. The ACASI surveys were completed at the schools. Parent participants (one parent only) were compensated for completing assessments. Adolescent participants were not compensated for their participation in the study.

Study design

This study was a randomized controlled trial utilizing two levels of intervention (brief Familias Unidas and community practice condition [CPC]) as the between subjects factor and four repeated measures assessments (T1, baseline; T2, 6 months; T3, 12 months; and T4, 24 months) as the within subject factor.

Study conditions

Experimental condition—The following changes were made to abbreviate Familias Unidas and yield brief Familias Unidas: (1) three of the eight parent group sessions were eliminated; (2) the number of parent-homework assignments was reduced from six to three; and (3) one (parent–adolescent communication) of four family visits was delivered. These changes were informed, respectively, by our understanding of how the intervention works, core intervention components, and prior findings, which indicated that improved family functioning mediates intervention effects. Sessions were parent centered, with adolescents' participation in intervention activities limited to the family visit. Sessions took place on a weekly basis and consisted of topics such as enhancing communication and managing adolescent peer pressure. Each parent group session was 2 hours, and the family visit was 1 hour. Participants attended a mean number of 3.62 sessions (standard deviation = 2.09), and 50% of families completed five or more of six sessions.

Community practice condition—CPC consisted of the school-based HIV risk-reduction intervention provided by the MDCPS system to students. Participants randomized to this condition did not receive intervention services (group or family visits) from staff. The MDCPS content of HIV instruction is offered to all students, delivered by MDCPS health science teachers in classroom format, and uses portions of evidence-based curriculum [14,15].

Measures

Demographics—Adolescents and their primary caregivers completed a demographics questionnaire, which requested their date and country of birth, number of years in the United

States, and national origin. Parents were also asked about their marital status and household income.

Outcome measures

Adolescent *substance use* was assessed using items similar to those used in the Monitoring the Future study [1], an ongoing national epidemiologic surveillance study in which student samples respond to questions regarding their recent (past 90 days) and lifetime use of cigarettes, alcohol, or illicit drugs. Youth who indicated having used illicit substances were also asked about dosage, type, and source. In this study, a binary variable was created to indicate any substance use (i.e., cigarettes, alcohol, or illicit substances) in the 90 days before each assessment. Likewise, binary initiation variables were created for use of cigarettes, alcohol, illicit substances, and overall substance use to indicate adolescents who reported no substance use at baseline and engaged in substance use during follow-up.

Adolescent *sexual risk behavior* was measured using items from the sexual behavior instrument [16]. Adolescents were asked if they had ever had sex (including vaginal, anal, or oral sex) in their lifetime and in the 90 days before each assessment. Adolescents who reported having had sex in the past 90 days were asked how often they had vaginal or anal sex without a condom, which ranged from 0 (Never) to 4 (Always). A binary sex initiation variable was created to indicate adolescents who reported no sex at baseline and engaged in sex during the follow-up period. A binary variable was also created to indicate if participants engaged in unsafe sex in the past 90 days based on responses to the question: “About how often have you had vaginal or anal sex without a condom in the past 90 days?” (i.e., inconsistent condom use vs. consistent condom use).

Parental involvement (15 items; $\alpha = .86$) and positive parenting (nine items; $\alpha = .80$) were measured with the Parenting Practices Scale [17], asked of the adolescents. Each item was rated on a five-point Likert scale ranging from “0 = Never” to “4 = Always.”

Parent–adolescent communication (20 items; $\alpha = .91$) was measured with the Parent–Adolescent Communication Scale [18], which assesses effective communication as reported by the adolescent respondents. Items were measured on a five-point Likert scale ranging from “1 = Strongly disagree” to “5 = Strongly agree.”

Data analytic strategy

Descriptive analyses of baseline demographic characteristics and outcome variables were conducted by condition (brief Familias Unidas vs. CPC). Chi-square tests and analyses of variance were then conducted to examine if there were significant differences at the baseline assessment by condition on any of the demographic characteristics and outcome variables. A chi-square test was also performed to test for significant attrition rates by condition. Tests of the effects of brief Familias Unidas on preventing/reducing each of the outcome variables were conducted using growth curve modeling with Mplus version 7.11 [19]. For substance use outcomes, we first tested intervention effects on overall substance use (i.e., any use of cigarettes, alcohol, or illicit drugs) during the past 90 days. Then, we decomposed substance use to test intervention effects on cigarette use, alcohol use, and illicit drug use separately.

Growth curve analyses were used to estimate individual trajectories of change and to test for differences between conditions over time (b-intercept). For each of the outcomes included in the analyses, data from all four assessment time points were used.

Chi-square tests were also conducted to examine if there were significant differences in substance use and sex initiation rates by condition for each follow-up. For substance use outcomes, we first tested intervention effects on overall substance use initiation, then decomposed substance use to test intervention effects on cigarette use, alcohol use, and illicit drug use initiation, separately.

To examine intervention effects on the family functioning variables (i.e., parental involvement, positive parenting, parent–adolescent communication), we conducted regression analyses 6 months after baseline (shown as b-intercept). The median split was used to calculate parental involvement. A cutoff point corresponding to an average of 2.6 on 15 items, representing a response of “most of the time,” was used to define a parental involvement score of ≤ 39 as low to moderate and >39 as high. Similarly, a cutoff score of 27 was used for positive parenting (27, 27). This cutoff point corresponds to an average of three on nine items, representing “most of the time,” and was used to define a positive parenting score <27 as low to moderate and ≥ 27 as high. The analyses presented in this article are for the adolescent respondents only.

To test the potential moderating effects of age (≤ 15 , >15 years) and gender, as well as the potential moderating effects of baseline levels of parental involvement, positive parenting, and parent–adolescent communication, we conducted moderation analyses by including the main effects of condition, the potential moderator, and the interaction term. In the event that a model demonstrated a significant interaction effect, we conducted separate analyses for each level of the moderator (e.g., separately by gender).

Results

Participants included 82 boys and 78 girls (mean age 15.3 years, standard deviation .89) and their primary caregiver. The median household income was between \$10,000 and \$15,000. More than half (54.4%) of the adolescents were born in the United States. Of foreign-born adolescents, 45.2% ($n = 33$) had been living in the United States for <3 years, 28.8% ($n = 21$) between 3 and 9 years, and 26.0% ($n = 19$) for >9 years. Immigrant adolescents and parents were primarily born in Cuba (37.0%), Honduras (12.3%), and Nicaragua (9.6%).

Comparability of conditions at baseline

Chi-square tests and analyses of variance indicated no significant differences at baseline assessment by condition on any of the variables (Table 1). There was no differential attrition across the two conditions over the 24-month period (12.5% and 11.4% for brief Familias Unidas and CPC, respectively; $\chi^2 = .049$; $p = .83$).

Tests of intervention effects

Main effects on unsafe sex—Growth curve analyses showed no significant differences in unsafe sexual intercourse, defined as inconsistent condom use, during the past 90 days

between brief Familias Unidas and CPC ($b = .26, p = .25$). A total of 65 youth reported being sexually active, defined as having sex in the past 90 days during any of the assessment time points. Given the low-risk nature of the sample size and a relatively small sample size, participants who did not engage in sex during the previous 90 days before each assessment time point were counted as part of not engaging in risky sex.

Main effects on sex initiation—Youth randomized to the brief Familias Unidas group had a significantly lower sexual initiation (oral, vaginal, or anal sex) rate (34.0%, 17 of 50) relative to youth randomized to the CPC group (55.0%, 33 of 60; $p = .028$; Table 1).

Main effects on substance use—Overall, growth curve analyses showed a nonsignificant difference in past 90-day substance use between brief Familias Unidas and CPC ($b = -.24; p = .37$). Substance use was then decomposed to examine intervention effects on each individual outcome. Brief Familias Unidas was not significantly efficacious in reducing cigarette use ($b = -.09; p = .85$), alcohol use ($b = -.17; p = .51$), or illicit drug use in the past 90 days ($b = .03; p = .93$).

Main effects on substance use initiation—Although youth randomized to brief Familias Unidas had a lower overall substance use initiation rate (35.0%) relative to youth randomized to CPC (49.0%), this difference was not statistically significant ($p = .19$).

Main effect on adolescent-reported positive parenting—At 6-month follow-up, youth randomized to the brief Familias Unidas group scored significantly higher on the positive parenting scale relative to youth randomized to the CPC group ($b = -2.34; p = .01$), after adjusting for baseline positive parenting score. No significant intervention effects were found on parent—adolescent communication ($b = -2.62; p = .14$) or parental involvement ($b = -1.62; p = .22$).

Moderating effects

Moderating effects of gender—There was a significant moderation effect of gender on overall substance use initiation ($p = .04$). Specifically, brief Familias Unidas was efficacious in preventing substance use initiation among girls (28.6% vs. 65.2% for brief Familias Unidas and CPC, respectively; $p = .02$), but not for boys (42.1% vs. 34.6% for brief Familias Unidas and CPC, respectively; $p = .61$). The brief Familias Unidas intervention was significantly associated with decreased alcohol use initiation among girls (30.4% vs. 64.0% for Familias Unidas and CPC, respectively; $p = .02$), but not for boys (28.0% vs. 26.7% for Familias Unidas and CPC, respectively; $p = .912$). No significant gender moderation effects were observed for other outcomes.

Moderating effect of age—There was a significant moderation effect of age on unsafe sex ($b = -1.12; p = .02$). Specifically, brief Familias Unidas was significantly associated with reduced unsafe sex among adolescents aged 15 years or less ($b = .85; p < .001; n = 70$; Figure 2), but not among older adolescents ($b = .24; p = .37; n = 90$). No significant age moderation effects were observed for other outcomes.

Moderating effect of baseline level of adolescent—reported parental involvement—Baseline level of parental involvement significantly moderated the relationship between condition and illicit drug use ($b = -1.26; p = .02$). Specifically, brief Familias Unidas was significantly associated with reduced illicit drug use among adolescents who reported low- to moderate-parental involvement ($b = -.61; p = .04$; Figure 3), but not among adolescents who reported high-parental involvement ($b = -1.98; p = .15$), at baseline. No significant baseline parental involvement moderation effects were observed for other outcomes.

Moderating effects of baseline positive parenting—Baseline level of positive parenting moderated the relationship between condition and positive parenting ($b = .33; p = .02$). Specifically, brief Familias Unidas was efficacious in improving positive parenting among adolescents who reported low to moderate levels of positive parenting at baseline ($b = -3.2; p = .002$; Figure 4) but not among adolescents who reported high positive parenting at baseline ($b = .53; p = .79$).

Moderating effects of baseline parent-adolescent communication—No significant moderation effects were found on parent-adolescent communication ($b = -.13; p = .29$).

Discussion

The brief Familias Unidas intervention demonstrated efficacy in lowering sex initiation (oral, vaginal, or anal sex) rates among Latino youth. Programs that delay sexual intercourse particularly for adolescents aged <15 years—are needed because Latino youth are at higher risk for engaging in early sex compared with youth in other racial/ethnic groups [20]. Although the mean age among U.S. youth for having had sex is 17 years [20], Latino youth were more likely than their white peers to have sex before the age 13 years [2]. Early sex initiation is associated with several health risks, including unintended pregnancy, exposure to HIV, and exposure to other sexually transmitted diseases [2]. Previous studies evidence early sexual initiation as a key mediator of the pathway to becoming infected with HIV and other sexually transmitted infections during early adulthood [21].

Our results did not reveal main effects for the substance use outcomes. There are several possible explanations for this finding. First, the adolescent sample consisted of participants with low substance use rates at baseline, which may have potentially limited our statistical power to detect an effect. Previous trials indicate that full-length Familias Unidas seems to have greater efficacy with higher risk families [22]. For example, lifetime alcohol use was 17% for the brief Familias Unidas sample compared with 41% for past 90 days alcohol use in another Familias Unidas trial [23]. Failure to replicate findings from the original Familias Unidas intervention may also be related to differences in dosage and session content. The original Familias Unidas intervention consisted of 12 group sessions and four family visits, whereas the brief version only had five group sessions and one family visit. Group and family sessions on behavior management and parental investment in school were eliminated. Removal of the school session reduces the focus on context, an important element in substance use prevention [24]. Additionally, the substance use and sexual risk behavior

sessions were combined into one. This shortening of intervention dosage may yield reduced effects.

Moderation analyses revealed significant findings in substance use initiation for girls (but not for boys). Given that most caregivers who participated in the study were females, it is possible that female–female dyads were more aligned than female–male dyads.

Additionally, some research has shown that females encounter more restrictions than males in homes that limit substance use exposure and opportunity [25], such as greater parental monitoring, restrictions on activities, and more home responsibilities. The intervention may further have bolstered these restrictions and monitoring activities for female participants.

In addition, significant interaction effects by age were found for unsafe sex during the last 90 days. That is, brief Familias Unidas had a greater impact for adolescents aged <15 years, compared with the control condition. Others have also reported that family-based sex education programs work better with younger adolescents than those with older adolescents [26]. This finding highlights the importance of timing intervention delivery to appropriate developmental stages. Prior work has revealed that parental monitoring takes on increased importance in late childhood and early adolescence because of the increased influence of peers, desire to spend unsupervised time with peers, and the contribution of increased unsupervised time with peers on unsafe sexual behavior [27–29].

Regarding positive parenting, youth randomized to brief Familias Unidas reported improvements in positive parenting, a domain of family functioning, more frequently than the youth randomized to CPC. Investigators have repeatedly found that improved family functioning has immediate and sustained effects on adolescent problem behaviors by reducing the likelihood that high-risk teens will use drugs, alcohol, and have unprotected sex to levels at—and often below—that of their peers [30]. These findings corroborate evidence from previous Familias Unidas trials that demonstrate greater intervention effects among families who start at higher risk [23].

In addition, findings indicated that parental involvement moderated intervention effects on substance use and that positive parenting moderated interventions effects on positive parenting. These results point to the need for tailoring interventions to populations that need them the most.

Future efficacy and effectiveness studies may glean a more comprehensive understanding of main outcomes by evaluating dissemination and implementation factors as secondary outcomes. Intervention needs may best be met through an adaptive intervention approach in which program elements and program dosage are differentially applied based on the existing need [31]. Indeed, researchers have suggested that single-strategy prevention interventions cannot meet the needs of all youth, and identifying those youth for whom interventions work best is an important element in moving prevention efforts forward [32].

There are several limitations to this study. First, the findings are not generalizable to all Latinos because of the unique nature of the South Florida area. In Miami, and other metropolitan areas, Latinos are a majority group with substantial social capital [33]. Second, it is necessary to consider the advantages and disadvantages of potential controls and, nearly

always, it is necessary to select an imperfect control that best serves the study design [34]. In the present study, there were advantages and disadvantages to designing including a control condition that was consistent with community prevention activities. Clearly, one advantage is its ecological validity. Changing current practice in any way might be construed as an experimental condition; therefore, we decided to have a community practice control condition. Third, selection bias may have been present as parents who called were likely more motivated to be part of this research study.

We streamlined an efficacious HIV and substance use preventive intervention so that it could more easily be delivered in community settings with Latino families. Our findings add to the limited body of evidence-based literature of HIV prevention interventions for Latino youth and provide an additional tool to support National HIV/AIDS Strategy effort [35] to reduce new HIV infections and HIV-related health disparities.

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Implications and Contribution

A streamlined evidence-based prevention intervention was efficacious in lowering sex initiation among Latino youth. Preventive effects for substance use and HIV risk-related outcomes were found among Latino adolescents who were female, aged <15 years, and reported low baseline parental involvement, with direct implications to dissemination/implementation research and reducing health disparities.

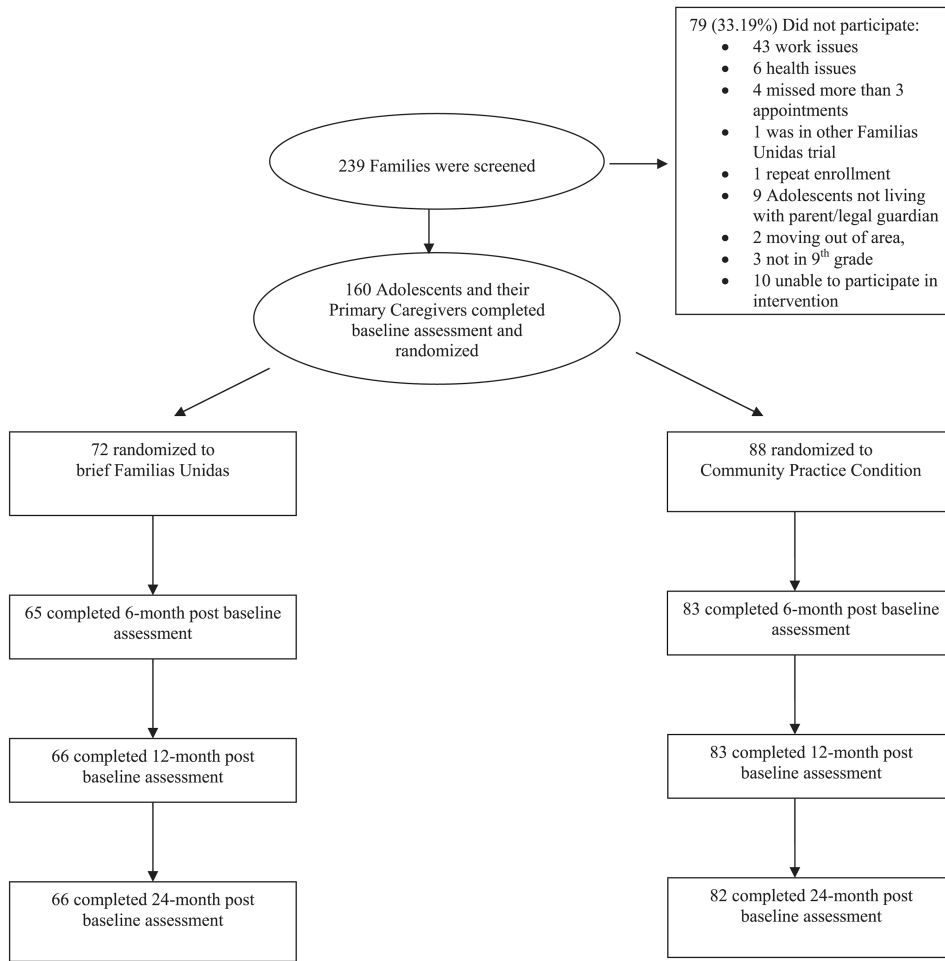


Figure 1. Flow of study participants, brief Familias Unidas trial, Florida, 2011–2013.

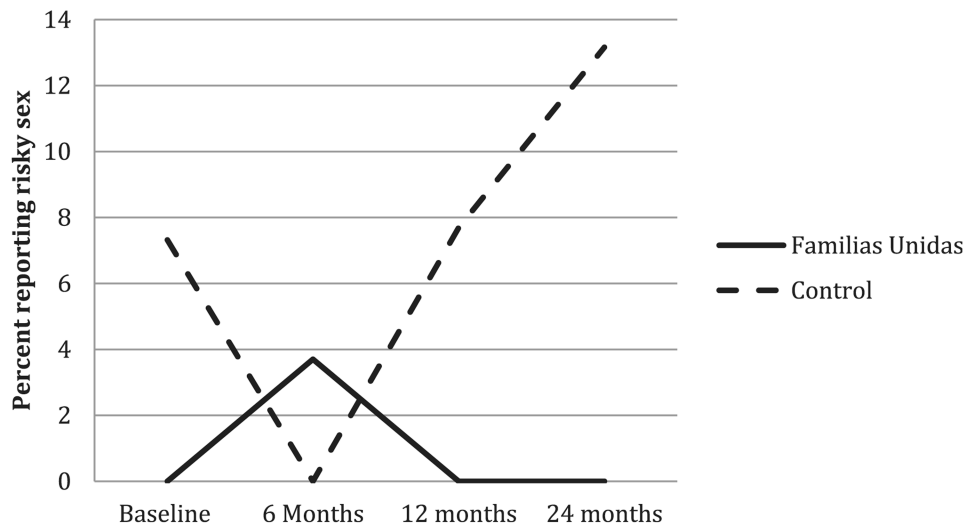


Figure 2. Unsafe* sex reported by participants, by condition, for Hispanic/Latino adolescents, aged 15 years, the brief Familias Unidas trial, Florida, 2011–2013.
*Unsafe sex includes vaginal and/or anal sex without a condom.

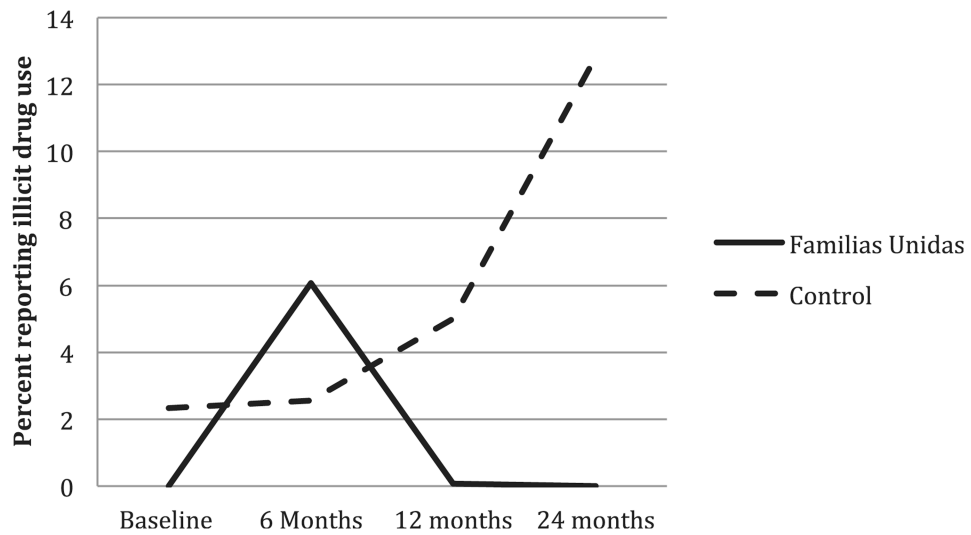


Figure 3. Reported illicit drug use, by condition, for Hispanic/Latino adolescents who reported low- to moderate-parental involvement at baseline, the brief Familias Unidas trial, Florida, 2011–2013.

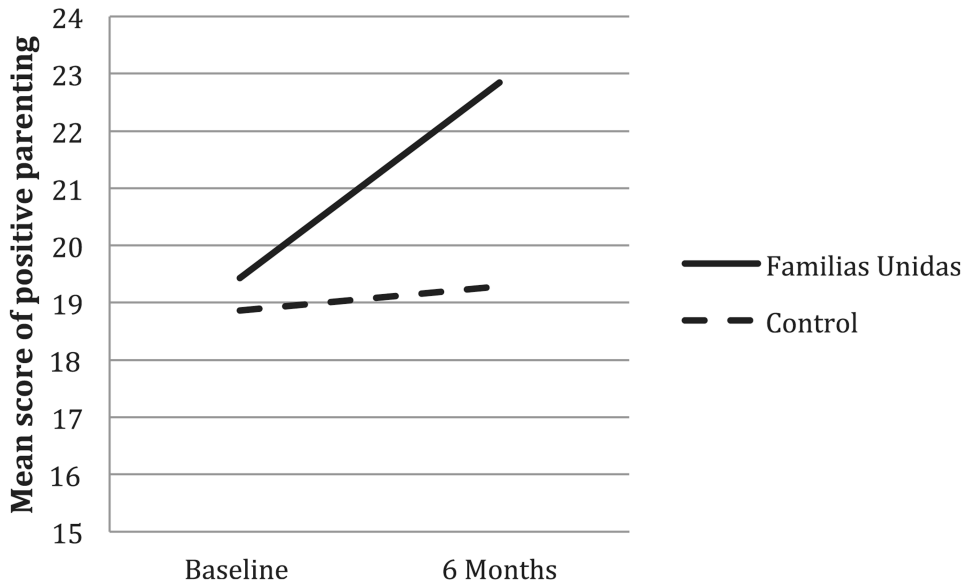


Figure 4. Positive parenting score* by condition, for Hispanic/Latino adolescents who reported low-to moderate-parental involvement at baseline, the brief Familias Unidas trial, Florida, 2011–2013. *The positive parenting score subscale assesses positive reinforcement (How often does your mom/dad thank you for doing things?), comfort (How often does your mom/dad talk to you when you feel bad and help you feel better?), communication (How often does your mom/dad talk to you, listen to you, or just have a good conversation with you?), and nonverbal affection (How often does your mom/dad hug you, kiss you, tickle you, or smile at you?).

Table 1
Baseline demographic characteristics and outcome variables for Hispanic/Latino study participants, for brief Familias Unidas and community practice condition, Florida, 2011–2013

Variables	Brief Familias Unidas (n = 72)		Community practice condition (n = 88)		χ^2 or F value ^a	p value
	N (%)	Mean (SD)	N (%)	Mean (SD)		
Gender					.37	.54
Males	35 (48.6)		47 (53.4)			
Females	37 (51.4)		41 (46.6)			
Mean age (SD)		15.3 (.89)		15.3 (.85)	.04	.84
U.S. born	44 (61.1)		43 (48.9)		2.39	.12
Years in the United States					2.23	.33
0–3	12 (16.7)		21 (23.9)			
3–9	13 (18.1)		10 (11.4)			
>9	47 (65.3)		57 (64.8)			
Family income					1.74	.63
\$0–\$9,999	27 (38.0)		35 (39.8)			
\$10,000–\$19,999	23 (32.4)		30 (34.1)			
\$20,000–\$29,999	13 (18.3)		10 (11.4)			
>\$30,000	8 (11.3)		13 (14.8)			
Reported cigarette use (lifetime) ^b	8 (11.3)		9 (10.2)		.05	.83
Reported cigarette use (past 90 days) ^{b,c}	0 (0)		4 (4.6)			.13
Reported alcohol use (lifetime) ^b	17 (23.6)		28 (31.8)		1.32	.25
Reported alcohol use (past 90 days) ^{b,c}	3 (4.2)		4 (4.7)			1.00
Reported illicit drug use (lifetime) ^b	7 (9.7)		11 (12.5)		.31	.58
Reported illicit drug use (past 90 days) ^{b,c}	1 (1.4)		2 (2.3)			1.00
Reported any sex (lifetime) ^{b,d}	17 (23.6)		21 (23.9)		.001	.97
Reported any sex (past 90 days) ^{b,d}	9 (12.5)		12 (13.6)		.05	.83
Reported unsafe vaginal/anal sex (past 90 days) ^{b,d,e}	7/9 (77.8)		7/12 (58.3)			.64
Positive parenting score (SD)		22.1 (6.48)		21.7 (6.85)	.14	.71

Variables	Brief Familias Unidas (n = 72)		Community practice condition (n = 88)		χ^2 or <i>F</i> value ^a	<i>p</i> value
	N (%)	Mean (SD)	N (%)	Mean (SD)		
Parental involvement		38.0 (10.5)		39.2 (9.3)	.65	.42
Parent-Adolescent communication		69.4 (15.6)		68.3 (16.0)	.18	.67

SD = standard deviation.

^a χ^2 (chi-square) value was reported for categorical variables, and the *F* value was reported for continuous variables.

^b Binary outcomes.

^c Fisher's exact test was used, so a χ^2 value is not reported.

^d Oral, vaginal, or anal sex.

^e Under the influence of drugs/alcohol, without a condom.