


# Culturally Adapted Substance Use Interventions for Latino Adolescents: A Systematic Review and Meta-Analysis

Eden Hernandez Robles<sup>1</sup>, Brandy R. Maynard<sup>2</sup>,  
Christopher P. Salas-Wright<sup>3</sup>, and Jelena Todich<sup>4</sup>

Research on Social Work Practice  
1-13  
© The Author(s) 2016  
Reprints and permission:  
sagepub.com/journalsPermissions.nav  
DOI: 10.1177/1049731516676601  
rsw.sagepub.com  


## Abstract

**Purpose:** To examine the characteristics and effects of culturally adapted substance use interventions with Latino adolescents on substance use outcomes. **Methods:** Systematic review and meta-analytic methods were used to synthesize effects across studies on substance use outcomes at posttest and follow-up time points. **Results:** Ten studies comprising 12,546 Latino adolescents met eligibility criteria. Meta-analytic results suggest positive, yet small effects on substance use outcomes at posttest and slightly larger effects at follow-up. A moderate amount of heterogeneity was observed; however, no variables tested explained the variance. The risk of bias assessment revealed that most studies were at high risk for performance and selection bias. **Conclusions:** Culturally adapted substance use interventions with Latino adolescents may be slightly more effective than other active interventions. We also uncovered important gaps and deficiencies in this body of research, including the need to examine potential secondary benefits of culturally adapted interventions.

## Keywords

systematic review, meta-analysis, intervention, cultural adaptation, substance use, Latino, adolescents

Adolescent substance use is a growing public health concern. Tobacco and alcohol use are of particular concern as research indicates that earlier initiation (at 14 years of age or younger) of these substances is often related to a progression to other illicit drug use and comorbid health-risk behavior (Golub & Johnson, 2001; Salas-Wright, Hernandez, Maynard, Saltzman, & Vaughn, 2014). Compared to those that initiate substance use as adults, epidemiological evidence suggests that adults who meet criteria for substance dependence consistently report substance initiation during early adolescence (Center on Addiction and Substance Abuse at Columbia University, 2011; McGue & Iacono, 2014; Salas-Wright, Vaughn, & Reingle Gonzalez, 2016).

While substance use among adolescents is a concern across all racial and ethnic groups, recent findings suggest that Latino adolescents are more likely than other groups to use a variety of substances (Prado, Szapocznik, Maldonado-Molina, Schwartz, & Pantin, 2008). In the Monitoring the Future (2014) study, Latino adolescents reported the highest rates of past year inhalant, marijuana, cocaine, crack, and methamphetamine use compared to their non-Latino White and African American counterparts. However, while Latinos in both 8th and 10th grades had the highest rates of past 30-day marijuana use, White adolescents among 12th graders had the highest rates of the past 30-day marijuana use. Similarly, 8th- and 10th-grade Latinos had the highest rates of the past 30-day alcohol use and past 2-week binge drinking, but White adolescents had

the highest rates of alcohol use among 12th graders. Researchers hypothesize that this consistent difference in substance use rates that occurs in the 12th grade can be attributed to the high dropout rate of Latino students. Other studies point to controversy regarding comparative rates of adolescent alcohol and drug use among varying racial/ethnic groups (Carvajal, Hanson, Romero, & Coyle, 2002; Kerr, Beck, Downs Shattuck, Kattar, & Uriburu, 2003). A comparison of Latinos and non-Latino White middle school students indicated no significant ethnic differences in drinking or smoking or drug use (Carvajal et al., 2002). However, even after controlling for social and economic variables, there are significant disparities in substance use rates for Latino adolescents compared to other ethnic groups (Johnston, O'Malley, Bachman, & Schulenberg,

<sup>1</sup> Department of Psychology, Latino Alcohol and Health Disparities Research Center, The University of Texas at El Paso, El Paso, TX, USA

<sup>2</sup> Saint Louis University, St. Louis, MO, USA

<sup>3</sup> Boston University, Boston, MA, USA

<sup>4</sup> The University of Texas at Austin, Austin, TX, USA

## Corresponding Author:

Eden Hernandez Robles, Department of Psychology, Latino Alcohol and Health Disparities Research Center, The University of Texas at El Paso, 500 W. University Ave., El Paso, TX 79968, USA.  
Email: erobles9@utep.edu

2009; Resnicow, Soler, Braithwaite, Ahluwalia, & Butler, 2002; Shih, Miles, Tucker, Zhou, & D'Amico, 2010).

Cross-cultural research provides strong evidence suggesting important differences between Latinos and other major racial/ethnic groups with respect to culturally informed beliefs, attitudes, values, orientations, and behaviors (Delva, Allen-Meares, & Momper, 2010; Hofstede, 2001; Ting-Toomey, 2012) that may contribute, both positively and negatively, to substance use disparities among ethnic groups. It is now well established that culture has important implications for substance use (Schwartz, Unger, Zamboanga, & Szapocznik, 2010), and a robust body of evidence points to ways in which cultural values may be of particular importance to alcohol and drug use among Latino adolescents in the United States (Castro et al., 2007; Soto et al., 2011). These cultural values may, at least in part, influence and contribute to the rates of substance use among Latino adolescents in terms of both protective and risk factors (Castro et al., 2007; Newcomb & Felix-Ortiz, 1992; Resnicow et al., 2002; Soto et al., 2011; Stone & Meyler, 2007; Unger et al., 2006). For example, studies suggest that *machismo* (Soto et al., 2011; Unger et al., 2002, 2006), *marianismo* (Unger et al., 2002, 2006), *familism* (Kaplan, Napoles-Springer, Stewart, & Perez-Stable, 2001; Ramirez et al., 2004; Soto et al., 2011; Unger et al., 2002), and *respeto* (Soto et al., 2011; Unger et al., 2006) serve as both protective factors and facilitators for substance use in Latino adolescents. Furthermore, strong protective factors, such as a high level of family involvement and family connectedness, were found to significantly reduce Latino adolescents' risk for drinking-related behaviors and drug use (Kerr et al., 2003). Latino identity is complex and influenced by multiple factors such as gender, familial events, place of origin, and immigration experience (Santiago-Rivera, Arredondo, & Gallardo-Cooper, 2000), thus presenting a great deal of complexity when examining the relationship between cultural factors and substance use. Moreover, research on how culture influences substance use among Latino adolescents is still underdeveloped. While there are gaps and controversy around the relationship between substance use and ethnicity and culture, current evidence suggests that culture, beliefs, attitudes, and values held by ethnic and racial groups may affect both the risk and the treatment of substance use.

Behavioral researchers have argued that inattention to culture in substance use interventions may result in ineffectiveness (Botvin, Schinke, Epstein, & Diaz, 1994; Castro & Alarcon, 2002; Faryna & Morales, 2000) and have drawn upon the aforementioned evidence of variation between cultures as a basis for culturally adapting substance use interventions for Latinos (Bernal, Bonilla, & Bellido, 1995; Castro & Alarcon, 2002; McGoldrick, Pearce, & Giordano, 1982). Cultural adaptation in present-day social and behavioral science contexts refers to the modifications made to an intervention that address issues regarding fit with target populations (Castro, Barrera, & Martinez, 2004; Preedy, 2010). A cultural adaptation is reflected in the process, materials, and/or practice behaviors by which interventions are delivered with an aim to increase

the cultural and linguistic appropriateness of a service to racial and ethnic minorities (Castro et al., 2004; Preedy, 2010). For example, cultural adaptations can include modifications to how, when, and where the intervention is delivered to be more aligned with cultural fit and preferences, materials may be modified to be written in the native language and to use more culturally appropriate graphics and examples, and therapists may be required to modify their therapeutic skills or certain characteristics, style, and mannerisms to be more congruent with the culture of the target population. There are a number of methods by which interventions are being culturally adapted, but it is unclear at this point which adaptations, if any, are necessary, or if some adaptations are more effective than others.

Despite the need for more research to investigate the means and outcomes of cultural adaptation of interventions, a number of initiatives have called for culturally and linguistically appropriate services for racial and ethnic minorities, influencing practice guidelines and policies and acting as an impetus to culturally adapt interventions (Office of Minority Health, 2014). Indeed, the National Standards for Culturally and Linguistically Appropriate Services (NCLAS), as part of the Affordable Care Act, explicitly requires health care institutions to provide culturally and linguistically appropriate services. Six states have passed legislation requiring that health and health-care services to racial and ethnic minority groups be culturally and linguistically appropriate (Office of Minority Health, 2014). The NCLAS provides a blueprint for institutions seeking compliance with the standards. However, it should be noted that the NCLAS is not a cultural adaptation model. As the call to provide culturally and linguistically appropriate services continues to grow, the science behind cultural adaptation has also been advancing. Although advances have been made, the process by and extent to which researchers, program developers, and service providers try to meet the standards for culturally and linguistically appropriate services and approach cultural adaptation vary substantially (Bernal & Rodriguez, 2012) and important questions remain with respect to the overall effectiveness of culturally adapted substance use interventions.

### Prior Reviews of Culturally Adapted Interventions

Prior reviews have examined culturally adapted substance use interventions for adolescents and racial and ethnic minority adolescents (see Hodge, Jackson, & Vaughn, 2012; Waldron & Turner, 2008). Such studies have used a variety of methods to synthesize this body of literature, ranging from traditional narrative reviews to systematic review and meta-analytic methods. Notably, however, no prior studies have focused the systematic review or meta-analyses on the effectiveness of culturally adapted substance use interventions for Latino adolescents specifically.

Waldron and Turner (2008) synthesized findings from 17 studies examining outpatient adolescent substance abuse treatments. The authors included both published and unpublished studies from 1998, with the latest publication date of studies

included in their review being in 2007. Review criteria for participants were adolescents (12–19 years of age) that met criteria for Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, classification for substance abuse. Only 25% of the total sample was Latino. The review excluded tobacco use and community- and school-based interventions. While the focus of the study was to examine the effectiveness of treatment by treatment approach, the authors also examined the moderating effect of ethnicity, finding smaller effects in studies with more Latino adolescents. The authors hypothesized that ethnic differences among group members or between therapist and participant may contribute to the variability and recommend further investigation of cultural factors.

A more recent review of the literature examined the effectiveness of culturally adapted interventions for addressing substance use among ethnic and racial minority adolescents (Hodge et al., 2012). The authors included studies published through October 2009. Their analysis included a total of 10 culturally adapted interventions and measured the effectiveness of the interventions exclusively on alcohol and marijuana outcomes. Hodge and colleagues specified their search to include adolescents (18 and younger) from several key racial/ethnic minority groups (i.e., African American, Latino, and Native American). Six of the 10 studies included a Latino sample. Results of the meta-analysis indicated that the interventions had a small yet significant effect on recent alcohol use outcomes,  $g = .225$ , 95% confidence interval (CI) [0.015, 0.435], but not on marijuana,  $g = .610$ , 95% CI [−0.256, 1.476]. While the Latino proportion of the review sample was larger than the other ethnic samples, mean effects include all racial/ethnic groups and thus it is not possible to parse out effects on Latino adolescents specifically.

Given the cultural differences among various racial and ethnic minority groups, it seems prudent to assess the effects of culturally adapted interventions separately for specific racial and ethnic minority groups (Nathan & Gorman, 2002). There is a pressing need to advance our understanding of substance use interventions designed to address the needs of Latino adolescents in the United States. Indeed, the Latino population in the United States is expected to double by 2050 (U.S. Census Bureau, 2014) and evidence continually points to disconcerting levels of alcohol and drug use among Latinos during adolescence (Prado et al., 2008; Swendsen et al., 2012). Although the literature abounds with broad overviews and conceptual discourse about the development and usefulness of culturally adapted interventions (Bernal & Rodriguez, 2009, 2012), it is unclear if there is strong empirical support for the use of culturally adapted interventions with Latino adolescents. Thus, further examination of the effectiveness of culturally adapted interventions on substance use outcomes for Latino adolescents is needed.

### Purpose of the Present Study

As culturally adapted interventions continue to gain popularity, it is important to examine the effects of these interventions

using rigorous synthesis methods. While previous systematic reviews and meta-analyses synthesized effects of culturally adapted substance use interventions across racial and ethnic groups, no rigorous reviews have examined effects of culturally adapted interventions specifically for Latino adolescents. To this end, this systematic review and meta-analysis will provide new and highly relevant evidence on the overall effectiveness of substance use interventions culturally adapted specifically for Latino adolescents. The questions that guided this study were (1) what are the types and characteristics of culturally adapted interventions being used to prevent or reduce substance use among Latino adolescents? and (2) what are the effects of culturally adapted interventions on Latino adolescents' substance use? We hypothesized that culturally adapted interventions will be effective in reducing substance use for Latino adolescents.

## Method

Systematic review procedures were used for all aspects of the search, retrieval, selection, and coding process (Campbell Collaboration, 2014). Study effects were synthesized using meta-analytic methods (Pigott, 2012). The protocol for this review was registered [blinded for peer review will provide full reference details and link to the protocol if accepted for publication]. Since a systematic review does not involve human subjects, but rather study reports, institutional review board was not necessary for this study.

### Study Eligibility Criteria

Studies were eligible for inclusion if they used an experimental or quasi-experimental design to examine the effects of a culturally adapted intervention on a substance use outcome with Latino adolescents between the ages of 11 and 18, in the United States. We excluded studies that used a preexperimental (e.g., single group pretest–posttest) or nonexperimental study design due to the lack of internal validity characteristic of these designs. To be eligible, at least 50% of the study sample must have been identified as Hispanic and/or Latino. For the purposes of this review, eligible interventions were any universal, selective, or indicated prevention or intervention program that used a cultural adaptation to prevent or reduce substance use (Kellam & Langevin, 2003; Mrazek & Haggerty, 1994). To meet criteria as a culturally adapted intervention, the intervention must have been adapted at (1) a *surface structural level*, which (a) reflects a Latino cultural or multicultural emphasis in the project title or mission or (b) explicitly incorporates Latino cultural values, concepts, norms, and beliefs in the intervention or (2) a *deeper structural level* when it (a) is provided in Spanish or (b) incorporates cultural-specific psychological and wellness factors related to health in the intervention (Resnicow et al., 2002). Outcomes of interest in this review were substance use–related behavioral outcomes, including alcohol, nicotine, or illicit drug use as measured by self-report, parent report, or other report (teacher, clinician), standardized scales,

observational reports, or other valid and reliable measures at posttest or follow-up. Measures of substance use intent and attitudes were excluded. We did not exclude studies based on publication status or language. Studies must have been conducted or reported between January 1990 and March 2014 to be eligible for inclusion. The Office of Minority Programs in the National Institutes of Health was established in 1990 (National Institute of Minority Health and Health Disparities, 2016). Shortly thereafter, the office issued a call to advance research to address minority health disparities. As such, we had reason to believe that 1990 was an appropriate start date to begin our search.

## Search Strategy

A comprehensive search strategy was executed to find eligible studies. Our search strategy consisted of 14 electronic databases and research registries, 6 relevant websites, reference harvesting of prior reviews and included studies and personal contacts with researchers and research centers.

**Databases.** The 14 databases we searched included Academic Search Complete, Alcohol and Alcohol Problems Science Database, Bureau of Criminal Justice Statistics, CINAHL, ERIC, MEDLINE, National Archive of Criminal Justice Data, National Criminal Justice Reference Center, ProQuest Dissertations and Theses, PsycINFO, PubMed, Social Service Abstracts, UT Digital Repository, and Web of Science. Most databases include a specialized thesaurus for multiple disciplines including the social and educational sciences. Some of the terms identified as suitable for the present search varied in word form (e.g., adjective or noun) such as “ethnic” or “ethnicity.” The search was intended to locate all relevant studies on Latino adolescents. The search accounted for the different subgroups and the various ethnonyms found in the research literature. The research team consulted with an expert librarian and developed a strategy to identify all articles relevant to this population. As a result, the authors learned that there are differences in how researchers refer to this particular ethnic group and the subgroups, and the terms Latino and Hispanic are often used interchangeably, therefore, we used both terms in our search process. Combinations of the following terms and key words related to the problem, outcomes, intervention, and target population were used as follows, with variations in databases depending on the nuances and thesaurus of the database (the full search strategy for each database is available in the online supplementary materials):

(Latino OR “Latin American” OR Hispanic OR “Central American” OR “South American” OR “Mexican Americans” OR “Mexican-Origin” OR “Mexican Heritage” OR “Puerto Rican” OR Dominican OR Cuban OR Salvadoran OR Guatemalan) AND (youth OR adolescent OR teen\* OR child\* OR “school age”) AND (substance OR drug OR alcohol) AND (cultural OR multicultural OR “cross-cultural” OR ethnic\* OR bicultural OR intercultural OR “cultural relevant” OR sociocultural) AND

(intervention OR outcome OR trial OR experiment\* OR evaluation OR treatment OR program OR therapy OR rehabilitation or prevention OR services)

**Websites.** Six websites were searched for potential studies: Blueprints for Health Youth Development, Office of Juvenile Justice and Delinquency Prevention Model Program Guide, Substance Abuse and Mental Health Services Administration, Institute of Science What Works Clearinghouse, National Research Laboratory and Clinic, and the Society for Implementation Research Collaboration.

**Reference lists and personal contacts.** Employing an ancestry approach (Cooper & Hedges, 1994), reference lists of prior reviews, included studies and other related studies identified through the search process were reviewed for relevant studies. We made direct contact, via e-mail, with seven researchers who had published work in this area to request any of their unpublished or other published works we may have missed and to refer us to others’ works of which they were aware that might be appropriate.

## Study Selection and Data Extraction

One reviewer screened all titles and abstracts retrieved through the search process for relevance. Studies deemed inappropriate at the title/abstract review stage were those that were not an intervention study, did not involve the target population, or did not address substance use. If there was any question as to a study’s appropriateness at the title/abstract review stage, the full-text document was obtained. The full text of all studies that were not obviously ineligible or were questionable at this stage was obtained and independently screened for eligibility by two reviewers using a screening instrument. Reviewers resolved discrepancies in screening decisions through discussion and consensus and, when necessary, a third reviewer was consulted. Two reviewers then independently coded all reports that passed eligibility screening using a coding instrument to guide systematic examination and extraction of data. The coding instrument included categories concerning all relevant bibliographic information; study context, intervention, and sample descriptors; research methods and design; effect size data; and risk of bias using Cochrane’s risk of bias tool (Higgins & Thompson, 2002). The coding instrument is available upon request from the study authors. The coders were all the authors of this study, who either held doctoral degrees or were doctoral students. Coders were trained by the second author who has extensive training and experience in conducting systematic reviews. The screening and data extraction forms were pilot tested by the coders and refinements were made to the screening and coding forms. Two coders independently screened and extracted data from all studies and 100% agreement between the coders was achieved through discussion and consensus for any discrepancies between coders. If data were missing from a study, every effort was made to contact the study author to



request the missing data. If effect size data were missing, and the author did not respond to requests to provide the missing data needed to calculate an effect size, the study was excluded from the meta-analysis.

## Analytic Methods

Several statistical procedures were employed following recommendations of Pigott (2012). First, statistical analysis was designed to produce descriptive information on the characteristics of all included studies. Effect sizes were calculated for substance use outcomes at posttest and at one follow-up time point when reported. To maintain statistical independence of data, only one effect size was computed for each study at each time point. Although specific substance use outcome variables (e.g., drinking, smoking, cocaine use) were measured in some studies and extracted from reports, other studies reported the data as one combined substance use outcome. Thus, there were not enough studies measuring and reporting the same individual substances to allow for meaningful analyses of outcomes for each type of substance, thus one substance use outcome was calculated for each study. When authors used multiple reports of the same outcome measure (e.g., self- and clinician reports) or measured multiple substances (e.g., measured alcohol use and marijuana use separately), we calculated the mean of all measures to create a study-level average across measures. The standard mean difference effect size statistic, corrected for small sample size bias (Hedges'  $g$ ), was calculated using a statistical software package, Comprehensive Meta-Analysis Version 3.0 (CMA; Borenstein, Hedges, Higgins, & Rothstein, 2014). For studies that measured outcomes using categorical variables, odds ratios were calculated and converted to Hedges'  $g$  in CMA.

Two meta-analyses were performed to synthesize studies assessing effects on substance use outcomes—one for studies reporting effects at posttest and one for studies reporting effects at a follow-up time point. A weighted mean effect was calculated by weighting each study by the inverse of its variance. Due to the anticipated variation in interventions and studies included in this review, we assumed random effects statistical models. We assessed statistical heterogeneity using the  $I^2$  statistic and  $Q$  test. If heterogeneity was observed between studies in either of the two planned meta-analyses (posttest and follow-up time points), we planned to conduct moderator analyses using the analog to the analysis of variance (ANOVA), a technique that groups effect sizes into categories based on characteristics identified a priori by the authors. The characteristics we tested included the level of intervention (universal, selective, indicated) and the comparison group condition (nothing, treatment as usual, nonadapted version of treatment). We also planned to assess publication bias, which can occur when authors and editors choose only to publish studies that demonstrate a significant effect or that support the hypothesis or conventional wisdom (Cooper, 2010). Publication bias may lead to an upward bias in the effect sizes reported in meta-analysis (Lipsey & Wilson, 2001). Thus, we diligently sought to locate both published and unpublished studies to mitigate publication

bias. Publication bias should be examined by assessing the symmetry of a funnel plot where each study's relative effect size and sample size was plotted. However, the use of funnel plots or other techniques such as regression to assess publication bias with fewer than 10 studies is not indicated (Card, 2012). Thus, the present study does not assess for publication bias.

## Results

The search process yielded a total of 35,842 titles and abstracts that were reviewed for relevance. After removing duplicates and those obviously ineligible, the full text of 108 reports was screened and, of those, 17 were deemed eligible for coding. Of the 91 studies excluded, 23 were excluded because the primary intervention goal was not to prevent or reduce substance use, 34 were excluded due to not being an intervention study, 7 were excluded because they used a single group pre-post design, and 4 were excluded because fewer than 50% of the study participants were Latino. Another 15 studies did not meet the age criteria for the present study, and 8 studies reported only substance use attitudes or beliefs. A full list of excluded studies is available in the online supplementary materials (for peer review and can be placed online if accepted for publication).

During the full-text coding process, three additional studies were excluded: one study was excluded because while the intervention reported on substance use, its main goal was improving mental health outcomes (Gonzalez et al., 2012), the second study reported school-level data, which was not comparable to individual-level substance use data (Botvin et al., 1994), and the third study did not include a true comparison group (Stevenson, McMillan, Mitchell, & Blanco, 1998). It is important to note that 6 of the remaining 14 articles reported outcomes from 2 major studies. Therefore, the present review and meta-analysis reports the findings of 10 studies reported in 14 articles. See Table 1 for a summary of included studies. The flow diagram as shown in Figure 1 illustrates the study search and selection process.

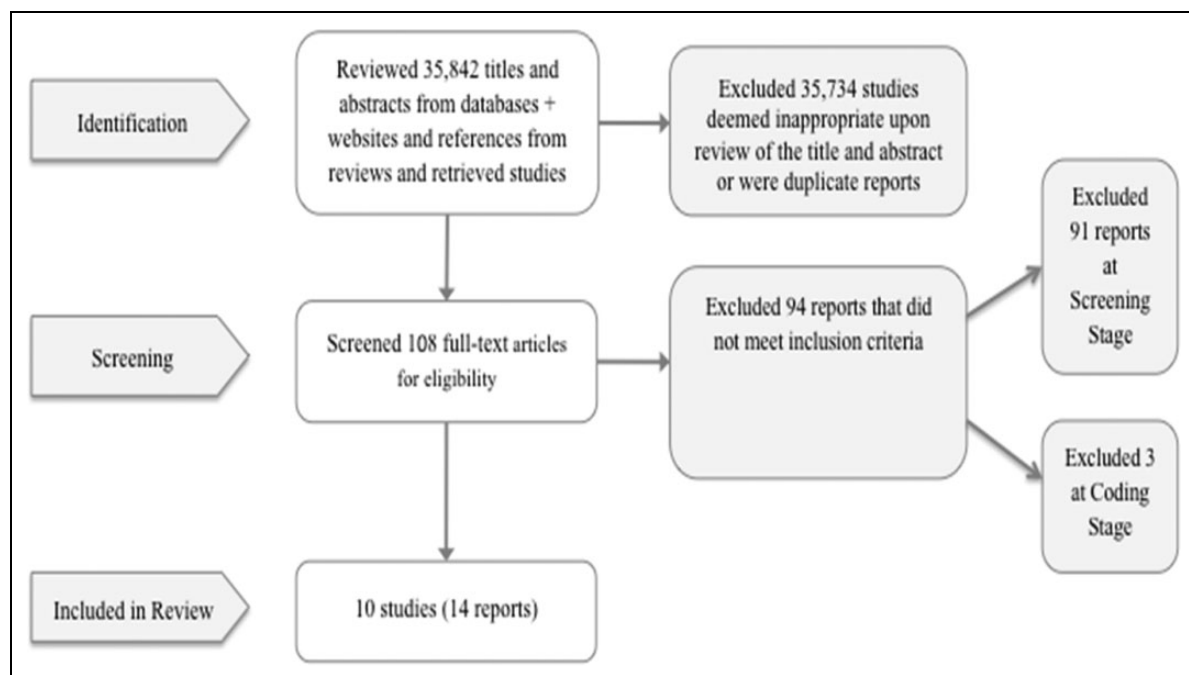
## Characteristics of Included Studies

**Study characteristics.** Table 2 summarizes study and participant characteristics across included studies. The included studies represent findings from 12,546 adolescents who participated in 10 studies of interventions intended to prevent or reduce substance use in Latino adolescents. The mean sample size across all studies was 1,255 adolescents, with a range of 25–6,035 adolescents. Seven studies were randomized controlled trials and three were quasi-experimental design studies. Of the 10 studies, 4 (40%) reported control groups receiving the nonadapted version of the intervention (Burrow-Sanchez & Wrona, 2012; Guilamo-Ramos et al., 2010; Robbins et al., 2008; Santisteban, Mena, & McCabe, 2011). In one study, the control group received a placebo—a first aid/home safety educational program (Elder et al., 2002). Three (30%) of the studies reported that control groups received a wait-list condition (Godley & Velasquez, 1998; Johnston, 2010; Marsiglia, Ayers,

**Table 1.** Summary of Included Studies.

Study	Intervention Name	Primary Setting	N	Mean Age	% Latino	Outcomes Reported
Burrows-Sanchez and Wrona (2012)	Accommodated Cognitive Behavioral Therapy	Not reported	35	15.5	100	Substance use
Elder et al. (2002)	Sembrando Salud	School	3,157	Not reported	100	Alcohol use (measures tobacco use)
Godley and Velasquez (1998)	Logan Square Prevention Project	Mixed settings	667	Not reported	77	Substance use
Guilamo-Ramos et al. (2010)	Project Towards no Tobacco Use (modified) + Linking Lives for Mothers	School	1,096	12.1	74.20	Tobacco use
Hecht et al. (2003)	KiR DRS	School	6,035	Not reported	54.97	Tobacco, marijuana, alcohol, and combined substance use
Johnson et al. (2005)	Project FLAVOR	School	190	11.3	59	Tobacco use
Marsiglia, Ayers, Gance-Cleveland, Mettler, and Booth (2012)	Keepin' it REAL	School	565	12.3	73.50	Alcohol use
Robbins et al. (2008)	Structural Ecosystems Therapy	Mixed settings	660	15.6	59	Substance use
Santisteban, Mena, and McCabe (2011)	CIFFTA	Not reported	25	Not reported	100	Marijuana, cocaine, and combined substance use
Valdez, Cepeda, Parrish, Horowitz, and Kaplan (2013)	Adapted Brief Strategic Family Therapy	Not reported	116	15.3	100	Marijuana, alcohol, and other illicit drug use

Note. FLAVOR = Fun Learning About Vitality, Origins, and Respect; CIFFTA = Culturally Informed and Flexible Family-Based Treatment for Adolescents; REAL = Refuse Explain Avoid Leave; DRUG = Drug Resistance Strategies Project.

**Figure 1.** Flowchart of study search and selection process.

Gance-Cleveland, Mettler, & Booth, 2012), and two (20%) reported treatment as usual (Hecht et al., 2003; Valdez, Cepeda, Parrish, Horowitz, & Kaplan, 2013). Half of the included studies were published within the last 5 years. Despite our comprehensive search to include gray literature, all studies were published in peer-reviewed journals.

All 10 studies reported specifically recruiting in Latino-dominant communities and schools. Two studies (Elder et al., 2002; Valdez et al., 2013) specifically targeted Latino adolescents only. Attrition was a problem in three (30%) included studies. Authors of all three studies that experienced attrition greater than 20% explained that lost cases were due to one or

**Table 2.** Study and Participant Characteristics Across Included Studies.

Study Characteristics	N (%)	Participant Characteristics	N (%)
Study year		Grade levels	13.13
1990–1999	1 (10)	Middle school (6–8)	5 (50)
2000–2009	4 (40)	Mixed	5 (50)
2010–2014	5 (50)	Rates of gender by study	
Sample size		<50% female	4 (40)
20–49	2 (20)	<50% male	4 (40)
100–199	2 (20)	Not given	2 (20)
200+	6 (60)	Rates of Hispanics by study	
Study location		50–60%	3 (30)
Arizona	2 (20)	70–80%	3 (30)
California	2 (20)	90–100%	4 (40)
Florida	2 (20)	Adolescents born in the United States	
Illinois	1 (10)	<50%	4 (40)
New York	1 (10)	Not reported	6 (60)
Texas	1 (10)	Parents born in the United States	
Utah	1 (10)	>50%	3 (30)
Attrition rates		<50%	1 (10)
>20%	3 (30)	Not reported	6 (60)
Control group condition		Language spoken at home	
Nonadapted version	4 (40)	>50% English	2 (20)
Placebo/attention	1 (10)	<50% English	1 (10)
Treatment as usual	2 (20)	Not reported	7 (70)
Nothing or wait-list	3 (30)		

more of the following three issues: (1) missing data/school records, (2) mobility of students (moving, withdrawing from school, etc.), and (3) refusing further follow-up. Table 2 provides a summary of the study and participant characteristics across the included studies.

**Participant characteristics.** The mean age of participants in the treatment group across all studies was 13.13 years, and males and females were equally represented. Half (50%) of the participants were middle school students and half (50%) represented a mixture of grade levels. The majority of the studies reported low-income adolescents as the main study participants. Only 6 (60%) of the studies identified Latino subgroups represented in their overall samples. Five (50%) studies reported Mexican Americans and one (10%) study reported Puerto Ricans as a part of their overall sample. Two (20%) studies labeled “Other” Latinos as a separate category, while the remainder of the studies (20%) did not specify subgroups in this way. Although the Robbin et al.’s (2008) study broadly identified the adolescent participants as Hispanic American, a supplemental report for the study identified parent ethnicity as ranging from Columbian, Cuban, Dominican, Nicaraguan, Puerto Rican, and Other Hispanic (Dillon, Turner, Robbins,

& Szapocznik, 2005). The majority (60–70%) of the studies did not provide data on ethnic markers such as nativity status or language at home. Of the studies that did provide data, the majority of the adolescents were born in the United States, while the majority of the parents were born in another country, and the majority spoke Spanish at home.

**Intervention characteristics.** As shown in Table 3, the interventions in this systematic review represent a broad range of types of interventions, providers, settings, duration of intervention, and cultural adaptation characteristics. This review includes cultural adaptations of 4 (40%) universal, 2 (20%) selective, and 4 (40%) indicated programs. The majority (70%) of the interventions addressed substance use through education or skills training. Other interventions include brief structured family therapy or structured family therapy (20%) and cognitive behavioral therapy (10%). The intervention format varied among the studies, and some included multiple formats. Seventy percent of the interventions were delivered to a group of adolescents by one provider, and 30% of the adolescents received the intervention exclusively from the provider. In addition, 40% of the studies included parents as a part of the intervention; however, the level of parental involvement in the interventions varied.

**Settings.** The majority of the interventions were conducted in a school setting. For the remaining interventions, services were provided in a combination of settings, including some combination of school, community-based organization, and home settings. The setting was not reported in three (30%) studies.

**Duration of intervention.** The duration of intervention was coded as number of hours and weeks and the total number of sessions provided; however, not all studies reported all these information. The duration of the interventions evaluated in the studies ranged from 1 to 28 weeks, with a mean of 12.37 weeks ( $n = 8$ ). The number of sessions ranged from 2 to 32 sessions, with a mean of 12.26 sessions ( $n = 9$ ). Of the four studies that provided information about the frequency of contact with adolescents, three (30%) reported that adolescents participated at least once weekly and one (10%) reported twice weekly participation.

**Characteristics of cultural adaptations.** The frameworks, models, and guidelines used for culturally adapting the interventions varied across studies. Of the studies that reported a framework, model, or guideline, the adaptive framework (10%), culturally grounded narrative-based framework (20%), ecological framework (20%), the cultural accommodation model for substance abuse treatment (10%), and the integrated framework (10%) were identified as the method for culturally adapting the intervention. Three (30%) did not identify a framework or model for culturally adapting the interventions. While these studies did not identify a specific adaptation model, they did discuss the specific cultural values they considered while adapting the intervention. A literature review (70%) was the most widely used strategy for cultural adaptation, followed by expert

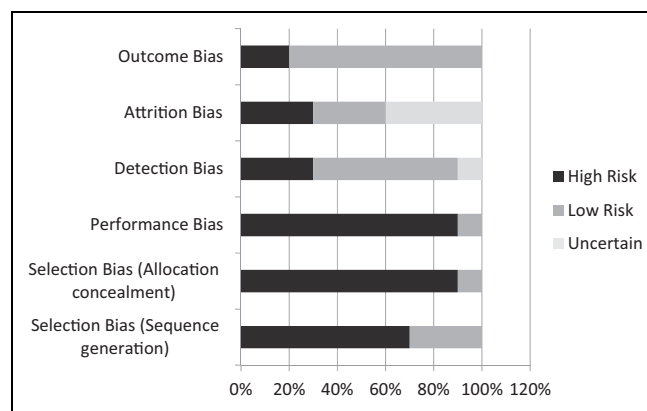
**Table 3.** Characteristics of Interventions Included in This Review.

Characteristic	N (%)	Characteristic	N (%)
Intervention design		Primary setting	
Universal	4 (40)	School	5 (50)
Indicated	4 (40)	Community based	1 (10)
Selective	2 (20)	Mixed settings	3 (30)
Intervention type		PSAs and billboards	1 (10)
BSFT or SFT	2 (20)	Unable to determine	3 (30)
CBT	1 (10)	Intervention format	
Education	5 (50)	Adolescent and provider	3 (30)
Network of services	1 (10)	Group of adolescents and provider	7 (70)
Skills training	1 (10)	Parents and provider	3 (30)
Duration of intervention (weeks)		Groups of parents and provider	4 (40)
1–10	2 (20)	Adolescents, parents, and provider	3 (30)
11–20	4 (40)	Groups of families and provider	1 (10)
11–20	2 (20)	Components culturally adapted	
21–30	1 (10)	Changes to intervention content	6 (60)
31–40	1 (10)	Delivered in English and Spanish	4 (40)
Unable to determine	2 (20)	Incorporates cultural values	9 (90)
		Changes service delivery	2 (20)
		Participant/therapist ethnic matching	1 (10)
		Name of intervention	1 (10)

Note. BSFT = brief structured family therapy; SFT = structured family therapy; CBT = cognitive behavioral therapy.

opinion (50%), focus groups/individual interviews (30%), and pilot testing culturally adapted material (10%). The majority of the studies reported incorporating cultural values to intervention content (i.e., *respeto*, *familismo*, etc.; 90%), followed by making changes to intervention content (i.e., using ethnic actors, telenovelas, etc.; 60%), providing the intervention in English and Spanish (40%), changing the nature of the therapeutic service delivery (i.e., family members are included in the recruitment, engagement, or retention of participants; 20%), participant/therapist ethnic matching (10%), and the name of the intervention (10%).

**Risk of bias.** Two coders independently assessed the risk of bias in each study using Cochrane's risk of bias tool (Higgins et al., 2011). Concerning selection bias, 70% of the studies were assessed as high risk for sequence generation and 90% were high risk for allocation concealment. Approximately 90% of the studies were high risk for performance bias. Whereas the majority of the studies were assessed as high risk for selection bias and performance bias, 60% of the studies were assessed as low risk for detection bias. Risk for attrition bias (30%) was also comparatively lower compared to other types of bias. Selective outcome reporting was also relatively low (20%). See Figure 2 for a summary of risk of bias across studies.

**Figure 2.** Risk of bias across studies.

### Effects of Interventions on Substance Use

**Mean effect of interventions at posttest.** Mean effects and CIs for the six studies that measured substance use at posttest included in this meta-analysis are shown in Figure 3. The overall mean effect at posttest on substance use outcomes assuming a random effects model and correcting for small sample size bias using Hedge's  $g$  was .06, 95% CI [0.01, 0.10];  $p = .01$ , demonstrating an effect that is significantly different from 0 but quite small and not clinically important. Heterogeneity was not statistically significant ( $I^2 = .00$ ;  $Q = 3.24$ ,  $p = .66$ ).

**Mean effect of interventions at follow-up.** Eight of the included studies reported outcomes at a follow-up time point. The follow-up time points ranged from 2 to 24 months following the posttest measure ( $M = 10.25$ ;  $SD = 6.69$ ). Mean effects and CIs for these studies are shown in Figure 4. The overall mean effect at follow-up on substance use outcomes assuming a random effects model and correcting for small sample size bias using Hedge's  $g$  was .26, 95% CI [0.10, 0.42];  $p = .002$ , demonstrating a small positive effect of interventions on substance use outcomes. There was a moderate amount of heterogeneity across studies at follow-up ( $I^2 = 55.11$ ;  $Q = 87.09$ ,  $p < .001$ ).

### Moderator Analysis

Due to the lack of heterogeneity across the effects at posttest, moderator analysis was not indicated. We did, however, conduct moderator analyses with the studies included in the meta-analysis of follow-up time points as there was a moderate amount of heterogeneity across those studies. Because of the small number of studies, the number of moderator analyses were limited to those in which there was enough variability on the variable across studies and those that were theoretically important: level of intervention (universal, selective, indicated) and the comparison group condition (nothing, treatment as usual, nonadapted version of treatment). We hypothesized that studies examining indicated interventions (more intensive interventions treating adolescents with a substance use problem) would result in greater effects than those examining



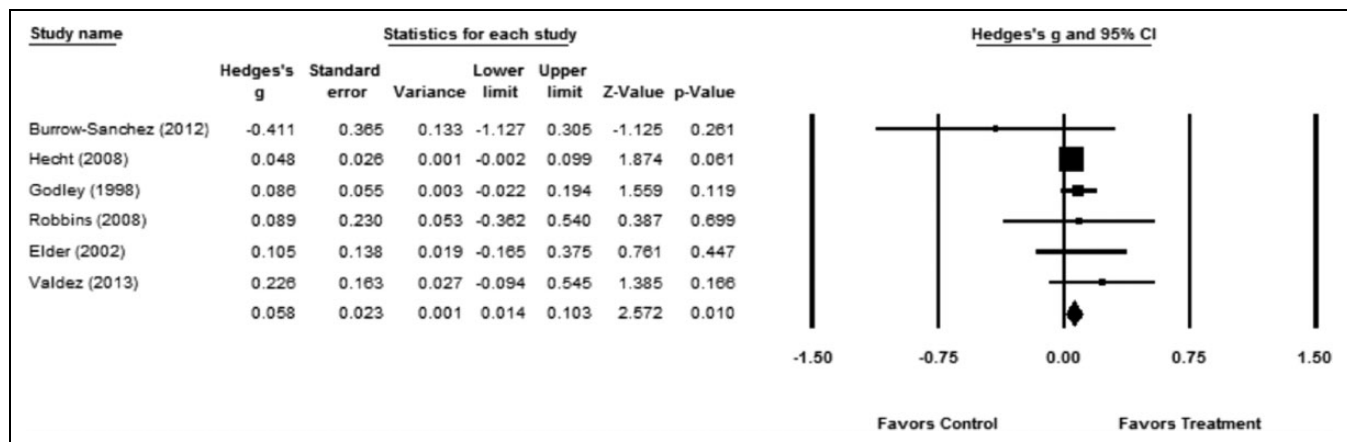


Figure 3. Effects of culturally adapted interventions at posttest.

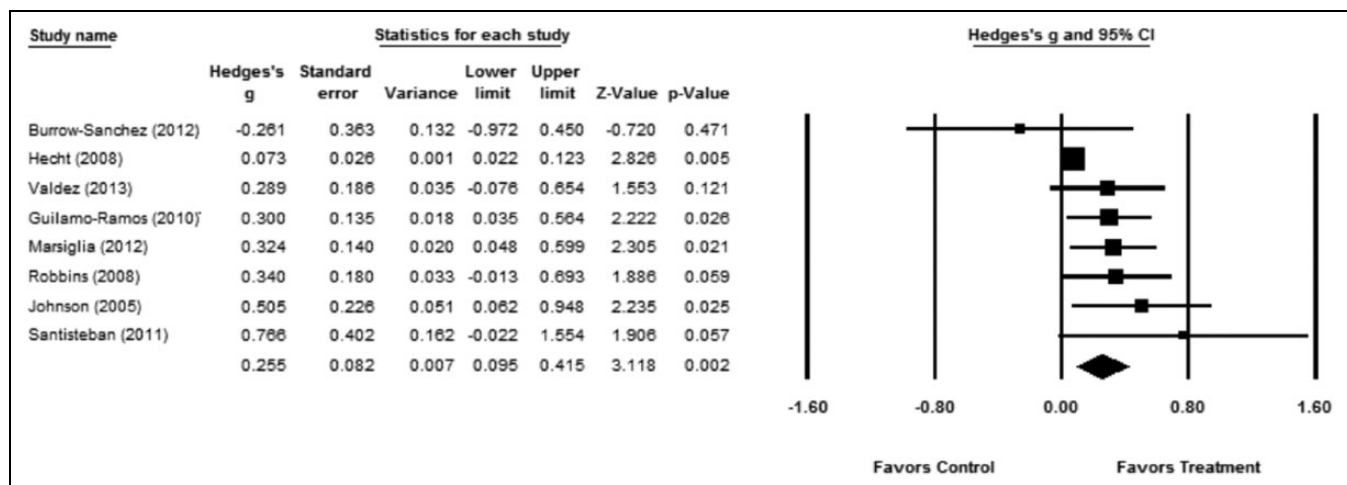


Figure 4. Effects of culturally adapted interventions at follow-up.

universal-level interventions. We also hypothesized that studies comparing the treatment to an active treatment condition would find smaller effects than those comparing the treatment to a comparison group receiving a no treatment/wait-list condition. The analog to the ANOVA was used to examine differences in magnitude of effects across different levels of categorical variables. There were no significant differences between studies for intervention level ( $Q = .30, p = .86$ ) or comparison group condition ( $Q = 4.46, p = .11$ ). Thus, there is no evidence of a relationship between the level of intervention or type of comparison group condition and the magnitude of the effect size.

## Discussion and Application to Practice

There is increasing support for interventions to be adapted to be more culturally and linguistically appropriate; however, it is not clear how interventions are being adapted or whether adapting interventions leads to increased effectiveness. Given the increased attention on implementing culturally adapted interventions, it is important to examine the ways in which

interventions have been adapted and assess the effects of these interventions with the ethnic and minority groups for which they have been adapted. Thus, this systematic review and meta-analysis examined the effects of culturally adapted substance use interventions on substance use outcomes with Latino adolescents.

Overall, findings from the current study suggest that the culturally adapted substance use interventions at posttest were, although positive and statistically significant from 0, small and likely not clinically important. At follow-up, the mean effect was larger, indicating that Latino adolescents outperformed their control group peers when assessing longer term effects on substance use outcomes. It is not clear from this review, however, if the larger magnitude of effect at follow-up indicates that outcomes improve over time or if the results were due to different studies being included in the posttest and follow-up analyses. Given that the control groups in the vast majority of the studies included in this review were provided a different type of intervention rather than nothing, the results indicate that the culturally adapted interventions slightly outperform active control conditions and have stronger longer term effects.

While all of the interventions included in this review examined outcomes of culturally adapted interventions, there was variability across the studies in terms of how the interventions were adapted and the level of detail authors provided about the adaptations they made. Included studies varied in terms of the adaptation model they used to guide their adaptation—Burrows-Sanchez and colleagues used the cultural accommodation model, some authors used many of the concepts found in the ecological validity framework and other authors used different models, a combination of models or did not specify a model. In terms of which components were changed to culturally adapt the intervention, 90% of the studies reported incorporating cultural values into the intervention content. Not surprisingly, *familism*, a term researchers coined to explain the close bonds observed in Latino families (Marin & Marin, 1991), which includes close family friends as well as other extended family members (Unger et al., 2004), and *respeto*, a relational concept where adolescents' interactions and communication with adults are guided by their status (Garcia, 1996), were the values most often incorporated into the interventions. It must be noted, however, that the methods for where and how authors incorporated these values varied. Other changes to intervention content, such as providing the intervention in English and Spanish; changing the nature of the service delivery, matching participant, and therapist ethnicities; and changing the name of the interventions were additional strategies used to adapt some of the interventions that varied across studies.

It is not clear whether any of these adaptations are necessary, whether any of these strategies are more important or effective than others, or whether they may be more or less effective combined with other strategies. While no clear rules or empirical evidence exist as to how to approach cultural adaptation, it seems counterintuitive that there was not greater involvement of the target population to adapt the interventions. In any case, the methods used to adapt the intervention could moderate the effects of the intervention. Future research of culturally adapted interventions could provide important contributions to better understanding cultural adaptation and effects of various strategies by more explicitly and fully describing the methods of cultural adaptation as well as testing specific methods or components to examine whether and to what extent the cultural adaptations impact the outcome.

Another important factor that could moderate effects, but was not adequately reported in the included studies, is the acculturation status and subethnic group characteristics of study participants. We attempted to collect data on acculturation status and subethnic groups for descriptive purposes and to test these variables as moderators; however, only one study provided these data. Marsiglia, Kulis, Wagstaff, Elek, and Dran (2005) conducted subgroup analysis and found that more highly acculturated Latino adolescents benefited more from the intervention than lower acculturated adolescents. Other related studies have found greater effects among highly acculturated participants compared to lower acculturated participants (Griner & Smith, 2006). Four other included studies, while not having conducted the subgroup analyses themselves, noted the

importance of comparing ethnic subgroups and/or acculturation status in future studies (Burrow-Sanchez & Wrona, 2012; Hecht et al., 2003; Johnson et al., 2005; Valdez et al., 2013). Thus, it is possible that acculturation status or the type and proportion of ethnic subgroups in the included studies could moderate effects of culturally adapted interventions. If researchers report ethnic subgroups of their samples and conduct and report subgroup analyses, future systematic reviewers will be able to test these differences and provide more nuanced information to inform program development.

In addition to findings related to the main effects of interventions and observed variability across studies, other important findings and contributions of this review are related to the quality of evidence. We found various sources of bias across the included studies, including a large proportion of studies being at high risk of performance and selection bias. In addition to identifying concerns related to study quality, our findings also raise some concerns regarding measurement and reporting of substance use outcomes. Most of the included studies used a form of self-report to measure substance use outcomes, thus there exists a possibility that results may have been impacted by under- or overreporting of substance use. Moreover, many of the studies reported substance use as one outcome encompassing multiple substances, rather than reporting the results of the intervention on individual substances. Thus, we were not able to examine effects on the use of individual substances (e.g., marijuana, alcohol). This is problematic in that there may be differential effects depending on the substance. For example, Hodge, Jackson, and Vaughn (2012) found significant intervention effects on alcohol but not marijuana use. Thus, reporting results for substance use as a general category may possibly distort differential effects on specific types of substance use. We recommend that future studies measure and report substances individually and that they use valid and reliable measures of substance use.

While this review adds additional evidence for culturally adapted interventions to treat substance use among Latino adolescents, the findings of this review must be interpreted in light of the study's limitations. First, the relatively small number of studies does not likely represent the potentially vast number of culturally adapted interventions currently being used across the United States. Although this is a relatively nascent area of research, we were surprised to not find more studies given the increased support for culturally adapted interventions. Second, despite our attempts to search for unpublished literature, this review includes only published studies and our sample size was too small to conduct meaningful publication bias analyses, thus publication bias is a potential threat to this review and the overall mean effect may be upwardly biased. Third, there was significant heterogeneity across the studies, thus caution must be used when interpreting the findings. Finally, the studies included in this review presented with various risks of bias and thus caution must be used when drawing causal inferences and applying findings from this review. Despite these limitations, the present study provides the first systematic synthesis of culturally adapted substance use interventions for Latino

adolescents and elucidates the promise of these types of interventions as well as the nuances and gaps in the evidence base to inform future research and practice in this area.

Practicing in a culturally sensitive and competent manner is a standard mandate across a range of health-care professions, but particularly in social work (NASW Standards for Cultural Competence in Social Work Practice, 2001). The NASW Standards of Cultural Competence (2001) encourages social workers to continue to develop culturally competent evidence-based models for diverse populations. The findings from this study provide preliminary evidence that culturally adapted interventions for Latino adolescents can be effective in reducing substance use but may not provide a clinically significant benefit above other active interventions that are not culturally adapted. Nevertheless, there may be some merit for social workers to implement some of the strategies to culturally adapt interventions observed in the included studies to meet the cultural competence standards of the profession as well as to potentially improve secondary benefits in the populations being served. For example, culturally adapted interventions may be more acceptable to minority adolescents and families and may lead to greater retention of adolescents in these programs. These secondary outcomes may justify the additional effort needed to adapt interventions for racial and ethnic minority adolescents; however, more research on secondary benefits is needed to understand the full value of culturally adapted interventions. Given the relatively small number of studies found for inclusion in this review, this review also serves as an impetus for social workers to identify ways in which interventions are being adapted for different ethnic and racial groups and test these adaptations for effectiveness to contribute to the evidence base.

The number of culturally adapted interventions is increasing rapidly, and the present study results indicate some positive effects of culturally adapted interventions over other active treatments; however, the state of the evidence could be improved and expanded. Future research in this area is warranted to improve the evidence of culturally adapted interventions by increasing the rigor of studies examining the effects of culturally adapted interventions, such as improving internal validity of studies, increasing sample sizes, and using valid measures of substances and reporting outcomes of each substance measured separately. Research could also be improved by authors providing more information about the characteristics of participants (including subgroups, etc.) and the interventions being studied, particularly as it relates to the cultural adaptations made to the intervention. It is also unclear which adapted components contribute to the effectiveness of culturally adapted substance use interventions or whether some models for cultural adaption are more effective than others. Future research could expand the evidence base to provide a more nuanced understanding of the relative effects of various models of cultural adaption or designing studies to parse effects of different components of culturally adapted models. Overall, cultural adapted substance use interventions for Latino adolescents show promise for use by social workers and other

practitioners and we encourage continued development and assessment of culturally adapted interventions for use with Latino adolescents.

### Authors' Note

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

### Acknowledgments

The authors acknowledge the School of Social Work at The University of Texas at Austin and also acknowledge the valuable contributions of Diana DiNitto, Nate Marti, Cynthia Franklin, and Yolanda Padilla.

### Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported in part by Grant Number R25 DA030310 (principal investigator: Anthony) from the National Institute on Drug Abuse, Grant number R25 DA026401 (principal investigator: Valdez) from the National Institute on Drug Abuse and the National Institute of General Medical Sciences of the National Institutes of Health under linked Award Numbers RL5GM118969, TL4GM118971, and UL1GM118970.

### Supplemental Material

The online [appendices/data supplements/etc.] are available at <http://rsw.sagepub.com/supplemental>

### References

- References marked with an asterisk indicate studies included in the meta-analysis.
- Bernal, G., Bonilla, J., & Bellido, C. (1995). Ecological validity and cultural sensitivity for outcome research: Issues for the cultural adaptation and development of psychosocial treatments with Hispanics. *Journal of Abnormal Child Psychology*, 23, 67–82. doi:10.1007/BF01447045
- Bernal, G., & Rodriguez, D. M. (2009). Advances in Latino family research: Cultural adaptations of evidence-based interventions. *Family Process*, 48, 169–178.
- Bernal, G. E., & Rodríguez, D. M. (2012). *Cultural adaptations: Tools for evidence-based practice with diverse populations*. Washington, DC: American Psychological Association.
- Borenstein, M., Hedges, L., Higgins, J., & Rothstein, H. (2014). *Comprehensive meta-analysis* (Version 3) [Computer software]. Englewood, NJ: Guildford Press.
- Botvin, G. J., Schinke, S. P., Epstein, J. A., & Diaz, T. (1994). Effectiveness of culturally focused and generic skills training approaches to alcohol and drug abuse prevention among minority youths. *Psychology of Addictive Behaviors*, 8, 116.
- \*Burrow-Sanchez, J. J., & Wrona, M. (2012). Comparing culturally accommodated versus standard group CBT for Latino adolescents

- with substance use disorders: A pilot study. *Cultural Diversity and Ethnic Minority Psychology*, 18, 373–383.
- Campbell Collaboration. (2014). *Campbell Collaboration systematic reviews: Policies and guidelines*. Retrieved from [http://www.campbellcollaboration.org/lib/download/3308/C2\\_Policies\\_Guidelines\\_Version\\_1\\_0.pdf](http://www.campbellcollaboration.org/lib/download/3308/C2_Policies_Guidelines_Version_1_0.pdf)
- Card, N. A. (2012). *Applied meta-analysis for social science research*. New York, NY: Guilford Press.
- Carvajal, S. C., Hanson, C. E., Romero, A. J., & Coyle, K. K. (2002). Behavioural risk factors and protective factors in adolescents: A comparison of Latinos and non-Latino whites. *Ethnicity and Health*, 7, 181–193.
- Castro, F. G., & Alarcón, E. H. (2002). Integrating cultural variables into drug abuse prevention and treatment with racial/ethnic minorities. *Journal of Drug Issues*, 32, 783–810.
- Castro, F. G., Barrera, M. Jr., & Martinez, C. R. Jr. (2004). The cultural adaptation of prevention interventions: Resolving tensions between fidelity and fit. *Prevention Science*, 5, 41–45.
- Castro, F. G., Garfinkle, J., Naranjo, D., Rollins, M., Brook, J. S., & Brook, D. W. (2007). Cultural traditions as “protective factors” among Latino children of illicit drug users. *Substance Use and Misuse*, 42, 621–642.
- Center on Addiction and Substance Abuse at Columbia University. (2011). *National Survey of American attitudes on substance abuse XVI: Teens and parents*. Retrieved from <http://www.casacolumbia.org/addiction-research/reports/national-survey-american-attitudes-substance-abuse-teens-parents-2011>
- Cooper, H. (2010). *Research synthesis and meta-analysis: A step-by-step approach*. Los Angeles, CA: Sage.
- Cooper, H., & Hedges, L. V. (Eds.). (1994). *The handbook of research synthesis*. New York, NY: Russell Sage Foundation.
- Delva, J., Allen-Meares, P., & Momper, S. L. (2010). *Cross-cultural research*. Oxford, England: Oxford University Press.
- Dillon, F. R., Turner, C. W., Robbins, M. S., & Szapocznik, J. (2005). Concordance among biological, interview, and self-report measures of drug use among African American and Hispanic adolescents referred for drug abuse treatment. *Psychology of Addictive Behaviors*, 19, 404.
- \*Elder, J. P., Litrownik, A. J., Slymen, D. J., Campbell, N. R., Parra-Medina, D., Choe, S., . . . Ayala, G. X. (2002). Tobacco and alcohol use—Prevention program for Hispanic migrant adolescents. *American Journal of Preventive Medicine*, 23, 269–275.
- Faryna, E. L., & Morales, E. (2000). Self-efficacy and HIV-related risk behaviors among multiethnic adolescents. *Cultural Diversity and Ethnic Minority Psychology*, 6, 42.
- Garcia, W. (1996). Respeto: A Mexican base for interpersonal relationships. In W. B. Gudykunst, S. Ting-Toomey, & T. Nishida (Eds.), *Communication in personal relationships across cultures* (pp. 137–155). Thousand Oaks, CA: Sage.
- \*Godley, M. D., & Velasquez, R. (1998). Effectiveness of the Logan Square prevention project: Interim results. *Drugs & Society*, 12, 87–103.
- Golub, A., & Johnson, B. D. (2001). Variation in youthful risks of progression from alcohol and tobacco to marijuana and to hard drugs across generations. *American Journal of Public Health*, 91, 225.
- Gonzalez-Blanks, A. G., Lopez, S. G., & Garza, R. T. (2012). Collectivism in smoking prevention programs for Hispanic preadolescents: Raising the ante on cultural sensitivity. *Journal of Child & Adolescent Substance Abuse*, 21, 427–439.
- Griner, D., & Smith, T. B. (2006). Culturally adapted mental health intervention: A meta-analytic review. *Psychotherapy: Theory, Research, Practice, Training*, 43, 531.
- \*Guilamo-Ramos, V., Jaccard, J., Dittus, P., Gonzalez, B., Bouris, A., & Banspach, S. (2010). The Linking Lives health education program: A randomized clinical trial of a parent-based tobacco use prevention program for African-American and Latino youths. *American Journal of Public Health*, 100, 1641–1647.
- \*Hecht, M. L., Marsiglia, F. F., Elek, E., Wagstaff, D. A., Kulis, S., Dustman, P., & Miller-Day, M. (2003). Culturally grounded substance use prevention: An evaluation of the Keepin’ it REAL curriculum. *Prevention Science*, 4, 233–248.
- Higgins, J., Altman, D. G., Gøtzsche, P. C., Jüni, P., Moher, D., Oxman, A. D., & Sterne, J. A. (2011). The Cochrane Collaboration’s tool for assessing risk of bias in randomized trials. *BMJ*, 343. doi: 10.1136/bmj.d5928
- Higgins, J., & Thompson, S. G. (2002). Quantifying heterogeneity in meta-analysis. *Statistics in Medicine*, 21, 1539–1558.
- Hodge, D. R., Jackson, K. F., & Vaughn, M. G. (2012). Culturally sensitive interventions and substance use: A meta-analytic review of outcomes among minority youths. *Social Work Research*, 36, 11–19.
- Hofstede, G. H. (Ed.). (2001). *Culture’s consequences: Comparing values, behaviors, institutions and organizations across nations*. Thousand Oaks, CA: Sage.
- \*Johnson, C. A., Unger, J. B., Ritt-Olson, A., Palmer, P. H., Cen, S. Y., Gallaher, P., & Chou, C. P. (2005). Smoking prevention for ethnically diverse adolescents: 2-year outcomes of a multicultural, school-based smoking prevention curriculum in Southern California. *Preventive Medicine*, 40, 842–852.
- Johnston, L. (2010). *Monitoring the future: National results on adolescent drug use: Overview of key findings*. Derby, PA: Diane Publishing Company.
- Johnston, L., O’Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2009). *Monitoring the future national results on adolescent drug use: Overview of key findings, 2008* (NIH Publication No. 09-7401). Bethesda, MD: National Institute of Drug Abuse.
- Kaplan, C., Napoles-Springer, A., Stewart, S., & Perez-Stable, E. (2001). Smoking acquisition among adolescents and young Latinas: The role of socio environmental and personal factors. *Addictive Behaviors*, 26, 531–550.
- Kellam, S. G., & Langevin, D. S. (2003). A framework for understanding “evidence” in prevention research and programs. *Prevention Science*, 4, 137–153.
- Kerr, M. H., Beck, K., Downs Shattuck, T., Kattar, C., & Uriburu, D. (2003). Family involvement, problem and prosocial behavior outcomes of Latino youth. *American Journal of Health Behavior*, 27, S55–S65.
- Lipsey, M., & Wilson, D. B. (2001). *Practical meta-analysis* (Vol. 49). Thousand Oaks, CA: Sage.
- Marin, G., & Marin, B. V. (1991). *Research with Hispanic populations*. Thousand Oaks, CA: Sage.
- \*Marsiglia, F. F., Ayers, S., Gance-Cleveland, B., Mettler, K., & Booth, J. (2012). Beyond primary prevention of alcohol use: A culturally specific secondary prevention program for Mexican heritage adolescents. *Prevention Science*, 13, 241–251.



- Marsiglia, F. F., Kulis, S., Wagstaff, D. A., Elek, E., & Dran, D. (2005). Acculturation status and substance use prevention with Mexican and Mexican-American youth. *Journal of Social Work Practice in the Addictions, 5*, 85–111.
- McGoldrick, M., Giordano, J., & Pearce, J. K. (1982). *Ethnicity and family therapy*. New York, NY: Guilford Press.
- McGue, M., & Iacono, W. G. (2014). The association of early adolescent problem behavior with adult psychopathology. *American Journal of Psychiatry, 162*, 1118–1124.
- Monitoring the Future. (2014). *Monitoring the future study*. Retrieved from <http://www.monitoringthefuture.org/data/data.html>
- Mrazek, P., & Haggerty, R. (1994). *Reducing risks for mental disorders: Frontiers for preventive intervention research*. Washington, DC: National Academy Press.
- NASW Standards for Cultural Competence in Social Work Practice. (2001). Retrieved from [http://www.socialworkers.org/sections/credentials/cultural\\_comp.asp](http://www.socialworkers.org/sections/credentials/cultural_comp.asp)
- Nathan, P. E., & Gorman, J. M. (2002). *A guide to treatments that work* (2nd ed.). New York, NY: Oxford.
- National Institute of Minority Health and Health Disparities. (2016). NIMHD overview: History. Bethesda, MD: National Institutes of Health.
- Newcomb, M. D., & Felix-Ortiz, M. (1992). Multiple protective and risk factors for drug use and abuse: Cross-sectional and prospective findings. *Journal of Personality and Social Psychology, 63*, 280.
- Office of Minority Health. (2014). *CLAS legislation map*. Retrieved from <https://www.thinkculturalhealth.hhs.gov/Content/LegislatingCLAS.asp>
- Pigott, T. D. (2012). *Advances in meta-analysis*. New York, NY: Springer.
- Prado, G., Szapocznik, J., Maldonado-Molina, M. M., Schwartz, S. J., & Pantin, H. (2008). Drug use/abuse prevalence, etiology, prevention, and treatment in Hispanic adolescents: A cultural perspective. *Journal of Drug Issues, 38*, 5–36.
- Preedy, V. R. (2010). *Handbook of disease burdens and quality of life measures*. New York, NY: Springer.
- Ramirez, J. R., Crano, W. D., Quist, R., Burgoon, M., Alvaro, E. M., & Grandpre, J. (2004). Acculturation, familism, parental monitoring, and knowledge as predictors of marijuana and inhalant use in adolescents. *Psychology of Addictive Behaviors, 18*, 3–11.
- Resnicow, K., Soler, R., Braithwaite, R. L., Ahluwalia, J. S., & Butler, J. (2002). Cultural sensitivity in substance use prevention: Bridging the gap between research and practice in community-based substance abuse prevention. *Journal of Community Psychology, 28*, 271–290.
- Robbins, M. S., Szapocznik, J., Dillon, F. R., Turner, C. W., Mitrani, V. B., & Feaster, D. J. (2008). The efficacy of structural ecosystems therapy with drug-abusing/dependent African American and Hispanic American adolescents. *Journal of Family Psychology, 22*, 51.
- Salas-Wright, C. P., Hernandez, L., Maynard, B. R., Saltzman, L. Y., & Vaughn, M. G. (2014). Alcohol use among Hispanic early adolescents in the United States: An examination of behavioural risk and protective profiles. *Substance Use & Misuse, 49*, 864–877.
- Salas-Wright, C. P., Vaughn, M. G., & Reingle Gonzalez, J. M. (2016). *Drug abuse and antisocial behavior: A biosocial life-course approach*. New York, NY: Palgrave Macmillan.
- Santiago-Rivera, A. L., Arredondo, P., & Gallardo-Cooper, M. (2001). *Counseling Latinos and la familia: A practical guide*. Thousand Oaks, CA: Sage Publications.
- \*Santisteban, D. A., Mena, M. P., & McCabe, B. E. (2011). Preliminary results for an adaptive family treatment for drug abuse in Hispanic youth. *Journal of Family Psychology, 25*, 610.
- Schwartz, S. J., Unger, J. B., Zamboanga, B. L., & Szapocznik, J. (2010). Rethinking the concept of acculturation: Implications for theory and research. *American Psychologist, 65*, 237.
- Shih, R. A., Miles, J. N. V., Tucker, J. S., Zhou, A. J., & D'Amico, E. J. (2010). Racial/ethnic differences in adolescent substance use: Mediation by individual, family, and school factors. *Journal of Studies on Alcohol and Drugs, 71*, 640–651.
- Soto, C., Unger, J. B., Ritt-Olson, A., Soto, D. W., Black, D. S., & Baezconde-Garbanati, L. (2011). Cultural values associated with substance use among Hispanic adolescents in southern California. *Substance Use & Misuse, 46*, 1223–1233.
- Stevenson, J. F., McMillan, B., Mitchell, R. E., & Blanco, M. (1998). Project HOPE: Altering risk and protective factors among high risk Hispanic youth and their families. *Journal of Primary Prevention, 18*, 287–317.
- Stone, R. A. T., & Meyler, D. (2007). Identifying potential risk and protective factors among non-metropolitan Latino youth: Cultural implications for substance use research. *Journal of Immigrant and Minority Health, 9*, 95–107.
- Swendsen, J., Burstein, M., Case, B., Conway, K. P., Dierker, L., He, J., & Merikangas, K. R. (2012). Use and abuse of alcohol and illicit drugs in US adolescents: Results of the National Comorbidity Survey–Adolescent Supplement. *Archives of General Psychiatry, 69*, 390–398.
- Ting-Toomey, S. (2012). *Communicating across cultures*. New York, NY: Guilford Press.
- Unger, J. B., Baezconde-Garbanati, L., Shakib, S., Palmer, P. H., Nezami, E., & Mora, J. (2004). A cultural psychology approach to “drug abuse” prevention. *Substance Use and Misuse, 39*, 1779–1820.
- Unger, J. B., Ritt-Olson, A., Teran, L., Huang, T., Hoffman, B. R., & Palmer, P. (2002). Cultural values and substance use in a multi-ethnic sample of California adolescents. *Addiction Research and Theory, 10*, 257–279.
- Unger, J. B., Shakib, S., Gallaher, P., Ritt-Olson, A., Mouttapa, M., & Palmer, P. H. (2006). Cultural/interpersonal values and smoking in an ethnically diverse sample of Southern California adolescents. *Journal of Cultural Diversity, 13*, 55–63.
- U.S. Census Bureau. (2014, September 8). *Facts for features: Hispanic heritage month* (Report No. CB14-FF.22). Retrieved from [http://www.census.gov/content/dam/Census/newsroom/facts-for-features/2014/cb14ff-22\\_hispanic.pdf](http://www.census.gov/content/dam/Census/newsroom/facts-for-features/2014/cb14ff-22_hispanic.pdf)
- \*Valdez, A., Cepeda, A., Parrish, D., Horowitz, R., & Kaplan, C. (2013). An adapted brief strategic family therapy for gang-affiliated Mexican American adolescents. *Research on Social Work Practice, 23*, 383–396.
- Waldron, H. B., & Turner, C. W. (2008). Evidence-based psychosocial treatments for adolescent substance abuse. *Journal of Clinical Child & Adolescent Psychology, 37*, 238–261.