

## Long-term Effects of a Universal Family Intervention: Mediation through Parent-Child Conflict

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### Abstract:

This randomized trial of a family-focused preventive intervention for Mexican American middle schoolers examined internalizing, externalizing, and substance use outcomes in late adolescence, 5 years after completing the intervention. Parent–adolescent conflict was tested as a mediator of these effects. The role of parent and adolescent acculturation in these pathways was also examined. There were 494 seventh-grade adolescents and their primary female caregivers randomized to receive either a 9-week multicomponent intervention or a brief workshop control group. Assessments were conducted at pretest, 2-year follow-up (9th grade), and 5-year follow-up (when most participants were in the 12th grade). The *Bridges* program significantly reduced mother–adolescent conflict measured in the 9th grade, with conflict mediating program effects on internalizing and externalizing symptoms, adolescent substance use, and diagnosed internalizing disorder in late adolescence. Mother and child acculturation were both significantly predictive of late adolescence outcomes. Contrary to hypotheses, neither mother nor child acculturation emerged as a significant predictor of mother–adolescent conflict, and the interaction of mother and adolescent acculturation was similarly not related to mother–adolescent conflict. Intervention effects were largely consistent across different levels of acculturation. These findings provide support for the efficacy of family-focused intervention during early adolescence, both in reducing mental health problems and substance use in the long term and in impacting parent–adolescent conflict processes that appear to play an important role in the development of later adjustment problems.

**Keywords:** parenting | adolescents | mediation | parent–adolescent conflict

### Article:

## INTRODUCTION

High levels of parent–adolescent conflict are widely regarded to be a critical marker of maladaptive family functioning and increased risk for a variety of youth problems in Latino families. Although parent–child conflict has disruptive effects within general population samples as well (Repetti, Taylor, & Seeman, 2002; Sheeber, Hops, Alpert, Davis, & Andrews, 1997), it is viewed as a particularly serious threat within Latino families because of the high value that this cultural group places on family harmony, hierarchical intergenerational relations, and child respect toward elders (Keefe & Padilla, 1987; Sabogal, Marín, Otero-Sabogal, Marín, & Perez-Stable, 1987). Higher levels of parent–adolescent conflict may signal a shift in cultural orientation as families adopt expectations and behavior patterns of the dominant culture in the process of acculturation, potentially explaining why more acculturated Latino youth are at increased risk for externalizing behavior problems and substance use (Johnston, O'Malley, Bachman, & Schulenberg, 2004; McLaughlin, Hilt, & Nolen-Hoeksema, 2007). As such, parent–adolescent conflict may be an important target to reduce or prevent youth problems for this population.

The current study used follow-up data from a randomized clinical trial to examine whether intervention-induced changes in mother–adolescent conflict reduced substance use and mental health problems for Mexican American youth that participated in a culturally competent, family-focused intervention in middle school, and whether these intervention effects varied as a function of acculturation level. Understanding prevention pathways for diverse Mexican American adolescents is an important goal for prevention science because the Latino youth population is one of the largest and fastest growing subgroups in the United States (Passel, Cohn, & Lopez, 2011) and a population that experiences a number of costly health disparities. Mexican American youth have higher rates of depressive symptoms and disorders than non-Latino Whites and members of other ethnic groups (Anderson & Mayes, 2010). Latino adolescents are more likely than all other racial/ethnic groups to have tried cigarettes, inhalants, ecstasy, or cocaine, and to have started drinking alcohol before age 13 (Centers for Disease Control and Prevention, 2012), and Mexican American teens are among the highest risk Latino subgroups on measures of heavy and frequent drinking, and marijuana use (Delva et al., 2005; Nielsen & Ford, 2001).

## **PARENT–CHILD CONFLICT AND ADOLESCENT MENTAL HEALTH, SUBSTANCE USE**

Parent–adolescent conflict has been linked to a host of mental health and substance use outcomes (Burt, Krueger, McGue, & Iacono, 2003; Repetti et al., 2002; Sheeber et al., 1997). Among Mexican Americans, parent–child conflict is related to internalizing problems, particularly depressive symptoms, both prospectively and cross-sectionally (Bámaca-Colbert, Umaña-Taylor, & Gayles, 2012; Gonzales, Deardorff, Formoso, Barr, & Barrera, 2006; Hill, Bush, & Roosa, 2003; Smokowski & Bacallao, 2007; Smokowski, Rose, & Bacallao, 2010; Zeiders, Roosa, & Tein, 2011). Parent–adolescent conflict also predicts symptoms of externalizing problems, such as conduct and oppositional defiant disorder, adolescent substance use, and sexual risk taking behaviors among Mexican American adolescents (Gonzales et al., 2006; Marsiglia, Kulis, Parsai, Villar, & Garcia, 2009; Pasch et al., 2006; Samaniego & Gonzales, 1999; Smokowski & Bacallao, 2006; Zeiders et al., 2011).

Despite consistent evidence implicating parent–adolescent conflict in adolescent problem trajectories, surprisingly few studies have tested or shown that preventive interventions can effectively decrease conflict and, in turn, reduce adolescent psychopathology. Although many interventions for adolescent populations target and evaluate the effects of more proximal family processes, such as positive parenting, parent–child communication, and support (Prado et al., 2007; Redmond, Spoth, Shin, & Lepper, 1999) that are expected to reduce dysfunctional parent–child relationships and conflict during adolescence, only a handful of studies have shown that family-focused preventive interventions do in fact change parent–adolescent conflict (Ralph & Sanders, 2004; Van Ryzin, Stormshak, & Dishion, 2012). Recent evidence from a middle school prevention trial also showed effects of a family-focused intervention on changes in parent–adolescent conflict across Grades 6 to 9, and those changes mediated intervention effects on late adolescent antisocial behavior (Van Ryzin & Dishion, 2012). This evidence suggests that parent–adolescent conflict can indeed serve as a mediator of long-term intervention effects, but this hypothesis has never been tested with Latinos, and evidence of mediation on internalizing outcomes has yet to be seen. The current study addressed these gaps and investigated whether the *Bridges to High School/Puentes a la Secundaria* intervention reduced levels of parent–adolescent conflict 2 years posttest (Grade 9), and whether parent–adolescent conflict mediated program effects on internalizing, externalizing, and substance use outcomes at 5 years posttest (Grade 12).

## **PARENT–CHILD CONFLICT AND ACCULTURATION**

The intervention and the current analyses were based in ecodevelopmental theory, which highlights how contextual factors shape and interact with normative developmental processes to influence developmental trajectories (Bronfenbrenner & Bronfenbrenner, 1979; Szapocznik & Coatsworth, 1999). In this framework, developing youth are influenced by and need to adapt to multiple social contexts simultaneously, including their families, peers, neighborhoods, and schools; in the current study we focus on the family context. Ecodevelopmental theory also recognizes that these contexts are influenced by and interact with the broader cultural context within which they are embedded, including processes associated with immigration and acculturation that present unique challenges and adaptation demands on Mexican origin youth and families in the United States (Gonzales, Jensen, Montaña, & Wynne, in press). Thus, in testing parent–adolescent conflict's hypothesized role as a mediator of intervention effects, the current study also examines the role that acculturation may play in these pathways.

Acculturation refers to the process of adopting the norms, language, and values of one's host country and can include an identification with and sense of belonging to the host culture (Berry, 2003). Prior studies report a positive relationship between adolescent acculturation level and parent–adolescent conflict (McQueen, Greg Getz, & Bray, 2003; Pasch et al., 2006; Samaniego & Gonzales, 1999). Studies also show that parent–adolescent conflict is a key mediator linking adolescent acculturation with several problem outcomes in adolescence, especially conduct problems, deviant behavior, aggression, and substance use (Gonzales et al., 2006; McQueen et al., 2003; Samaniego & Gonzales, 1999; Smokowski & Bacallao, 2006). On the basis of growing evidence supporting this pattern, several scholars suggest that intergenerational conflicts are one of the most important mechanisms that accounts for the

immigrant paradox, a phenomena whereby immigrants in the United States have relatively better mental health than their U.S-born, more highly acculturated counterparts, despite similar or worse economic disadvantage (Alegria et al., 2008). Latino youth acculturation is related to significantly higher rates of alcohol and drug use, delinquent behaviors, and associations with deviant peers (Gonzales, Knight, Morgan-Lopez, Saenz, & Sirolli, 2002); linkages with internalizing outcomes have also been reported, but less consistently (Breslau, Borges, Hagar, Tancredi, & Gilman, 2009; Polo & Lopez, 2009; Potochnick & Perreira, 2010; Smokowski et al., 2010).

Parent–child acculturation discrepancy theory, also termed “intercultural/intergenerational conflict theory” (Szapocznik & Williams, 2000) and “dissonant acculturation theory” (Portes & Rumbaut, 2001), is the most popular explanation for the link between acculturation and parent–child conflict. Specifically, it has been posited that gaps in levels of acculturation between parent and child are tied to increased family conflict and, in turn, poorer adjustment outcomes; typically adolescents are expected to acculturate more rapidly and have a stronger orientation to the mainstream culture than their parents (Szapocznik & Kurtines, 1993). Although this model is theoretically appealing, empirical studies tend to produce mixed findings. In a thorough review of the literature, Telzer (2010) concluded that the acculturation-gap-distress model does not have consistent empirical support and that perhaps parent and child acculturation are related to child functioning in more complex ways. For example, some evidence suggests that higher levels of child *and* parent acculturation increase risk for parent–adolescent conflict and problem outcomes (Bui, 2008; Cavanagh, 2007; Gonzales et al., 2006; Pasch et al., 2006).

The research to date highlights the need to include measures of acculturation, including parent acculturation and adolescent acculturation, when evaluating intervention effects on parent–adolescent conflict and adolescent psychopathology. In addition, these findings raise the possibility of differential intervention effects in families that vary on acculturation level, due to their differential susceptibility to problematic parent–child conflicts and adolescent psychopathology. For example, it is possible that intervention effects on parent–adolescent conflict, and ensuing adolescent outcomes, may be stronger for more acculturated adolescents because they are at greater risk for increased conflict as they transition from middle to high school. Although very few intervention studies have examined differential effects due to acculturation-related variables, initial findings with both adults and youth samples have highlighted subgroup differences that have important implications for future dissemination (Gonzales et al., 2012; Griner & Smith, 2006; Martinez & Eddy, 2005). The current study contributes to this literature and also advances culturally informed theory about the role of parent–adolescent conflict in Mexican American families. Specifically, the current study includes measures of maternal and adolescent acculturation to examine whether they also account for changes in mother–adolescent conflict, externalizing, internalizing, and substance use across middle and high school, and to examine whether they moderate any of the hypothesized mediation pathways.

### ***BRIDGES TO HIGH SCHOOL PROGRAM***

The *Bridges to High School Program (Bridges)* is a culturally competent, family-focused intervention that aimed to strengthen youth and family competencies in middle school to

decrease risk for later mental health and substance use disorders. *Bridges* highlighted the strengths of Mexican American families, particularly the importance of strong family bonds, to motivate family members to work together to manage the challenges of middle school, including problem parent–adolescent dynamics. *Bridges* utilized intervention components and strategies common to other evidence-based preventive interventions (Dishion & Andrews, 1995; Irvine, Biglan, Smilkowski, Metzler, & Ary, 1999; Kazdin, Siegel, & Bass, 1992; Spoth, Redmond, & Shin, 1998) but adapted them to be consistent with Latino family values and concerns. For example, parenting groups focused on expectations and practices in U.S. schools and encouraged parents to communicate and monitor school and peer activities as a way to increase connection to and understanding of teen's cultural experiences and pressures outside the family. Teen group sessions taught coping and self-regulation skills but also emphasized traditional family values of respect and support. Family sessions provided opportunities for parents and teens to practice skills together but also emphasized traditional family values and cultural pride.

Previous findings showed effects on dimensions of parenting, coping, and family cohesion, processes theoretically expected to reduce problematic levels of parent–adolescent conflict over time; however, several effects varied depending on whether families participated in Spanish or English language groups, further highlighting the possibility that effects vary based on acculturation level (Gonzales et al., 2012). Consistent with our theory of the intervention, the current analyses examine whether the intervention produced subsequent reductions in parent–adolescent conflict compared to the control condition which has not been previously examined. Specifically, this study examined intervention effects on conflict in ninth grade, two years posttest, and mediated effects (through conflict) on substance use, externalizing and internalizing symptoms, diagnosed internalizing disorder, and disruptive behavior diagnosis five years later (when most adolescents were in 12th grade). Three hypotheses were tested: First, we predicted the intervention would have long-term, indirect effects (mediated) through mother–adolescent conflict to reduce substance use, externalizing and internalizing symptoms, and mental health diagnoses (internalizing disorders and disruptive behavior disorders). Second, we hypothesized that adolescent acculturation level would have significant main effects to predict higher levels of mother–adolescent conflict and problem behaviors (externalizing and substance use outcomes), and these effects would vary depending on level of parent acculturation. A main effect of adolescent acculturation and an interaction between mother and youth acculturation were predicted, but the nature of the interaction effect was not specified due to conflicting evidence in the literature (Telzer, 2010). Third, we predicted stronger intervention effects on conflict and stronger mediated effects (through conflict) on internalizing, externalizing, and substance use outcomes for more acculturated youth. This hypothesis, tested as an interaction between adolescent acculturation and intervention condition, is based on evidence from prior prevention trials that have shown higher risk youth often derive greater benefits (National Research Council, 2009). Although we also examined main effects and moderating effects of maternal acculturation (Maternal Acculturation  $\times$  Intervention Status), we did not advance specific hypotheses for these analyses because the effects of maternal acculturation remain mixed, particularly in the theoretical literature.

## **METHOD**

### Participants

The study sample included 494 Mexican American adolescents and their mothers drawn from a sample of 516 Mexican American families of seventh graders that participated in the efficacy trial of *Bridges* in an urban city in the Southwestern United States. Of eligible families, 62% enrolled and completed pretest interviews (Dillman Carpentier et al., 2007). The mother sample was primarily biological and adoptive mothers (94.3%), with some stepmothers and mother-figure relatives. Child gender was equally balanced (50% male), and mothers were primarily of Mexican descent (98%) with most born in Mexico (60%). Most were two-parent families (84%), and the average family income in this sample was of \$33,179 ( $SD = 20,481$ ).

## Procedures

**Recruitment and randomization.** Seventh graders with a “Hispanic” designation were randomly selected from school rosters and were recruited across three cohorts. A phone call was made to each family that described the intervention and determined eligibility according to the following criteria: the adolescent was of Mexican descent, at least one caregiver of Mexican descent was interested in participating, and the family was willing to be randomly assigned to the 9-week intervention or a brief workshop (control group). Families that agreed to participate designated the predominant language used in their family and this determined their placement in either the English or Spanish subsample. For full description of recruitment and randomization procedures, see Dillman Carpentier et al. (2007).

**Data collection.** Data collection for the current analyses occurred prior to the intervention (Time 1 [T1]), two years after the intervention when adolescents were in the end of ninth grade (T2), and five years after the intervention, when most adolescents were near the end of 12th grade (T3). Adolescent and mother data were collected separately through private in-home, computer-assisted interviews. Each adolescent and mother participant received \$30 for each assessment.

**Intervention condition.** *Bridges* employed three primary components: (a) a parenting intervention, (b) an adolescent coping intervention, and (c) a family strengthening intervention. A school liaison also was available to help families apply program skills to address school-related problems. Components were delivered in nine weekly evening group sessions at the adolescents' schools and two home visits (preintervention and mid-program). The nine sessions included separate simultaneous 1.25-hr groups for adolescents and parents followed by a .75-hr conjoint family session. All components were designed to optimize cultural competence (for details, see Gonzales, Dumka, Mauricio, & Germán, 2007). Videos for all intervention sessions were coded for adherence by independent raters, with an average interrater agreement of 90%. Results indicated 91% of adolescent and 88% of parent program components were delivered with fidelity. Of adolescents randomized to *Bridges*, 63% attended at least five and 31% attended all nine sessions. These statistics include adolescents that did not attend any sessions (17%).

**Control condition.** Parents and adolescents jointly attended a single 1.5-hr evening workshop. Participants received handouts on school resources, discussed barriers to school success, and developed their own family plan to support middle school success. In contrast to the intervention, this workshop did not teach specific skills to strengthen family and youth competencies.

**Table 1.** Intercorrelations Between Study Variables and Descriptive Statistics

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Language Group	—															
2. Gender	-0.01	—														
3. Mother-Adolescent Conflict T1	0.12**	-0.15**	—													
4. Mother-Adolescent Conflict T2	0.02	-0.13**	0.43**	—												
5. Adolescent Acculturation	0.47**	0.08	0.09*	-0.05	—											
6. Maternal Acculturation	0.89**	0.02	0.11	0.03	0.47**	—										
7. Internalizing Symptoms T1	0.10*	0.15**	0.29**	0.22**	0.05	0.06	—									
8. Internalizing Symptoms T3	0.19**	0.12**	0.06	0.28**	0.02	0.17**	0.34**	—								
9. Externalizing Symptoms (A)T1	0.06	-0.07	0.41**	0.38**	<0.01	0.03	0.54**	0.27**	—							
10. Externalizing Symptoms (A)T3	0.20**	-0.05	0.14**	0.31**	0.10	0.19**	0.23**	0.75**	0.40**	—						
11. Externalizing Symptoms (M)T1	0.11*	-0.06	0.20**	0.23**	0.01	0.11*	0.18**	0.23**	0.31**	0.30**	—					
12. Externalizing Symptoms (M)T3	0.14**	-0.01	0.17**	0.27**	0.10*	0.10*	0.16**	0.38**	0.30**	0.45**	0.60**	—				
13. Substance Use T1	0.19**	-0.12**	0.28**	0.23**	0.07	0.15**	0.18**	0.16**	0.47**	0.27**	0.33**	0.28**	—			
14. Substance Use T3	0.24**	-0.14**	0.22**	0.32**	0.07	0.24**	0.10*	0.27**	0.35**	0.42**	0.28**	0.36**	0.42**	—		
15. Internalizing Disorder T3	0.12**	0.07	0.11*	0.12**	0.12**	0.08	0.09*	0.30**	0.13**	0.26**	0.07	0.09*	0.10*	0.10*	—	
16. Disruptive Disorder T3	0.05	-0.03	0.08*	0.11*	0.02	0.07	0.02	0.24**	0.16**	0.40**	0.22**	0.37**	0.13**	0.30**	0.14**	—
<i>M</i>	—	—	1.41	1.10	3.92	3.07	13.90	12.31	8.80	11.04	7.94	8.95	0.54	1.82	—	—
<i>SD</i>	—	—	0.89	0.74	0.55	1.17	8.79	9.30	6.93	9.32	6.98	9.33	0.98	1.51	—	—
<i>N</i>	494	494	494	397	489	476	493	400	492	400	492	395	493	400	405	405
$\alpha$	—	—	.90	.90	.80	.95	0.89	0.91	0.87	0.92	0.89	0.93	—	—	—	—

*Note:* Language group, gender, and internalizing and disruptive disorders were represented by binary variables. Correlations, means, and standard deviations calculated using full information maximum likelihood in Mplus ( $N = 494$ ). Alpha coefficients derived from data present (see *Ns*). T = time; A = adolescent report; M = mother report.

\* $p < .05$ . \*\* $p < .01$ .

## Measures

Validated translated versions of the measures were used when available. Measures not previously validated in Spanish were translated and back-translated by fluent Spanish and English speakers. Internal consistency for all study measures were good in both English and Spanish language ( $\alpha = .86-.94$ ), with the exception of the measure of acculturation (Acculturation Rating Scale for Mexican Americans–II [ARSMA-II]; Cuellar, Arnold, & Maldonado, 1995), which was lower as expected when examined separately by language, including for maternal acculturation in both English ( $\alpha = .79$ ) and Spanish ( $\alpha = .83$ ) and for adolescent acculturation in English ( $\alpha = .65$ ) and Spanish ( $\alpha = .80$ ). Because the ARSMA-II is based to a large extent on language, reduction in variability and therefore reliability is to be expected when dividing the sample according to the predominant language used in the home. The means, standard deviations, and alpha coefficients for each study measure and intercorrelations between study variables are presented in Table 1.

**Mother–adolescent conflict.** Adolescents reported on the frequency and severity of conflicts within the mother–child relationship in 17 domains in the past month. Sample items include “In the past month, how often do you and your mother disagree about your school grades and homework?” and “... your activities with your friends.” This scale was adapted from a measure used in the Penn State Family Relationships Project that was based on the work of Smetana (1988) and Harris (1992). Adolescents responded on a scale from 0 (*never*) to 4 (*all the time*). Reliability of responses at both T1 ( $\alpha = 0.90$ ) and T2 ( $\alpha = 0.90$ ) were good.

**Acculturation.** Adolescent and maternal acculturation levels were measured by corresponding reporter on the Anglo orientation scale of the ARSMA-II (Cuellar et al., 1995). Sample items include “How often do you speak English?” and “I like to identify myself as an American,” with response options that range from 1 (*not at all*) to 5 (*extremely often or almost always*). Internal consistency for both mother and adolescent report were good ( $\alpha s = .80-.95$ ) for the full sample.

**Internalizing and externalizing symptoms.** Internalizing and externalizing symptoms were assessed using the adolescent report on the Youth Self Report at T1 and Adult Self Report at T3. Mother report of adolescent externalizing symptoms was collected with the Child Behavior Checklist at T1 and the Adult Behavior Checklist at T3. These standard scales (Achenbach, 1991; Achenbach & Rescorla, 2001) have been validated extensively with diverse populations. Item scores were summed within each scale to form scale scores with higher scores indicating higher levels of internalizing and externalizing symptoms. Internal consistencies were good for both adolescent report of internalizing and externalizing symptoms ( $\alpha s = 0.89-0.92$ ) and mother report of adolescent externalizing symptoms ( $\alpha s = 0.89-0.93$ ).

**Substance use.** Adolescents reported their use of tobacco, alcohol, marijuana, and other illegal substances based on six questions taken from the 2001 Youth Risk Behavior Survey (Centers for Disease Control and Prevention, 2001) that were each coded to form dichotomous categories of lifetime use (0 = *no use*, 1 = *use*). The total number of substances ever used was derived for each adolescent, ranging from 0 to 5.



**Internalizing disorder diagnosis.** Diagnosis of an internalizing disorder was based on adolescent report on the Diagnostic Interview Schedule for Children (DISC), a highly structured diagnostic interview of mental health disorders in youth based on the *Diagnostic and statistical manual of mental disorders* diagnostic system (American Psychiatric Association, 1994). Here, internalizing disorder diagnosis is a binary variable (0 = *no diagnosis*, 1 = *at least one diagnosis*) combining DISC past year diagnoses in the anxiety and mood disorders categories; adolescents who met criteria for any anxiety or mood disorder diagnosis based on symptoms in the past year received a score of 1 on this variable.

**Disruptive disorder diagnosis.** Diagnosis of a disruptive disorder was based on adolescent and mother report on DISC. Through this measure, adolescents and parents are presented with statements that correspond to diagnostic criteria and asked whether each statement was true of the adolescents' behavior within the past year. A binary variable was created to represent diagnosis of an externalizing disorder, with 1 indicating that the criteria were met for conduct disorder, oppositional defiant disorder, or attention-deficit/hyperactivity disorder based on either mother or adolescent report. This variable was coded 0 for participants whose self- and mother report did not meet the criteria for any of these three externalizing disorders.

**Intervention status.** Intervention status was coded as a binary variable with 0 representing assignment to the control condition and 1 indicating assignment to the intervention.

**Gender.** A binary measure of adolescent gender was included as a covariate, with 0 representing young men and 1 representing young women.

**Language group.** A binary variable of 0 “Spanish-speaking” and 1 “English-speaking” represented the self-selected language in which families received either the one-time workshop or intervention condition (as previously described) and was included as a covariate preliminary analyses. Approximately 53% of families in the current sample selected Spanish as their preferred group.

## Data Analysis

All analyses were conducted in Mplus software version 6.1 (Muthén & Muthén, 1998–2010) using full information maximum likelihood to handle missing data. In addition, intent-to-treat analyses, which analyze participants based on initial randomized assignment regardless of whether treatment was actually received, were employed in these models as a conservative test of intervention effects.

Mediation models were constructed to test effects of the intervention through T2 mother–adolescent conflict on each T3 outcome (externalizing and internalizing symptoms, substance use, disruptive disorder diagnosis, and internalizing disorder diagnosis) as well as the unique effects of mother and adolescent acculturation levels on T2 conflict and T3 outcomes. T1 mother–adolescent conflict, adolescent gender, and T1 levels of each T3 outcome were included as covariates in models that included their respective outcomes. Because diagnostic measures were not administered at T1, T1 self-report of internalizing symptoms were used as covariates in the internalizing disorder diagnosis model and T1 self-report externalizing symptoms were used

as covariates in the T3 disruptive disorder diagnosis model. When paths from the intervention to mother–adolescent conflict and from mother–adolescent conflict to the T3 outcome were found to reach at least statistical significance (defined as  $p < .05$ ), mediated effects of the intervention through mother–adolescent conflict were evaluated by forming the product of coefficients and evaluating it for significance using a confidence interval produced by the *RMediation* program (Tofighi & MacKinnon, 2011). In addition, parallel logistic regression models were constructed to test effects on T3 disruptive disorder and internalizing disorder diagnoses. All models were found to have adequate fit to the data based on fit indices (comparative fit index = .96–1.00 and standardized root mean square residual = .001–.017).

Next, two sets of analyses examined moderation hypotheses. First, the interaction between T1 mother and adolescent acculturation was added in a separate set of analyses to examine the hypothesis that adolescent acculturation would have differential effects on mother–adolescent conflict and outcomes depending on the level of maternal acculturation. The interaction calculation method (Telzer, 2010) was chosen over alternative methods for calculating acculturation gaps (e.g., match/mismatch and difference score methods) because it simultaneously tests the cultural gap hypothesis (that problems arise when the adolescent is high and mother is low on acculturation) and the alternative hypothesis that risk for conflict might be highest when both mother and adolescent are high on acculturation. T1 acculturation measures were mean centered at zero prior to creating interactions terms (Aiken & West, 1991). Next, we conducted a separate set of analyses that included the interaction terms of Intervention Status  $\times$  T1 Maternal Acculturation and Intervention Status  $\times$  T1 Adolescent Acculturation, testing the possibility that the intervention might differentially impact mother–adolescent conflict and outcomes at different levels of mother or adolescent acculturation.

## RESULTS

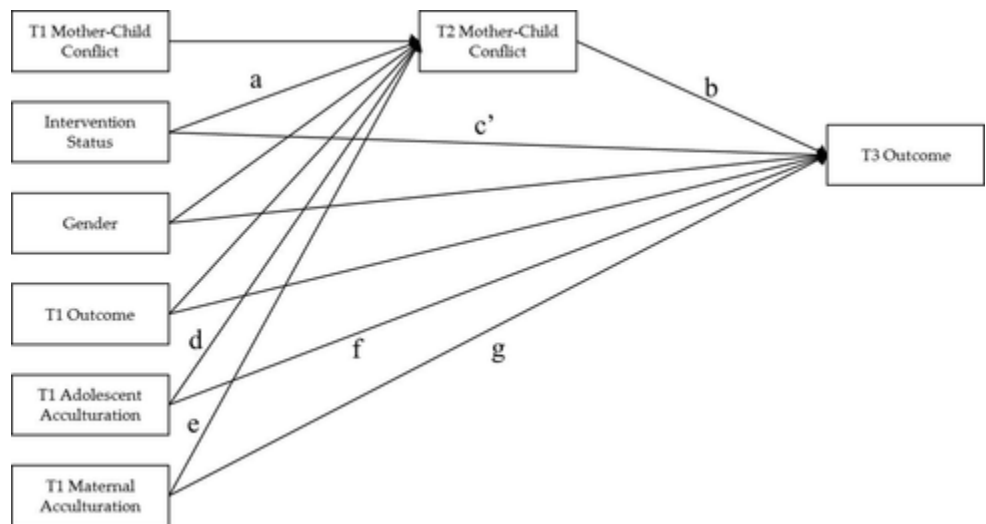
### Preliminary Analyses: Effects of Language Group

Based on previous analyses that showed significant interactions between language group and intervention status on several outcomes (see Gonzales et al., 2012), we first examined whether language moderated intervention effects on T2 mother–adolescent conflict and T3 outcomes by adding both language group and the Language Group  $\times$  Intervention interaction to each of our models. Results showed no significant moderated or main effects of language group on mother–adolescent conflict, and only two main effects of language group on T3 internalizing symptoms ( $b = 5.32$ ,  $SE = 2.23$ ,  $p = .02$ ) and internalizing diagnosis ( $b = 1.629$ ,  $SE = .832$ ,  $p = .05$ ). Based on these analyses, language was not included in subsequent models to reduce problems of collinearity with acculturation measures that were correlated with language group ( $r = .89$ ,  $p < .001$  for maternal acculturation;  $r = .47$ ,  $p < .001$ , for adolescent acculturation).

### Primary Analyses

**Bridges intervention effects.** Unstandardized (raw) regression coefficients for mediation models are presented in Table 2. There was a significant effect of the intervention on mother–adolescent conflict in all six models. There were significant effects of mother–adolescent conflict on internalizing symptoms, adolescent and mother report of externalizing symptoms, substance use,

and internalizing disorder diagnosis in corresponding models; the effect of mother–adolescent conflict on disruptive behavior disorder was not significant. The indirect effect of the intervention through mother–adolescent conflict (see Figure 1) on T3 adolescent report ( $ab = -0.37$ ), confidence interval (CI)  $[-0.8, -0.061]$ , as well as mother report of externalizing symptoms ( $ab = -0.28$ ), CI  $[-0.632, -0.033]$ , were both significant. There was also a significant indirect intervention effect through conflict on T3 adolescent self-report of substance use ( $ab = -0.08$ ), CI  $[-0.15, -0.016]$ ; internalizing symptoms ( $ab = -0.50$ ), CI  $[-0.988, -0.127]$ , as well as internalizing disorder diagnosis ( $ab = -0.10$ ), CI  $[-0.233, -0.006]$ . For all of the aforementioned effects, the intervention group showed lower levels of each outcome (i.e., less externalizing/internalizing symptoms, fewer substances used, and lower likelihood of an internalizing disorder diagnosis) than the control group at T3. No significant indirect intervention effects were found on disruptive disorder diagnosis. The treatment effect on T2 mother–adolescent conflict corresponds to a small effect size (Fritz & MacKinnon, 2007) with standardized regression coefficients ( $\beta$ ) ranging from  $-.106$  to  $-.125$  in the six models. Similarly, the effect sizes of T2 mother–adolescent conflict on T3 substance use ( $\beta = .207$ ), mother report of externalizing symptoms ( $\beta = .134$ ), child report of externalizing symptoms ( $\beta = .179$ ), and internalizing symptoms ( $\beta = .214$ ), and internalizing diagnosis (odds ratio = 1.66) were small.



**Figure 1.** Mediation model of intervention effects on Time 3 (T3) outcomes through T2 mother–adolescent conflict.

**Table 2.** Results From Mediation Models

T3 Outcome	a	b	ab	c'	d	e	f	g
Internalizing Symptoms	-.19*	2.68*	-.50*	.31	-.12†	.02	-1.12	1.34*
Externalizing Symptoms (A)	-.17*	2.25*	-.37*	.22	-.12†	.02	.53	1.19*
Externalizing Symptoms (M)	-.17*	1.69*	-.28*	-.69	-.12†	.01	1.71*	-.15
Substance Use	-.18*	.42*	-.08*	-.18	-.12†	.01	-.07	.24*
Internalizing Disorder	-.19*	.51*	-.10*	.08	-.12†	.02	.82*	<.01
Disruptive Disorder	-.17*	.30	-.05	-.47	-.11	.01	.08	.16

Note: Unstandardized regression coefficients reported. Internalizing and disruptive disorder models include logistic regression coefficients. A = adolescent report; M = mother report.

\* $p < .05$ . † $p < .10$ .

**Acculturation effects.** Neither adolescent nor mother T1 acculturation levels were found to significantly predict mother–adolescent conflict at T2 above and beyond the intervention effects and covariates. In most models, acculturation appeared to play a stronger role in predicting the T3 outcomes, above and beyond the intervention and covariate effects. Specifically, maternal acculturation significantly predicted adolescent report of externalizing ( $b = 1.19$ ,  $SE = 0.42$ ,  $p < .01$ ) and internalizing symptoms ( $b = 1.34$ ,  $SE = 0.42$ ,  $p < .01$ ) as well as adolescent report of substance use at T3 ( $b = 0.24$ ,  $SE = .07$ ,  $p < .01$ ). Conversely, adolescent acculturation, not maternal acculturation, predicted mother report of adolescent externalizing symptoms at T3 ( $b = 1.71$ ,  $SE = 0.77$ ,  $p = .03$ ) and adolescent report of internalizing disorder diagnosis ( $b = 0.82$ ,  $SE = .37$ ,  $p = .03$ ). For all of these effects on T3 outcomes, higher levels of acculturation were related to greater levels of negative outcomes (i.e., more externalizing symptoms, more substances used, and greater likelihood of internalizing disorder diagnosis).

**Gender effects.** Gender had only one significant effect; being female was associated with higher adolescent report of internalizing symptoms ( $b = 2.03$ ,  $SE = 0.87$ ,  $p = .02$ ).

**Interaction of mother and adolescent acculturation.** Analyses that included an interaction between mother and child acculturation were also conducted to explore the possibility that certain combinations of mother and adolescent acculturation may better predict conflict than either alone. Moderation analyses revealed that there was not a significant interaction between mother and adolescent acculturation in predicting T2 mother–adolescent conflict or any of the T3 outcomes.

**Moderated intervention effects by acculturation.** Additional models that included interactions between the intervention status and either adolescent or maternal acculturation were also examined. The results showed that neither adolescent nor maternal acculturation significantly moderated intervention effects on mother–adolescent conflict at T2. However, in the adolescent report of internalizing models, we found a significant interaction between adolescent acculturation and intervention status ( $b = -3.65$ ,  $SE = 1.66$ ,  $p = .03$ ) as well as between maternal acculturation and intervention status on T3 internalizing symptoms ( $b = -1.90$ ,  $SE = 0.79$ ,  $p = .02$ ). However, probing of these interactions at 1 SD above and below the mean levels of acculturation showed that, although the path estimates varied significantly across levels of acculturation, there was not a significant direct intervention effect on T3 internalizing symptoms at either high or low levels of acculturation.

## DISCUSSION

This study showed that the *Bridges* intervention group had greater declines over time in mother–adolescent conflict, and these changes accounted for reduced externalizing and internalizing problems, and reduced escalation in substance use experimentation 5 years later when compared to the control group. Thus, as hypothesized, parent–adolescent conflict was an important mediator of intervention effects for our sample of Mexican American youth, with long-term effects shown across several outcomes. Of importance, effects were found across levels of acculturation in a diverse sample of Mexican American families, indicating the intervention improves family interactions equally well for families that vary in their orientation toward the mainstream U.S. culture. These results also provided confirmation that mother and adolescent

acculturation are independent predictors of youth problem outcomes, though they were not related to parent–adolescent conflict as hypothesized.

The *Bridges* intervention reduced mother–adolescent conflict after the transition to high school, and these reductions in parent–adolescent conflict were in turn related to fewer externalizing symptoms, adolescent substance use experimentation, and fewer internalizing symptoms and diagnosed internalizing disorders during late adolescence. Of note, these effects were seen across both mother and child report of externalizing symptoms. It is also noteworthy that parent–adolescent conflict accounted for intervention effects on internalizing symptoms as well as rates of diagnosed internalizing disorders. These findings extend prior research on the role of parent–adolescent conflict in family interventions by showing effects with Mexican American families for the first time, and by demonstrating effects on a broader range of outcomes than previously tested.

The timing of the *Bridges* intervention is key; these results show that a family-focused intervention, delivered in middle school, when parent–adolescent relationships are in flux, can successfully support and encourage healthy family interactions so that temporary perturbations expected at this time are not as likely to become problematic in the long term. Overall, rates of conflict between mother and child were declining across the seventh to ninth grades, but the decline was even greater for those families that participated in the intervention. Although this reduction in conflict from early- to midadolescence reflects a normative pattern, the current findings provided robust evidence to show that problems like internalizing disorders (e.g., diagnosed depression) and substance use, which rise during this period (Burke, Burke, Regier, & Rae, 1990; Kessler et al., 2005), are reduced in families that show greater reductions in conflict during the transition from middle to high school. The protective effect of these reductions in parent–adolescent conflict can perhaps be attributed to family environments that are able to maintain strong bonds through the middle school transition, which can aid adolescents as they navigate this risky period (Farrell & White, 1998). Alternatively, if parent–adolescent conflict levels are allowed to persist at high levels across adolescence, the likelihood that the child will reject the family unit and turn instead to a deviant peer group may increase (Dishion, Patterson, Stoolmiller, & Skinner, 1991; Patterson, Chamberlain, & Reid, 1982). Higher levels of conflict within the family are also related to child dysregulation (including disruptions in physiological systems), which may explain why it predicts both internalizing and externalizing outcomes (O'Brien, Margolin, John, & Krueger, 1991; Repetti et al., 2002). Thus, reductions in conflict triggered by the *Bridges* intervention may in fact be promoting healthy emotional and behavioral regulation, positive peer relations, and effective problem-solving skills.

Ecodevelopmental theory suggests that normative developmental processes unfold within a broader cultural context, and this context also influences risk processes. We found support for the role of acculturation, but some effects contradicted our expectations. Maternal acculturation positively predicted adolescent report of externalizing, internalizing, and substance use, whereas adolescent acculturation positively predicted mother report of externalizing and adolescent report of internalizing disorder diagnosis. These results confirm the demonstrated link between youth acculturation and problem behavior and substance use outcomes (Gonzales et al., 2002), whereas the less often observed relation between child acculturation and internalizing also emerged. Among mothers, acculturation was predictive of adolescent externalizing, internalizing, and

substance use, a finding that contrasts theory suggesting that youth problems are more likely to be elevated when parents are less acculturated (Szapocznik & Kurtines, 1993). However, it should be noted that these effects are estimated in the context of an intervention designed to reduce these outcomes. Thus, mother and adolescent acculturation explain variance in externalizing and internalizing after accounting for effects associated with the intervention. This seems to suggest that there may be other risk processes associated with acculturation not addressed by the intervention.

Contrary to our hypotheses, acculturation was not predictive of parent–adolescent conflict in these analyses. Similarly, the interaction between mother and adolescent acculturation (symbolizing the acculturation gap) was not a significant predictor of mother–adolescent conflict. Although this is not the first study that failed to find that family processes mediate acculturation's effects on adolescent outcomes (Ramírez García, Manongdo, & Cruz-Santiago, 2010), these results run contrary to the several other studies that have reported higher rates of conflict in more acculturated families. It is possible that the intervention reduced acculturation-related differences, though these relations were not evident at pretest, prior to any exposure to the intervention. Perhaps the measure of parent–adolescent conflict used here (a standard scale assessing frequency of conflict across typical domains of disagreement between parents and adolescents) did not capture acculturation-related tensions that have been assessed in other studies (e.g., Smokowski & Bacallao, 2006).

Likewise, acculturation did not moderate intervention effects on mother–adolescent conflict, and it produced few meaningful differences in intervention effects on adolescent outcomes. The moderating effects of acculturation were examined as a function of mother and adolescent acculturation scores, and as a function of the language of program delivery.

Previous *Bridges* outcome analyses (at posttest in seventh grade) found several differences in intervention effects on targeted mediators based on program language (Gonzales et al., 2012). For example, mothers that elected to attend the Spanish-language program with their families showed significantly greater posttest reductions in maternal harsh parenting compared to those that attended in English who showed significantly greater reductions in maternal monitoring. We believe these findings reflected underlying differences in risk processes in more and less acculturated families and evidence that families derived different immediate benefits from the intervention according to these needs. The emergence of no significant moderated intervention effects here supports the conclusion that different families benefit from the intervention components in different ways but in the long term family processes and adolescent outcomes improve similarly. These findings have important implications for understanding how the intervention works (i.e., theory of the intervention), and whether it is possible for a single intervention to address the varying needs of diverse families. These findings also highlight the importance of long-term follow-up to better understand how intervention effects unfold over time to benefit participants.

Although not the primary focus of the present study, the influence of gender was consistent with the literature regarding gender differences in depression and anxiety that become more pronounced during late adolescence (Hankin et al., 1998); female gender was associated with higher reports of internalizing symptoms at the 12th grade.

## Limitations, Strengths, and Implications

These results should be viewed in light of several limitations. Although acculturation is the most often cited cultural determinant of parent–adolescent conflict, there are other cultural processes that may come into play. For example, enculturation, conceptualized as one's adoption and/or maintenance of the cultural beliefs, values, behaviors, and language of one's heritage culture (Berry, 2003) may also play an important role in the nature of parent–child interactions during adolescence. It is also important to keep in mind that acculturation is a dynamic process, which can change over time. However, because we did not assess acculturation repeatedly in follow-up assessments, it was not possible to examine how changes in acculturation over time might have influenced conflict and adolescent outcomes. Future research ought to also include a focus on how both father acculturation and father–adolescent conflict play into these complex family processes. It is also important to note that the present sample was almost exclusively of Mexican origin, and thus applications of these findings to the acculturation experiences of other ethnic or Latino subgroups may be limited.

The fact that the present analyses utilized only adolescent report of mother–adolescent conflict limits the extent to which one can infer the importance of objectively validated parent–adolescent conflict; it is possible that it is really the child's *perception* of conflict that carries weight in the present study. Relying solely on adolescent report also raises concerns about potential reporting bias, though the replication of effects on outcomes across multiple reporters suggests that mother–adolescent conflict's influence on outcomes is not solely attributable to reporter bias.

The primary goal of the current study was to test parent–adolescent conflict as a mediator of intervention effects on late adolescent outcomes, which we have demonstrated here. However, it is not possible to determine from the present analyses which components of the intervention were responsible for effects on conflict in ninth grade. These effects may have resulted from earlier changes in dimensions of parenting, family functioning, or adolescent self-regulation and coping, or some combination thereof that were found at posttest (seventh grade). Future analyses will be needed to identify effective intervention components that produced the positive changes in mother–adolescent conflict reported here.

This study had considerable strengths, and was especially well suited to test the mediating effects of parent–adolescent conflict on later mental health and substance use outcomes, and for evaluating the role of acculturation in these pathways. The intervention was delivered with high levels of fidelity, recruitment rates were high relative to the field, multiple reporters were used to assess key outcomes, and the sample was diverse in terms of acculturation and generational status. All told, this longitudinal study provides encouraging evidence that a multicomponent, family-focused intervention delivered at a key developmental juncture can have far-reaching effects to reduce multiple problem outcomes for Mexican American youth, a population that is fast growing and at heightened risk for disparities in mental health and substance use outcomes.

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