A Tale of Two Measures: Concordance between the ARSMA-II and the BIQ Acculturation Scales among Latino Immigrant Families

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Abstract

Acculturation refers to the extent to which an individual immigrant (or immigrant group) acquires the customs and characteristics of a new receiving society and/or retains the customs and characteristics of the person's or group's cultural heritage. Different acculturation measures are often assumed to be interchangeable, although this assumption is rarely tested empirically. The purpose of the present study was to examine the overlap between two commonly used measures of acculturation among individuals of Latino/Hispanic ancestry in the United States, the Acculturation Rating Scale for Mexican Americans II (ARSMA-II) and the Bicultural Involvement Questionnaire-Short Version (BIQ-S). Specifically, we examined the ways in which scores from the two measures relate to one another, as well as similarities versus differences in the ways they predict external variables of interest (e.g., family functioning, parenting, and youth adjustment) that acculturation is known to influence. Findings indicate distinct patterns of results for the two measures. For instance, though the BIQ-S focuses entirely on language use and other cultural practices, the ARSMA-II more consistently relates to language variables. Further, adolescent BIQ-S cultural heritage scores related negatively to risks for and engagement in alcohol use—supporting prior findings—whereas ARSMA-II scores were unrelated to alcohol use. Given the largely non-overlapping set of relationships of the BIQ-S and the ARSMA-II subscale scores with measures of language dominance and conflict, measures of parenting, and measures of youth outcomes, we recommend that studies utilize both of these measures to fully appraise acculturation in this population. (word count = 244)

Keywords

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Introduction

Acculturation represents cultural change that occurs when culturally dissimilar groups come into continuous contact (Berry, 1994). When applied to the specific context of international migration, acculturation refers to the extent to which an individual immigrant (or immigrant group) acquires the customs and characteristics of the new receiving society and/or retains the customs and characteristics of their cultural heritage (Szapocznik, Kurtines, & Fernandez, 1980). By definition, acculturation is both a multidimensional and developmental construct and integrates a broad range of variables including language, nativity, behavioral preferences, and ethnic identity, among other elements (Cabassa, 2003; Gonzales, Knight, Morgan-Lopez, Saenz, & Sirolli, 2002; Rogler, Cortes, & Malgady, 1991). Although many acculturation measures assume that increases in involvement in the receiving (e.g., U.S.) culture entail corresponding decreases in involvement in one's heritage culture (Thomson & Hoffman-Goetz, 2009), other researchers argue the need to assess "heritage culture affiliation" and "receiving cultural affiliation" separately (Szapocznik et al., 1980). Such definitional complexity has led to lack of consensus in the field about how to measure acculturative processes (Cabassa, 2003; Zane & Mak, 2003). Moreover, perhaps because of definitional inconsistencies, studies linking acculturation processes to behavioral health outcomes often produce inconsistent findings, with different studies showing positive, negative, or curvilinear relationships between acculturation and the same sets of outcomes.

Literature on acculturation has burgeoned in recent decades, largely because of unprecedented rates of international migration around the world (Sam & Berry, 2010; United Nations, 2014). Many migrant groups, such as Latinos in the United States, may face cultural adaptation challenges because of the large divergence between collectivist-oriented heritage societies and individualist-oriented receiving contexts (Hofstede, 2001). Indeed, this cultural divide, coupled with phenotypic and behavioral differences between immigrants and the societies that are receiving them, create the need for an acculturation process following migration. The amount of acculturation needed depends on the extent of cultural differences between the heritage and receiving contexts, and on pressures exerted by dominant groups on new arrivals. White Canadians migrating to the United States, for example, may not have much "acculturating" to do because their heritage and receiving cultures (and languages) are quite similar. By contrast, Mexicans migrating to the United States, Pakistanis migrating to the United Kingdom, and Chinese migrating to Australia likely will face more extensive acculturative tasks because of the greater differences between their cultural heritages and the cultural contexts to which they have migrated. Further, the historic racialization of immigrants in the United States, combined with intermittent xenophobia, can further contribute to disparities in immigrants' experiences of acculturation. For instance, certain groups (e.g., Mexicans) may experience intense and sometimes hostile assimilation pressures, whereas Caucasian immigrants from Canada or Europe may receive much less scrutiny.

Acculturation as a Predictor of Life Outcomes

Acculturation has been studied not only in its own right, but also as a predictor of family, psychosocial, and health outcomes (see Thomson & Hoffman-Goetz, 2009, for a review).

For example, in some studies, "more acculturated" immigrants have been found to be more vulnerable to drug and alcohol use (Ramirez et al., 2004), obesity (Yeh, Viladrich, Bruning, & Roy, 2009), and psychiatric problems (Alegría et al., 2008). Of course, it is not precisely clear what "more acculturated" means (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). Other studies have examined acculturation as a family-level (vs. individual-level) process and have found that greater acculturation discrepancies between parents and adolescents (i.e., adolescents' greater Americanism) predicts decreases in effective parenting and higher likelihood of adolescent drug use among Latino immigrant families (Martinez, 2006; Schwartz et al., 2016).

As noted previously, however, the acculturation literature is characterized by many inconsistent findings (Lopez-Class, Castro, & Ramirez, 2011). For example, adolescent acculturation has been associated with some problematic family processes (such as family conflict; Pasch, Deardorff, Tschann, Flores, Penilla, & Pantoja, 2006), but not with others (such as maternal parenting practices; Gonzales, Deardorff, Formoso, Barr, & Barrera, 2006). It is possible that some of these inconsistencies are due to the specific immigrant groups, receiving countries or regions, or settings (e.g., cities vs. suburban or rural areas) examined (Steiner, 2009), or to the specific outcome variables used in analysis. However, some discrepant findings in the acculturation literature might be due to the measurement instruments used to assess acculturation (Lopez, 2009). Literature reviews and meta-analyses often collapse or summarize across studies without taking into account the specific acculturation measure(s) used in each study (Lopez-Class et al., 2011). That is, different acculturation scales are often implicitly assumed to be equivalent and to measure the construct in the same way – despite evidence that this may not be the case (Unger, Ritt-Olson, Wagner, Soto, & Baezconde-Garbanati, 2007). Fortunately, the great frequency with which acculturation measures are employed across diverse fields also provides an evidence base that can further inform productive inquiry into the influence of acculturative processes on outcomes critical to the wellbeing of families, children and adolescents. More empirical attention needs to be paid to the specific strengths and weaknesses of each acculturation instrument, however (Burrow-Sánchez, Ortiz-Jensen, Corrales, & Meyers, 2015), so that researchers can choose the instruments that meet the needs of the specific population and research question under consideration. Although acculturation research has accelerated considerably, far less attention has been directed toward measurement issues in this area.

Measurement of Acculturation

The majority of acculturation measures focus primarily on cultural practices such as language use, food choices, and media (Kim & Abreu, 2001). However, prior research has suggested that scores generated by various acculturation measures do not correlate strongly with one another (Unger et al., 2007). As noted earlier, some measures cast receiving-culture acquisition and heritage-culture retention as opposing ends of a single continuum, whereas others consider these two dimensions as separate subscales. Further, some measures of acculturation assess only one specific content area, such as language use, whereas other measures assess multiple content areas. Because different measures often frame acculturation differently, the empirical overlap between them is likely to be fairly modest.

What may be less well known, however, is the extent to which measures drawn from the *same* (or similar) operationalizations of acculturation provide scores that overlap with one another. Bidimensional models of acculturation, where receiving-culture acquisition and heritage-culture retention are viewed as independent dimensions, are generally regarded as more reflective of immigrants' lived experiences than are unidimensional models (Ryder, Alden, & Paulhus, 2000; Thomson & Hoffman-Goetz, 2009). However, within the universe of bidimensional acculturation measures, how important is the specific measure selected for use? Put differently, the acculturation literature consists of studies that have used different measurement instruments – so should findings from these various studies be compiled together without regard to the instruments that were used in a given study? Establishing the criterion-related validity of various acculturation measures is essential for answering this question.

Here we examine the Acculturation Rating Scale for Mexican Americans II (ARSMA-II; Cuéllar, Arnold, & González, 1995) and the Bicultural Involvement Questionnaire-Short Version (BIQ-S; Szapocznik, Kurtines, & Fernandez, 1980), both of which were both developed to assess behavioral acculturation among Latino immigrants to the United States. The ARSMA-II and the BIQ are two of the most prominent measures used with this heterogeneous immigrant population (Jones & Mortimer, 2014; Unger et al., 2007). The ARSMA-II was developed for use with Mexican Americans but has been adapted for use with other Latino groups (e.g., Dennis, Fonseca, Gutierrez, Shen, & Salazar, 2016), and the BIQ-S was developed for use with Cuban Americans but also has been adapted for use with other Latino groups (e.g., Birman, 1998); these are the two most commonly used acculturation measures with Latin American and Spanish-speaking Caribbean origin ancestry groups in the U.S.

Both of these measures contain items referring to English and Spanish language use and to enjoyment of American and Latino foods. The BIQ-S presents additional items indexing music, dances, and ways of celebrating birthdays and holidays (which the ARSMA-II does not); whereas the ARSMA-II presents additional items referring to friends and to identifying as Hispanic/Latino (which the BIQ-S does not). The BIQ-S also uses only two question formats. The first is "I speak _____ at _____", where a language and a setting (e.g., school, home, work, with friends) are used to fill in the blanks within each of the first 10 items. The second format is "I enjoy _____-oriented _____," where a cultural stream (Latino or American) is placed into the first blank and a specific type of custom (e.g., dances, music, TV programs) is placed into the second blank. This second format is used for items 11–24. In contrast, the ARSMA-II uses a variety of question formats and contents, including engagement in English and Spanish language activities, but also comfort and discomfort with specific U.S. and Latino practices and ways of being. The ARSMA-II also asks about one's own and one's parents' identifications as American and as Latino, therefore positioning the ARSMA-II as being more multifaceted than the BIQ-S in terms of item domains. In other words, each measure likely has strengths and weaknesses.

There is evidence that both the BIQ-S and the ARSMA-II provide scores with acceptable factorial validity. For the BIQ-S, Szapocznik et al. (1980) provide initial correlational evidence in their validation study. A confirmatory factor analytic study using the BIQ-S with

Latino participants from various nationalities (Guo, Suarez-Morales, Schwartz, & Szapocznik, 2009) further supported the separation of Latino and U.S. orientations within the BIQ-S. For the ARSMA, the Latino and U.S. subscales were initially established during scale development work by Cuellar and colleagues (1995). The scale has been widely used for both Mexican American and other Latino groups; adaptations of the measure have also been used with other populations. In addition to the initial scale development work, the construct validity of the measure and adaptations of the measures has been examined in various studies. For example, Lee, Yoon, and Liu-Tom (2006) conducted exploratory factor analyses that supported the separate heritage and U.S. subscales in a sample of Asian American college students. They found two separate factors for heritage orientation (heritage language use and social interactions with Asian individuals) and two factors for U.S. orientation (English language use and social interactions with U.S. individuals). However, we should note that no similar analyses have been conducted on the full ARSMA-II with Latino samples. Two studies confirmed the two-factor structure of the brief ARSMA-II, a 12-item variant of Cuéllar et al.'s 30-item scale, using Latino adolescent samples (Bauman, 2005; Burrow-Sánchez et al., 2015).

In many studies of first- and second-generation immigrant populations, some participants complete measures in English whereas others complete measures in their heritage languages (Knight, Roosa, & Umaña-Taylor, 2009). In the majority of cases, English and heritage-language versions are assumed to function equivalently, and data obtained from the two language versions are combined without empirical evidence that scores generated by the two language versions are psychometrically equivalent (Knight & Zerr, 2010).

Among prior studies that employ ARSMA-II, Bauman (2005) is a notable exception in its attention to language of administration. Separately examining samples of 292 middle school students and 116 Grade 3–5 students, Bauman reports the proportions of those samples that opted for Spanish-language versions of the brief ARSMA-II (12% and 27%, respectively). Both English and Spanish language forms were included together in the factor structure validation process, and no evidence of factor structure variability by language was presented, although it is not clear whether this was a focus particular focus of the analysis. Correspondingly, methodologists (e.g., Dimitrov, 2010) argue that evidence of equivalence is required before data can be combined across any grouping variable; a point we will return to later in the discussion. Not surprisingly, Bauman also found statistically significant associations between language of administration and both unidimensional and bidimensional acculturation scores on the brief ARSMA-II, with individuals completing forms in English being linked to higher levels of U.S. acculturation. Schwartz et al. (2014) randomly assigned bilingual participants to complete English or Spanish versions of several acculturation-related measures, including the BIQ-S. These authors found evidence for full metric (equal factor loadings) and scalar (equal item intercepts) equivalence across the English and Spanish versions of the BIQ-S, as well as full metric and partial scalar equivalence for several other acculturation measures. White, Umaña-Taylor, Knight, and Zeiders (2011) found equivalence of scores generated by another acculturation scale across English and Spanish language versions. Although the ARSMA-II was not included in the Schwartz et al. study, it is worth noting that all of the comparisons across language versions of acculturation measures thus far have yielded conclusions of measurement equivalence. Nonetheless, it is

essential for future work to ascertain the cross-language equivalence of ARSMA-II scores. In the Discussion, we provide recommendations for such research.

The Present Study

A key issue is how the BIQ-S and the ARSMA-II, as exemplars of bidimensional acculturation measures designed for the same population, provide similar and unique information regarding individuals' acculturation processes. This issue might be addressed through examining three primary foci: (a) differences in heritage and U.S. acculturation subscales from each measure across cohorts of individuals who have resided in the United States for shorter vs. longer amounts of time; (b) correlations between corresponding subscales (e.g., U.S.-culture acquisition and Hispanic culture retention) from the two measures; and (c) correlations of heritage and U.S. acculturation subscales from each measure with external variables of interest (e.g., discrimination, family functioning) that are known to be related to acculturation. These three steps represent the goals of the present study.

The first two steps enumerated in the previous paragraph can – and should – be provided separately for groups of individuals who have been in the United States for shorter vs. longer periods of time. Several researchers argue that acculturation carries different meanings for recent, long-term, and second-generation individuals (Lopez, 2009; Zane & Mak, 2003). As such, convergence among measures of acculturation – and links between acculturation and other constructs – may differ across these three groups. Whereas other studies (e.g., Andrews, Bridges, & Gomez, 2013; Unger et al., 2007) have involved only broad-stroke comparisons of measures (i.e., collapsing across length of time in the United States), an additional advance might involve examining the extent to which these comparisons might differ across "time in residence" cohorts. Findings from Andrews et al.'s relatively small, convenience sample of $n = 40$ Latino adults who had lived in the United States for < 5 years ($n = 15$), 5–10 years ($n = 16$), and > 10 years ($n = 9$) amplify the importance of intentionally designed time in residence cohorts. Andrews et al. found statistically significant differences in Latino and U.S. orientation scores by time in residence group, but the time-in-residence variable explained only about 10% of variance in ARSMA-II scores.

Whereas Andrews et al. used time-in-residence cohorts to compare mean acculturation scores across differing amounts of time in the United States, our goal in the present study was to use such cohorts to compare the strength of associations between BIQ-S and ARSMA-II scores, and of scores on each measure with other variables, across time in the United States. We utilized baseline data from a longitudinal study of acculturation and behavioral health outcomes for recently immigrated Hispanic middle-school youth and their parents in Oregon (the Adolescent Latino Acculturation Study; ALAS). Comparisons between the ARSMA-II and the BIQ-S were conducted in three ways: (a) correlations between corresponding ARSMA-II and BIQ-S scores (e.g., ARSMA-II Latino orientation with BIQ-S Latino orientation); (b) correlations of the ARSMA-II and BIQ-S subscales with acculturation-related variables; and (c) correlations of the ARSMA-II and BIQ-S subscales with indices of parenting and youth adjustment. To increase the rigor of our comparisons, we conducted analyses separately for youth-reported data and for parent-reported data because

youth and parents often acculturate differently (Smokowski, Rose, & Bacallao, 2008). For each reporter, we conducted analyses both on the sample as a whole and within three separate time-in-residence cohorts. In the larger longitudinal study from which these data were taken, time-in-residence cohorts were intentionally created so as to reflect differing numbers of years lived in the United States – specifically 2–4 years, 6–8 years, and 10–12 years. The numbers of years spent in the United States were intentionally discontinuous (i.e., no families having spent 1, 5, or 9 years in the country at baseline were sampled) so as to create separation between each pair of adjacent time-in-residence cohorts. More information about these cohorts is provided in the method section.

In terms of hypotheses, we expected that scores on corresponding ARSMA-II and BIQ-S subscales would correlate fairly strongly (i.e., between $r = .50$ and $r = .70$). We expected that corresponding ARSMA-II and BIQ-S subscales would correlate similarly with acculturation-related variables and with indices of parenting and youth adjustment. We did not advance specific hypotheses regarding differences between parent and adolescent reports or across time-in-residence cohorts given the scarcity of extant research examining such differences.

As a final note, our team engaged in a thorough translation process to assure the functional equivalence and understandability of all of the measures used in our study (Brislin, 1986; Cauce et al., 1998; Foster & Martinez, 1995). This process was particularly critical for our use of standardized and validated measures of youth and parent adjustment, previously available only in English (e.g., Perceived Discrimination; Kessler, Mickelson, & Williams, 1999). This translation process involved: (a) having a translation team perform initial typographical and functional translations in Spanish, (b) using outside experts to conduct back translations into English, and (c) using the entire research team plus outside language experts as needed to compare the documents and resolve disagreements. Indeed, in our own work, we have found no differences between participants who responded in English or Spanish in reports of individual and family emotional or behavioral functioning (Martinez, McClure, Eddy & Wilson, 2011).

Method

Participants

ALAS employed a prospective longitudinal design involving Latino immigrant boys and girls (grades 6–10) and their parents in Oregon (Martinez, McClure, & Eddy, 2008; Martinez, McClure, Eddy, Ruth, & Hyers, 2012; Martinez, McClure, Eddy, & Wilson, 2011). The primary purpose of the ALAS study was to examine the influence of acculturation and other contextual factors on family adjustment, particularly as these factors relate to youth outcomes and as they unfold in real time in a region where large-scale immigration is a fairly new phenomenon. Study inclusion criteria required that youth be foreign-born and that youth and parent(s) speak either English or Spanish. Only one parent from each family was required to participate. Data from the first annual assessment wave were included for analysis in the present study. All analyses involving parents focused on the primary participating parent within each family. Primary parents were mostly mothers (93%). The Institutional Review Board at the Oregon Social Learning Center (OSLC)

approved the research protocol, and participants provided written consent (parents) or assent (youth). The assessment battery was available in both English and Spanish, and participants were asked to select their preferred language prior to starting the battery. Overall, 40% of adolescents and 100% of parents completed measures in Spanish.

Families were recruited into ALAS based on the time in residency (TR) of focal youth, and youth were classified into one of three time-in-residence groups. These groups were essential to the study design, in that they permitted us to study acculturation among youth who had been in the United States for differing amounts of time when the study began. A main premise of the study was to test how acculturation trajectories vary in terms of relationships with behavioral health outcomes for families at different points of exposure to U.S. cultural norms. Indeed, the TR grouping designations were designed to represent three distinct age-at-immigration categories (recently immigrated, immigrated in middle childhood, and immigrated in early childhood). Further, the design included a one-year gap between each TR group in order to better distinguish the groups from one another.

Specifically, to be eligible for the study, youth in the TR1 group (recent immigrants; $n = 72$) had to be in their second through fourth years of U.S. residence as of the initial telephone screening; TR2 youth (immigrated in middle childhood; $n = 78$) had to be in their sixth through eighth years; and TR3 (immigrated in early childhood; $n = 67$) had to be in their 10th through 12th years. The average age of arrival in the United States for youth in TR1 was 11.1 years ($SD = 1.8$) and, at the baseline assessment, their mean time in residence was 2.3 years ($SD = 1.1$). Average arrival age for TR2 youth was 7.0 years ($SD = 1.9$), and their mean time in residence was 6.5 years ($SD = 1.1$) at baseline. TR3 youth had an arrival age of 2.7 years ($SD = 1.5$) and a mean time in residence of 10.6 years ($SD = 1.1$). As expected, many more TR1 youth opted to be assessed in Spanish at the outset of the study (approximately 71% compared with 36% and 25% of youth in TR2 and TR3, respectively). Because youth outcomes were the major focus of the study, we utilized youth (rather than parent) TR as the key grouping variable, though, as expected, youth TR strongly and positively correlated with that for primary parents ($r = .73$, $p < .001$).

Data from 217 families were included for the present study, each with a participating mother or father and a focal youth, recruited from one of nine counties in western Oregon. Complete details on recruitment strategies and assessment procedures are presented elsewhere (Martinez et al., 2012). Forty-three percent of participating youth were girls (the percentages of girls in TR1, TR2, and TR3 were 40%, 46%, and 43%, respectively). Overall, and within each TR group, youth averaged 13.4 years old at baseline ($SD = 1.4$). All focal youth identified as Latino. Ninety-four percent of youth were born in Mexico (proportions of youth born in Mexico were 92% in TR1, 95% in TR2, and 94% in TR3), and the few remaining participants traced their roots to nations in Central America ($n = 7$), South America ($n = 5$), and the Caribbean ($n = 2$). Mothers were 36.2 years old ($SD = 5.9$) on average, and fathers were 43.5 years old ($SD = 8.8$) on average. For the three TR groups, mothers averaged 36.4, 36.0, and 36.1 years old, and fathers averaged 39.1, 39.7, and 46.6 years old, respectively. Aside from one mother, all parents were born outside of the United States. Sixty-eight percent of parents had completed nine or fewer years of education, and 20% of parents had completed high school and/or received post-secondary education. Among the three TR

groups, 67%, 71%, and 66% of participating parents reported nine or fewer years of education, and 25%, 15%, and 19% reported having attended at least some high school or beyond, respectively. Parents reported an average household monthly income of $1,816 ($SD$ = $928) after taxes for an average household of 4.8 people (SD = 1.6). Across TR groups, average reported monthly incomes were $1,689, $1,735, and $2,044, respectively, with the average household size ranging from 4.7 to 4.9 people. No statistically significant differences in any of these demographic variables emerged across TR groups.

Measures

Acculturation—The *Acculturation Rating Scale for Mexican Americans-II* (ARSMA-II; Cuéllar et al., 1995) was administered separately to youth and parents. The ARSMA-II assesses the degree to which parents and youth embrace practices (e.g., language use), preferences (e.g., for certain types of music or reading material), and cultural identifications (e.g., in relationship to one's nativity, such as "Mexicano/a") that reflect an individual's involvement in heritage and U.S. cultural customs. To ensure that the items were relevant for both Mexican and non-Mexican participants, we modified the items to ask about practices, behaviors, and self-identifications with reference to the person's home country. The ARSMA-II includes 48 self-report, Likert-type items (from 1 = not at all to 5 = extremely often or almost always) with sub-scales computed for Latino and U.S. orientations. Scales demonstrated adequate internal consistency: for parents and youth, Cronbach's alphas for Latino orientation were .77 and .85, and for U.S. orientation were .86 and .83, respectively, for parents and adolescents.

Parents and youth also completed the *Bicultural Involvement Questionnaire* (BIQ-S) (Szapocznik et al., 1980) independently as part of the larger assessment protocol. The BIQ-S consists of 24 items, 12 assessing U.S. practices (e.g., speaking English, eating American food), and 12 assessing Latino practices (e.g., speaking Spanish, eating Latino food). Cronbach's alpha coefficients were .80 for U.S. practices and .78 for Latino practices. We used a five-point, Likert-type scale ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*).

Spanish language dominance reported by each primary parent was computed through averaging four items ("I speak with my child in"; "I can speak;" "I can read in"' and "I can write in") from the Language Issues interview (Martinez, Ruth, & Goldman, 2002). A similar scale was computed for youth reflecting the average of five items ("I speak with my mother in"; "I prefer that my parents speak to me in"; "I am capable of speaking"; "I am capable of reading and writing in"). Cronbach's alphas were .78 for parents and .70 for youth.

School-related language issues reported by primary parents reflected the mean of three items (e.g., whether homework or instructions about homework is available in Spanish; other school information is available in Spanish; there are other school personnel available who speak Spanish) from the Language Issues interview. Cronbach's alpha was .61 for parents.

Language-related stressors were measured using the Language Issues Interview. A subscale reflecting language-related stressors was calculated for each parent and youth by computing

mean scores for five items (e.g., "My child/parent and I experience conflict due to which language we speak"). Cronbach's alphas were .72 for parents and .77 for youth.

Discrimination—Youth perceived discrimination was measured through the 18-item adapted version of the Perceived Discrimination instrument (Kessler, Mickelson, & Williams, 1999), in which respondents were first asked whether a discriminatory event (e.g., treated with less courtesy or respect) had occurred within the past three months. If an event did occur, respondents were asked to rate the degree of stress they experienced as a result on a 5-point scale (1 = *not at all stressful* to 5 = *extremely stressful*). Cronbach's alpha for the discriminatory event scale was .78, and the average item to total correlation for the stress response scale was .77. Slightly more than half (51%) of youth reported no discriminatory events and thus had no score for stress response.

Effective parenting—We used standard parenting scales developed over generations of OSLC research to reflect different aspects of parenting (see Capaldi & Patterson, 1989). In the current investigation, we focused on three scales. The first was *parenting efficacy*, which consists of nine items reflecting general past month use of effective parenting strategies with the youth in the study ($\alpha = .88$). The *monitoring* scale consists of nine items assessing parent supervision and tracking of the youth's activities ($\alpha = .73$). The *school involvement* scale consists of nine items reflecting the frequency of parents' contact with school personnel and engagement in school-based activities ($\alpha = .69$).

Youth Adjustment—Youth adjustment was assessed in terms of psychosocial functioning and substance use. Because adolescent substance use prevalence was low, which was expected given their young age, we assessed refusal skills and likelihood (i.e., intentions) of use. Recent work (Lorenzo-Blanco et al., in press) suggests that, among Latino immigrant early adolescents, refusal skills and intentions to use are strongly predictive of use later in adolescence. *Youth substance use risk* was assessed using the OSLC-developed self-report Youth Substance Use Questionnaire, which includes an 8-item use likelihood and refusal intent subscale for alcohol and a parallel scale for illicit drugs. Cronbach's alphas were .79 for youth alcohol risk and .88 for youth illicit drug risk. *Youth confidence* was assessed by youth average ratings of their confidence levels from 1 (not at all confident) to 5 (very confident) in response to six items regarding physical appearance, ability to do well in activities, make friends, do schoolwork well, ability to cooperate with adult expectations, and expectation that they would become successful adults ($\alpha = .77$). *Adolescent depression* was measured by youth's responses to the Child Depression Inventory (Kovacs, 1985), a well-known standard measure of youth depression. The scale is a summative index of 27 items reflecting various dimensions of depression. Cronbach's alpha was .80.

Results

Parent and Youth Acculturation Scores by TR Group

To test for differences in *youth* ARSMA-II and BIQ-S scale scores by TR group, we conducted one-way multivariate analyses of variance (MANOVA). The multivariate effect was statistically significant, Wilks' $\lambda = .79$, $F(8, 390) = 6.20$, $p < .001$, $\eta^2 = .11$. Significant

univariate effects emerged for all four subscales: BIQ-S Latino, $F(2, 198) = 3.18$, $p < .05$, $\eta^2 = .03$; BIQ-S US, $F(2, 198) = 5.91$, $p < .004$, $\eta^2 = .06$; ARSMA-II Latino, $F(2, 198) = 6.36$, $p < .004$, $\eta^2 = .06$; ARSMA-II US, $F(2, 198) = 12.47$, $p < .001$, $\eta^2 = .11$. To test for differences in *parent* ARSMA-II and BIQ-S scale scores by TR group, we conducted another one-way MANOVA. The multivariate effect was statistically significant, Wilks' $\lambda = .92$, $F(8, 414) = 2.29$, $p < .03$, $\eta^2 = .04$. Significant univariate effects emerged only for the ARSMA-II subscales: Latino, $F(2, 210) = 5.31$, $p < .01$, $\eta^2 = .05$; US, $F(2, 210) = 3.41$, $p < .04$, $\eta^2 = .03$. Tukey's Honestly Significant Difference post-hoc test results are reported each for youth and parents in Table 1.

Convergent Validity

We report correlations between ARSMA-II and BIQ-S scores in Table 2. Correlations range from .18 to .75, providing uneven support for convergent validity in this sample. In total, correlations between parent-report measures were noticeably lower for Latino than U.S. orientations. Parent scores on the Latino subscales shared less than 9% of variability, whereas parents' U.S. scores on the ARSMA-II and BIQ-S shared 53% of their variability. An opposite pattern emerged for youth: correlations between corresponding Latino subscales on the ARSMA-II and BIQ-S shared more variance (42%) than correlations for corresponding U.S. subscales (26%). The differences between these correlations, using the z-test for correlation differences and the q index of effect size, were $z = 6.52$, $p < .001$, $q = .63$ for parents and $z = 2.20$, $p < .03$, $q = .22$ for youth.

We next examined convergent validity correlations separately within each of the TR groups. Parents' convergent validity correlations between the ARSMA-II and BIQ-S Latino subscales decreased linearly as time in residence increased, such that TR3 parents' BIQ-S and ARSMA-II Latino scores were not significantly correlated ($r = .18$, $p = .14$). Convergent validity correlations for parents' U.S. scores were the same for TR1 and TR3, but slightly (and nonsignificantly) lower for TR2, $z = 1.18$, $p = .24$, $q = .20$. By contrast, T2 youths' convergent validity correlations on the ARSMA-II and BIQ-S Latino subscales was highest among TR1, with correlations between U.S. subscales decreasing linearly as time in residence increased. These correlation differences were not significant, however ($z = 0.85$, $p = .39$, $q = .14$ for the largest difference). Among TR1 youth, the correlation between the ARSMA-II and BIQ-S Latino orientation scores was identical to the correlation between the two measures' U.S. orientation scores. Correlations among TR2 and TR3 youth were substantially higher for Latino orientation than for U.S. orientation. This correlation difference was statistically significant for TR2, $z = 2.61$, $p < .01$, $q = .44$; and approached significance for TR3, $z = 1.85$, $p = .065$, $q = .30$.

Concurrent Validity

In Table 3, we report correlations between parent and youth scores on both Latino and U.S. subscales from the ARSMA-II and the BIQ-S with variables including language-related and acculturative stressors. For ease of interpretation in the concurrent validity analyses, we report only within-reporter associations (e.g., parent Spanish-language dominance with parent acculturation scores). Table 3 also provides statistical tests for the difference between corresponding BIQ-S and ARSMA-II correlations. Differences between corresponding

correlations across TR groups are described here in text. Note that the correlations in Table 3 are not independent (i.e., they share one variable in common), and as a result, the correlations of corresponding BIQ-S and ARSMA-II subscales with an "external" variable must be compared using Steiger's Z-test for correlated correlations. Comparisons of correlations across TR groups are fully independent and, as a result, use the standard z-test and the q index of effect size.

Parent Spanish-Language Dominance—Parent scores on the Latino subscales from both the ARSMA-II and BIQ-S did not correlate significantly with parent Spanish-language dominance. By contrast, parents' U.S. subscale scores on both measures correlated significantly and negatively with Spanish-language dominance. When examined by TR group, TR1 and TR3 parents' ARSMA-II US scores were more strongly associated with parent Spanish-language dominance than were BIQ-S U.S. scores. This difference was significant for TR3, $z = 1.97$, $p < .05$, $q = .33$; but not for TR1, $z = 0.75$, $p = .45$, $q = .13$.

Youth Spanish-Language Dominance—Youth acculturation scores were positively correlated with youth Spanish-language dominance for both measures' Latino subscales, whereas these correlations were negative for both measures' U.S. subscales. The strengths of the associations between youth scores on the measures' respective Latino subscales were more similar (ARSMA-II correlations were .03 stronger) than U.S. subscales (ARSMA-II correlations were .22 stronger). The difference in associations with U.S. subscales was statistically significant, $z = 2.41$, $p < .02$, $q = .24$. Within individual TR groups, youth ARSMA-II Latino scores were significantly and positively correlated with Spanish-language dominance for all three TR groups. BIQ-S Latino scores were significantly and positively correlated with Spanish-language dominance for TR2 and TR3, but not for TR1. Correlations for TR2, $z = 3.40$, $p < .001$, $q = .57$; and TR3, $z = 3.60$, $p < .001$, $q = .62$; were significantly different from the correlation for TR1. ARSMA-II U.S. acculturation scores were significantly and negatively correlated with youth Spanish-language dominance for TR1 youth, but not for those in TR2 or TR3. However, only the difference between the TR1 and TR2 correlations was statistically significant, $z = 1.98$, $p < .05$, $q = .33$. BIQ-S U.S. scores did not correlate significantly with youth Spanish-language dominance for any TR group.

Parent school-related language issues—Correlations between parent school-related language issues and parents' acculturation were significantly positive for ARSMA-II Latino scores but significantly negative for ARSMA-II U.S. scores. In contrast, correlations between parents' BIQ-S scores with parent school-related language issues approached significance for U.S. orientation and were not statistically significant for Latino orientation. Looking across TR groups, ARSMA-II scores produced significant correlations (positive for Latino and negative for U.S.) for TR3 only. Of possible correlation differences across TR groups, only the correlation difference for ARSMA-II Latino orientation between TR2 and TR3 was statistically significant, $z = 2.16$, $p < .04$, $q = .37$.

Language-related stressors—Parents' ARSMA-II scores were significantly correlated with parent language-related stressors for both Latino (positive) and U.S. (negative)

subscales. Correlations between parents' BIQ-S U.S. acculturation scores and language-related stressors approached significance, whereas Latino scores were not significantly correlated with language-related stressors. When comparing results across TR groups, ARSMA-II Latino scores correlated positively for TR1 only, and this correlation approached significance as stronger than the corresponding correlation for TR3, $z = 1.90$, $p = .057$, $q = .33$. TR2 U.S. scores on both the ARSMA-II and BIQ-S were negatively correlated with language-related stressors. Neither of these correlations were significantly different from the corresponding correlations for TR1 or TR3, however.

Youth acculturation scores did not correlate significantly with youth language-related stressors for either measure on either subscale. Within TR groups on the BIQ-S, TR1 Latino scores and TR3 U.S. scores were both correlated negatively with youth language-related stressors (see Table 3). For BIQ-S U.S. acculturation scores, the TR3 correlation was significantly stronger compared to the corresponding correlation for TR1, $z = 2.21$, $p < .03$, $q = .38$. None of the correlation differences between TR groups were significant for BIQ-S Latino orientation.

Construct Validity

For construct validity, we report correlations between (a) scores on the ARSMA-II and the BIQ-S Latino and U.S. subscales with (b) parenting and youth adjustment (Tables 4 and 5, respectively). To simplify the presentation, we present only within-reporter correlations. Tables 4 and 5 also provide statistical tests for differences between corresponding BIQ-S and ARSMA-II correlations. We describe differences between corresponding correlations across TR groups here in text.

Parenting—Significant correlations with parenting variables were distributed nearly equally across the ARSMA-II and BIQ-S (see Table 4).

Parenting efficacy: Correlations between parental efficacy and parents' U.S. acculturation scores were significantly negative on both the ARSMA-II and BIQ-S. Neither measure's Latino subscale significantly correlated with parenting efficacy. Parenting efficacy was significantly correlated with TR1 and TR3 parents' U.S. scores on both measures. The only significant correlation difference, however, involving parents' U.S. orientation and parenting efficacy was for the BIQ-S between TR1 and TR2, $z = 1.99$, $p < .05$, $q = .33$. In all instances of significant correlations between parenting efficacy and parents' U.S. acculturation scores, the correlations were larger for the ARSMA-II than for the BIQ (see Table 4).

Parents' school involvement and monitoring: *Parents' school involvement* was significantly and negatively correlated with parents' BIQ-S (but not ARSMA-II) Latino scores. When analyzed by TR group, parents' Latino scores on the BIQ-S were significantly correlated with school involvement significantly for TR2 and TR3 parents only. The correlation difference between TR1 and TR3 was statistically significant, $z = 1.98$, $p < .05$, $q = .34$; but the correlation difference between TR1 and TR2 was not, $z = 1.47$, $p = .14$, $q = .25$. In terms of U.S. acculturation, the only significant correlation with parents' school involvement was a positive association with the ARSMA-II subscale among TR2 parents.

This correlation was not significantly different between the corresponding correlations for TR1 or for TR3, however.

Parental monitoring: Parental monitoring did not correlate significantly with parent acculturation in the sample as a whole, but a positive relationship did emerge with TR1 parents' ARSMA-II (but not BIQ-S) Latino scores (see Table 4). This correlation was significantly stronger for TR1 parents than for TR3 parents, $z = 2.05$, $p < .05$, $q = .36$.

Youth adjustment—Correlations with youth adjustment variables and ARSMA-II and BIQ-S scores can be found in Table 5.

Youth alcohol risk: Youth Latino scores on both the ARSMA-II and BIQ-S negatively predicted youth alcohol risk. The correlation of BIQ-S scores was slightly stronger, but this difference was not statistically significant, $z = 1.31$, $p = .46$, $q = .07$. Youth U.S. acculturation scores approached significance on the BIQ-S, but not on the ARSMA-II, and this difference was statistically significant, $z = 2.28$, $p < .03$, $q = .23$. Youth alcohol risk correlations were not significant for TR1 youth on either measure for Latino or U.S. orientations. For TR2 and TR3, BIQ-S Latino scores were significantly and negatively correlated with youth alcohol use. For U.S. orientation, patterns were less consistent across TR groups. These correlations were significantly negative with BIQ-S scores for TR2 and TR3 youth, but were significant and positive for ARSMA-II scores for TR2 youth. For BIQ-S U.S. orientation scores, correlations for TR2 ($z = 2.60$, $p < .01$, $q = .34$) and TR3 ($z = 3.10$, $p < .002$, $q = .45$) youth were significantly stronger than the corresponding correlation for TR1 youth. For ARSMA-II U.S. orientation, the correlation for TR2 youth was significantly stronger than the corresponding correlation for TR1 youth, $z = 2.23$, $p < .03$, $q = .33$.

Youth drug risk: Youth acculturation scores were similarly correlated with youth drug risk as they were with youth alcohol risk. Youth Latino scores on both the ARSMA-II and BIQ-S were negatively related to youth drug risk. Youth BIQ-S, but not ARSMA-II, U.S. scores were significantly and negatively correlated with youth drug risk – although the difference between the correlations with the BIQ-S and with the ARSMA-II was not statistically significant. Youth drug risk correlations were not significant for TR1 youth for any of the BIQ-S or ARSMA-II subscales. For TR2, youth Latino and U.S. scores for the BIQ-S were significantly and negatively related to youth drug risk. Both of these correlations were significantly stronger for TR2 than for TR1: Latino orientation, $z = 1.96$, $p = .05$, $q = .33$; US orientation, $z = 2.39$, $p < .02$, $q = .40$.

Youth confidence: Youth Latino scores on both the ARSMA-II and BIQ-S were positively correlated with youth confidence. Youth U.S. acculturation scores did not correlate significantly with youth confidence. Within TR groups, youth Latino scores on the ARSMA-II for TR1 and TR2, but on the BIQ-S only for TR2, were significantly and positively related to youth confidence. For the BIQ-S Latino subscale, the correlation with youth confidence was significantly stronger for TR2 than for TR3, $z = 2.53$, $p < .02$, $q = .43$. This correlation difference approached significance between TR2 and TR1, $z = 1.85$, $p = .064$, $q = .31$. For TR2 only, youth BIQ-S U.S. orientation was significantly and positively correlated with

youth confidence. This correlation was not significantly different from the correlations for TR1 or for TR3, however.

Youth depressive symptoms: Correlations with youth depressive symptoms were inconsistent across measures and subscales. Youth BIQ-S, but not ARSMA-II, U.S. scores correlated significantly and negatively with youth depressive symptoms (though this correlation difference was not statistically significant). When we analyzed by TR group, BIQ-S Latino scores for TR2 youth were significantly negatively correlated with youth depressive symptoms, and this correlation was significantly stronger than the corresponding correlation for TR3, $z = 2.31$, $p < .03$, $q = .39$. For TR1, BIQ-S U.S. scores youth were correlated significantly and negatively with youth depressive symptoms. This correlation was not significantly different from the corresponding correlations for TR2 or TR3. For TR3, ARSMA-II U.S. scores were significantly and positively correlated with youth depressive symptoms, and this correlation was significantly stronger than the corresponding correlation for TR1, $z = 2.41$, $p < .02$, $q = .42$.

Discussion

The present study was conducted to compare two commonly used U.S. Hispanic/Latino acculturation measures, the BIQ-S and the ARSMA-II, in terms of (a) their relations with one another and (b) similarities versus differences in the ways in which they predict scores on acculturation-related, parenting, and youth adjustment variables. We premised our study on testing the idea that various acculturation instruments are assumed to be equivalent.

Summary and Interpretation of Findings

Convergent Validity—Our results suggest that scores generated by the BIQ-S and ARSMA-II are only modestly intercorrelated, and that the degree of intercorrelation between the two measures' scores differs across reporter (parent versus youth), subscale (Latino versus U.S.), and the length of time that respondents have spent in the United States. For example, correlations between scores on corresponding BIQ-S and ARSMA-II scales ranged from .18 (3% shared variability) to .75 (56% shared variability).

For parents, scores on the two measures' U.S. subscales converged much more strongly than did their scores on Latino subscales. One possible reason for this is that the BIQ-S was designed for Cuban Americans and later adapted for use with diverse Latino groups, whereas the ARSMA-II was designed specifically for Mexican Americans. Although both measures were adapted to refer to multiple Hispanic/Latino groups, their items focus on different aspects of heritage and U.S. cultural streams. The BIQ-S focuses exclusively on comfort with language use and enjoyment of other behavioral practices, whereas the ARSMA-II focuses on identifications as well as behaviors. Among parents who immigrated to the United States as adults, U.S. behaviors (e.g., speaking English, eating typical American foods) may be viewed as accompanying identification with the United States. Especially in a new receiving community where there are few established ethnic enclaves, parents may be equally (a) exposed to U.S. foods and recreational activities and (b) U.S.-based symbols that may promote identifications. Indeed, Schildkraut (2010) has found that the majority of recent immigrants identified themselves with the United States.

Latino practices and identifications, however, may begin to separate – especially for adults residing in a new receiving community, such as in Oregon. In contrast to the "Big Six" states (California, New York, Texas, Florida, Illinois, and New Jersey), which have been receiving Latino immigrants for many years, states such as Oregon are less experienced with Latino immigration and may offer fewer supports and resources to promote retention of Latino culture among parents and youth (cf. Schwartz & Unger, 2010). Parents may continue to cook and eat traditional ethnic foods, and may maintain Spanish language in the home, but their identification with their countries of birth may begin to erode over time. The finding that correlations between the BIQ-S and ARSMA-II Latino orientation scores was lowest (r = .18) for TR3 parents – who had been in the United States for 10 or more years – provide some support for our argument that practices and identifications begin to separate with increasing time spent in the United States.

For youth, the opposite pattern emerged, especially for the TR2 and TR3 groups (who had been in the United States for longer periods of time compared to the TR1 group). The youth BIQ-S and ARSMA-II Latino subscale scores were more closely intercorrelated than were the U.S. subscale scores. Adolescents may have strong senses of themselves as belonging to their heritage culture, even after many years in the United States (Portes & Rumbaut, 2006). Many immigrant adolescents also identify less strongly as American than their parents do, even though adolescents attend school in English and may be exposed to non-Latino peers (Schwartz, Unger, et al., 2016). This may occur because the decision to emigrate is generally made by parents rather than by youth. At the same time, adolescents are likely to speak English with their friends and to eat U.S. foods outside the home. So the practices (which are the focus of the BIQ-S) and identifications (which are measured by some ARSMA-II items) may not correspond strongly for youth. In a new receiving community such as those in Oregon, however, heritage practices and identifications are likely to be maintained in the home – and less reinforced outside the home. Practices and identifications may, therefore, be more closely related for youth.

Construct Validity with Language Related Variables—Results were somewhat consistent for construct validity with language-related variables. Parents' Spanish-language dominance was inversely related to U.S. orientation, but unrelated to Latino orientation, for parents – and this finding was consistent across the BIQ-S and the ARSMA-II. Youth's Spanish-language dominance was positively related to Latino orientation on the ARSMA-II, and on the BIQ-S overall and for TR2 and TR3. Relations between youth Spanish-language dominance and U.S. orientation scores were limited to the ARSMA-II and to TR1. Parent school-related language issues were related to parents' acculturation (both heritage and U.S.) only on the ARSMA-II and only for TR3 parents, who had been in the United States for the longest amounts of time.

The findings for Spanish-language dominance may be reflective of the emergence of ethnically dense areas. Specifically, parents who remain Spanish-dominant are apt to associate primarily with other Latinos, likely in ethnically dense areas where many Latinos live or work. Residing or working in ethnically dense areas is known to inhibit acquisition of English and other U.S. practices among adults (Portes & Rumbaut, 2014; Schwartz, Pantin, Sullivan, Prado, & Szapocznik, 2006). Among youth, remaining Spanish dominant is likely

challenging given that school is taught in English and most peers are likely to be English speaking. However, youth can retain Spanish with family members. Doing so requires a commitment to retaining one's cultural heritage, which may be difficult to do for youth residing in new receiving communities.

It is also worth noting that there is comparatively less variability in parents' BIQ-S and ARSMA-II Latino acculturation scores than in their U.S. acculturation scores. Parents in all three TR groups scored high on heritage culture retention – suggesting that adults generally remain committed to maintaining their cultural heritage even after they have lived in the US for many years. In their study of immigrants on the East and West Coasts, Portes and Rumbaut (2001) found that Latinos are more likely than other immigrant groups to retain their cultural heritage across time spent in the United States. If we assume that most, if not all, of the parents in our study spoke Spanish regularly, then lack of variability in heritage culture retention (likely due to ceiling effects) may be responsible for the non-significant correlations with Spanish-language dominance. A similar finding emerged for youth, where correlations for Latino orientation with Spanish-language dominance were stronger (especially for the ARSMA-II) than correlations for U.S. orientation. Most Latino adolescents speak English with their peers, and there may be more individual differences in terms of how much Spanish they speak (e.g., Portes & Rumbaut, 2006). The exception appears to be TR1 (the most recently arrived group), where U.S. orientation was negatively related to Spanish-language dominance. Recently arrived adolescents may differ markedly in their English language skills and usage.

Although the vast majority of Latino immigrant adults speak Spanish regularly, there may be considerable variability in their use of English – and variability in the Spanish-language dominance measure may be picking up on individual differences in the use of English. Indeed, the measure of Spanish-language dominance asks participants to select the extent to which they speak Spanish more than English. Although we cannot discern this given the scale format (i.e., Spanish-language use contrasted with English-language use), it is likely that differences between and among participants in use of English were responsible for the majority of variance in scores generated by the Spanish-language dominance measure. Such a conclusion is bolstered by the moderate to strong negative correlations between this measure and U.S. acculturation (as assessed by both the BIQ-S and the ARSMA-II) among parents.

The finding that parents' school language issues were correlated with ARSMA-II (but not BIQ-S) Latino and U.S. acculturation scores only for TR3 suggests that parents who have lived in the United States for the longest number of years might be most likely to involve themselves in their adolescents' schooling. It also should be kept in mind that adolescents in TR1 and TR2, who had lived in the U.S. for shorter periods of time, were more likely to be in English for Speakers of Other Languages (ESOL) classes compared to TR3 youth, who had lived in the U.S. for the vast majority of their lives. Youth in ESOL classes are likely to have materials sent home in their native languages, such that parents would be able to understand these materials easily. Students in regular classes are more likely to have materials sent home in English – perhaps resulting in more stress for parents.

Construct Validity with Parenting Variables—The most consistent associations between acculturation scale scores and parenting variables involved parental efficacy (negatively with ARSMA-II U.S. orientation) and parental involvement in school (negatively with BIQ-S Latino orientation. There is evidence (Santisteban, Coatsworth, Briones, Kurtines, & Szapocznik, 2012) that decreasing familism – which often accompanies increases in U.S. orientation – is predictive of more permissive and less competent parenting. Regarding involvement in school, in a new receiving community it is possible that increased heritage orientation may contribute to isolating immigrant parents from "mainstream" social institutions such as school. Although biculturalism is often protective against a variety of negative outcomes (Nguyen & Benet-Martínez, 2013), becoming bicultural may be more challenging in a context where a large heritage culture community is not available.

Construct Validity with Youth Adjustment Variables—For the two time-in-residence cohorts who were not recent immigrants, Latino orientation scores on the BIQ-S, but not the ARSMA-II, were negatively associated with risks for alcohol use. There is evidence that heritage cultural practices and values (but not necessarily identifications) may be protective against alcohol use (Gil, Wagner, & Vega, 2000; Zamboanga, Schwartz, Jarvis, & Van Tyne, 2009; Zemore, 2007) but this may not be true for very recent immigrants (Schwartz, Unger, et al., 2014). Heritage orientation may be the most protective once individuals have passed the initial "culture shock" and have begun their long-term adjustment to U.S. society.

Interestingly, there was no clear pattern of associations of acculturation with confidence or depressive symptoms. Schwartz, Unger, et al. (2015) found that, among recent Latino immigrant youth in Miami and Los Angeles, individuals who were more bicultural reported higher self-esteem and fewer depressive symptoms.

Time in Residence Group Comparisons

When we compared the BIQ-S and ARSMA-II subscale scores by TR group, *youth* scores generated by both measures appeared to differ across TR groups in ways that would be expected. Latino orientation scores were higher – and U.S. orientation scores were lower – for TR1 youth, who were recent immigrants. Among youth, TR2 and TR3 scores did not differ from one another on any of BIQ-S or ARSMA-II subscales.

Among *parents*, differences were smaller and were detected only using the ARSMA-II. TR3 parents, who had spent the most time in the United States, reported the lowest Latino orientation scores and the highest U.S. orientation scores. The BIQ did not appear to be sensitive enough to detect differences in parents' acculturation across time-in-residence groups.

The Big Picture: Are the BIQ-S and ARSMA-II Interchangeable?

Our primary goal in the present study was to test the assumption that the BIQ-S and ARSMA-II, as commonly used measures of acculturation in Hispanic/Latino samples, are largely interchangeable. The patterns of results for the two measures appear to be quite different, with each measure's corresponding scales associated with different sets of

outcomes. The patterns of associations were not wholly consistent with what would be expected – for example, given that the BIQ-S focuses entirely on language use and other cultural practices, one might expect BIQ-S scores to be linked with language dominance and with language-related challenges. However, the ARSMA-II appeared to be more consistently related to language variables. The BIQ-S may be tapping into language *preference* rather than language *dominance* – especially given that the BIQ includes the wording "I am comfortable speaking _____ at _____." The ARSMA, in contrast, provides items that assess language use as well as language preference. The ARSMA-II may be picking up on indices of language dominance that the BIQ-S does not.

Similarly, for the immigrant parents in our sample, parental efficacy indexes more than just behaviors – it indexes comfort with parenting an adolescent in a somewhat unfamiliar context. The breadth of the ARSMA-II appears to pick up on this comfort, whereas the behavioral focus of the BIQ-S does not. In contrast, parents' involvement in school requires behavioral skills such as English language comfort (in addition to competence), as well as a willingness to engage with U.S. culture. The BIQ-S may tap into the cultural orientations that best facilitate parents' involvement in school, whereas the ARSMA-II may be too broad to speak to this fairly focused set of orientations.

Adolescent BIQ-S Latino scores also appeared to be negatively related to risks for alcohol use – whereas ARSMA-II scores did not. Studies have found that, among Hispanic youth, heritage cultural practices are protective against alcohol use, whereas heritage identifications may serve as a risk factor (Zamboanga et al., 2009). Because the ARSMA-II assesses both practices and identifications, these two effects may cancel out – whereas the behavioral focus of the BIQ may tap directly into mechanisms that can protect against alcohol use.

In summary, it is important to recognize that different acculturation instruments focus on different dimensions of the acculturation process. Given the multidimensionality of acculturation, including practices, values, identifications, and other domains (Schwartz et al., 2010), it is important to attend to the specific domains that are – and are not – included within a given instrument. Even within those measures that assess Latino and U.S. orientations separately, each measure may tap into different domains or may ask about skills versus preferences. These small nuances may affect the data obtained by a given acculturation measure, as the present results suggest.

Given the largely non-overlapping set of relations between (a) the BIQ-S and the ARSMA-II subscale scores and (b) measures of language dominance and stress, measures of parenting, and measures of youth outcomes, we might recommend that studies utilize both of these measures to assess acculturation. Indeed, acculturation is a complex construct that requires multiple scales and multiple reporters to fully assess (Martinez, 2006; Unger & Schwartz, 2012).

It should be noted that, although the BIQ-S and ARSMA-II are both widely used (Jones & Mortimer, 2014; Unger et al., 2007), the psychometric literatures on these two measures are not equivalently strong. Although Yoon, Langrehr, and Ong (2011) identified the ARSMA-II as one of the most commonly used measures of acculturation in their 22-year review, we

were unable to identify published psychometric analyses (e.g., tests of factor structure, equivalence between English and Spanish versions) on the ARSMA-II. In contrast, the psychometric properties of the BIQ-S have been rigorously examined (e.g., Guo et al., 2009; Schwartz et al., 2014). As a result, it is entirely possible that at least some of the differences we discuss below can be attributed to differences in the psychometric properties of the two measures.

It is essential for future work to ascertain the psychometric properties of scores generated by the ARSMA in sufficiently large samples. Language equivalence might be examined by randomly assigning bilingual participants to complete the instrument in either English or Spanish, and then conducting measurement equivalence analyses (Dimitrov, 2010) on the resulting data. Comparing naturally occurring language groups (i.e., people who choose to complete surveys in English versus those who choose Spanish) may be confounded because there may be important differences between these two groups (Schwartz et al., 2013). As stated previously, we found only one study that employed the ARSMA-II (i.e., Bauman, 2005) and examined effects of assessment language.

Limitations and Future Directions

The present results should be interpreted in light of several important limitations. First, the present study was cross-sectional and did not assess change in cultural orientations over time. Comparing measures based on longitudinal trajectories is an important future direction. Second, our data came from only one settlement context – the new receiving community of Oregon – and did not include traditional gateway cities, where the findings might have been different. Third, we included only two measures in the present analyses. Other acculturation measures could also have been included. Fourth, the sample sizes within each TR group were fairly small, and we may have been underpowered to examine correlations within individual TR groups. Fifth, as noted above, although cross-language equivalence has been established for the BIQ-S, this step has not yet been taken for the ARSMA-II. We do not know how much of the discrepancy in findings for the two acculturation measures may have been due to differences in their cross-language equivalence. Sixth, although the use of TR groups allowed us to examine the associations involving the BIQ-S and the ARSMA-II across various amounts of time spent in the United States, the TR groups are – by definition – confounded with language of assessment. All of these limitations are important to address and circumvent in future research. For example, a larger sample size would allow researchers to conduct language equivalence analyses within each TR group, and a comparative design including multiple sites would allow for examination of the extent to which the current results would replicate across both new receiving communities and traditional gateway areas.

Despite these and other limitations, our study has been one of the first to directly compare acculturation measures that are assumed to be interchangeable. We found a number of studies that have adapted measures such as the ARSMA-II to suit new cultural contexts without empirically assessing the adapted measures. As an example, Schaefer et al. (2009) adapted or added six items to use the ARSMA-II to assess acculturation among immigrants from nine Asian contexts – Mien, Hmong, Polynesian/Tongan, Vietnamese, Chinese,

Japanese, Laotian, Filipino, and Thai. Schaefer and colleagues also translated ARSMA-II items into Mien, Hmong, Vietnamese, and Cantonese, but did not describe or test effects of their translation or other modification processes. Indeed, acculturation research has only recently begun to attend to comparative measurement issues (Doucerain, Segalowitz, & Ryder, in press), and the present study represents an important step in this direction. Indeed, identifying the specific nuances in item wording and focus – likely through mixed-method research – that affect the resulting data is an essential line of work that acculturation research should continue to pursue. We hope that the current study has broken new ground in this line of work.

Acknowledgments

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PUBLIC SIGNIFICANCE STATEMENT

This study advances understanding of the complex approaches used in the field to measure acculturation (i.e., the process of adapting to norms, values, and beliefs of a new host culture), by showing that two of the most commonly used measures in the field may appraise different aspects of acculturation and relate very differently to outcomes for Latino immigrant youth and parents. Although measures of acculturation are often conceptually linked, this study suggests that they should not be used interchangeably.

Table 1

Descriptive Statistics of Latino and U.S. Orientation Subscale Scores on the ARSMA-II and BIQ-S Among Youth and Parent Reporters by Time in Residence and Overall

Subscale	Reporter	TR group	n	M	SD
ARSMA-II Latino					
	Youth	1	66	4.18_a	0.49
		2	75	3.99_b	0.65
		3	63	3.80_b	0.68
		Overall	204	4.00	0.63
	Parent	1	71	4.14_{ab}	0.55
		2	77	4.18_a	0.40
		3	67	4.09_b	0.36
		Overall	215	4.14	0.45
ARSMA-II U.S.					
	Youth	1	66	2.97_a	0.75
		2	74	3.56_b	0.56
		3	62	3.55_b	0.51
		Overall	202	3.36	0.67
	Parent	1	72	1.93_a	0.68
		2	77	1.99_a	0.56
		3	67	2.17_b	0.61
		Overall	216	2.02	0.62
BIQ-S Latino					
	Youth	1	68	4.39_a	0.81
		2	77	4.14_{ab}	0.91
		3	63	4.01_b	0.92
		Overall	208	4.18	0.89
	Parent	1	71	4.47	0.57
		2	78	4.33	0.77
		3	67	4.40	0.61
		Overall	216	4.40	0.64

Subscale	Reporter	TR group	n	M	SD
		1	67	3.64_a	1.07
	Youth	2	78	4.10_b	0.76
		3	63	4.10_b	0.76
		Overall	208	3.95	0.90
BIQ-S U.S		1	71	2.48	1.15
	Parent	2	77	2.48	1.00
		3	67	2.84	1.17
		Overall	215	2.59	1.11

Note. ARSMA-II = Acculturation Rating Scale for Mexican Americans-II; BIQ-S = Biculturalism Questionnaire short form; TR = Time in Residence; TR = Time in Residence: TR1 = 2–4 years ($n = 72$), TR2 = 6–8 years ($n = 78$), TR3 = 10–12 years ($n = 67$). Latino orientation = Hispanic/Latino; U.S. orientation = United States. Within each subscale column, means with the same subscript do not differ from one another at $p < .05$.

Table 2

Convergent Validity of the ARSMA-II and the BIQ-S

Reporter	Subscale	TR1 (2–4 years)	TR2 (6–8 years)	TR3 (10–12 years)	All TR groups
Parent	Latino	.37 **	.30 **	.18	.29 ***
	U.S.	.75 ***	.65 ***	.75 ***	.73 ***
Youth	Latino	.53 ***	.71 ***	.62 ***	.65 ***
	U.S.	.53 ***	.42 ***	.40 **	.51 ***

Note. ARSMA-II = Acculturation Rating Scale for Mexican Americans-II; BIQ-S = Biculturalism Questionnaire short form; TR1: $n = 72$, TR2: $n = 78$, TR3: $n = 67$. Latino = Hispanic/Latino orientation; U.S. = United States orientation.

*
$p < .05$;

**
$p < .01$;

***
$p < .001$

Table 3

Concurrent Validity of the ARSMA-II and BIQ-S for Language-Related and Stress Variables by Time in Residence

Variable	Reporter	TR	Latino orientation			U.S. orientation		
			ARSMA-II	BIQ-S	Z	ARSMA-II	BIQ-S	Z
Parent Spanish-language dominance	Parent	2–4	.06	.01	0.38	−.58 ***	−.49 **	−1.28
		6–8	.16	.06	0.73	−.35 **	−.39 **	0.45
		10–12	.15	−.12	1.62	−.72 ***	−.52 **	−3.23 **
		All	.11	−.01	1.47	−.55 ***	−.46 ***	−2.13 *
Youth Spanish - language dominance	Youth	2–4	.34 *	−.21	4.74 ***	−.48 ***	−.21	−2.51 *
		6–8	.28 *	.34 *	−0.77	−.19	−.09	−0.83
		10–12	.42 **	.39 *	0.31	−.24	−.12	−0.86
		All	.40 ***	.37 ***	0.59	−.42 ***	−.20 *	3.49 ***
Parent school-related language issues	Parent	2–4	.20 ^{t}	.03	1.31	−.22 ^{t}	−.18	−0.48
		6–8	.01	.07	−0.43	.01	−.08	0.92
		10–12	.36 **	.08	1.74 ^{t}	−.25 *	−.09	−1.96 *
		All	.18 **	.06	1.49	−.16 *	−.12 ^{t}	−0.81
Parent language-related stressors	Parent	2–4	.31 **	.03	2.18 *	−.23 ^{t}	−.08	−1.78 ^{t}
		6–8	.17	−.09	1.88 ^{t}	−.31 **	−.25 *	−0.65
		10–12	−.01	−.04	0.18	−.11	−.08	−0.36
		All	.20 **	−.03	2.84 **	−.22 **	−.14 ^{t}	−1.62
Youth language-related stressors	Youth	2–4	−.13	−.27 *	1.24	.19	.04	1.30
		6–8	.03	−.01	0.49	.20	.19	0.08
		10–12	−.12	−.26	1.33	−.19	−.33 *	1.03
		All	−.04	−.15 ^{t}	1.99 *	.14	.05	1.35

Note. ARSMA-II = Acculturation Rating Scale for Mexican Americans-II; BIQ-S = Biculturalism Questionnaire short form; Z = Steiger's Z-test for "correlated correlations" within a population; TR = Time in Residence: TR1 = 2–4 years ($n = 72$), TR2 = 6–8 years ($n = 78$), TR3 = 10–12 years ($n = 67$). Latino orientation = Hispanic/Latino; U.S. orientation = United States.

t
$p < .10;$

$*$
$p < .05;$

$**$
$p < .01;$

$***$
$p < .001$

Table 4

Construct Validity of the ARSMA-II and BIQ-S with Parenting by Time in Residence

Variable	TR	Parent Latino orientation			Parent U.S. orientation		
		ARSMA-II	BIQ-S	Z	ARSMA-II	BIQ-S	Z
Parenting efficacy	2–4	.15	–.10	1.91^t	–.39**	–.32**	–0.89
	6–8	.15	–.13	2.02*	–.14	–.00	–1.44
	10–12	.02	–.11	0.78	–.27*	–.16*	–1.36
	All	.11	–.11	2.70**	–.27***	–.17*	–2.05*
Parent school involvement	2–4	–.02	–.01	–0.08	.18	.13	0.59
	6–8	–.14	–.25*	0.81	.25*	.05	2.08*
	10–12	.01	–.34**	2.14*	–.06	–.14	0.97
	All	–.06	–.21**	1.86^t	.11	.00	2.19*
Parental monitoring	2–4	.25*	.00	1.93^t	.14	.05	1.06
	6–8	.04	.06	–0.14	.22^t	.08	1.46
	10–12	–.10	.00	–0.60	–.02	–.06	0.48
	All	.09	–.01	1.23	.13	.04	1.80^t

Note. ARSMA-II = Acculturation Rating Scale for Mexican Americans-II; BIQ-S = Bicultural Involvement Questionnaire short form; Z = Steiger's Z-test for "correlated correlations" within a population; TR = Time in Residence: TR1 = 2–4 years (n = 72), TR2 = 6–8 years (n = 78), TR3 = 10–12 years (n = 67). Latino orientation = Hispanic/Latino; U.S. orientation = United States.

^{t} $p < .10$;

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 5

Construct Validity of the ARSMA-II and BIQ-S with Youth Adjustment by Time in Residence and Orientation

Subscale	Reporter	TR	Latino orientation			U.S. orientation		
			ARSMA-II	BIQ-S	Z	ARSMA-II	BIQ-S	Z
Youth alcohol risk	Youth	2–4	−.03	.09	−1.03	−.01	.04	−0.42
		6–8	−.19	−.33**	1.77^t	−.09	−.32**	1.94^t
		10–12	−.23^t	−.42**	1.89^t	.25*	−.23^t	3.37***
		All	−.22**	−.29***	0.74	.11	−.12^t	2.27*
Youth illicit drug risk	Youth	2–4	−.14	.06	−1.72^t	−.05	.01	−0.51
		6–8	−.14	−.26*	1.49	−.22^t	−.37**	1.30
		10–12	−.12	−.19	0.66	.10	−.17	1.90^t
		All	−.14*	−.16*	0.36	−.03	−.15*	1.79^t
Youth confidence	Youth	2–4	.30*	.15	1.33	−.03	.03	−0.51
		6–8	.30*	.43***	−1.72^t	.18	.24*	−0.51
		10–12	.23	.03	1.88^t	.04	−.02	0.42
		All	.29***	.24**	0.94	.01	.07	−0.89
Youth depressive symptoms	Youth	2–4	−.01	−.11	0.86	−.14	−.29*	1.32
		6–8	−.16	−.33**	2.14*	.06	−.14	1.64
		10–12	.04	.05	−0.09	.27*	−.03	2.13*
		All	−.02	−.12^t	1.80^t	.01	−.17*	2.69**

Note. ARSMA-II = Acculturation Rating Scale for Mexican Americans-II; BIQ-S = Biculturalism Questionnaire short form; Z = Steiger's Z-test for "correlated correlations" within a population; TR = Time in Residence: TR1 = 2–4 years ($n = 72$), TR2 = 6–8 years ($n = 78$), TR3 = 10–12 years ($n = 67$). Latino orientation = Hispanic/Latino; U.S. orientation = United States.

^t
$p < .10$;

*
$p < .05$;

**
$p < .01$;

***
$p < .001$