

Evaluation of a Tobacco and Alcohol Use Prevention Program for Hispanic Migrant Adolescents: Promoting the Protective Factor of Parent–Child Communication¹

Alan J. Litrownik, Ph.D.,*² John P. Elder, Ph.D., M.P.H.,† Nadia R. Campbell, M.P.H.,†
Guadalupe X. Ayala, M.A.,* Donald J. Slymen, Ph.D.,† Deborah Parra-Medina, Ph.D., M.P.H.,‡
Francisco B. Zavala, M.S.,§ and Chris Y. Lovato, Ph.D.¶

*SDSU/UCSD Joint Doctoral Program in Clinical Psychology, and †Graduate School of Public Health, San Diego State University; San Diego, California 92123; ‡School of Public Health, University of South Carolina, §Formerly affiliated with the Graduate School of Public Health, SDSU, now affiliated with Hoover High School, San Diego, California; and ¶Centre for Community Child Health Research, Vancouver, Canada

Background. Interventions designed to prevent tobacco and alcohol use targeting high-risk adolescents are limited. In addition, few studies have attempted to improve parent–child communication skills as a way of improving and maintaining healthy youth decision-making.

Methods. A total of 660 Hispanic migrant families participated in a randomized pre–post control group study that was utilized to determine the impact of the intervention on parent–child communication. Both treatment and attention-control groups of youth were exposed to an eight-session culturally sensitive program presented by bilingual/bicultural college students. Parents jointly attended three of the eight sessions and participated in helping their child complete homework assignments supporting the content of each session. The content of the treatment intervention included (1) information about tobacco and alcohol effects, (2) social skills training (i.e., refusal skills), and (3) the specific development of parent–child communication skills to support healthy youth decisions.

Results. Significant intervention by household size interactions for both parent and youth perceptions of communication were found indicating that the treatment was effective in increasing communication in families with fewer children. Based on the effect size and the previously established relationship between communication and susceptibility to tobacco and alcohol use, it was determined that the intervention effect

could be translated into a future 5 to 10% decrease in susceptibility for these smaller families.

Conclusions. A culturally sensitive family-based intervention for migrant Hispanic youth was found to be effective in increasing perceived parent–child communication in families with fewer children. It is expected that increases in this important protective factor will lead to later observed decreases in tobacco and alcohol use. © 2000 American Health Foundation and Academic Press

Key Words: adolescents; alcohol; communication; Hispanic; migrant; parental monitoring; susceptibility; tobacco.

INTRODUCTION

According to a recent National Research Council–Institute of Medicine Report, the status of immigrant children and adolescents is “severely understudied” despite the fact that they are the fastest growing segment of the U.S. population [1]. In California, the growth of the Hispanic population, the largest of the immigrant groups, has increased dramatically since 1970 [2]. Numerous investigations have examined health risk behaviors and acculturation among this population; however, very little is known about Hispanic migrants in general and Hispanic migrant adolescents in particular.

Migrant farm children appear to be at greater risk for health problems and earlier mortality than the general population [3]. Most migrant farm worker families live at or below the poverty level [4] and report low utilization of public programs which provide health-related services [5]. Not only is there evidence that the acculturation process and socioeconomic stressors experienced by migrants can result in mental health distress [6,7],

¹ This research was supported by the National Cancer Institute (Grant RO1 CA58858).

² To whom reprint request should be addressed at Behavioral and Community Health Studies, 9245 Sky Park Court No. 221, San Diego, CA 92123.



but also they appear to increase health risk behaviors (e.g., tobacco and alcohol use) [8-10].

There is some evidence suggesting that first-generation immigrant adolescents are less likely to have sexual intercourse at an early age, engage in violence, or use cigarettes or other substances than the general U.S. population. This lower risk profile, however, diminishes the longer the adolescent is in the United States [1]. Little is known about the initial protective factors related to immigrant status, much less the reasons why they dissipate over time. In the companion paper preceding this paper, we identified a number of potential protective factors based on cross-sectional data from Hispanic migrant youth. Factors identified included those related to tobacco and alcohol use directly (i.e., expected outcomes, use by peers, household use), as well as those related to more general social relationships such as satisfaction with social support and parent-child communication, which had the strongest protective effect [11].

There is an obvious need to develop tobacco and alcohol use prevention programs that target this immigrant population, specifically taking into account culture, language, and demands to acculturate. As with any approach to prevention, interventions targeted at tobacco and alcohol use have been based on the assumption that the relevant behaviors develop over time. Given the trend toward tobacco and alcohol use initiation at younger ages, most prevention programs have targeted adolescents and preadolescents. It is at this age that the influence of parents begins to decrease with a concurrent rise in peer influence [12].

One major focus of research in tobacco and alcohol prevention has been on social influences as a risk factor for substance use since a strong predictor of substance using behavior for adolescents has been their association with others who use drugs [13-15]. In a review of the literature, Hawkins and colleagues describe a number of studies that successfully utilized a social influence-focused intervention in delaying the onset of alcohol and/or marijuana use [16]. Furthermore, studies have found that interventions led by peers were more effective than those led by teachers [13,17].

In addition to the focus on social influences, others have suggested that stress and methods of coping with this stress need to be addressed in developing prevention programs. Developmental theorists have suggested that stress is often a natural byproduct of the adolescent transitional period (i.e., moving from childhood to adulthood). As a result, much adolescent risk behavior, such as experimenting with substances, is viewed as part of the normal adolescent developmental process [2,18]. Specifically, Wills found that stress was related to smoking and alcohol use in 7th and 8th graders [19]. In this study, different coping strategies served to either buffer or moderate the influence of stress or lead to

greater vulnerability, that is, peer support and an aggressive approach to coping with stress were related to increased substance use while behavioral and cognitive approaches to coping and adult support were related to lower levels of substance use. In a subsequent study, Wills and Vaughan found that both peer and adult or parental support were related to tobacco or alcohol use [20]. High levels of peer support, especially when the peers were tobacco and alcohol users, were related to higher use rates in adolescents. In contrast, parental support was related to nonuse with increasing effects associated with parents who did not use tobacco or alcohol. Finally, there was some evidence for the buffering or moderating effect of parental support when considered in relation to peer influences, that is, peer support was more strongly related to substance use when there was a decrease in parental support.

From the social influence and stress approaches, adult or parental support has been found to have a direct, mediating (i.e., protective), or moderating effect on adolescent substance use [20-24], that is, parental use of tobacco and alcohol has been related to increased use in their adolescent offspring, parental connectedness (i.e., communication, monitoring) to their adolescents has been related to decreased substance use, and peer influences are magnified when parental involvement decreases. In general, the stress and social influence models recognize that a number of individual factors (e.g., coping, self-esteem, self-efficacy, risk-taking, conventionality) and situational factors (e.g., peer and parental support, availability) are likely important in determining substance use [21-23].

In an effort to combat tobacco and alcohol use, three major program approaches have evolved: (1) media-based interventions, (2) prevention programs in the context of school health education, and (3) psychosocial curricula. The first two are differentiated based on the context in which the program is presented while the third refers to the content of the program. Psychosocial curricula, oftentimes presented in the school context, have been extensively evaluated and have emerged as the program approach with the most positive outcomes [25]. The National Cancer Institute convened a panel of experts in 1987 to review the empirical literature and identify common features of successful tobacco use prevention programs. As a result, the panel proposed that the following three minimum program components should be included in any preventive effort: (1) information about the effects of tobacco use, (2) information about social influences on tobacco use, and (3) training in refusal skills [26].

Although preventive efforts have followed these recommendations, subsequent interventions have been

limited. First, they have been less successful in reaching high-risk and minority adolescents (e.g., black, Hispanic, rural, low SES, low achievers, and school drop-outs) [26–28]. And studies suggest that while these intervention approaches may be successful in delaying onset of substance use (i.e., tobacco), the outcomes do not appear to be maintained [29].

The present study describes the development of a community-based tobacco and alcohol use prevention program that targets high-risk adolescents who typically are not exposed to cancer prevention programs (e.g., low SES, Hispanic). The program “*Sembrando Salud*” not only includes the three minimum components identified by NCI for tobacco use prevention, but also involves parents in the intervention. The importance of this involvement is suggested by the demonstrated protective effect of parent–child communication and the need to develop methods for maintaining the positive effects of preventive interventions. In addition, involving parents builds on one of the strengths of this high-risk target group, that is, the importance of the family (e.g., value of children, support from extended family, religious beliefs, strong parent–child attachment, and strong sense of family loyalty) [4,30].

In an effort to begin to evaluate the efficacy of this culturally sensitive intervention that recruited hard-to-reach youth and their families, the present paper focuses on the outcome of perceived parent–child communication. Specifically, the objective of this paper is to determine whether the intervention, designed to impact parent–child communication, did, in fact, do so.

METHODS

Setting and Subjects

The setting for this field test, San Diego County, as well as how participants were recruited is described in the previous companion paper [11]. Prior to recruitment, schools within geographic regions were preredomized to an intervention that targeted either tobacco and alcohol use prevention (i.e., treatment) or first aid/home safety (i.e., attention-control). Table 1 presents the recruitment rate for school districts and the percentage of schools and families (i.e., eligible, contacted, agreed to participate, and enrolled) within the treatment and control schools.

Twenty-five schools within 17 school districts were eligible to participate in the study. Participating families came from 22 schools and 15 school districts. One district was reluctant to share their rosters of Migrant Education family names and the other had insufficient numbers of eligible families. Two schools did not agree to participate because of academic changes in the school calendar and the third school was determined ineligible due to a small number of Migrant Education families.

Six hundred sixty adolescents (49% females) and 1

adult caregiver (parent: 94%; guardian: 6%) agreed to participate in an experimental intervention study designed to improve health (i.e., prevent the use of tobacco and alcohol, learn first aid/home safety). As a result of the random assignment of schools to the two intervention groups, the treatment group (i.e., tobacco and alcohol use prevention) had more eligible families (56% of the total). This percentage difference in the two intervention groups was maintained when looking at the number of families contacted, agreeing to participate, and eventually enrolling in the study. Thus, similar recruitment success was observed for the two interventions. Again, an overall description of the participating families is presented in the companion paper [11]. It is important to note that the participants were identified through the Migrant Education Program in San Diego County, predominantly oriented toward the Mexican culture, and the mean income (i.e., less than \$15,000 annually) of the average family with three to four children was clearly below the poverty level.

Procedure

Following recruitment at a given school, trained evaluation assistants, who were bilingual, bicultural, and blinded to condition (i.e., tobacco/alcohol use prevention versus first aid/home safety), conducted the face-to-face baseline surveys. An average of 1 h was required per family to complete the baseline survey, with parents and adolescents assessed simultaneously in separate areas. In general, surveys were conducted in the evenings at the school site. If a family missed a scheduled assessment, the evaluation assistants scheduled a home visit to complete the baseline survey. Each parent/adolescent pair completed either a Spanish or an English version of the baseline survey prior to participating in the educational sessions. All participating parents chose the Spanish version of the baseline survey while 79% of the adolescents selected this version. Prior to implementing the program at a given school, all baseline surveys were completed within a 2- to 6-week period of time depending on the number of participating families. Based on the predetermined random assignment of schools, parents and adolescents were then exposed to eight sessions of either the treatment or the attention-control intervention over a 7- to 10-week period of time adjusting for school closures (e.g., vacations, breaks).

Postassessments of all participants using the same surveys were conducted following the completion of the group educational sessions. Evaluation assistants again scheduled appointments at the school or at the participants' homes to conduct the survey and had a 2-month window in which to complete all surveys at a given school. In order to minimize differential attrition rates and increase the likelihood of retention for all

TABLE 1
Recruitment Rates by School and Family for Treatment and Attention-Control Groups

	Total	%		
School districts				
Number of school districts targeted	17			
Number of participating school districts	15	88		
	Treatment		Attention-control	
	Total	%	Total	%
Schools				
Number of schools targeted	12	48	13	52
Number of participating schools	11	50	11	50
Families				
Eligible families per Migrant Education roster ^a	908	56	703	44
Families with information to attempt contact	815	57	617	43
Number of families contacted ^b	710	57	544	43
Number of families who agreed to participate	435	54	368	46
Number of families enrolled in the intervention	367	56	293	44

^a Eligibility was based on the following: age between 11 and 16 years old and enrolled in Migrant Education.

^b One hundred seventy-eight were unreachable due to disconnected or incorrect phone numbers.

participants (i.e., treatment and attention-control), a \$10 incentive for completion of the baseline and postintervention assessments was provided to each respondent in the family (i.e., targeted adolescent and parent). In fact, 637 of the 660 families (96% retention rate) completed the postintervention assessments. Three families refused to continue participating, 8 moved from the geographic area, and 12 were unable to complete the assessment within the 2-month window. Attrition was similar across the treatment and attention-control groups, 12 and 11 families, respectively.

Intervention

During the orientation for the project "*Sembrando Salud*," participating families were told that all educational sessions would be held during evening hours and were asked to select their preference for the most convenient evening to meet for the educational sessions. In schools where there were a large number of participating families, groups were held on various evenings to accommodate families' schedules. In schools where only one group was held, the group met on the day convenient for most families.

Two skills-training programs were developed, one for each condition, and were designed to be equivalent in all respects except for the specific content. The structure of these programs was weekly, small group format sessions, which were held in the evenings on school grounds or at nearby community agencies and occurred between January 1996 and December 1997.

The general format of both programs was equivalent and included adolescents attending eight weekly, 2-h sessions and parents attending three sessions jointly with their adolescent (i.e., the first, second, and eighth

sessions). Both educational programs used the same format for each session—welcome and session overview, group introductions for the first session and check-ins for the remaining sessions, brief review of previous session, group leader presentation of session content, break, skills demonstration and practice, homework assignments, and closure. Presentation methods for the core content of each session varied; however, each curriculum utilized a similar mix of teaching methods including group-leader-led discussions, videos, demonstrations, skill practice, and role playing. Since both programs targeted skill development, social learning techniques, such as modeling, rehearsal, and reinforcement, were utilized. For the sessions jointly attended by parents and adolescents, separate parent- and adolescent-only breakout groups were utilized in addition to combined parent-adolescent groups in an effort to facilitate discussions relevant to each group. To increase participation, "*Sembrando Salud* dollars" were given to both adolescent and parent participants contingent on their session attendance, participation in sessions, and completed homework. At the conclusion of the program, families pooled their dollars and were able to purchase materials from the "*Sembrando Salud*" Project Store (e.g., backpacks, shirts, mugs, and caps with project logo).

The curriculum and group sessions were specifically tailored to a migrant Hispanic audience using several complementary approaches. All sessions were taught by bilingual, bicultural Mexican-American group leaders. As such, they were not only sensitive to the values and norms of the culture, but they were also able to move between the languages during presentation of the material for greater comprehension. In addition, many

of the group leaders were themselves former members of the Migrant Education Program and thus aware of the competing forces on the lives of the adolescents. Many of the role-plays were adapted from experiences common to migrant Hispanic adolescents living in the United States. For example, issues of *familismo* and *respecto* were incorporated into the curriculum to help the adolescents learn tobacco and alcohol refusal skills without showing disrespect to their elders [31].

A total of 23 group leaders were recruited from local universities and colleges, screened by project staff, randomized to one of the two educational programs (13 in the treatment condition and 10 in the attention-control condition), and trained. Group leader training was condition specific and the content generally mimicked the participant curriculum; however, additional training sessions were added to address presentation skills, handling difficult participants, providing feedback to participants, ground rules for working with participants, and group leader roles and responsibilities. Group leaders attended 10 weekly training sessions, each 2 h in length, and had to meet a minimum level of competency before working with study participants. Competency was established by successfully presenting each session before project staff and other potential group leaders, actively participating in training sessions conducted by other potential group leaders, and reliable and punctual attendance at scheduled training sessions.

Group leaders were monitored throughout the intervention period in an effort to insure that the programs were being presented as designed. Monitoring included mandatory attendance at weekly condition-specific feedback sessions, completion of session-specific content checklists in which group leaders checked off activities they completed at each session, and evaluation of actual performance by project staff who observed at least 25% of the sessions. Feedback sessions focused on actual session performance, e.g., ability to follow project protocols, problems that arose, and how the group leader responded.

The *tobacco and alcohol use prevention* program included the three necessary components of (1) information about the health effects of tobacco/alcohol use, (2) social influences on tobacco/alcohol use, and (3) training in refusal skills. These existing, well-developed components were specifically adapted for presentation to the Hispanic migrant families based on information obtained from focus groups of Hispanic migrant adolescents and adults and Migrant Education Program staff, as well as feedback from previous pilot testing of the program [10]. The resulting intervention program not only included the three well-established components, but also presented a systematic approach to problem

solving, in general, and specifically as it related to tobacco and alcohol use. Through presentation of information, modeling, and behavioral rehearsal, the adolescents were exposed to how problems could be identified and analyzed, solutions generated, and decisions made, implemented, and, finally, evaluated. The other unique component of this program was the specific focus on developing parental support for the healthy decisions and behaviors of the adolescents through enhanced parent-child communication. Parental communication skills such as listening (e.g., verbal and nonverbal attention), confirmation (e.g., accepting messages), and reassurance (e.g., expressing care and concern) were developed and reinforced through behavioral methods of modeling, role playing, and behavior rehearsal. The content of the specific tobacco/alcohol sessions included: 1 (listening skills), 2 (communication skills), 3 (health effects of smoking and peer pressure), 4 (health effects of alcohol and decision making), 5 (societal influences), 6 (refusal skills), 7 (media and adult influences), and 8 (review).

As an example, the first session brought parents and adolescents together while the group leaders summarized the eight-session program—e.g., objectives, expectations of participants, receipt and spending of “*Sembrando Salud* dollars.” Separate parent and adolescent groups were then presented with information about the importance of listening to one another and how to listen effectively. After some role playing within these breakout groups, parents and adolescents had an opportunity to rehearse these skills with someone other than their child or parent within the combined group. The homework assignment for this session had the adolescents interview their parents. Adolescents were instructed to utilize the effective listening skills they had been presented in gathering information about their parents’ history of tobacco use (e.g., did they ever smoke?; if yes, did they ever try to quit? would they choose to make the same decision to smoke now?; if no, why did they choose to not smoke? how did they manage to stay smoke free?).

The *first aid/home safety* educational program focused on preparation for an emergency (e.g., assembling a first aid kit) and how to approach an emergency victim (e.g., check, call, care). Again, specific skills required to respond to an individual presenting with physical problems (e.g., fever, burn, bleeding, fracture/dislocation, sudden illness, poisoning, bites/stings) were modeled, role-played, and rehearsed. In addition, household safety concerns were addressed (e.g., baby-proofing a house).

Measurement

The project-developed survey using previously developed scales and/or items was translated into Spanish

and back-translated [32–33]. The 201-item survey was interviewer-administered and assessed information in a number of domains. The following were utilized to evaluate the impact of the intervention on parent and adolescent participants in the current study.

Demographic information. Standard demographic information was collected from the adolescent respondents, including age, gender, and household size.

Communication with parents. The Communication with Parents scale was developed by Huizinga and his colleagues as part of the Denver Youth Survey [34,35]. This scale assesses adolescent perceptions of parent-child communication, i.e., how often parents listen to them and communicate with them about their whereabouts and their day. The six items (e.g., Do your parents talk to you about what you actually did during the day? Do your parents talk with you about how things are going at school? Do you leave a note for your parents or call them about where you are going if they are not at home? Do your parents know who you are with when you are away from home? Do you know how to get in touch with your parents if they are not at home? Do your parents find time to listen to you when you want to talk to them?) are presented with a three-point response option ranging from “often” to “never.” A mean communication score was computed for all participants. Prior reports [34] of the internal consistency of this scale have varied between 0.37 and 0.68, with the current sample’s alpha coefficient being 0.68.

Communication with children. A parallel scale assessing perceived parent-child communication was developed for the parents. The same six items were reworded for the parents, e.g., “How often do you talk with (*your child*) about how things are going in school?” A similar small to medium reliability estimate was obtained with the current sample ($\alpha = 0.70$).

Acculturation. Acculturation status was measured using the Acculturation Rating Scale for Mexican-Americans (ARSMA) [36]. This scale was appropriate for all of the participants (adolescents and parents) except one parent who identified herself as Guatemalan. A score was not computed for her. Responses to the ARSMA items (e.g., friends, language read) are made on a five-point Likert-type response format, ranging from Mexican/Spanish (1) to Anglo/English (5). A mean score is computed for the 20 items and participants are classified along a continuum with lower scores denoting a more Mexican orientation. Although newer measures of acculturation now tap the bicultural nature of the acculturation process [37], the ARSMA was the best multidimensional instrument available at the time of measurement development and pilot-testing for the current field test.

RESULTS

The two group pre-post randomized design allowed for the testing of the impact of the tobacco and alcohol intervention on the targeted outcome of parent-child communication. A total of seventy 8-week intervention groups (37 tobacco and alcohol and 33 first aid/home safety) were conducted with the size of the groups ranging from 3 to 15 (mean group sizes = 9.9 and 8.9 for the tobacco/alcohol and first aid/home safety interventions, respectively). The average attendance for adolescents in the treatment group was 4.66 ($SD = 2.85$) of 8 sessions, with a similar mean attendance (4.76, $SD = 3.00$) for the attention-control group. Parents in the treatment group attended an average of 1.79 ($SD = 1.08$) of the 3 sessions that were scheduled for them and their adolescents. As with the adolescents, parents in the attention-control group attended an equal number of sessions (e.g., $M = 1.81$, $SD = 1.15$) when compared to those in the treatment group. In addition, there were no significant differences in the number of “*Sembrando Salud* dollars” earned (total possible = 20) by the tobacco/alcohol use prevention and first aid/home safety groups ($M_s = 7.93$ and 8.49 , standard deviations = 5.25 and 5.67 , respectively). Finally, group leader reports (i.e., checklists of completed session content) and project staff observations indicated that both intervention programs were implemented as designed.

Since randomization was based on schools, generalized estimating equations (GEE) were used to account for the effects of clustering that resulted when forming intervention groups within schools. The models were constructed with an identity link, a normal error distribution, and an exchangeable correlation structure. Although normality is assumed, the empirical estimates are shown which are not highly dependent on the underlying distributional assumptions.

GEE models were fitted for the two outcomes, (1) parental and (2) adolescent perception of parent-child communication (i.e., mean scores on the six-item measure). The main effects of the intervention (tobacco-alcohol versus attention-control), age, gender, and acculturation level of the adolescent, and household size were included in each model as was the initial pre-assessment level of perceived parent-child communication. In addition, interactions between intervention group and the main effects of age, gender, acculturation, and household size were examined separately and then included in the final model only if found to be significant ($P < 0.05$) in these analyses. The results of these refitted models for adolescent perception of parent-child communication and parent perception of parent-child communication are summarized in Tables 2 and 3, respectively.

TABLE 2
Summary of Variables Predicting Adolescent Reports of Parent–Child Communication^{a,b}

Parameter	Estimate	Standard error	95% Confidence limits		Z Score	Probability
			Lower	Upper		
Baseline level (communication)	0.502	0.042	0.421	0.584	12.032	<0.001
Intervention (1 = treatment, 0 = control)	0.115	0.058	0.001	0.229	1.981	0.048
Age of adolescent	-0.017	0.009	-0.035	-0.001	-1.987	0.047
Gender of adolescent (1 = female, 0 = male)	0.052	0.027	-0.002	0.105	1.897	0.058
Acculturation of adolescent ^c	-0.052	0.026	-0.103	-0.001	-2.005	0.045
Household size	0.005	0.009	-0.013	0.023	0.537	0.591
Intervention × household size	-0.029	0.013	-0.055	-0.003	-2.168	0.030

^a *N* = 635.

^b Mean communication with parents score based on six items (1 = never, 3 = often).

^c The scale is based on a continuum from very Mexican (1.00–1.99) to very Anglicized (4.01–5.00).

Similar models emerged for both parents' and adolescents' perception of communication. That is, both parents and adolescents reported better parent–child communication if they participated in the tobacco and alcohol use prevention program (significant intervention main effect), and this effect was moderated by the size of their household (significant interaction between the intervention and household size). Based on the parameter estimates for the intervention main effect and the interaction term, the suggested trend is for the positive difference of the tobacco–alcohol program over the attention-control to decrease as the household size increases. Quadratic main effects and interaction terms were also included to assess a curvilinear component for household size, but none of the terms was statistically significant and they were dropped from the models. No other main effects were found for parent perception of parent–child communication. In contrast, adolescent reports of parent–child communication decreased with age and higher levels of adolescent acculturation, and females reported marginally better parent–child communication than males.

Since parents and adolescents responded to the same six-item measure of parent–child communication we

decided to look at their correspondence. Specifically, Pearson correlation coefficients at pre- and postassessments indicated that parent and adolescent reports of parent–child communication were significantly ($P < 0.001$) related, r 's = 0.17 and 0.19, respectively. Although significant, the relationship between parent and adolescent reports was in the low range (i.e., less than 5% of the variability in reports from one member of the family is accounted for when knowing what the other reports).

Finally, we attempted to put the observed effect of this public health intervention on adolescent-reported parent–child communication in context. In the present analysis of adolescent-reported parent–child communication, the effect size for the treatment in smaller households was approximately 0.1. In the preceding companion paper [11] susceptibility to tobacco use and ever use of tobacco and alcohol decreased with increasing adolescent reports of good parent–child communication (odds ratio = 0.48; 0.52; 0.63, respectively). Taken together, we might predict that participants in the tobacco and alcohol use prevention program from smaller households will be 5 to 10% less likely to use tobacco or alcohol (or be susceptible to tobacco use) in the future.

TABLE 3
Summary of Variables Predicting Parent Reports of Parent–Child Communication^{a,b}

Parameter	Estimate	Standard error	95% Confidence limits		Z Score	Probability
			Lower	Upper		
Baseline level (communication)	0.471	0.048	0.376	0.565	9.762	<0.001
Intervention (1 = treatment, 0 = control)	0.126	0.052	0.023	0.229	2.406	0.016
Age of adolescent	-0.014	0.009	-0.032	0.004	-1.504	0.133
Gender of adolescent (1 = female, 0 = male)	0.021	0.024	-0.027	0.067	0.841	0.401
Acculturation level of adolescent ^c	-0.006	0.026	-0.058	0.046	-0.232	0.816
Household size	0.019	0.011	-0.002	0.041	1.798	0.072
Intervention × household size	-0.036	0.014	-0.063	-0.009	-2.606	0.009

^a *N* = 635.

^b Mean parent–child communication score based on six items (1 = never, 3 = often).

^c The scale is based on a continuum from very Mexican (1.00–1.99) to very Anglicized (4.01–5.00).

DISCUSSION

In the present study we describe a community-based intervention that was developed to prevent tobacco and alcohol use in a hard-to-reach population of Hispanic migrant adolescents. While the focus of the intervention was on tobacco and alcohol use prevention and included those program components previously recommended, an additional emphasis of the described intervention was the involvement of parents to facilitate communication with and support of their children. The results of this randomized control group field test indicate that this culturally sensitive tobacco and alcohol use prevention program did in fact result in both parents and adolescents reporting greater improvements in communication than those who experienced an attention-control program. This effect was moderated by the size of the household. Not unexpectedly, the intervention tended to be effective when there were fewer siblings, as the parents presumably had even more opportunity to attend to and communicate with their participating child. This finding suggests that additional attention needs to be focused on larger families. Specifically, we must not only recognize that it may be more difficult to impact communication in individual parent-child dyads, but also explore approaches (e.g., routinely scheduled meetings of the entire family or various family members) that address the time constraints of these families.

The importance of parent-child communication in promoting healthy behaviors has been demonstrated in a number of studies linking parental connectedness, parental monitoring, and communication with parents to lower levels of tobacco, alcohol, and other substance use [20,23,24]. It may be the case that this factor plays an even more important role with the population of adolescents targeted for the intervention in this study. For example, previous studies have shown the ill effects of immigration, but failed to identify the mechanism through which this negative impact occurs [6,13]. Based on the results of the companion study reported in this issue [11], we suggested that recently immigrated adolescents and their parents may acculturate at different rates. That is, the participants in our study were faced with English-language schools and friendship groups, while their parents (involved in seasonal labor or home-making) were much less likely to encounter the "Anglo" culture in their daily lives. Thus, promoting parent-child communication in these adolescents and their parents may not only promote healthy behaviors, but also prevent additional family stress and its negative consequences.

Although parent and adolescent reports of their communication were significantly related, the relationship was a small one. Individual perceptions can be influenced by many factors, such as someone's attitudes and

beliefs and the unique interpretation of events and relationships by an individual, as well as the role that an individual plays in the family system [38,39]. These factors may result in several different realities existing within a family [39]. In fact, there is considerable evidence indicating that there are substantial differences in adolescent and parental perceptions of family functioning with adolescents generally perceiving the family more negatively [40-42]. The failure to find different perceptions in families who were referred to a child guidance clinic led Noller et al. to suggest that these parents may not have as much invested in presenting their family in a favorable light due to the recognized need for treatment [42].

Thus, differences in parent and adolescent perceptions of family functioning (e.g., communication) could be due to a number of factors, e.g., use of different criteria and differential responsiveness to social desirability. In any case, the lack of interinformant agreement, while not providing evidence for concurrent validity, does not indicate a lack of validity [43]. In the present study a previously developed measure with established reliability and validity assessing adolescent perceptions of parent-child communication was adapted for use by parents [34,35]. Although there was weak evidence for concurrent validity (i.e., interinformant agreement), the observed significant treatment effect found for both adolescent and parent reports provides additional evidence for the validity of the adolescent measure and initial evidence for the validity of the parent measure.

Finally, some indication of the potential impact of improved parent-child communication on subsequent tobacco and alcohol use was presented in this study. The modest estimates (e.g., 5 to 10% reduction in use among households with fewer siblings) provide some indication of what we might expect to see in the future if improved communication does in fact serve as a protective factor.

Although the result of this first step in evaluating a culturally sensitive intervention targeted to migrant Hispanic youth is promising, there are limitations that should be noted, as well as suggestions for further work. First, the tobacco and alcohol use prevention program targeted a population that typically has not benefited from interventions because of access. Although we utilized culturally sensitive recruiters and materials along with staff from the Migrant Education Program, almost 60% of the eligible families did not participate. This not only limits our ability to generalize the findings to those who were not reached, but also suggests that additional efforts to involve this hard-to-reach population need to be considered. Additional limitations include the short-term follow-up and reliance on self-report measures to evaluate the specific outcome. Reliance on self-reports from parents and adolescents could raise a concern that

the observed effect of the intervention was a function of nothing more than social desirability. While it is possible that the responses of the parents and adolescents were impacted by the desire to present their family in the most positive light, social desirability cannot explain the observed findings. First, participants were randomly assigned to the attention-control and intervention groups. Since the comparison group received a meaningful intervention that included equivalent amounts of time and attention from the program staff, nonspecific treatment factors (i.e., demand to respond in a socially desirable manner) were, in effect, controlled. And finally, the effect was observed in the reports of both the parents and the adolescents, even though there is some suggestion that parents and adolescents are differentially responsive to social desirability when describing family functioning [40–42].

Regardless, future studies can address these limitations by examining the impact of the intervention on other proposed protective factors (e.g., individual and situational). More important, long-term follow-up assessments of the participants which are currently being conducted will allow us to look at not only the impact of the intervention on tobacco and alcohol use, but also the proposed mediating effect of protective factors such as parent–child communication.

ACKNOWLEDGMENTS

We gratefully acknowledge the assistance of Celia Ramirez and Dixie Bryant of the Migrant Education Program, San Diego County office of Education. Without their assistance, this project would not have been possible.

REFERENCES

- Hernandez DJ, Charney E. From generation to generation: the health and well-being of children in immigrant families. National Research Council–Institute of Medicine, 1998.
- Hurtado A, Hayes-Bautista DE, Valdez RB, et al. Family strengths, family continuity. In: Hurtado A, Hayes-Bautista DE, Valdez RB, et al., editors. *Redefining California: Latino social engagement in a multicultural society*. Los Angeles (CA): UCLA Chicano Research Center Publication, 1992. 11–30.
- Slesinger D, Christenson BA, Cautley E. Health and mortality of migrant farm children. *Soc Sci Med* 1986;23(1):65–74.
- Larson OW, Doris J, Alvarez, WF. Migrants and maltreatment: comparative evidence from central register data. *Child Abuse Negl*. 1990;14:375–85.
- Hayes-Bautista DE, Hurtado A, Valdez RB, et al. Strong families. In: Hayes-Bautista DE, Hurtado A, Valdez RB, et al., editors. *No longer a minority: Hispanics and social policy in California*. Los Angeles (CA): UCLA Chicano Research Center Publication, 1992: 17–9.
- Vega WA, Kolody B, Aguilar-Gaxiola S, et al. Lifetime prevalence of DSM-III-R psychiatric disorders among urban and rural Mexican Americans in California. *Arch Gen Psychiatry* 1998;55: 771–8.
- Kaplan MS, Marks G. Adverse effects of acculturation: psychological distress among Mexican American young adults. *Soc Sci Med* 1990;31(12):1313–9.
- Marín G, Perez-Stable EJ, Marín BV. Cigarette smoking among San Francisco Hispanics: the role of acculturation and gender. *Am J Public Health* 1989;79:196–9.
- Gilbert MJ. Alcohol consumption patterns in immigrant and later generation Mexican American women. *Hisp J Behav Sci* 1987; 98(3):199–213.
- Lovato CY, Litrownik AJ, Elder J, Nuñez-Liriano A, Suarez D, Talavera GA. Cigarette and alcohol use among migrant Hispanic adolescents. *Fam Comm Health* 1994;16:18–31.
- Elder JP, Campbell NR, Litrownik AJ, Ayala GX, Slymen DJ, Parra-Medina D, Lovato CY. Predictors of cigarette and alcohol susceptibility and use among Hispanic migrant adolescents. *Prev Med* 2000;115–123.
- Baumrind D. Familial antecedents of adolescent drug use: a developmental perspective. In: Jones CL, Battjes, RJ, editors. *Etiology of drug abuse: implications for prevention*. Washington: U.S. Govt. Printing Office, 1985:13–44. [DHHS Publication No. (ADM) 86-1335].
- Botvin GJ. Substance abuse prevention research: recent developments and future directions. *J Sch Health* 1986;56:369–74.
- Flay B. Psychosocial approaches to smoking prevention: a review of findings. *Health Psychol* 1985;4(5):449–88.
- Johnson C, Pentz M, Weber M, Dwyer J, Baer N, MacKinnon D, Hansen W. Relative effectiveness of comprehensive community programming for drug abuse prevention with high-risk and low-risk adolescents. *J Consult Clin Psychol* 1990;58(4):447–56.
- Hawkins JD, Catalano RF, Miller JY. Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. *Psychol Bull* 1992;112(1):64–105.
- Klepp K, Halper A, Perry CL. The efficacy of peer leaders in drug abuse prevention. *J Sch Health* 1986;56:407–11.
- Logan, BN. Adolescent substance abuse prevention: an overview of the literature. *Fam Comm Health* 1991;13(4):25–36.
- Wills TA. Stress and coping in early adolescence: relationships to substance use in urban school samples. *Health Psychol* 1986; 5(6):503–29.
- Wills TA, Vaughan R. Social support and substance use in early adolescence. *J Behav Med* 1989;12(4):321–37.
- Collins LM, Sussman S, Mestel J, Rauch M, Dent CW, Johnson CA, Hansen WB, Flay BR. Psychosocial predictors of young adolescent cigarette smoking: a sixteen-month, three-wave longitudinal study. *J App Soc Psychol* 1987;17(6):554–73.
- Donovan JE, Jessor R, Costa FM. Adolescent health behavior and conventionality–unconventionality: an extension of problem–behavior theory. *Health Psychol* 1991;10(1):52–61.
- Stacy AW, Sussman S, Dent CW, Burton D, Flay BR. Moderators of peer social influence in adolescent smoking. *Pers Soc Psychol Bull* 1992;18(2):163–72.
- Resnick MD, Bearman PS, Blum RW, Bauman KE, Harris KM, Jones J, Tabor J, Beuhring T, Sieving RE, Shew M, Ireland M., Bearinger LH, Udry JR. Protecting adolescents from harm: findings from the National Longitudinal Study on adolescent health. *J Am Med Assoc* 1997;278:823–32.
- USDHS, Reducing the health consequences of smoking: 25 years of progress. A report of the Surgeon General. U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. [DHHS Publication No. (CDC) 89-8411].
- Glynn, TJ. Essential elements of school-based smoking prevention programs. *J Sch Health* 1989;79(10):1371–6.
- Hover SJ, Gafney LR. Factors associated with smoking behavior in adolescent girls. *Addic Behav* 1988;13:139–45.

28. Pentz MA, et al. the power of policy: the relationship of smoking policy to adolescent smoking. *Am J Public Health* 1989;79: 857-62.
29. Perry CL, Pirie P, Holder W, Halper A, Dudovitz B. Parent involvement in cigarette smoking prevention: two pilot evaluations for the "unpuffables program." *J Sch Health* 1990;60(9): 443-7.
30. Marín G, Marín BV. Research with Hispanic populations. Newbury Park (CA): Sage; 1991.
31. Sabogal R, Marín G, Otero-Sabogal R, Marín BV, Pérez-Stable EJ. Hispanic familism and acculturation: what changes and what doesn't? *Hisp J Behav Sci* 1987;9:397-412.
32. Brislin RW. Back-translation for cross-cultural research. *J Cross-Cultural Psychol* 1970;1:185-216.
33. Werner O, Campbell D. Translating, working through interpreters, and the problem of decentering. In: Naroll R, Cohen R, editors. *A handbook of method in cultural anthropology*. New York: American Museum of Natural History, 1970:398-420.
34. Huizinga D, Esbensen, F. Scales and measures of the Denver Youth Survey Denver (CO): Institute of Behavioral Science, University of Colorado, 1990.
35. Huizinga D, Esbensen F, Weiher A. Are there multiple paths to delinquency. *J Criminal Law Criminol* 1991;82:83-119.
36. Cuéllar I, Harris LC, Jasso R. An acculturation scale for Mexican-American normal and clinical populations. *Hisp J Behav Sci* 1980;2:199-217.
37. Cuéllar I, Arnold B, Maldonado R. Acculturation rating scale for Mexican Americans—II: a revision of the original ARSMA scale. *Hisp J Behav Sci* 1995;17:275-304.
38. Feldman SS, Gehring TM. Changing perceptions of family cohesion and power across adolescence. *Child Dev* 1988;59:1034-45.
39. Smith KA, Forehand R. Parent-adolescent conflict: comparison and prediction of the perceptions of mothers, fathers, and daughters. *J Early Adol* 1986;6:353-67.
40. Jessop DJ. Family relationships as viewed by parents and adolescents: a specification. *J Marriage Fam* 1981;43:95-107.
41. Noller P, Callan VJ. Adolescent and parent perceptions of family cohesion and adaptability. *J Adol* 1986;9:97-106.
42. Noller P, Seth-Smith M, Bouma R, Schweitzer R. Parent and adolescent perceptions of family functioning: a comparison of clinic and non-clinic families. *J Adol* 1992;15:101-14.
43. Hodges K, Gordon Y, Lennon MP. Parent-child agreement on symptoms assessed via a clinical research interview for children: The Child Assessment Schedule (CAS). *J Child Psychol Psychiatry* 1990;31:427-36.