



Published in final edited form as:

J Prim Prev. 2007 November ; 28(6): 521–546. doi:10.1007/s10935-007-0110-z.

Engaging Mexican Origin Families in a School-Based Preventive Intervention

Francesca R. Dillman Carpentier,

School of Journalism and Mass Communication, University of North Carolina at Chapel Hill, Carroll Hall, Campus Box 3365, Chapel Hill, NC 27599-3365, USA, e-mail: francesca@unc.edu

Anne M. Mauricio,

Arizona State University, Tempe, AZ, USA

Nancy A. Gonzales,

Arizona State University, Tempe, AZ, USA

Roger E. Millsap,

Arizona State University, Tempe, AZ, USA

Connie M. Meza,

Arizona State University, Tempe, AZ, USA

Larry E. Dumka,

Arizona State University, Tempe, AZ, USA

Miguelina Germán, and

Arizona State University, Tempe, AZ, USA

M. Toni Genalo

Arizona State University, Tempe, AZ, USA

Abstract

This study describes a culturally sensitive approach to engage Mexican origin families in a school-based, family-focused preventive intervention trial. The approach was evaluated via assessing study enrollment and intervention program participation, as well as examining predictors of engagement at each stage. Incorporating traditional cultural values into all aspects of engagement resulted in participation rates higher than reported rates of minority-focused trials not emphasizing cultural sensitivity. Family preferred language (English or Spanish) or acculturation status predicted engagement at all levels, with less acculturated families participating at higher rates. Spanish-language families with less acculturated adolescents participated at higher rates than Spanish-language families with more acculturated adolescents. Other findings included two-way interactions between family language and the target child's familism values, family single- vs. dual-parent status, and number of hours the primary parent worked in predicting intervention participation. *Editors' Strategic Implications:* The authors present a promising approach—which requires replication—to engaging and retaining Mexican American families in a school-based prevention program. The research also highlights the importance of considering acculturation status when implementing and studying culturally tailored aspects of prevention models.

Keywords

Culture; Engagement; Intervention; Latino; Minority; Recruitment

Introduction

The U.S. Latino population is expected to grow from 14% to 25% by the mid-21st century, and a large share of this growth will occur via immigration from Mexico (U.S. Census Bureau 2002a, b). Upwards of 30% of U.S. Mexican origin youth live in families with incomes below the official poverty threshold, half of these families at 150% below the poverty line (Hernandez 2004). Correspondingly, this population is disproportionately at risk for social, educational, and psychological problems. For example, nearly a third drop out of school, surpassing rates for African Americans (13%) and White non-Hispanics (7%) (U.S. Department of Education 2000). This is particularly problematic, as school failure substantially increases risks for unstable employment, poverty and mental health problems (Power et al. 1991).

Family interventions show promise in preventing academic disengagement and psychological disorders for Mexican origin youth (Martinez and Eddy 2005). These interventions have demonstrated effects on a broad range of child and adolescent outcomes across different populations (Greenberg et al. 1999; Szapocznik et al. 1990). School-based family interventions are frequently recommended as a powerful strategy to promote academic success because they can directly address the home-school disconnect, a critical risk factor for Mexican origin youth (Delgado-Gaitan 1992; Larson and Rumberger 1995). However, Latinos often underutilize health services (e.g., Harachi et al. 1997) and only about 30% of Latinos typically participate in clinical trials of psychological interventions (e.g., Cardemil et al. 2005; Miranda et al. 1996). Because Mexican origin parents experience barriers to engagement with U.S. schools and may have doubts about the schools' credibility or authority to address parenting and family concerns (Eccles and Harold, 1996; Keller and McDade 2000), it may be especially difficult to obtain this group's participation in school-based interventions.

The current study reports Mexican origin family engagement in a randomized, controlled trial of *Puentes a la Secundaria/Bridges to High School*, a family-focused preventive intervention designed to increase protective factors and reduce risk factors associated with academic engagement and mental health. Targeting middle school students from low-income neighborhood schools, this intervention brought families to schools for a 9-session program that included parent skills training, adolescent coping skills training, and a family strengthening component. The program aimed to change trajectories toward externalizing and internalizing problems, targeting academic engagement as a significant determinant of these pathways for Mexican origin youth. In this article, we will report the extent to which Mexican origin families were willing to invest time in this school-based, family-focused intervention efficacy trial and to identify factors that predict family engagement in the intervention trial. We will also describe the strategies used to maximize cultural sensitivity and engagement of *Puentes/Bridges* in order to inform future intervention research with Mexican origin families.

Strategies to Increase Engagement of Mexican Origin Families

We incorporated a number of strategies recommended in the literature to maximize recruitment and encourage participation in the intervention. We used repeated, personalized contacts, social networking, and home visits, which have produced moderate to high recruitment rates (50–70% enrollment among eligible families) in prior research with inner-city, ethnic minorities (Harachi et al. 1997; Miranda et al. 1996). Periodic newsletters and postcards, acquiring contact information for family and friends, and frequent tracking were used to manage family mobility (Dumka et al. 1997; Prinz et al. 2001), a difficult challenge when working with low-income,

immigrant populations. Convenient program locations and scheduling, food, transportation and childcare incentives were also used to increase program appeal and reduce participation obstacles (Lengua et al. 1992; Miranda et al. 1996; Webster-Stratton 1998).

Evidence suggests program engagement is influenced by the extent to which an intervention is sensitive to the cultural characteristics of the target population (Harachi et al. 1997; Kumpfer et al. 2002). We used a variety of strategies described in the literature (e.g., Dumka et al. 1997) to ensure the intervention was sensitive to the needs, preferences, and values of our target participants and schools (Gonzales et al. 2007). Prior to developing the intervention, we gathered qualitative data about program preferences (Dumka et al. 1998) and potential barriers to participation (Lengua et al. 1992). Consumer satisfaction ratings and focus groups were used during pilot testing to assess participant and group leader reactions to program parameters and to refine the intervention (Gonzales et al. 2004). We formed a partnership with our school districts and established a school advisory board to ensure the program and our efforts to promote home-school linkages were adapted to the “culture” of the school (Gonzales et al. 2007).

Strategies that resulted from these efforts to maximize cultural sensitivity included: (1) aligning the family-based intervention with traditional family values (Szapocznik et al. 1990), (2) incorporating culturally syntonic instructional activities, e.g., cooperative learning, video modeling using Latino actors, (3) integrating cultural values such as *personalismo* (face-to-face interaction), *respeto* (dignity and respect) and *confianza* (building trust) into intervention and engagement strategies (Miranda et al. 1996; Pantin et al. 2003), (4) holding equivalent Spanish and English program groups and training staff to be sensitive to group differences in language abilities, (5) hiring predominantly ethnically-matched staff and providing all staff with cultural competency training (e.g., Harachi et al. 1997; Prinz et al. 2001), (6) providing families with knowledge, skills, and a school liaison to overcome cultural barriers to school engagement, and (7) using strength-based cultural messages and empowerment strategies, e.g., stating that the purpose of the program was to mobilize the strengths of Mexican origin families to “promote success” (Lengua et al. 1992) and help teens stay on *el buen camino* [the good path; (Azmitia and Brown 2002)]. Given our systematic attention to these issues, the *Puentes/Bridges* efficacy trial offered an ideal opportunity to examine to what extent Mexican-origin families engaged in a school-based intervention and efficacy trial and to examine factors that predict engagement.

Predictors of Engagement in Family-Based Preventive Interventions

Documentation of recruitment success for intervention research targeting Latino families is limited, particularly for Mexican origin samples (Muñoz and Mendelson 2005). However, research with general population samples identifies several demographic indicators associated with reduced engagement in family interventions, measured by initial enrollment, attendance, session involvement and attrition. Along with ethnic minority membership (Orrell-Valente et al. 1999; Perrino et al. 2001), the identified indicators include the following predictors examined in the current study: low parent education (Redmond et al. 2002; Spoth et al. 1999), low family income (Perrino et al. 2001; Redmond et al. 2002), single parent status (Cohen and Linton 1995; Dumka et al. 1997), and multiple children at home (Katz et al. 2001; Redmond et al. 2002).

Regarding factors that *increase* engagement, some studies suggest that parents who perceive their child as maladjusted are more likely to enroll in preventive interventions in comparison to parents who report children with fewer adjustment problems (Haggerty et al. 2002; Heinrichs et al. 2005). Grounding their work in the Health Beliefs Model (e.g., Rosenstock 1990), Spoth and colleagues (Spoth and Redmond 1995; Spoth et al. 2000) have suggested the reason for this difference is that parents interpret child maladjustment as a need for intervention. Much

of this research is focused on predicting participation in parenting programs that target child mental health symptoms. However, the basis for this research applies to the current study, in that the Health Beliefs Model states that individuals are motivated to enroll in services where the service's targeted behavior is seen as a real risk for those individuals. Accordingly, a child's poor academic performance might indicate to parents that their child is at risk for school dropout, motivating the parents to participate in a program aimed at decreasing academic disengagement. Thus, the current study examines child mental health symptoms and academic performance as predictors of program engagement.

Acculturation and Family Language Assignment—Acculturation is defined as a process of adaptation that occurs through sustained contact with a culture that is distinct from one's culture of origin (Berry 2006). Although many immigrants retain aspects of their ethnic culture when they adapt to that of the U.S. mainstream, the majority learn English and gradually incorporate some of the values and norms of the U.S. host culture (Rogler et al. 1991). Because acculturation produces change on a variety of dimensions, including integration with or orientation toward the host culture and its customs and values, intra-group variability in acculturation levels might explain differences in service utilization for Mexican origin families.

Studies investigating psychotherapy service utilization patterns have found that less acculturated Latino families are less likely to enroll and more likely to prematurely terminate services compared with more acculturated or U.S. born families (Miranda 1976; Wells et al. 1987). Because less acculturated immigrant family members earn substantially lower wages and hold less stable jobs than those born in the U.S. (Hernandez 2004), these immigrants are likely more vulnerable to barriers associated with low income that may impede participation. These findings suggest that acculturation level may be negatively associated with engagement in a time-intensive, school-based family intervention. Yet, in an earlier pilot of *Puentes/Bridges*, Spanish-speaking families participated at significantly higher rates than more acculturated, English-speaking families (Gonzales et al. 2004). One possible explanation is that the family orientation of the *Puentes/Bridges* program is consistent with the cultural value of familism, which is centrally important within traditional Mexican origin families (Cauce and Domenech-Rodriguez 2002). In addition, it is possible that differential attendance was due to differences in the group dynamics of the English and Spanish groups. Pilot program evaluations indicated a higher degree of cohesiveness within the Spanish-speaking groups (Gonzales et al. 2004), and group psychotherapy research suggests that group process can play a pivotal role in group members' engagement in treatment (Mackenzie and Tschuschke 1993; Tschuschke and Dies 1994).

The *Puentes/Bridges* pilot study was based on a small convenience sample from a single school. Thus, the current study includes family language preference as a predictor of engagement to provide a stronger test of the language effect with a larger sample of Mexican origin families recruited through five large middle schools. In addition, this study expands on the pilot findings by testing the effects of family language preference along with the demographic and risk variables described above that have predicted engagement with other general population and high risk samples. Finally, the study includes a measure of acculturation (Anglo orientation) and familism values of the primary caregiver and target child, as well as intervention group environment variables, to explore the foregoing hypotheses regarding the family language effect.

Analyses to Address Primary Study Aims

Consistent with prior studies of participant engagement in preventive interventions (Cardemil et al. 2005; Martinez and Eddy 2005; Perrino et al. 2001; Spoth et al. 2000), engagement in this study was first operationalized as initial enrollment in the study (successful recruitment

and completion of a pretest interview). For families randomized to the 9-week intervention, as opposed to a control group, engagement was further assessed as program enrollment (completion of initial home visit discussing the program and family program goals) and attendance (number of sessions attended of 9 sessions). Evaluating engagement at each stage is important because factors that explain initial enrollment may differ from factors that explain participation in an intervention (Spoth et al. 2000), as the latter requires greater commitment.

Four sets of analyses address the primary study aims. First, we used descriptive analyses to address the extent to which Mexican origin families will invest time in a school-based, family-focused preventive intervention trial. Second, based on our pilot study, we examined whether initial enrollment varied as a function of family language preference, one of few variables determined at initial contact. Third, for all families that completed a pretest interview and were randomized to the intervention, we examined predictors of program enrollment and attendance. Hypothesized predictors assessed at pretest and available for program engagement analyses include demographic variables (parent education level, family income, single parent status, number of children in the home), adolescent risk variables (internalizing and externalizing symptoms, grade point average), and parent and child acculturation variables (Anglo orientation and familism values). Family language assignment was also included as a predictor and, in addition, was treated as a grouping variable to test the possibility that predictors of engagement might interact with or vary as a function of language assignment. Fourth, group process variables were examined for families that attended at least one session and completed post-test assessments. Although group process data were collected at the end of the program and do not meet temporal precedence criteria to support a causal inference about their link to attendance, they are useful for bolstering plausible hypotheses to explain attendance.

Method

Overview

A stratified recruitment approach was used to identify English- and Spanish-speaking families eligible to participate in the Puentes/Bridges project. Three independent cohorts of 7th graders and their families were recruited in each of three consecutive years from schools rosters of five large, urban middle schools. If eligible and willing to participate, family members became participants in the field experiment that tested the efficacy of the intervention by randomly assigning families to a 9-session intervention or a 2-h control group workshop.

Sample Determinants

Eligibility Criteria—To be eligible to participate in *Puentes/Bridges*, a family had to have a 7th grader under the age of 15 enrolled in one of five middle schools, as separate English and Spanish programs would be held at these schools. At least one of the child's biological parents had to be of Mexican descent *and* at least one guardian living in the home had to be of Mexican descent and willing to participate with the 7th grader. Finally, family participants had to be able to communicate in either English or Spanish to permit placement in the same language program.

Middle Schools—Participating middle schools were located in the disadvantaged neighborhoods in Phoenix, Arizona with the highest enrollment of Mexican origin students (ranging between 69% and 82%; Arizona Department of Education 2004c). Between 75% and 85% of the students at these schools were eligible for free or reduced lunches (Arizona Department of Education 2004a) and, on average, 25% were enrolled in Limited English Proficiency (LEP) classes (Arizona Department of Education 2004b).

Sampling—School rosters contained the following data for each student: contact information, gender, ethnicity (White, Hispanic, Black, Asian, Native American, Other), and language spoken at home (Spanish, English, Other). Across the three cohorts, the five participating schools yielded 5,304 enrolled Hispanic 7th graders (see Fig. 1), 70% of whom were listed as speaking Spanish at home; 30% English. To account for school misidentification of language (36% identified as English-speaking actually preferred Spanish) and greater difficulty recruiting English-speaking families (for our pilot tests), unequal probability sampling gave English families a higher chance (65%) of being sampled than Spanish families (35% chance). Unequal probability assignment was also used to randomly assign English- and Spanish-speaking families to treatment or control conditions. English families were given a 70% chance of being placed in treatment and a 30% chance of being placed in control. Spanish families were given a 60% chance of being placed in treatment; 40% chance in control. The unequal sampling procedure proved necessary, as fewer English ($n = 241$) than Spanish ($n = 302$) families were randomized into the study, despite oversampling English speakers.

Procedures

A short bilingual letter featuring participating schools' endorsement of *Puentes/Bridges* was sent on each school's letterhead to randomly selected families. Shortly thereafter, each solicited family was sent a bilingual project letter and brochure, which included messages about the program's purpose, cultural focus, incentives and benefits for family and community. The messages in these recruitment materials reflected the lessons of the Health Belief Model (Rosenstock 1990), as well as other research on designing messages to attract readers (e.g., Knobloch et al. 2003; Knobloch-Westerwick et al. 2005).

Selected families next received personal contact by telephone from a bilingual Hispanic recruiter to determine eligibility and language preference. The determination of family language preference not only allowed for stratified recruitment and randomization to English and Spanish intervention and control groups but also provided one of the few variables available to analyze engagement at this initial enrollment stage. The recruiter also assessed willingness to accept random assignment to a longer program (the treatment condition) or a shorter program (control condition) and asked the guardian to consult with other family members about their willingness to participate. Families with two eligible adult caregivers in the household were encouraged to have both caregivers participate with the child. Eligible families who agreed to enroll received a phone call a few days later to confirm and reinforce their participation.

Families that confirmed participation at the second phone call were assigned to interview teams. About 75% of the interviewers were Hispanic and bilingual, the other 25% Caucasian. Computer-assisted interviews lasted about 2.5 h. Questions were read aloud to minimize literacy issues. The average period between initial recruitment and interview was 35 days (*range* = 0–133 days). During this period, families received newsletters to maintain contact. After interviews were completed, families were randomly assigned to either the control or intervention condition and to either Spanish or English groups according to their language determination.

Families in the intervention condition received an initial home visit from two of their group leaders (one parent and one adolescent group leader) to introduce the program and assess families' unique strengths and challenges. All subsequent parent and adolescent intervention sessions were conducted by two group leaders, and the family sessions were conducted by all four group leaders. At least one Latino group leader was present at 90% of the meetings, and all facilitators of the Spanish groups were fluently bilingual. A second home visit was conducted midway through the program to individualize program skills. In addition, families

received attendance reminder calls from their group leaders prior to the first and fifth session and follow-up calls if they missed a session to offer support and strategize attendance barriers.

Measures

Engagement—Three indices assessed engagement. First, initial study enrollment was indicated by completion of a pre-test interview, with completion = 1 and refusal = 0 for all families eligible to participate, as determined at screening. Then, for all families assigned to the 9-session intervention treatment condition ($n = 353$), engagement was assessed two-fold: program enrollment indicated as completion of an initial home visit program session (completion = 1, non-completion = 0) and family program attendance (number of intervention sessions attended). Families received credit for attendance if any participating member was present at the session.

Family Language Preference—At initial screening, families selected the language that would be the most comfortable for all participating family members to use in the intervention. Although participants often spoke both English and Spanish, especially in the adolescent group sessions, it was important to ensure that all participants could communicate in a common language to maximize fidelity for the efficacy trial. As language use has been used in prior research as the single best marker of acculturation status (Marín and Gamba 1996), this intervention grouping variable also provided a family level index of acculturation.

Demographics—Five demographic indicators identified in the literature and assessed during the pretest interview were included as potential predictors of program enrollment and attendance. *Number of hours worked* was a single item that asked parents to report the average number of hours they worked per week. For parents who were not employed, 0 h was entered as a response. *Family income* was a single item representing a family's aggregate income. Sources included wages, salary, child support, and state and/or federal assistance. *Number of children in the home* was a single item that included biological, adopted and step children, children of a live-in partner, and the target child. *Single parent status* was a single item that represented whether families were one- or two-parent households. Families were coded as dual-parent households if the female caregiver was married or living with a partner and all other families were coded as single-parent households. Finally, *family education level* was assessed by combining individual caregiver education levels for each family to create a score representing the highest education level obtained by any principal caregiver in that family. Values ranged 0–20, with 0–12 representing years in elementary and secondary school and 13–20 representing postsecondary degrees (e.g., 16 = 4 year college degree, 18 = master's degree). Average family education level was 10.6 ($SD = 3.4$) years of school ($range = 1–18$).

Symptomatology—Regarding child risk, parent perceptions of child symptomatology were assessed using the externalizing ($\alpha = .89$; $M = 8.17$; $SD = 7.35$) and internalizing ($\alpha = .85$; $M = 9.23$; $SD = 7.05$) scores from the Child Behavior Checklist (CBCL; Achenbach and Edelbrock 1981), the most widely used scale to assess parent report of child mental health problems. Each item is answered using a 3-point Likert-type scale (e.g., “Not true” to “Very true or often true”).

Grade Point Average (GPA)—An additional indicator of child risk, adolescent letter grades in Language Arts, Math, Social Studies, and Science were obtained from the school district, transformed into a number ranging from 13 (A+) to 1 (F), and then summed by quarter. Quarters 1 and 2 were aggregated to represent first semester GPA, which reflects adolescents' grades pre-intervention. Average GPA was 7.32 ($SD = 2.79$) or C+.

Anglo Orientation—With regard to cultural indices, one of the most popular measures of acculturation is the Acculturation Rating Scale for Mexican Americans -II (ARSMA-II; Cuéllar

et al. 1995). One advantage of this scale is that it extends beyond simple single measures of language use, immigrant status, or generational status to account for acculturation. The current study assessed the Anglo Orientation subscale for the primary caregiver ($\alpha = .95$, $X = 3.01$, $SD = 1.16$) and adolescent ($\alpha = .81$, $X = 3.89$, $SD = .57$).

Familism—Familism, another cultural index, was assessed for the primary caregiver ($\alpha = .95$, $X = 4.45$, $SD = .41$) and adolescent ($\alpha = .84$, $X = 4.46$, $SD = .42$) using a 16-item composite of three subscales (r 's = .50–.64) that assessed an individual's endorsement of values regarding obligations to the family, appropriate levels of emotional closeness and support, and using the family as a referent when making decisions (Knight et al. under review). Participants rated how much they agreed or disagreed with each item with responses ranging from 1 (strongly disagree) to 5 (strongly agree).

Group Environment—Last to be included, the 264 individuals who participated in at least 1 intervention session and an immediate post-test interview completed measures of group cohesion and facilitator support adapted from the Moos Group Environment Scale (1981). On a scale from “not at all true” (1) to “very true” (5), participants rated items indicative of group cohesion, such as “there was a strong feeling of belonging-ness in this group,” and group facilitator support, such as “leaders listened carefully to what I had to say.” Because measures of group cohesion and facilitator support were correlated ($r = .75$, $P < .001$), these measures were averaged to create a composite score assessing *supportive group environment* ($\alpha = .90$, $M = 4.72$, $SD = .41$).

Participants

Just 50 of the families included in the initial recruitment sample (see Fig. 1) across the three cohorts did not have phone numbers listed with the schools. For these families, a bilingual recruiter was sent to each family's address on record to recruit the families face-to-face. In most cases, the recruiter was unable to locate the family after visiting the address and canvassing the neighborhood for leads as to the families' new residence. However, 18% ($n = 9$) of these families were successfully located and joined the telephone recruits in participating in the project.

Demographic and socioeconomic data were collected for the 596 families that completed the pre-test interview (273 English, 323 Spanish). Adolescent gender was equally distributed (300 girls, 296 boys) and adolescent mean age was 12.3 ($SD = .54$). These families' included 20% single-parent households and 80% dual-parent homes. Average household size was 5.7 members ($SD = 2.1$). Average number of children was 3.2 ($SD = 1.5$). Average family income was \$36,679 ($SD = \$20,257$), with a range of reported income between \$2,000 and \$156,999.

When available, both male and female caregivers were encouraged to participate. Caregivers were defined as adults who were physically residing with the child and who had primary responsibility for childrearing. In single-parent households ($n = 118$), 111 of the sole caregivers completing the pretest interview were female (7 male). In dual-parent homes ($n = 478$), 459 female and 323 male caregivers completed the pretest interview. Across single- and dual-parent homes, 94% of the female caregivers were biological or adoptive mothers, 2% were stepmothers, and 4% were other relatives. The male caregiver breakdown was 80% biological or adoptive fathers, 17% stepfathers, and 3% other relatives.

Results

Descriptive Data on Extent of Engagement in Efficacy Trial

About half of the random sample ($n = 955$, see Fig. 1) was determined eligible at screening. Family loss at this stage was largely due to an inability to locate families. Ineligible families were determined as such because the target child had left a participating school (30%) or was not of Mexican descent (26%), or the child and caregiver were not both proficient in the same language (16%). Because language preference was among the last determinations at screening, it is unknown what language many ineligible or unscreened families spoke at home. Of those determined eligible, 35% refused to participate, with 85% of these families providing reasons for refusal. The most widely-cited reason was time conflicts (59%), followed by parent disinterest (18%), child resistance (17%), health problems (4%) and transportation issues (2%). Thus, 65% ($n = 626$) of the eligible families initially agreed to enroll in the study, 45% of which were English-speaking. About 3% of the families were subsequently lost due to mobility and other eligibility issues, and so 62% ($n = 596$) of eligible families, 46% of which were English-speaking, ultimately enrolled and completed the pretest interview (Fig. 1).

Of the interviewed families, 353 families were randomly assigned to the intervention (see Fig. 1). Almost 80% ($n = 279$) of these families completed the initial home visit session. Average family program attendance was 5.3 sessions ($SD = 3.5$, $range = 0-9$). This average increased to 6.4 sessions ($SD = 2.8$) if the 58 families who never attended a session are excluded. About 64% of the 353 families attended 5 or more of the 9 sessions; 33% attended all 9 sessions.

Predictors of Initial Enrollment

A binary logistic regression evaluated which of the two available predictor variables assessed at screening best predicted initial enrollment. Family language preference (English = 0, Spanish = 1) and cohort (1, 2, 3) were entered to predict which families completed ($n = 596$) or refused ($n = 330$) the pretest interview (completed = 1, refused = 0) of the subsample of eligible families invited to enroll (see Fig. 1). Interactions were also initially included but failed to yield appreciable effects. The resulting model ($\chi^2 = 24.10$, $df = 3$, $P < .001$) showed language (Wald = 15.28, $df = 1$, $P < .001$) to be a significant predictor ($B = -.56$, $SE B = .14$, $\beta = .57$). Spanish-speaking families tended to enroll at higher rates (73% enrolled) than English-speaking families (60%). A cohort effect (Wald = 8.23, $df = 2$, $P < .05$) also emerged ($Bs = -.46$ to $-.48$, $SE Bs = .18$, $\beta s = .62$ to $.63$). Cohort 3 enrollment (71% enrolled) was most successful, followed by Cohorts 1 (63%) and 2 (60%).

Predictors of Engagement in the 9-Week Intervention

Preliminary Analyses—Zero-order correlations using listwise deletion were run among all predictor variables to help guide inclusion criteria in later analyses. As seen in Table 1, program enrollment and attendance were positively associated with each other and with family language preference (Spanish) and negatively correlated with primary caregiver Anglo orientation. Family language preference and primary caregiver Anglo orientation were highly correlated with each other, indicating substantial overlap between these two markers of acculturation. These two markers were similarly correlated with other variables, child internalizing symptoms excluded, in further demonstration of their conceptual overlap. Besides language and Anglo orientation, family education level was negatively associated with program enrollment, and adolescent GPA was positively associated with family attendance. Cohort was unrelated to either program enrollment or family attendance and was thus excluded from subsequent analyses.

Program Enrollment—In preparation for the analyses, categorical variables (language and single-parent status) were dummy-coded to accurately interpret differences between groups

(Aiken and West 1991). Continuous predictors were centered to eliminate nonessential multicollinearity and facilitate interpretation of lower-order coefficients.

Next, a series of binary hierarchical logistic regressions examined effects of language, demographic factors, child risk, and cultural variables on program enrollment. Listwise deletion excluded participants with missing data from the analyses; missing data were 5% or less on any one predictor and less than 7% across all predictors. Tests were conducted by domain, such that one set of tests examined independent variables representing demographics, another set of tests entered only variables associated with child risk, and a third set of tests looked at variables belonging to the cultural predictors domain. For each model pertaining to a specific domain, the appropriate independent variables were entered into the first block to examine potential main effects on program enrollment (completion of initial home visit). Two-way interactions were entered into the second block to examine interaction effects. For each set of tests, interactions that were not significant, based on Wald and χ^2 -change statistics, were dropped from the model. The final three models representing demographic, child risk, and acculturation domains are reported, in which only the significant two-way interactions are retained in the second blocks.

The final regression testing the domain of demographic variables on program enrollment yielded no significant main effects in Block 1. In Block 2, the interaction between language and number of parent hours worked predicted enrollment and significantly improved model fit, resulting in a final model that fit the data well (see Table 2). To interpret the interaction, odds ratios indicating likelihood of program enrollment were calculated for each language group. Follow-up results (Wald = 4.98, $P < .05$) indicated that Spanish families were 2% less likely to enroll than English families for every 1-unit increase in hours worked (OR = .98, CI = .96–.99).

The final regression testing the child risk domain entered child externalizing and internalizing symptoms, child GPA, and language as main effects in Block 1. Language was marginally associated with program enrollment. No two-way interactions initially entered into Block 2 were significant and were thus dropped. Nonetheless, Block 1 fit the data (see Table 2).

The final regression assessing the acculturation domain entered parent and child familism and Anglo orientation scores with language in Block 1 and two-way interactions in Block 2. Child Anglo orientation \times language was the only interaction retained in the final model. There were no significant main effects at Step 1 with both language and parent Anglo orientation in the model. However, a significant child Anglo orientation \times language interaction emerged and brought out a significant child Anglo orientation main effect in Block 2. The final model fit the data adequately (Table 2). Follow-up results probing the child Anglo orientation \times language effect (Wald = 4.68, $P < .05$) indicated that English families were 54% less likely to enroll than Spanish families for every 1-unit increase in child Anglo orientation (OR = .46, CI = .22–.93).

Given the overlap between language assignment and primary caregiver Anglo orientation, additional regressions were run, dropping each of these variables from the first block while retaining the rest of the original configuration. Dropping parent acculturation resulted in a significant family language effect (Wald = 3.87, $P < .05$). Similarly, dropping language resulted in a significant acculturation effect (Wald = 5.73, $P < .05$). Post-hoc results indicated that Spanish families [OR = 1.76, CI = 1.10–3.07] or less acculturated families [OR = 1.35, CI = 1.72–1.05] were more likely to enroll in the program. The main and interaction effects involving child Anglo orientation remained significant in these models.

Program Attendance—To prepare for the next analyses, preliminary regressions were run on family attendance, each using one predictor and its interaction with language to identify

significant language \times predictor effects to include in the final models (Aiken and West 1991), in efforts to avoid overwhelming final models with interaction terms. In these single predictor models, parent status \times language ($\beta = .34, t(349) = 2.34, P < .05$), number of parent hours worked \times language ($\beta = -.22, t(349) = -3.02, P < .01$), and child familism \times language ($\beta = .15, t(349) = 1.96, P < .05$) interactions were significant and thus included in final models (see Table 3).

Final models, as with the previous analyses, consisted of domain-specific hierarchical regressions that examined main (Block 1) and interaction (Block 2) effects of predictors relevant to the target domain (demographics, child risk, and cultural predictors), entering only those interactions demonstrating significance in the preliminary single-predictor models into the second block. For the demographic domain, only a language main effect emerged in Block 1. Block 2 inclusion of the interaction terms significantly improved upon the model, wherein parent status reached marginal significance ($\beta = -.14, t(341) = -1.89, P < .10$) and parent status \times language ($\beta = .32, t(341) = 2.15, P < .05$) and number of parent hours worked \times language interactions ($\beta = -.21, t(341) = -2.67, P < .01$) were also significant (see Table 3).

To probe the significant parent status \times language interaction, a new 4-level variable, representing Spanish/single parent ($n = 20$), Spanish/dual parent ($n = 166$), English/single parent ($n = 42$), and English/dual parent ($n = 125$), was created and used as an independent factor in a one-way ANOVA. This analysis yielded significant group differences ($F(3,349) = 6.23, P < .01$). Bonferroni post-hoc tests indicated that Spanish two-caregiver families ($M = 6.1$) attended significantly more sessions ($P < .01$) than English two-caregiver families ($M = 4.4$). No other group differences were found (single-caregiver: English $M = 5.5$, Spanish $M = 4.9$).

Simple slope analyses (Aiken and West 1991) were used to probe significant interactions between the continuous parent-hours-worked predictor and family language preference. Separate regression lines representing the relationship between family attendance and the continuous predictor were calculated for English and Spanish families. Predicted attendance values were calculated for each language group at predictor values equal to one standard deviation above and below the mean. Results indicated that English language parents attended more sessions if they worked more hours ($\beta = .025, t(349) = 2.11, P < .05$), whereas Spanish language parents attended more sessions if they worked fewer hours ($\beta = -.03, t(349) = -2.15, P < .05$).

For the child risk domain consisting of child adjustment predictors, GPA had a main effect on family attendance ($\beta = .14, t(332) = 2.48, P < .05$), in that families attended more sessions when the target child received higher grades in the semester preceding the intervention. Language demonstrated the familiar main effect indicating more Spanish participation (Table 3).

For the analysis pertaining to acculturation predictors, no main effects emerged in Block 1. In Block 2, child familism interacted with language ($\beta = .20, t(331) = 2.46, P < .05$) to predict attendance. Simple slope analyses revealed that child familism values only associated (positively) with Spanish-language family attendance ($\beta = .18, t(349) = 2.57, P < .05$). Post-hoc analyses testing language and acculturation separately showed that both language ($\beta = .19, t(340) = 3.30, P < .01$) and parent acculturation ($\beta = -.16, t(331) = -2.79, P < .01$) predicted attendance.

Group Environment Effects—Regressions were used on the subsample of families that attended at least 1 intervention session and completed a program evaluation at immediate post-test ($n = 262$) to evaluate how parent perceptions of the group environment might predict

attendance. A first model tested if language moderated a group environment main effect on family attendance. Results indicated that language ($\beta = .18, t(260) = 2.91, P < .01$) and group perception ($\beta = .13, t(259) = 2.48, P < .05$) did predict attendance, with group environment explaining a significant increase in variance (Adjusted $\Delta R^2 = .06, P < .01$) beyond the variance explained by language.

Next, to evaluate if Spanish language families' higher attendance rates were explained by parent perceptions of the group, a second model tested if group environment perceptions mediated the relation between language and attendance. Language was significantly related to group perception, with Spanish-language parents rating group cohesion higher than English-language parents ($\beta = .19, t(259) = 3.19, P < .01$). Group environment acted as a partial mediator, in that group environment predicted attendance ($\beta = .24, t(260) = 4.02, P < .001$), although language was still significant after controlling for the group variable ($\beta = .13, t(259) = 2.14, P < .05$).

Discussion

In this article, we described and evaluated the success of a culturally sensitive engagement approach developed as part of a universal, family-focused, school-based intervention to prevent academic disengagement and mental health problems of Mexican origin middle school students. Second, we evaluated this engagement approach in terms of how successful we were in enrolling families in the intervention trial and engaging them to participate in the intervention. Overall, we found our engagement outcomes to be quite positive. Our 62% initial enrollment rate of eligible families is comparable to the notable success rates of other culturally sensitive interventions, and surpasses engagement rates typically reported in trials that involved high-risk, ethnic minority populations and did not use culture-specific engagement strategies (see Eddy et al. 2005). Our rate of enrollment suggests that a school-based approach is a viable means to deliver services and programs for Mexican origin families, particularly if they include efforts to engage families through culturally compatible materials and strategies. However, despite our success in engaging eligible families, we were unable to reach more than 30% of families included on school rosters, even with assistance from schools and neighborhood canvassing. Available contact information often was not accurate due to high rates of mobility for our population, highlighting that mobility remains a difficult barrier when conducting intervention research with Mexican origin families.

In addition, despite efforts to overcome childcare, transportation and dinner issues, as well as provide a small monetary incentive to complete the interviews, 35% of eligible families still initially refused to enroll. Although this rate is by no means poor in comparison to similar trials, it is further corroboration that high-risk ethnic minority groups perceive heavy barriers to participation and researchers must be prepared to address these barriers in their recruitment messages and program planning to better reach these often-underrepresented populations. For example, by far the most cited reason for inability to participate surrounded substantive time conflicts. As caregivers often held multiple jobs, they were forced to reserve the few evenings they had available for activities such as taking their child to church confirmation meetings. Researchers, therefore, might consider offering their content to families in more creative ways, provided the researchers can endure the increased costs of implementation and logistical hurdles that might arise as a consequence. The manner in which researchers "sell" their programs is also relevant, in that programs such as *Puentes/Bridges* compete with part-time work, religious commitments, school-sponsored sporting activities, and other staples of family life. Because interventions are competing for limited attention and time, it might behoove researchers to incorporate lessons from marketing or persuasion literature into recruitment methods in efforts to convey the importance of participation in these programs more effectively.

Turning to the intervention, rates of attendance indicated we were able to successfully engage families to attend the intervention sessions. Only 16% of families did not attend the first session, despite a relatively long time lapse between recruitment and the start of the program. Though a large majority of families were successfully engaged at the start of the program, attendance varied across the trial. This pattern is typical for family interventions, particularly with high-risk populations that encounter numerous barriers to regular attendance.

When compared to other family-focused preventive interventions involving parent and child participation, our attendance rates were comparable (e.g., DeGarmo et al. 2004; Brody et al. 2006) or slightly higher (e.g., Harachi et al. 1997). Two recent studies reported higher attendance for culturally sensitive Latino family interventions (Martinez and Eddy 2005; Pantin et al. 2003), but one of these provided monetary incentives for session attendance. Also, these studies were conducted with immigrant families, and our attendance rates for less acculturated, largely immigrant Spanish-speaking families were comparable.

Altogether, our findings are consistent with recent studies demonstrating higher rates of engagement via efforts to adapt the intervention and engagement approach to the cultural needs, values, and preferences of culturally distinct populations (Kumpfer et al. 2002). However, when attempting to identify factors that predicted engagement, a number of factors significantly influenced family enrollment and attendance. Family language preference emerged as a significant predictor of engagement at all three stages of engagement, consisting of initial enrollment at recruitment (trial or control conditions), enrollment in the intervention (trial condition), and attendance at the intervention sessions. With regard to initial enrollment, defined as agreement to participate at recruitment and completion of a pretest interview, families electing to participate in Spanish enrolled at higher rates than those electing to participate in English. Cohort effects also emerged, indicating higher enrollment rates (71%) for families recruited in the final year of implementation. This cohort effect may be due to the school partnership gaining strength over the years, key school personnel becoming increasingly invested in the program, and perhaps competency gains in recruitment staff. Although it remains to be seen whether these effects would replicate or remain stable over time if the program were sustained within the community, they lend some support for strong partnerships with local community agencies involved in program implementation (Spoth and Greenberg 2005; Wandersmann, 2003).

With regard to intervention enrollment and attendance, family language preference also predicted participation for those families randomized to the 9-session intervention. Families electing to participate in Spanish were more likely to follow through with the preliminary program home visit, indicating their willingness to enroll in the intervention, and they attended a greater number of sessions ($M = 6.3$) than those electing to participate in English ($M = 5.0$).

The acculturation level of the child, based on the Anglo orientation of the ARSMA-II, also predicted enrollment in the intervention for the English-speaking group. This interaction effect, which was significant after controlling for family language preference and parent Anglo orientation, suggests that English speaking families with the most acculturated adolescents are the least likely to stay engaged with the program following initial recruitment.

Although the link between language or acculturation and engagement has not been previously tested, this finding replicates the pattern observed in the *Puentes/Bridges* pilot study. There are a number of plausible explanations. For example, our strong focus on the family as a source of strength to help children succeed may have been especially appealing to families that endorsed very traditional familistic views. Conversely, our efforts to appeal to the traditional values and cultural identity of Mexican origin families may have been less appealing to more acculturated families that were less identified with their Mexican heritage. To offer one

possibility, English speaking families with highly acculturated youth might have been less cohesive as a family unit and their children may have been less willing to engage in a family-centered program, in part due to these youth's increased involvement in activities and social relations outside the family. Consistent with this view, a strong sense of familism did not predict attendance for the English group, but was positively associated with session attendance for the Spanish group.

This view implies that adolescents' family obligations and their belief that the family is an important source of support may serve as a powerful motivation for these adolescents to remain engaged in a program. In fact, the language effect on attendance was most pronounced for two-parent families. Two-parent families are arguably most closely aligned with a traditional family orientation and more amenable to the model of family support the program endorsed. It is also possible that the Spanish-dominant families were more motivated to participate because the program emphasized school success and therefore appealed to the sense of optimism and investment in children's educational success that is often reported for immigrant groups (Fuligni 1997; Suarez-Orozco and Suarez-Orozco, 1995). Alternatively, it is possible that less acculturated, Spanish-dominant families were more motivated to take advantage of school-based programs because the families have fewer resources and institutional ties available to them. Services provided in Spanish and demonstrating respect for Mexican origin families represent a hospitable environment compared to the hostile situations immigrants might otherwise encounter in the U.S.

Analyses examining demographic factors supported parent work hours and single parent status as additional predictors of engagement, but these effects varied by language. For the Spanish group, enrollment and attendance rates were lower if the primary caregiver worked more hours. This pattern is seen in other studies, in which parent's busy work schedules are an impediment to participation in voluntary interventions (e.g., Dumka et al. 1997). However, it was surprising that parent work hours had the opposite effect on attendance for the English group. This pattern may reflect differences in the nature and associated meaning of parental employment for English and Spanish speaking parents. English-group primary caregivers worked more hours and had higher education levels than Spanish-group primary caregivers. Thus, it is possible that increased work hours reflect greater occupational opportunities for English-speakers, and these parents may be more motivated to engage in a program that aims to increase school success, in contrast to working immigrant parents that often must settle for low-skill jobs and lack the time to engage in such a program.

Effects of the child risk variables were unexpected. Child mental health symptoms did not predict engagement, as suggested by the Health Beliefs Model. Child academic performance predicted attendance, but in the opposite direction expected. The positive relation found between child GPA and attendance may reflect an optimistic outlook among parents whose children are doing relatively well in school, in that increased attendance among these families might be reflecting a motivation to facilitate their children's realistic educational goals. In contrast, families of low performing students may have been less motivated to persist in the intervention due to a belief that program benefits were less likely to be realized. Thus, although the program's emphasis on school success is consistent with the school and community goals, as well as parent preference for programs that focus on "promoting success" rather than preventing problems (Lengua et al. 1992), this emphasis may discourage families with low performance students that are the least academically motivated but potentially have the most to gain. For these youth, it may be necessary to appeal to other potential program benefits to keep them engaged.

Although it was somewhat surprising that socioeconomic status was unrelated to engagement, this sample specifically targeted lower income communities, thus reducing socioeconomic

variability in our sample. Our efforts to maintain supportive contact with families who missed sessions and our provision of other ancillary services, such as childcare, transportation and meals, also might have eliminated participation barriers associated with socioeconomic status. Our childcare service, specifically, might explain why the number of children in the home also did not predict engagement. Finally, parent education status was associated with lower attendance rates at the bivariate level, in contrast to prior findings. However, parent education level was highly related to family language and acculturation status and was no longer significant when language preference was controlled. Once again, these findings highlight this study's central finding that acculturation is an important predictor of engagement for Latino families and that other predictors of engagement may operate in distinctly different ways for Latino families depending on their acculturation level.

Finally, it is possible that the language effect on attendance reflects differences between groups in the importance of the group experience, the social connection it provided, or group dynamics in the Spanish vs. English versions of the program. Data collected at post-test supports this notion, in that participants in the Spanish groups viewed their group as significantly more supportive than those in the English groups. It is unknown whether this finding is due to differences in expectations, group dynamics, or even in the cultural sensitivity of the leaders that ran the groups. Nevertheless, perceptions of group support cannot explain why Spanish families initially enrolled in the project, and it only partially explains the language effect on attendance.

Study Limitations and Implications

In evaluating the success of our engagement strategy, only surface comparisons with other studies are possible, as we have no direct test of this overall approach in comparison with other approaches. This investigation was also limited to one southwestern metropolitan area, though the neighborhoods selected for sampling included families representing a wide variety of sociodemographic characteristics. The study also was limited in its ability to tease out the effects of acculturation, immigration status and language preference because these variables were highly confounded in our sample, as they are in the general Mexican origin population. These above limitations might have contributed to the small, though statistically significant, effect sizes found in the models predicting program engagement. Although even small effects can suggest socially important findings (e.g., Trusty et al. 2004), there is clearly a need to expand upon these findings in efforts to identify additional factors that account for engagement in preventive interventions.

Despite these limitations, our findings add to the literature on recruitment of Mexican origin families. This study provides guidelines for designing a culturally sensitive and effective engagement approach and offers evidence that Mexican origin families are willing to invest in a preventive intervention to promote success and well being for their children. Our recruitment and engagement rates also offer encouragement for educators seeking to engage Latino families in programs to promote children's academic success. Mexican origin families, particularly immigrants, are often perceived by school personnel as being uninterested in supporting their children's education (Delgado-Gaitan 1992). In stark contrast, our findings suggest Mexican origin parents, especially immigrants, are interested in taking an active role in school-sponsored programs when culturally sensitive services are provided.

As the Mexican American population continues to grow, it will become increasingly important to improve the effectiveness of education and health promotion programs targeting this group. Research will need to address the heterogeneity of this and other immigrant populations in the U.S. in order to design effective recruitment and engagement strategies. By enhancing the cultural competence of all aspects of engagement approaches we may increase participation among the hardest-to-reach populations, thus strengthening the efficacy of beneficial

interventions and increasing the potential population impact. The caution our findings suggest is that culturally tailored engagement strategies may not be as effective with ethnic minority families that are highly acculturated and less identified with their traditional culture.

Acknowledgments

We are grateful to the families who participated in this project and to the following districts and schools who collaborated: Cartwright School District, Phoenix Elementary District #1, Marc T. Atkinson Middle School, Desert Sands Middle School, Frank Borman Middle School, Estrella Middle School, and Phoenix Preparatory Academy. We thank Michael Martinez, John Woollums, William Bean, Consuelo Nava, Ema Jauregui, Heather Davis, Pat Heichel, David Dowdle, Ken Hunter, Jim Paczosa, Raul Pina, Brenda Avalos, Susan Jurkunas, Jo May, Dan Perez, Maria Salas, Dave Malin, Phoenix Union High School District, Trevor Browne High School, and Maryvale High School for their assistance in implementing the intervention. We thank Anne Mauricio, Francesca Dillman Carpentier, Lorey Wheeler, Roger Millsap, Sharlene Wolchik, Irwin Sandler, Mark Roosa, Toni Genalo, Miguelina Germán, Fairlee Fabrett, Darya Bonds, Su Yeong Kim, Jake Heller, Diana Naranjo, Soyoung Lee, Krystal Martinez, Brandi Young, Jeanette Avila, and Connie Meza for their assistance in conducting this investigation. This research was supported by NIMH grant R01-MH64707 to fund a randomized, controlled trial of a preventive intervention for Mexican American adolescents, NIMH grant 5-P30-MH39246-13 to fund a Preventive Intervention Research Center at Arizona State University, Public Health Service grant GM071798 from the National Institute of General Medical Sciences to fund the PREP program, and the Cowden Endowment to the School of Social and Family Dynamics at Arizona State University. Connie Meza also wishes to acknowledge that her participation was made possible with a grant from the National Institute of General Medical Sciences (NIGMS grant R25GM071798).

References

- Achenbach TM, Edelbrock CS. Behavioral problems and competencies reported by parents of normal and disturbed children aged four through sixteen. *Monographs of the Society for Research in Child Development* 1981;46:1–25. [PubMed: 7242540]
- Aiken, LS.; West, SG. *Multiple regression: Testing and interpreting interactions*. Thousand Oaks: Sage; 1991.
- Arizona Department of Education. National school lunch programs free and reduced percentage report SY2004-2005. 2004a [Retrieved August 15, 2007]. from http://www.ade.az.gov/health-safety/cnp/frpercentages/adhoc_frp-march2004_2004_10_20.pdf
- Arizona Department of Education. Limited English proficient(LEP) students ARS 15-754 percent of increase/decrease for all programs: Fiscal year 2002–2003. 2004b [Retrieved August 15, 2007]. from http://www.ade.az.gov/asd/lep/LEP16-2_2003_D20040106.pdf
- Arizona Department of Education. 2005 enrollments by school, gender and ethnicity. 2004c [Retrieved August 15, 2007]. from http://www.ade.az.gov/researchpolicy/AZEnroll/2004-2005/2005SchoolByGenderRace_all.pdf
- Azmitia, M.; Brown, JR. Latino immigrant parents' beliefs about the 'path of life' for their adolescent children. In: Contreras, JM.; Kerns, KA.; Neal-Barnet, AM., editors. *Latino children and families in the United States*. Westbrook: Praeger; 2002. p. 77-110.
- Berry, JW. Acculturation: A conceptual overview. In: Bornstein, MH.; Cote, LR., editors. *Acculturation and parent-child relationships*. Mahwah: Lawrence Erlbaum Associates; 2006. p. 13-32.
- Brody G, Murry V, Chen Y, Kogan S, Brown A. Effects of family risk factors on dosage and efficacy of a family-centered preventive intervention for rural African Americans. *Prevention Science* 2006;7:281–291. [PubMed: 16718542]
- Brody GH, Murry VM, Kogan SM, Gerrard M, Gibbons FX, Molgaard V, Brown AC, Anderson T, Chen Y, Luo Z, Wills TA. The strong African American families program: A cluster-randomized prevention trial of long-term effects and a mediational model. *Journal of Consulting and Clinical Psychology* 2006;74(2):356–366. [PubMed: 16649880]
- Cardemil EV, Kim S, Pinedo TM, Miller IW. Developing a culturally appropriate depression prevention program: The Family Coping Skills Program. *Cultural Diversity and Ethnic Minority Psychology* 2005;11(2):99–112. [PubMed: 15884982]
- Cauce, AM.; Domenech-Rodríguez, M. Latino families: Myths and realities. In: Contreras, J.; Neal-Barnett, A.; Kerns, K., editors. *Latino children and families in the United States: Current research and future directions*. Westport: Praeger; 2002. p. 3-26.

- Cohen D, Linton K. Parent participation in an adolescent drug abuse prevention program. *Journal of Drug Education* 1995;25(2):159–169. [PubMed: 7658296]
- Cuéllar I, Arnold B, Maldonado R. Acculturation rating scale for Mexican Americans-II: A revision of the original ARSMA scale. *Hispanic Journal of Behavioral Sciences* 1995;17(3):275–304.
- DeGarmo DS, Patterson GR, Forgatch MS. How do outcomes in a specified parent training intervention maintain or wane over time? *Prevention Science* 2004;5(2):73–89. [PubMed: 15134313]
- Delgado-Gaitan C. School matters in the Mexican-American home: Socializing children to education. *American Educational Research Journal* 1992;29:495–513.
- Dumka L, Garza C, Roosa M, Stoerzinger H. Recruitment and retention of high-risk families into a preventive parent training intervention. *Journal of Primary Prevention* 1997;18:25–39.
- Dumka LE, Gonzales NA, Wood J, Formoso D. Using qualitative methods to develop contextually relevant measures and preventive interventions: An illustration. *American Journal of Community Psychology* 1998;26:605–637. [PubMed: 9772733]
- Eccles, JA.; Harold, RD. Family involvement in children's, adolescents' schooling. In: Booth, A.; Dunn, JE., editors. *Family-school links: How do they affect educational outcomes?*. Hillsdale: Lawrence Erlbaum Associates; 1996. p. 3-34.
- Eddy JM, Smith P, Brown CH, Reid JB. A survey of prevention science training: Implications for educating the next generation. *Prevention Science* 2005;6(1):59–71. [PubMed: 15766006]
- Fulgini AJ. The academic achievement of adolescents from immigrant families: The roles of family background, attitudes, and behavior. *Child Development* 1997;68(2):351–363. [PubMed: 9180006]
- Gonzales NA, Dumka LE, Deardorff J, Jacobs-Carter S, McCray A. Preventing poor mental health and school dropout of Mexican American adolescents following the transition to junior high school. *Journal of Adolescent Research* 2004;19:113–131.
- Gonzales, NA.; Dumka, LE.; Mauricio, AM.; Germán, M. Building bridges: Strategies to promote academic and psychological resilience for adolescents of Mexican origin. In: Lansford, JE.; Deater-Deckard, K.; Bornstein, M., editors. *Immigrant families in contemporary society*. New York, NY: Guilford Press; 2007. p. 268-286.
- Greenberg, MT.; Domitrovich, C.; Bumbarger, B. Preventing mental disorders in school-age children: A review of the effectiveness of prevention programs. from Center for Mental Health Services, Substance Abuse Mental Health Services Administration, U.S. Department of Health and Human Services via the Prevention Research Center for the Promotion of Human Development at the College of Health and Human Development at Pennsylvania State University; 1999 [Retrieved August 15, 2007]. <http://www.prevention.psu.edu/pubs/CMHS.html>
- Harachi TW, Catalano RF, Hawkins JD. Effective recruitment for parenting programs within ethnic minority communities. *Child and Adolescent Social Work Journal* 1997;14:23–39.
- Haggerty K, Fleming C, Lonczak H, Oxford M, Harachi T, Catalano R. Predictors of participation in parenting workshops. *The Journal of Primary Prevention* 2002;22(4):375–387.
- Heinrichs N, Bertram H, Kuschel A, Hahlweg K. Parent recruitment and retention in a universal prevention program for child behavior and emotional problems: Barriers to research and program participation. *Prevention Science* 2005;6(4):275–286. [PubMed: 16075192]
- Hernandez DJ. Demographic change and the life circumstances of immigrant families. *The Future of Children: Immigrant Children and Families* 2004;14:16–47.
- Katz KS, El-Mohandes A, Johnson DM, Jarrett M, Rose A, Cober M. Retention of low-income mothers in a parenting intervention study. *Journal of Community Health* 2001;26:203–217. [PubMed: 11478566]
- Keller J, McDade K. Attitudes of low-income parents toward seeking help with parenting: Implications for practice. *Child Welfare* 2000;79:285–309. [PubMed: 10813085]
- Knight, GP.; Gonzales, NA.; Saenz, DS.; Germán, M.; Deardorff, J.; Roosa, MW.; Updegraff, K. The Mexican American cultural values scale for adolescents and adults. under review. Manuscript submitted for publication.
- Knobloch S, Dillman Carpentier F, Zillmann D. Effects of salience dimensions of informational utility on selective exposure to online news. *Journalism and Mass Communication Quarterly* 2003;80(1): 91–108.

- Knobloch-Westerwick S, Carpentier FD, Blumhoff A, Nickel N. Selective exposure effects for positive and negative news: Testing the robustness of the informational utility model. *Journalism and Mass Communication Quarterly* 2005;82(1):181–195.
- Kumpfer KL, Alvarado R, Smith P, Bellamy N. Cultural sensitivity and adaptation in family-based prevention interventions. *Prevention Science* 2002;3:241–246. [PubMed: 12387558]
- Larson, K.; Rumberger, R. ALAS: Achievement for Latinos through academic success (Project evaluation: 1990–1995). In: Thornton, H., editor. *Staying in school: A technical report of three dropout prevention projects for middle school students with learning and emotional disabilities*. Minneapolis, MN: University of Minnesota; 1995.
- Lengua L, Roosa MW, Shupak E, Michaels M, Berg C, Ayers T. The role of focus groups in the development of community based parenting intervention programs. *Family Relations* 1992;41:163–168.
- MacKenzie KR, Tschuschke V. Relatedness, group work, and outcome in long-term inpatient psychotherapy groups. *Journal of Psychotherapy Practice and Research* 1993;2(2):147–156.
- Marín G, Gamba RJ. A new measurement of acculturation for Hispanics: The Bidimensional Acculturation Scale for Hispanics (BAS). *Hispanic Journal of Behavioral Sciences* 1996;18:297–316.
- Martinez CR, Eddy JM. Effects of culturally adapted parent management training on Latino youth behavioral health outcomes. *Journal of Consulting and Clinical Psychology* 2005;73:841–851. [PubMed: 16287384]
- Miranda MR. Mexican American dropouts in psychotherapy as related to level of acculturation. *Spanish Speaking Mental Health Research Center Monograph Series*. No 3 1976:5–50.
- Miranda J, Azocar F, Organista KC, Munoz RF, Lieberman A. Recruiting and retaining low-income Latinos in psychotherapy research. *Journal of Consulting and Clinical Psychology* 1996;64:868–887. [PubMed: 8916613]
- Moos, R. *Group Environment Scale manual*. Palo Alto, CA: Consulting Psychologists Press; 1981.
- Muñoz RF, Mendelson T. Toward evidence-based interventions for diverse populations: The San Francisco General Hospital prevention and treatment manuals. *Journal of Consulting and Clinical Psychology* 2005;73(5):790–799. [PubMed: 16287379]
- Orrell-Valente J, Pinderhughes E, Valente E, Laird RD. If it's offered, will they come? Influences on parents' participation in a community-based conduct problems prevention program. *American Journal of Community Psychology* 1999;27(6):753–783. [PubMed: 10723534]
- Pantin H, Coatsworth J, Feaster DJ, Newman FL, Briones E, Prado G, Schwartz SJ, Szapocznik J. Familias Unidas: The efficacy of an intervention to promote parental investment in Hispanic immigrant families. *Prevention Science* 2003;4(3):189–201. [PubMed: 12940469]
- Perrino T, Coatsworth JD, Briones E, Pantin H, Szapocznik J. Initial engagement in parent-centered preventive interventions: A family systems perspective. *The Journal of Primary Prevention* 2001;22(1):21–44.
- Power, C.; Manor, O.; Fox, J. *Health and class: The early years*. London: Chapman and Hall; 1991.
- Prinz RJ, Smith EP, Dumas JE, Laughlin JE, White DW, Barro´n R. Recruitment and retention of participants in prevention trials involving family-based interventions. *American Journal of Preventive Medicine* 2001;20(1):31–37. [PubMed: 11146258]
- Redmond C, Spoth R, Trudeau L. Family- and community-level predictors of parent support seeking. *Journal of Community Psychology* 2002;30(2):153–171.
- Rogler LH, Cortes DE, Malgady RG. Acculturation and mental health status among Hispanics: Convergence and new directions for research. *American Psychologist* 1991;46:585–597. [PubMed: 1952420]
- Rosenstock, I. The health belief model: Explaining health behavior through expectancies. In: Glanz, K., et al., editors. *Health behavior and health education: Theory, research and practice*. San Francisco: Jossey-Bass; 1990. p. 39-62.
- Spoth R, Goldberg C, Redmond C. Engaging families in longitudinal preventive intervention research: Discrete-time survival analysis of socioeconomic and social-emotional risk factors. *Journal of Consulting and Clinical Psychology* 1999;67(1):157–163. [PubMed: 10028221]

- Spoth RL, Greenberg MT. Toward a comprehensive strategy for effective practitioner-scientist partnerships and larger-scale community health and well-being. *American Journal of Community Psychology* 2005;35:107–126. [PubMed: 15909789]
- Spoth R, Redmond C. Parent motivation to enroll in parenting skills programs: A model of family context and health belief predictors. *Journal of Family Psychology* 1995;9(3):294–310.
- Spoth R, Redmond C, Chin C. Modeling factors influencing enrollment in family-focused preventive intervention research. *Prevention Science* 2000;1(4):213–225. [PubMed: 11523749]
- Suarez-Orozco, C.; Suarez-Orozco, M. *Transformations: Immigration, family life, and achievement motivation among Latino adolescents*. Stanford: Stanford University Press; 1995.
- Szapocznik J, Kurtines W, Santisteban DA, Rio AT. Interplay of advances between theory, research, and application in treatment interventions aimed at behavior problem children and adolescents. *Journal of Consulting and Clinical Psychology* 1990;58:696–703. [PubMed: 2292619]
- Trusty JG, Thompson B, Petrocelli JV. Practical guide for reporting effect size in quantitative research in the *Journal of Counseling and Development*. *Journal of Counseling and Development* 2004;82:107–110.
- Tschuschke V, Dies RR. Intensive analysis of therapeutic factors and outcome in long-term inpatient groups. *International Journal of Group Psychotherapy* 1994;44:185–208. [PubMed: 8005718]
- U.S. Census Bureau. from census 2000, public law 94-171 summary file: Tables for race and ethnic distribution in the United States. Bethesda, MD: EEO Visions, Inc.; 2002a [Retrieved August 15, 2007]. http://www.eeoc.gov/stats/census/majorgroups/US/US_states.html
- U.S. Census Bureau. from U.S. census projections: Population division, populations projections branch. Maintained by information and research services internet staff. Washington, D.C: U.S. Census Bureau; 2002b [Retrieved August 15, 2007]. <http://www.census.gov/population/www/projections/natproj.html>
- U.S. Department of Education. Dropout rates in the United States: 1998 (NCES 2000–022). Washington, DC: U.S. Government Printing Office; 2000.
- Wandersmann A. Community science: Bridging the gap between science and practice with community-centered models. *American Journal of Community Psychology* 2003;3:227–242.
- Webster-Stratton, C. Parent training with low-income families: Promoting parental engagement through a collaborative approach. In: Lutzker, J., editor. *Handbook of child abuse research and treatment*. NY: Plenum Press; 1998. p. 183-210.
- Wells KB, Hough RL, Golding JM, Burnam MA. Which Mexican-Americans underutilize health services? *American Journal of Psychiatry* 1987;144(7):918–922. [PubMed: 3605404]

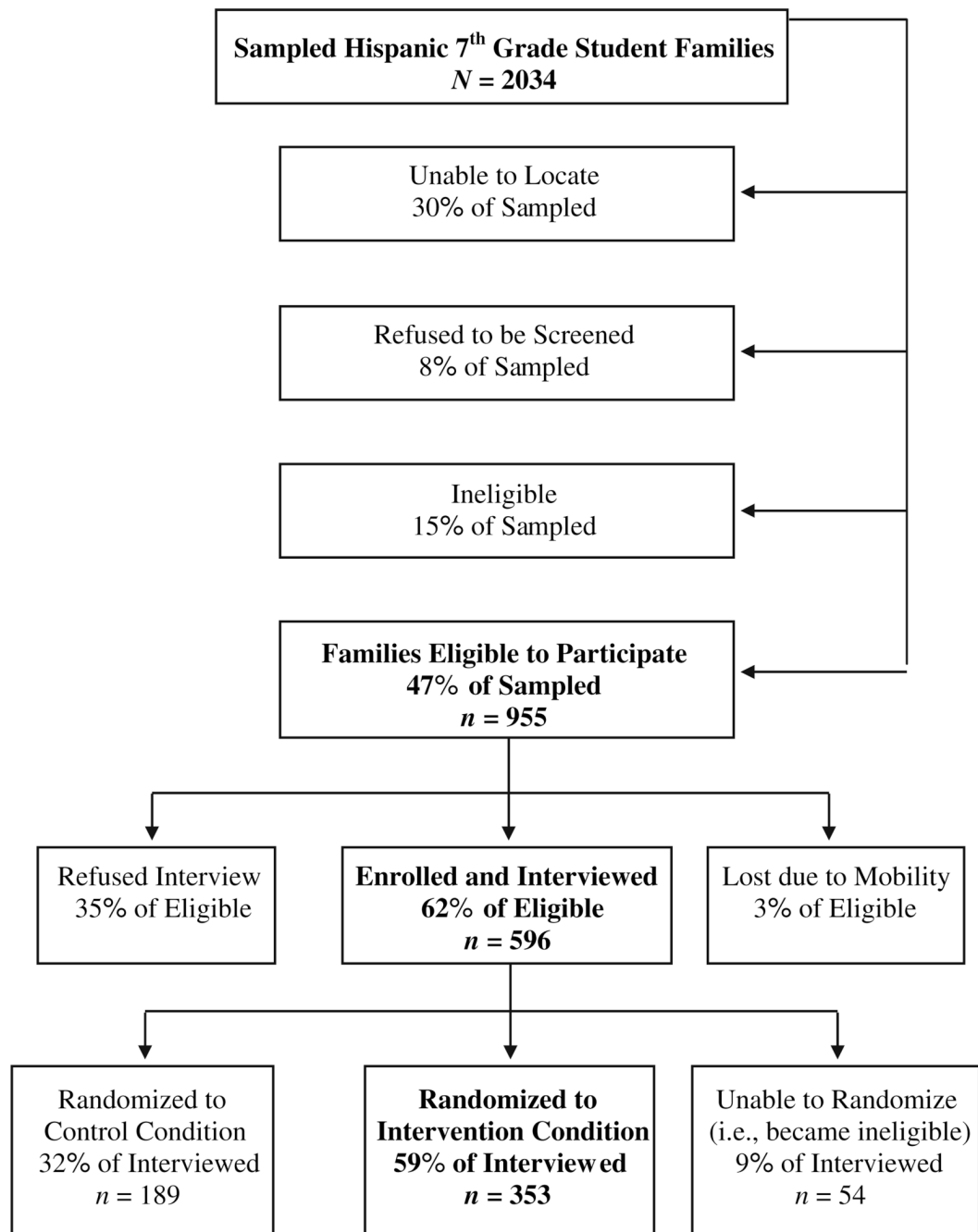


Fig. 1. Flowchart of overall engagement of families of Mexican origin 7th graders recruited into the *Puentes/Bridges* intervention efficacy trial, from initial sampling through randomization into either the intervention trial or control condition

Table 1

Correlations between program enrollment, family attendance and predictors of enrollment and attendance for families randomized to the intervention trial condition ($n = 353$)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Cohort	.01	-.01	-.15***	.01	-.05	.05	.15***	-.03	-.11	.03	-.00	.10	.02	-.02	.01
2. Family language		-.26**	-.02	-.35*	.19***	-.44**	.10	-.12*	.06	-.88**	.36*	.08	-.05	.11*	.19**
3. Family income			.04	.29*	.28*	.32*	.11*	-.10	-.13	.25*	-.17***	-.07	.04	-.03	-.03
4. Number kids in home				-.10	.09	-.10	-.00	-.02	.02	-.03	.07	-.01	-.04	.03	-.03
5. Parent work hours					-.12	.19*	-.03	.02	-.04	.40**	-.07	-.13*	-.02	-.05	-.07
6. Parent status						.00	.09	-.09	-.01	-.22*	.06	-.02	.02	-.02	.01
7. Family education							.02	.03	-.05	.46**	-.26*	-.08	.12*	-.12*	-.05
8. Child GPA								-.30**	-.17**	-.09	.10	.03	-.01	.01	.15**
9. Child externalizing									.62*	.09	-.18**	-.02	-.03	-.03	-.05
10. Child internalizing										-.08	-.12*	.05	.01	.01	.06
11. Parent Anglo orientation											-.33**	-.05	.11*	-.13*	-.16**
12. Parent familism												.12*	-.05	.03	.07
13. Child Anglo orientation												.00	-.04	-.04	.03
14. Child familism													-.03	-.03	.08
15. Program enrollment															.52**
16. Program attendance															

Note: Cell statistics are zero-order Pearson correlations using listwise deletion. Coding was as follows: Language (0 = English, 1 = Spanish); Parent status (0 = single parent, 1 = dual parent); Program enrollment (0 = not enrolled, 1 = enrolled)

† $P < .10$

* $P < .05$

** $P < .01$

Table 2
Summary of final three hierarchical logistic regression tests predicting program enrollment ($n = 353$)

Predictors by domain	Block 1 (Main effects)			Block 2 (with interactions)		
	B	SE	Wald	B	SE	Wald
<i>Test 1—Language, other demographics^a</i>						
Family language	.46	.32	2.1	.47	.31	2.35
Number of parent hours worked	.01	.01	.08	.01	.01	2.41
Family income	.01	.01	.49	.01	.01	.252
Family education level	-.07	.05	1.96	-.07	.05	1.88
Number of kids in home	.05	.09	.33	.05	.09	.37
Parent status	-.36	.39	.86	-.37	.39	.87
Language × Parent hours worked				-.07**	.01	7.50
<i>Test 2—Language, child adjustment^b</i>						
Family language	.51 [†]	.28	3.34	n/a		
Child externalizing symptoms	-.01	.02	.09	n/a		
Child internalizing symptoms	.01	.02	.01	n/a		
Child GPA	-.05	.01	.03	n/a		
<i>Test 3—Language, other acculturation factors^c</i>						
Family language	-.06	.59	.01	-.19	.60	.10
Primary parent Anglo orientation	-.32	.25	1.60	-.34	.26	1.68
Primary parent familism	-.21	.39	.30	-.10	.39	.07
Child Anglo orientation	-.31	.25	1.50	-1.07**	.40	7.05
Child familism	-.06	.34	.03	-.11	.34	.10
Language × Child Anglo orientation				1.45**	.53	7.41

Note: Coding was as follows: Language (0 = English, 1 = Spanish); Parent status (0 = single parent, 1 = dual parent); Program enrollment (0 = not enrolled, 1 = enrolled). Block Chi Square values are Chi Square difference tests and significant values (i.e., $P < .05$) indicate that inclusion of the variable improved the model fit. Model Chi Square values are a goodness-of-fit test and non-significant values (i.e., $P > .05$) indicate that the model adequately fits the data

^aTest 1 Block 1: $\chi^2(6) = 7.99, ns$; Block 2: $\Delta\chi^2(2) = 7.66, P < .01$; Final Model: $\chi^2(8) = 9.6, ns$

^bTest 2 Block 1 and Final Model: $\chi^2(4) = 3.85, ns$ (Block 2 had no significant interaction effects)

^cTest 3 Block 1: $\chi^2(5) = 7.42, ns$; Block 2: $\Delta\chi^2(1) = 7.72P < .05$; Final Model: $\chi^2(8) = 4.49, ns$

[†] $P < .10$
* $P < .05$
** $P < .01$

Table 3
Summary of final three hierarchical regression tests predicting family attendance in the intervention ($n = 353$)

Predictors by domain	Block 1 (Main effects)			Block 2 (with interactions)		
	B	SE	β	B	SE	β
<i>Test 1—Language, other demographics^a</i>						
Family language	1.46**	.44	.21	-.35	.96	-.05
Number of parent hours worked	-.01	.01	-.02	.02	.01	.13
Family income	.01	.01	.03	.01	.01	.04
Family education level	.04	.06	.04	.03	.06	.03
Number of kids in home	-.06	.12	-.02	-.06	.12	-.03
Parent status	-.39	.53	-.04	-1.22 [†]	.65	-.14
Language × Parent hours worked				-1.22**	.65	-.14
Language × Parent status				-.046*	.02	-.21
<i>Test 2—Language, child adjustment^b</i>						
Family language	1.07**	.38	.16	n/a		
Child externalizing symptoms	-.09	.03	-.05	n/a		
Child internalizing symptoms	.03	.02	.10	n/a		
Child GPA	.18*	.07	.14	n/a		
<i>Test 3—Language, other acculturation factors^c</i>						
Family language	1.24	.80	.18	1.15	.79	.17
Primary parent Anglo orientation	-.02	.34	-.01	-.07	.37	-.02
Primary parent familism	-.22	.52	-.02	-.29	.52	-.03
Child Anglo orientation	.05	.33	.01	.01	.33	.01
Child familism	.61	.45	.07	-.60	.67	-.07
Language × Child familism				2.16**	.90	.20

Note: Coding was as follows: Language (0 = English, 1 = Spanish); Parent status (0 = single parent, 1 = dual parent)

^a Step 1 Adj. $R^2 = .00$ ($F(5,343) = .31, ns$); Step 2 Adj. $\Delta R^2 = .03$ ($\Delta F(2,341) = 5.1, P < .05$)

^b Step 1 Adj. $R^2 = .02$ ($F(3,335) = 2.8, P < .05$)

^c Step 1 Adj. $R^2 = .04$ ($F(5,332) = 2.5, P < .05$); Step 2 Adj. $\Delta R^2 = .02$ ($\Delta F(1,331) = 5.8, P < .05$)

[†] $P < .10$
* $P < .05$
** $P < .01$