



Published in final edited form as:

Psychol Assess. 2014 June ; 26(2): 539–554. doi:10.1037/a0035951.

The Mexican American Biculturalism Scale: Bicultural Comfort, Facility, and Advantages for Adolescents and Adults

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Abstract

Empirical research on biculturalism is limited, in part because of the lack of quality measures of biculturalism. The currently available measures have limitations due to scoring procedures and sampling of only a narrow range of behaviors and attitudes. We present a measure of biculturalism that captures a broader range of the bicultural experience and uses a scoring system that better represents the wide ranging levels of biculturalism that exist in the diverse population of Mexican American adolescents, mothers, and fathers born either in Mexico or the United States. The Mexican American Biculturalism Scale (MABS; 27 items) includes 3 subscales: bicultural comfort (9 items), bicultural facility (9 items), and bicultural advantages (9 items). We report on the reliability and construct validity of test scores, and confirmatory factor analyses findings for a diverse sample of 316 Mexican American families from a large southwestern metropolitan city. The MABS is available both in English and Spanish (see Appendix). The use of the scale has implications for future research studying how biculturalism is related to psychological outcomes for Mexicans/Mexican Americans.

Keywords

Biculturalism; Mexican American; measurement; scale

Introduction

The concept of biculturalism has existed for decades and researchers have tried to define it, measure it, and examine how it is related to an array of psychological outcomes. An understanding of the psychological processes associated with biculturalism is currently of particular importance because many countries of the world are rapidly becoming very ethnically diverse. According to the 2010 Census, almost 13% of the United States population is foreign born, and another 11% have at least one foreign-born parent. This means that almost one-fourth of the population of the United States is either first or second-generation. Most striking, over 53% of foreign-born individuals are from Latin America. These individuals, along with the relatively large number of later generation individuals who may still live in neighborhoods comprised largely of ethnic minority families must adapt to both their ethnic cultural context and the mainstream cultural context. Although a sizeable proportion of these individuals may be adept at functioning in both cultural contexts, it remains a challenge to effectively capture the complexities of biculturalism.

In this article we summarize theoretical conceptualizations of biculturalism, the ways in which biculturalism has been measured, and discrepancies between theory and currently available measures. We then present the Mexican American Biculturalism Scale (MABS), an alternative approach to the assessment of biculturalism among Mexican Americans that we propose is more congruent with conceptual definitions of biculturalism as a psychological construct. We focus specifically on Mexican Americans because they comprise 63% of the total Latino population, and is one of the largest (i.e., over 31 million) and fastest growing (i.e., increasing 54% from 2000 to 2010) ethnic groups in the United States (United States Census, 2012). We use the term “Mexican Americans” to refer broadly to individuals of Mexican heritage and/or descent living in the United States, similar to other measures developed for this cultural group (Cuéllar, Arnold, & Maldonado, 1995; Knight et al., 2010; Szapocznik, Kurtines, & Fernandez, 1980). However, we acknowledge that some individuals prefer to identify themselves as ‘Mexican’, and allow individuals to self-identify with their preferred term in the administration of the scale.

Theoretical Conceptualizations of Biculturalism

Although biculturalism has been conceptualized in a number of ways (see Nguyen & Benet-Martinez, 2007 for review) that vary greatly in specificity, recent definitions consist of two types. In one type, biculturalism has been defined based primarily on demographic variables that reflect exposure to two cultures. For example, in some studies individuals who are ethnic minorities or immigrants have been considered bicultural based on demographic information (e.g., Feliciano, 2001; Wang, Quan, Kanaya, Fernandez, 2010). This type of definition does not recognize individual differences within these demographic categories among persons who may have different levels of exposure or receptivity to ethnic and mainstream cultural influences. Though authors of these studies often recognize that

biculturalism requires adaptation to the cultural context, the studies that use this type of definition are still generally recognized as being limited in the inferences that can be made when linking biculturalism with other variables, such as psychological outcomes.

A more meaningful conceptualization of biculturalism defines it as a psychological construct that characterizes the degree to which individuals have internalized aspects of two cultures in terms of their identity, behavior, beliefs, attitudes, values, and worldview, and can respond functionally to both ethnic and mainstream cultural cues (LaFromboise, Coleman, & Gerton, 1993; Nguyen & Benet-Martinez, 2007). This conceptualization allows for individual differences in degree of biculturalism and also shifts the focus to assessing biculturalism as a *process* of cultural adaptation rather than as a simple demographic characteristic. For example, LaFromboise et al. (1993) posit that individuals may know and understand two different cultures and may alter their behavior to fit a particular cultural context. The process of becoming bicultural may be driven in part by accountability pressures from members of the two cultural groups (Tadmor & Tetlock, 2006) and ethnic minority individuals may engage in frame switching (switching between their dual cultural identities in response to cultural cues as needed; e.g., Hong, Morris, Chiu, & Benet-Martinez, 2000; Benet-Martinez, Leu, Lee, & Morris, 2002; Verkuyten & Pouliasi, 2006). Hence, this second conceptualization of biculturalism assumes adaptation to the mainstream culture and adaptation to the ethnic culture. Although some describe this process under the rubric of acculturation (e.g., Berry, 2006), we describe this dual cultural adaptation as occurring through the processes of acculturation and enculturation (e.g., Gonzales et al., 2002) to differentiate those forces promoting mainstream adaptation from those promoting ethnic adaptations. Acculturation is the process of adaptation to the mainstream culture, while enculturation is the process of adaptation to the ethnic culture. These dual cultural adaptations may occur at different rates and to different degrees, and may result in competencies that facilitate the adaptive functioning of a bicultural individual. Bicultural competence is the ability of an individual to behave and function successfully in two cultures as well as maintain interpersonal relationships with members of both cultures (LaFromboise et al., 1993; David, Okazaki, and Saw, 2009). Bicultural competence can be achieved through the following: (a) being knowledgeable about cultural beliefs and values, (b) having positive attitudes toward both cultural groups, (c) having bicultural self-efficacy, which is the belief that one can effectively function in both cultures; (d) being able to communicate with members of both cultural groups, including language competence and nonverbal communication; (e) possessing a repertoire of culturally-situated roles; and (f) and being grounded in both cultures through social networks (LaFromboise et al., 1993; David, Okazaki, and Saw, 2009).

Because of the empirical evidence that culture impacts emotion, behavior, and cognition (e.g., Chua, Leu, & Nisbett, 2005; Heine et al, 1999; Markus & Kitayama, 1991) we created a multicomponent measure that assessed different elements of biculturalism. We created items designed to assess how Mexican American adolescents and adults: (a) feel about navigating their dual cultural world (i.e., bicultural comfort); (b) respond to the behavioral demands of their dual cultural worlds (i.e., bicultural facility); and (c) think about or perceive inherent advantages in being bicultural given that they live in a dual cultural

context (i.e., bicultural advantages). We posit that bicultural individual should feel comfortable in mainstream and ethnic cultural contexts, find it easier to act or behave appropriately in mainstream and ethnic contexts, and should believe there are inherent advantages associated with being bicultural given that they live in a dual cultural context. These three components help the individual integrate the ethnic and mainstream culture in a way that is adaptive and beneficial, and an individual who scores high on all three components will be able to move fluidly between the two cultural worlds. We argue that this more nuanced and multicomponent approach to measuring biculturalism will be more useful in future research examining the relation of biculturalism to mental health (e.g., anxiety, substance abuse) and psychological outcomes (e.g., self-esteem, self-efficacy).

The Measurement of Biculturalism and Limitations

Assessment of this complex psychological construct is difficult, and may be one reason for the limited state of empirical research on biculturalism. As Coatsworth, Maldonado-Molina, Pantin, and Szapocznik (2005) note, “operationalizing, assessing, and analyzing the processes of [acculturation and enculturation] in a way that both reflects and extends current theory is an ongoing challenge for researchers --- [and has resulted in] a broad array of measures and analysis strategies that may reflect different theoretical models of acculturation for different groups of individuals” (p. 158). One strategy used to assess this complexity is to administer pairs of related items to independently assess ethnic and mainstream attributes. These measures then rely on some computation involving the relative difference between, or the sum of, the scores on these items or sets of items (e.g., Cuéllar et al., 1995; Szapocznik et al., 1980). For example, the Bicultural Involvement Questionnaire (BIQ; Szapocznik et al., 1980) administers separate but comparable items such as “How comfortable do you feel speaking Spanish?” and “How comfortable do you feel speaking English?” Then the ethnic items are combined to create a Hispanicism score and the mainstream items are combined to create an Americanism score. Biculturalism is then calculated by subtracting the Americanism score from the Hispanicism score. There are, however, some limitations associated with this approach. First, this approach does not distinguish those who are bicultural (i.e., score high on both the ethnic and mainstream items) from those who have been called marginalized (i.e., score low on both the ethnic and mainstream items) according to Berry's model (Berry, 1995) or even those who are moderately involved in each culture. In order to address this issue, a cultural involvement score is calculated by summing the Hispanicism and Americanism score, with high scores indicating high cultural involvement and low scores indicating marginality (Szapocznik et al., 1980). Still, other researchers have argued that biculturalism measurement should reflect high involvement in both cultures, rather than a balanced involvement in both (Birman, 1998). To index this involvement, Birman proposed a product score computation of the Hispanicism and Americanism scores. However, a second limitation associated with these scoring approaches is that difference, sum, or product scores of this sort typically are considerably less reliable than the original scores utilized in these computations (Malgady & Colon-Malgady, 1991). This enhanced measurement error (i.e., lower reliability of test scores) likely attenuates observed relations between biculturalism scores calculated in these ways and theoretically related variables.

Another way to utilize sets of corresponding items measuring ethnic attributes (e.g., participating in ethnic traditions) and mainstream attributes (e.g., participating in mainstream traditions) is to identify individuals who score high on both sets of items using some mathematical criteria to determine biculturalism (as in Berry's fourfold typology model, 1980). However, this measurement approach also has several limitations. The first and perhaps the greatest challenge is in determining what scale values should be considered high. Most often researchers have used a median split to differentiate high and low scores and have labeled those participants who are above the median on both the ethnic behavior scores and the mainstream behavior scores as bicultural. Unfortunately, because the distributions of the scores on these items are almost always skewed, the cut-point (i.e., median) for high versus low is often very high on the response scale (i.e. often around or above 4.0 on a five-point response scale) and, hence, the cut-point for low is often well above the midpoint of the response scale. The potential limitations of this scoring approach have been clearly demonstrated in studies that have utilized a more person-centered approach to the identification of the cultural orientation of Latino individuals by relying on an interpretation of assessments such as these while respecting the meaningfulness of the values on the item response scales (Coatsworth et al., 2005; Knight, Vargas-Chanes, et al., 2009; Knight, Basilio, Cham, Gonzales, Liu, & Umaña-Taylor, 2013). In contrast to the median split approach, the use of a more person-centered approach considering the continuous nature of the response scales has generally identified substantially large groups of Latino youth who can be characterized as either highly or moderately bicultural, and have found very few youth who might be considered marginalized. Second, conducting a mean or median split results in a less reliable dichotomous variable relative to the original set of continuous scores, and again is likely to attenuate the observed relations between these biculturalism scores and theoretically related variables (Cohen, 1983; Maxwell & Delaney, 1993). In addition, prior research using these measurement approaches often include items that sample a very narrow range of culturally related phenomena (see Knight, Jacobson, Gonzales, Roosa, & Saenz, 2009), often dominated by items focused on language use. For example, the BIQ (Szapocznik et al., 1980) focuses heavily on language use in different settings and language-related items (e.g., enjoying Hispanic books and magazines or American books and magazines).

Although these measurement limitations are somewhat pervasive in the biculturalism literature, there have been several measures presented that avoid the limitations mentioned above. The Acculturation, Habits, and Interests Multicultural Scale for Adolescents (Unger et al., 2002) allows participants to respond to questions inquiring about culturally-related preferences with four options: the United States, country of origin, both, and neither. These response options are useful as they let participants indicate their dual cultural involvement without having to compute a difference score. However, the small number of items (i.e., eight items) in this measure allows an assessment only of a narrow range of cultural phenomena. Similarly, the Bicultural Self-Efficacy Scale (David, Okazaki, & Saw, 2009) is designed to measure bicultural efficacy and competence among college students and takes a broader approach by including items ranging from cultural knowledge to attitudes. However, because this measure was designed for individuals from multiple cultural groups, the items are very general in nature. For example, one item assesses the respondent's knowledge about

the values important to mainstream Americans as well as one's own cultural group allowing respondents to interpret this item broadly and perhaps to respond based on very different criteria than intended (i.e., when the respondent views themselves primarily as “American”). This broad approach, while useful because of its utility for multiple cultural groups, may not be able to detect the nuances in the bicultural experience for specific ethnic groups.

The Present Study

This research was designed to develop a new measure of biculturalism specifically for both English and Spanish speaking Mexican American adolescents and adults. This scale is intended to assess the respondent's degree of biculturalism rather than categories of acculturation types. The MABS was developed to address the limitations of the currently available measures by: (a) avoiding the use of demographic variables; (b) avoiding the use of a difference score or mathematical computation that is ambiguous to interpret and prone to inflated measurement error; (c) produces continuous biculturalism scores and does not use arbitrary cut points; (d) assesses multiple components of biculturalism with a broader range of indicators than previous measures related to biculturalism.

In addition to presenting the MABS items, we present evidence of reliability of test scores from, and factor structure of the MABS. To demonstrate the reliability of the scores from the MABS, we present indices of the internal consistency (i.e., Cronbach's alpha and inter-item correlations) for each subscale (i.e., bicultural comfort, bicultural facility, and bicultural advantages) for a community sample of Mexican American adolescents, mothers, and fathers. To demonstrate the factor structure, we present confirmatory factor analyses (CFA) of the higher order factor structure model separately for the adolescents, mothers and fathers. We chose to take a CFA approach because the development of the MABS was theory-driven.

In addition, many researchers have become aware that our understanding of group differences may be compromised by measurement issues; that is, an observed mean difference between two groups (i.e., ethnic, gender, or age groups) may be a function of the particular operational definition of a construct rather than a real group difference in that construct (e.g., Hui & Triandis, 1985; Knight, Roosa, & Umaña-Taylor, 2009). In an attempt to evaluate the likelihood that an observed mean difference is a function of measurement issues rather than a meaningful group difference, researchers have advanced analytical approaches to evaluate the factorial invariance across groups (e.g., Millsap, 2010; Widaman & Reese, 1997). Some authors also recommend evaluation of the equivalence of construct validity relations, in addition to factorial invariance, to evaluate the equivalence of a measure across diverse groups of individuals (e.g., Knight et al., 2009). Further, because researchers often wish to compare scores on biculturalism across groups (e.g., across parents and their children to test the generation gap hypothesis), we present measurement equivalence evidence (i.e., factorial invariance and construct validity equivalence) among reporters (i.e., adolescents, mothers, and fathers); gender (i.e., male and female adolescents); and language (i.e., English language and Spanish language). The factorial invariance across language versions was only examined among the mothers because mothers were the only

group of respondents with a sufficient number of individuals completing the measure in both languages.

To evaluate construct validity, we also examined mean differences between adolescents and parents on the three MABS components, and we examined associations between MABS scores and several theoretically relevant variables. First, we hypothesized that adolescents would be higher than their parents (mothers and fathers) on bicultural comfort and bicultural facility because they spend more time in mainstream contexts, acculturate faster, and are more likely to have experienced functioning within and across both mainstream and ethnic contexts (Szapocznik & Truss, 1978). Second, for similar reasons, we expected that family members born in the United States versus those born in Mexico would be higher in both bicultural comfort and bicultural facility. Third, we have non-directional hypotheses about differences in perceived bicultural advantages based on family role (parent vs. adolescent) or nativity. Although it is possible that individuals may be more aware of the associated advantages of biculturalism with greater exposure and opportunities to become bicultural (e.g. adolescents attending U.S. schools), it is equally possible that individuals that have suffered from the lack of biculturalism (e.g., parents, immigrants) would perceive greater advantages associated with it. Fourth, we hypothesized that English language use would predict greater bicultural comfort and facility for parents (the majority of whom speak Spanish and are immigrants), but Spanish language use would predict bicultural comfort and facility for adolescents (the majority of whom are fluent in English). Fifth, we hypothesized more broadly that experiencing more difficulty with either language would be negatively associated with overall biculturalism (and each biculturalism component) because such language conflicts may be due to limited fluency in either language. Sixth, we also hypothesized that individuals scoring high on overall biculturalism (and each biculturalism component) would perceive less discrimination because of their greater connection to both the ethnic and mainstream cultures. Finally, we hypothesized that individuals scoring high on overall biculturalism (and each bicultural component) would retain a strong sense of ethnic identity while also having strong attachments to the mainstream culture. Thus, ethnic identity (i.e., a composite of ethnic affirmation, ethnic resolution, and ethnic exploration; Umaña-Taylor, Yazedjian, & Bámaca-Gómez, 2004) was expected to be positively associated with all bicultural components.

Development of the MABS Items

The development of the MABS and creation of the items took place over a two-year period. During the first year, a large list of potential item content domains (i.e., knowledge, behaviors, affiliation patterns, attitudes, and values) that have been associated with the Mexican American and mainstream cultures, and several potential item formats and response scales, were identified by the research team based upon a broad consideration of the empirical research literature. From these an initial set of 16-items was generated for each subscale and examined for face and content validity by three focus groups composed of Mexican American community members. Each focus group was led by at least two moderators and at least one of them was a fluent bilingual English and Spanish speaker. The first focus group consisted of bilingual English and Spanish speakers ($n = 8$), the second focus group consisted of English speakers only ($n = 5$), and the final focus group consisted

of Spanish speakers only ($n = 5$). During each taperecorded focus group session, each item was read and reviewed by the group as a whole and participants were invited to express their honest opinions about the questions' content, understandability, and wording. Focus group participants also evaluated the understandability and clarity of the response options. They were also instrumental in determining the terminology used to refer to ethnic groups in the MABS. For example, the term “Gringo” was included to supplement the description of White Americans because focus group participants indicated that this is a much more common term that is used to refer to White non-Latino Americans. The response options were also thoroughly evaluated for ease of interpretability. Further the bilingual focus group evaluated the quality and equivalence of the translations. At the end of each focus group participants were asked to speculate on what the scale was intended to measure. In all three focus groups, participants indicated that the scale was intended to measure some type of dual cultural adaptation. The feedback from each focus group was carefully taken into consideration and used in the refining of the questions in the scale.

The MABS was purposefully created to include three subscales: bicultural comfort, bicultural facility, and perceived bicultural advantages, which we hypothesized to jointly capture biculturalism. The item stems and response scales were also designed to highlight the juxtaposition the two cultures. The first two subscales are intended to capture the idea of flexibility in navigating the two cultural worlds. The comfort subscale focuses on how comfortable the individual is in switching between behavior patterns deemed appropriate in the ethnic culture and the mainstream cultures. Although these behavior patterns may be incompatible or inconsistent between the two cultures, a person scoring high on this subscale should feel quite comfortable responding appropriately to the cultural cues in the appropriate context. In contrast, a person scoring low on this subscale is someone who is quite uncomfortable with having to switch their behavior patterns to accommodate culturally different contextual demands. The second subscale focuses on how easy it is for the individual to navigate the demands of the two cultures. Thus, a person scoring high on bicultural facility should be quite skilled in behaving in a manner consistent with the ethnic culture in an ethnic context and consistent with the mainstream culture in a mainstream context. In contrast, a person scoring low on this subscale is someone who finds it quite difficult to behave in culturally appropriate ways in either the mainstream or ethnic context. Finally, the bicultural advantages items focus on the *perceived* advantages of being able to adapt successfully to both sets of cultural demands. Thus, a person scoring high on bicultural advantages perceives many advantages to being bicultural. In contrast, a person scoring low on this subscale is someone who perceives many disadvantages to being bicultural. Participants indicate how comfortable, easy, and how much advantages they find in each of the items given. In summary, higher scores on each subscale indicate that respondents are comfortable in both cultural groups, find it easy to exist in both cultural groups, and see advantages to being members of both cultural groups; while lower scores indicate discomfort, difficulty and perceived disadvantages of being a member of both cultural groups. The initial set of items was professionally translated into Spanish and back translated into English.

Method

Participants

The MABS and all other measures were administered to 316 Mexican American families living in the greater Phoenix area (see Roosa et al., 2008 for detailed sampling and recruitment information) as a part of longitudinal research project. The study used a combination of random and purposive sampling so as to include Mexican American families from diverse backgrounds (e.g., nativity, SES status, cultural context of the community). In the administration of the MABS, participants were from the second cohort (about 53% of the complete sample) while in their third wave of participation with the larger research project. Specifically, adolescents were in the tenth grade ($M = 15.87$ years, $SD = .43$ years) at the time of participation. Only one child per family participated in the study. Within these families not all mothers and father participated; hence the final sample consisted of 316 adolescents ($n = 164$ males, $n = 152$ females), 308 mothers, and 177 fathers. A majority (78.2 %) of adolescents in our sample were born in the United States, 21.8% were first generation (foreign-born), 42.9% were second generation, 13.5% were third generation, and 21.8% were fourth generation or later. A majority of the mothers (69.7%) and fathers (72.7%) were born in Mexico (i.e., were first generation immigrants). Among the parents, 6.9% of the mothers and 6.4 % of the fathers were second generation; 9.2% of the mothers and 8.7% of the fathers were third generation; and 13.9% of the mothers and 12.1% of the fathers were fourth or later generation. The average number of years of education completed by mothers and fathers in our sample was 10.9 years and 10.7 years, respectively. Participants were given \$55.00 each for their participation.

Procedures

All interviews were computer-assisted with a bilingual interviewer asking the questions and recording participants' responses on the computer. Most of the interviews were conducted at the participant's home. A small number of participants were interviewed over the phone (11 mothers, 4 fathers, and 11 adolescents). All participants were also provided a book with a list of response options corresponding to each questionnaire. All measures were administered in either English or Spanish depending on participants' preferences. All measures underwent stringent translation procedures and tests of measurement invariance across languages. Participants self-selected their labels between “Mexican” or “Mexican American” and this label was piped into all questions. The MABS was part of a larger battery of questionnaires. As part of the larger study, participants also reported on demographic information (e.g., nativity, generation status). The initial scale of 16 items per subscale was administered towards the end of the interview.

Measures

Mexican American Biculturalism Scale (MABS)—Participants completed the Mexican American Biculturalism Scale. The subscales were administered in the following order: Bicultural comfort, bicultural facility, and bicultural advantages. Participants indicated which ethnic group label they identified with (i.e., “Mexican” or “Mexican American”) and this self-selected label was inserted when appropriate throughout the scale. The response scale for bicultural comfort ranged from 1 (e.g., “I am only comfortable when

[I need to speak in English/Spanish].”) to 5 (e.g., “I am always comfortable in both of these situations.”) and the mean of item scores were computed with higher scores indicating higher levels of bicultural comfort. For the bicultural comfort subscale, responses corresponding with only being comfortable in either the mainstream or ethnic contexts, were both recoded to a score of 1, representing being only comfortable in a monocultural setting. The response scale for bicultural facility (e.g., “Needing to speak Spanish sometimes and English other times is”) ranged from 1 (very easy) to 5 (very difficult), and items were reverse coded. The mean of item scores were computed with higher scores indicating higher levels of bicultural facility. The response scale for bicultural advantages (e.g., “For me, being able to speak Spanish sometimes and English other times has”) ranged from 1 (many advantages) to 5 (many disadvantages), and items were reverse coded. The mean of item scores were computed with higher scores indicating higher levels of bicultural advantages. Overall biculturalism was calculated by computing the means of all the items.

Language use—Participants completed the language use items from the Acculturation Rating Scale for Mexican Americans-II (Cuéllar et al., 1995). We used eight (four English and four Spanish) of the language items from the ARSMA-II. These items best represented the different contexts (i.e., speaking, listening, writing, and enjoying) in which language use may be represented for both English ($\alpha=.69$ for adolescents, $\alpha=.91$ for mothers, $\alpha=.89$ for fathers) and Spanish ($\alpha=.83$ for adolescents, $\alpha=.87$ for mothers, $\alpha=.82$ for fathers) language use. The subscales evaluate frequency of language use (e.g., “How often do you speak Spanish?”). The response scale ranged from 1 (almost never) to 5 (almost always) and the mean of item scores were computed for each subscale with higher scores indicating greater language use.

Language conflicts and pressures—Adolescent participants completed the Language Conflicts Subscale of the Multicultural Events Scale for Adolescents (Gonzales, Tein, Sandler, & Friedman, 2001). The seven-item subscale evaluates the amount of language conflicts or hassles adolescents experience in their daily lives (e.g., “A teacher put you down for not speaking English or not speaking it well.”). The response options were either 1 (happened) or 2 (did not happen) and count scores were computed for the subscale with higher counts indicating more language hassles.

Mother and father participants completed the language dimension of the Multidimensional Acculturative Stress Inventory (Rodriguez, Myers, Mira, Flores, & Garcia-Hernández, 2002). The 10-item subscale evaluates acculturative stress resulting from both English ($\alpha=.90$ for mothers, $\alpha=.82$ for fathers) and Spanish ($\alpha=.82$ for mothers, $\alpha=.81$ for fathers) language pressures and difficulty (e.g., “People have treated you rudely or unfairly because you do not speak English well.”). The response scales ranged from 1 (not at all true) to 5 (very true) and the mean of item scores were computed with higher scores indicating higher levels of language-related acculturative stress.

Perceived discrimination—Participants completed the Brief Perceived Ethnic Discrimination Questionnaire (Brondolo, Kelly, Coakley, Gordon, Thompson, Levy, Cassells, Tobin, Sweeney, & Contrada, 2005). The 17-item measure ($\alpha=.92$ for adolescents, $\alpha=.90$ for mothers, $\alpha=.90$ for fathers) assessed experiences with ethnic discrimination (e.g.,

“Have you been treated unfairly by co-workers because you are Mexican or Mexican American?”). The response scale ranged from 1 (almost never or never) to 5 (almost always or always) and the mean of item scores were computed with higher scores indicating higher perceived discrimination.

Ethnic identity—Participants completed the Ethnic Identity Scale (Umaña-Taylor et al., 2004). The 17-item scale ($\alpha=.84$ for adolescents, $\alpha=.81$ for mothers, $\alpha=.81$ for fathers) assessed ethnic exploration, resolution, and affirmation (e.g., “You are clear about what your Mexican/Mexican American background means to you”). The response scales ranged from 1 (not at all true) to 5 (very true) and the mean of item scores were computed with higher scores indicating higher levels of ethnic identification.

Results

Preliminary Analyses

A preliminary set of analyses (not reported) were conducted to aid us in reducing the initial set of 16-items for each subscale to the final 9-item version of each subscale. This reduction was based on a review of the focus group discussion about each item, the purposeful elimination of some items that assessed conceptually redundant content (e.g., we included only one language related item), and the elimination of those redundant items with the least normal distribution of participant responses and the weakest inter-item correlations and factor loadings.

Model Fit and Measurement Invariance Analytic Strategy

To examine the factor structure of the MABS we conducted CFA using *Mplus* statistical software (Muthén & Muthén, 2007) to examine the fit of our theoretically proposed hierarchical model consisting of the second order factor of biculturalism with three first order factors of bicultural comfort, bicultural facility, and bicultural advantages (see Figure 1) separately for adolescents, mothers, and fathers. To evaluate the similarity of the factor structure across reporters, adolescent genders, and language versions we used multi-group CFA to fit a series of hierarchically nested factor structures, moving from configural invariance to strict factorial invariance (Knight, Roosa, & Umaña-Taylor, 2009; Millsap & Kwok, 2004; Widaman & Reise, 1997). At each level of factorial invariance testing, we applied additional constraints to the multi-group measurement model, using nested model comparisons to determine if the added constraint contributed to poor model fit. Subsequent invariance constraints were only tested if the previous level of invariance was achieved. Configural invariance exists if a CFA indicates that the same set of items fit into each of the three related latent factors across groups (i.e., reporters, genders, languages). Weak factorial invariance exists when a model constraining the latent factor loadings for individual items to be equal across groups fits well and is comparable to the configural invariance model. Strong factorial invariance exists when a model constraining the latent factor loadings and the latent item intercepts to be equal across groups fits well and is comparable to the weak invariance model. Strict factorial invariance exists when a model constraining the latent factor loadings, the latent item intercepts, and the unique item variances to be equal across groups fits well and is comparable to the strong invariance model.

Multiple indices were used to assess model fit because each individual fit index has limitations. The chi-square test statistic was used to assess perfect model fit under maximum likelihood estimation, along with several practical fit indices for invariance testing across adolescents' gender and mothers' language. Given that we accounted for clustering effects in our data across adolescents, mothers, and fathers (using MPLUS COMPLEX option), we utilized the log likelihood (LL) statistic instead of chi-square statistic to evaluate model fit across reporters (Muthén & Muthén, 2007). The LL statistic is preferable to the chi-square statistic in nested data because the chi-square statistic is inflated, giving a less accurate RMSEA estimation (Muthén & Muthén, 1998-2010; Snijders & Bosker, 1999). Generally, model fit was considered good (acceptable) according to practical fit indices if the Comparative Fit Index (CFI) was greater than or equal to 0.95 (0.90), the Root Mean Square Error of Approximation (RMSEA) was less than or equal to 0.05 (less than 0.08), and the Standardized Root Mean Square Residual (SRMR) was below 0.05 (less than 0.08) (Hu & Bentler, 1999; Kline, 2005). In addition, the chi-square difference (χ^2) was used to make nested model comparisons for invariance testing across adolescents' gender and mothers' language, whereas we utilized the LL-difference test to evaluate measurement invariance across reporters (Muthén & Muthén, 2007). Given that χ^2 and LL criteria are sensitive to trivial modifications of fit (Cheung & Rensvold, 2002); significant χ^2 and LL-difference statistics, accompanied by marked changes in practical fit indices, were used to make a judgment regarding each level of factorial invariance.

Higher Order Latent Factor Model

Adolescents—The higher order factor model (see Figure 1) did not initially fit the data acceptably, $\chi^2(321) = 703.62, p < .001, CFI = .868, RMSEA = .061, SRMR = .056$. The modification indices suggested we allow pairs of item unique variances (i.e., error variances) to correlate, likely due to similar wording across the scales (see Appendix A). We allowed the item variances to correlate (i.e., items 1 on the comfort and facility subscales; and items 9 and 6 on the advantage subscale). After these unique variances were allowed to correlate, the model fit the data acceptably, $\chi^2(319) = 614.19, p < .001, CFI = .90, RMSEA = .05, SRMR = .05$, and all factor loadings were significant.

Mothers—The higher order factor model (see Figure 1) did not initially fit the data acceptably, $\chi^2(321) = 853.59, p < .001, CFI = .89, RMSEA = .07, SRMR = .07$. The original model had a small, but negative residual variance for facility. Thus, for the adjusted model, we set the residual variance for facility to zero. In addition, the modification indices suggested that we allow several pairs of item unique variances to correlate (i.e., item 1 on the comfort and facility subscales; items 7 and 8 on the advantage subscale; and items 6 and 9 on the facility subscale). After these unique variances were allowed to correlate, the model fit the data acceptably, $\chi^2(319) = 751.64, p < .001, CFI = .91, RMSEA = .07, SRMR = .06$, and all factor loadings were significant.

Fathers—Again, the higher order factor model (see Figure 1) did not initially fit the data acceptably, $\chi^2(321) = 689.75, p < .001, CFI = .86, RMSEA = .08, SRMR = .07$. The modification indices suggested that we allow several pairs of item unique variances to correlate (i.e., items 6 and 9 on the facility subscale; items 4 and 5 on the facility subscale;

items 7 on the facility and advantages subscale; and items 4 and 5 on the advantages subscale). After these unique variances were allowed to correlate the model fit the data acceptably, $\chi^2(317) = 582.77, p < .001, CFI = .90, RMSEA = .07, SRMR = .06$ and all factor loadings were significant.

Alternative Models

We also examined the model fit of two more parsimonious alternative models: a single factor model, and a three orthogonal factor model. The results showed that the one factor model of biculturalism did not fit the data acceptably for: adolescents [$\chi^2(324) = 1467.78, p < .001, CFI = .61, RMSEA = .11, SRMR = .11$]; mothers [$\chi^2(324) = 2665.74, p < .001, CFI = .51, RMSEA = .15, SRMR = .15$]; or fathers [$\chi^2(324) = 1634.49, p < .001, CFI = .51, RMSEA = .15, SRMR = .14$]. Similarly, the three orthogonal factor model also did not fit the data acceptably for: adolescents [$\chi^2(324) = 830.60, p < .001, CFI = .83, RMSEA = .07, SRMR = .14$]; mothers [$\chi^2(324) = 1032.11, p < .001, CFI = .85, RMSEA = .08, SRMR = .19$]; or fathers [$\chi^2(324) = 781.30, CFI = .83, RMSEA = .09, SRMR = .19$].

Cross-Reporter Factorial Invariance Analyses

To evaluate the cross-reporter factorial invariance analyses we conducted all possible pairwise comparisons across the three reporters using CFA and the same practical fit indices. We again allowed the unique variances among pairs of items to correlate as suggested by the modification indices.

Adolescents and mothers—The configural invariance for the adjusted model fit acceptably, $LL(-642) = 41747.7, CFI = .90, RMSEA = .055, SRMR = .061$. Working from configural invariance, we next examined weak invariance for our adjusted model, which resulted in a significant $LL(-26) = 67.18$. However, given that the practical fit indices indicated that the weak invariance model fit acceptably, $CFI = .90, RMSEA = .056, SRMR = .075$, we proceeded to examine strong invariance for our adjusted model. The strong invariance model constraints resulted in a non-significant $LL(-22) = 11.40, CFI = .90, RMSEA = .054, SRMR = .082$. Finally, we examined our adjusted model for strict invariance, where the strict invariance model constraints resulted in a significant $LL(-23) = 69.5$, but other practical fit indices indicated an acceptable fit, $CFI = .90, RMSEA = .054, SRMR = .091$. Hence, strict factorial invariance exists between adolescents' and mothers' reports.

Adolescents and fathers—First, we began our analyses by examining configural invariance. The adjusted model fit acceptably with $LL(-640) = 33543.53, CFI = .90, RMSEA = .052, SRMR = .059$. Working from configural invariance, we next examined weak invariance for our adjusted model, which resulted in a significant $LL(-24) = 38.72$. However, given that the weak model fit acceptably according to the other fit indices, $CFI = .90, RMSEA = .052, SRMR = .068$, we proceeded with examining strong invariance for our adjusted model. Our results showed it fit acceptably with a non-significant $LL(-20) = 23.87, CFI = .90, RMSEA = .052, SRMR = .078$. Finally, we examined our adjusted model for strict invariance, and our results yielded a significant $LL(-25) = 55.36$, but other

fit indices showed our model had acceptable fit, CFI = .90, RMSEA = .051, and SRMR = .084. Hence, strict factorial invariance exists between adolescents' and fathers' reports.

Mothers and fathers—First, we began our analyses by examining configural invariance. The adjusted model fit acceptably with $LL(644) = 32112.07$, CFI = .90, RMSEA = .062, and SRMR = .066. Working from configural invariance, we next examined weak invariance for our adjusted model, which resulted in a non-significant $LL(26) = 26.48$, CFI = .90, RMSEA = .060, SRMR = .071. We proceeded with examining strong invariance for our adjusted model and our results showed a significant $LL(24) = 37.60$. However, given that the strong model fit acceptably according to other fit indices, CFI = .90, RMSEA = .060, and SRMR = .073, we proceeded with examining strict factorial invariance. Our results showed a significant $LL(27) = 57.10$, but other fit indices showed our model had acceptable fit, CFI = .90, RMSEA = .059, and SRMR = .076. Hence, strict factorial invariance exists between mothers' and fathers' reports.

Cross-Gender and –Language Factorial Invariance Analyses

To evaluate the cross-gender and cross-language factorial invariance analyses we conducted CFA using the same practical fit indices comparing male and female adolescents for gender invariance, and Spanish and English language version for language invariance. However, we could only conduct the cross-language factorial invariance among the mothers because a substantial majority of adolescents took the survey in English (i.e., 96.1%) and a substantial majority of the fathers took it in Spanish (i.e., 71.8%) making cross group comparisons impractical in these groups. Again we allowed unique variances to correlate between items as described in our higher order solution.

Adolescent gender invariance—First, we began our analyses by examining configural invariance. The adjusted model fit acceptably with $\chi^2(631) = 951.08$, CFI = .90, RMSEA = .057, and SRMR = .067. Working from configural invariance, we next examined weak invariance for our model which yielded a non-significant $\chi^2(25) = 15.66$, CFI = .90, RMSEA = .056, SRMR = .077. Given that the weak model fit acceptably, we proceeded with examining strong invariance for our model. Our results showed a non-significant $\chi^2(26) = 13.16$, CFI = .90, RMSEA = .053, and SRMR = .078. Finally, we examined strict factorial invariance. Our results showed a nonsignificant $\chi^2(26) = 30.03$, CFI = .90, RMSEA = .052, and SRMR = .079. Hence, strict factorial invariance exists between male and female adolescents' reports.

Mother language invariance—First, we began our analyses by examining configural invariance. The adjusted model fit acceptably with $\chi^2(652) = 91068.97$, CFI = .90, RMSEA = .068, and SRMR = .084. Working from configural invariance, we next examined weak invariance for our model which yielded a significant $\chi^2(24) = 39.30$. However, given that the weak model fit acceptably according to the other fit indices CFI = .90, RMSEA = .070, SRMR = .080, we proceeded to examine strong invariance for our adjusted model. Our results showed a significant $\chi^2(18) = 32.17$, but other fit indices showed our model had acceptable fit CFI = .90, RMSEA = .067, and SRMR = .080. Finally, we proceeded with examining strict factorial invariance and found a significant $\chi^2(23) = 36.11$, but other fit

indices showed our model had almost acceptable fit $CFI = .90$, $RMSEA = .067$, and $SRMR = .104$. Hence, strict factorial invariance almost exists between mothers' English and Spanish language reports.

Construct Validity

Table 1 presents the means (standard deviations), Cronbach's alpha coefficients (95% CI), and median (range) of inter-item correlations for the subscales bicultural comfort, bicultural ease and bicultural facility, and bicultural advantages, and overall biculturalism for adolescents, mothers, and fathers. Overall, participants scored relatively high on each subscale (except for father's bicultural comfort), suggesting that our participants were relatively bicultural. The standard deviations for each subscale were substantial, particularly for bicultural comfort for all reporters, suggesting that there are considerable individual differences in biculturalism. The Cronbach's alpha for each subscale, as well as overall biculturalism for each reporter ranged from .81 to .92 (see Table 1).

To examine how adolescents compared to mothers and fathers on the three subscales, planned contrasts, comparing adolescents with mothers and fathers combined were conducted using SAS Statistical Software. We used nested models (i.e., PROC MIXED command with maximum likelihood estimation) to handle the data dependency within families. Our results showed that adolescents scored higher on bicultural comfort, $t(533) = 5.05$, $p < .001$, and bicultural facility, $t(522) = 4.41$, $p < .001$, than mothers and fathers. In contrast mothers and fathers scored higher on bicultural advantages than adolescents, $t(527) = -1.97$, $p < .05$.

To further examine the construct validity of scores from the bicultural components and the higher order latent variable of biculturalism, we conducted a series of analyses to examine the relations of each biculturalism component to several theoretically related variables (i.e., language use, language conflicts and pressures as indicators of acculturative stress, perceived discrimination, and ethnic identity) separately for adolescents, mothers, and fathers. We employed Structural Equation Modeling with maximum likelihood estimation using *Mplus* statistical software (Muthén & Muthén, 2007). Table 2 presents the means and standard deviations for scale scores on our construct validity measures. Table 3 presents the unstandardized path coefficients for each of our construct validity measures predicting the latent constructs of bicultural comfort, bicultural facility, bicultural advantages, and overall biculturalism. For the language items, English (use and pressures), Spanish (use and pressures), and the interaction between English and Spanish (use and pressures) were simultaneously entered into the model. Because of the unique interdependence between the frequency of English and Spanish language use and pressures, we conducted analyses to examine whether interaction effects of English and Spanish use (for all reporters) and English and Spanish pressures (for mothers and fathers) were significant across all three subscales. We found no consistent effects, and only two significant and small interaction effects across all analyses. Thus, we do not report on these findings.

Bicultural Comfort—Our results showed that adolescents who scored high in bicultural comfort tended to speak in English more often (marginally significant), experienced less

perceived less discrimination, and had higher ethnic identity. For mothers and fathers, those who scored high on bicultural comfort also reported greater English use and less Spanish use, significantly less English competency pressures, higher Spanish competency pressure (fathers only), and higher levels of ethnic identity.

Bicultural Facility—Adolescents who scored higher on bicultural facility also reported greater English use and less language conflicts. They also experienced less perceived discrimination and had higher ethnic identity (marginal). Mothers and fathers who had high bicultural facility also reported greater English use and less Spanish use. They also reported less English competency pressures, less perceived discrimination (mothers only), and higher ethnic identity.

Bicultural advantages—Adolescents who had high bicultural advantages also reported more English and Spanish use, and higher ethnic identity. Mothers and fathers who had high bicultural advantages reported greater English use, less English competency pressures, less perceived discrimination (fathers only), and higher ethnic identity.

Overall biculturalism—Adolescents who scored high on overall biculturalism also reported greater English use, less language conflicts, and higher ethnic identity. Mothers and fathers who had high overall biculturalism reported greater English use, less Spanish use, less English competency pressures, less perceived discrimination, and higher ethnic identity (fathers only).

Nativity—Preliminary analyses revealed that significant omnibus tests for mean differences on MABS scores by generation were largely due to first generation immigrants scoring differently than second, third, and fourth and beyond generation participants. Thus, we proceeded by examining how nativity was associated with the three bicultural components. We found that, for adolescents, those who were born in the United States ($n = 245$) compared to those who were born in Mexico ($n = 70$) did not score differently on bicultural comfort, $t(313) = -.37, p=.71$, bicultural facility, $t(313) = 1.04, p=.30$, or bicultural advantages, $t(313) = -9.2, p=.36$. For mothers, those who were born in the United States ($n = 93$) compared to those born in Mexico ($n = 214$), scored higher on bicultural comfort, $t(305) = 7.87, p<.001$, and bicultural facility, $t(305) = 5.13, p<.001$. However, no differences were found for bicultural advantages, $t(305) = 1.49, p=.14$. For fathers, those who were born in the United States ($n = 44$), compared to those born in Mexico ($n = 126$), scored higher on bicultural comfort, $t(168) = 5.01, p<.001$, and bicultural facility, $t(168) = 4.31, p<.001$. However, no differences were found for bicultural advantages, $t(168) = 1.75, p=.08$.

Discussion

The results supported our proposed three-factor model of biculturalism, giving credence to the hypothesis that biculturalism is a multifactor construct. In addition, the MABS was shown to be invariant across age groups, language, and gender suggesting that it is effectively measuring the same construct in all of our Mexican American participants. Further, differences among mothers, fathers, and adolescents in their bicultural comfort, bicultural facility, and bicultural advantages are consistent with our expectations. The

measure was also correlated as expected with a number of theoretically related psychological constructs, suggesting that the MABS is indeed measuring biculturalism.

The mean of item scores of our participants indicates that they were generally relatively bicultural, even though a substantial number of our participants were born in Mexico and a substantial portion of parents and a modest proportion of adolescents preferred to complete the interviews in Spanish. Nevertheless, the standard deviations for each subscale were substantial, suggesting that there are considerable individual differences in biculturalism. This variability highlights the importance of measuring biculturalism as a psychological construct rather than as demographic categories, as done occasionally in some earlier research. The variability in responses and the magnitude of the internal consistency coefficients suggests that the MABS is a sensitive and reliable measure of individual differences in biculturalism.

The confirmatory factor analysis findings supported our hypothesized multicomponent nature of biculturalism with the three components of bicultural comfort, bicultural facility, and bicultural advantages. Although these three subscales were correlated, our results show that they are meaningfully separable components of the higher order psychological construct of biculturalism. This measure can be used to examine how individuals can vary in their biculturalism by examining each of the components of bicultural comfort, bicultural facility, and bicultural advantages. Some individuals may be highly comfortable in both cultures, yet may not find it as easy to switch between the behavior patterns. This may be true for those who are still in the process of becoming bicultural, or those who are bicultural but may be living in a largely homogenous context and lack the necessity to switch back and forth between the two cultural frames. Similarly, an individual who is in the process of becoming more fully bicultural may perceive the advantages of being able to identify with both cultures, yet may still express some discomfort and difficulty when exposed to either the mainstream or the ethnic culture.

As expected, the planned comparisons comparing adolescents to their parents revealed that Mexican American adolescents were higher in bicultural comfort and bicultural facility than their parents, perhaps because adolescents may often have greater exposure to both the ethnic (at home) and mainstream (at school) cultures than their parents. Mexican American mothers and fathers may not be as exposed to the mainstream culture, especially if they work in a relatively homogenous Mexican American workplace or if they primarily interact with other Mexican Americans within their neighborhoods. In contrast, the mothers and fathers, compared to their adolescents, perceived greater advantages to being bicultural. Perhaps parents have a deeper understanding of the utility of being able to respond to the demands of both the mainstream and ethnic cultures based upon their personal experiences. Indeed, by being lower in bicultural comfort and bicultural facility, the parents may be more sensitive to the consequences of not being bicultural. Further, many of the parents in this sample who made the decision to immigrate to the United States may have done so because they already perceived the advantages of being connected to both the ethnic and mainstream cultures. In addition, the dual frame of reference hypothesis was also consistent with these findings: immigrants who have experiences in both the United States and their country of origin, more often the parents in this sample, may use their experiences in Mexico as frame

of reference, thus causing them to perceive greater advantages in being able to adapt and being a part of the mainstream US culture (Ogbu, 1993; Ogbu, 1994; Suarez-Orozco & Suarez-Orozco, 1995).

The construct validity analyses revealed a number of significant and conceptually meaningful relationships between the MABS and several theoretically-related constructs providing more evidence that the MABS is a valid measure of the individual differences in biculturalism. We found that English use is strongly associated with bicultural comfort, bicultural facility, and bicultural advantages, particularly for mothers and fathers. Perhaps these Mexican American adults, who were generally more comfortable completing the measures in Spanish, experience the demands from the larger mainstream society to speak the English language fluently and the bicultural adults are more successful in responding to these demands. Spanish use was negatively associated with bicultural comfort and bicultural facility for mothers and fathers. Among adolescents, Spanish use was associated with bicultural advantages, but not bicultural comfort and bicultural facility. However, more bicultural adolescents seemed to recognize the advantages of being able to speak both languages perhaps because a substantial proportion of our adolescent participants may have been monolingual English speakers. Unfortunately, we did not have an index of bilingualism, which may well have been substantially related to individuals' biculturalism scores. English language pressure was also strongly associated with all three bicultural subscales for the mothers and fathers. In contrast, pressure to speak the Spanish language fluently may not be as great, as reflected in the smaller association of Spanish use and Spanish pressure with bicultural comfort, bicultural facility, and bicultural advantages. For adolescents, language conflicts with English and Spanish were negatively associated with bicultural facility, which was expected as difficulty communicating in either English or Spanish may make it difficult to respond to the demands of both cultures. Perceived ethnic discrimination was highly negatively associated with bicultural comfort for adolescents. It may be that adolescents who report higher perceived discrimination feel uncomfortable because they can not respond to the demands of mainstream culture and this may lead to negative consequences, thus coloring their interactions with mainstream culture as a negative experience. Thus, they may attribute this negative experience to ethnic discrimination. It is also possible that adolescents who are not able to respond well to mainstream demands are actually treated more poorly and have more experiences with discrimination. Ethnic identity was also related to bicultural comfort, bicultural facility, and bicultural advantages for all reporters. This was expected because maintenance of one's ethnic identity in the process of becoming oriented to mainstream culture is central to the definition of biculturalism.

The results of our factorial invariance analyses showed that the MABS factor structure was similar across age groups, language versions, and gender. Hence, the support for the factorial invariance of the MABS suggests that this biculturalism measure can be useful for studies that may want to make comparisons across age groups, gender, and languages. Researchers can be reasonably assured that the MABS is measuring the same biculturalism construct across different groups and that any observed group differences likely represent real and meaningful differences between the groups rather than non-equivalence of the measure across groups.

The MABS provides researchers with a new measurement tool that may help advance our understanding of how ethnic minority individuals adapt to their dual cultural existence. For example, the availability of the MABS could foster studies examining how biculturalism is related to mental and psychological health. Longitudinal assessments using the MABS could help elucidate the dynamic process of becoming bicultural by capturing the changes in biculturalism over time, and by allowing an examination of the associations between these changes and individuals' experiences within the ethnic and mainstream cultures. Further, trajectory analyses of longitudinal assessments of biculturalism could help us understand the emergence, and the likely differential progress, of the development of the separate components of biculturalism. In addition, the format of the three subscales of items and response options, as well as the breadth of cultural indicators included in the subscales, of the MABS can serve as a blueprint for the development of measures of biculturalism for other ethnic groups. However, the cultural content of the items must be consistent with culturally unique and/or culturally relative features of the development of biculturalism for that ethnic group. Future research could also examine how the MABS is related to other theoretically-related variables (e.g., exposure to the mainstream and ethnic cultures). Further, the overall scale or individual subscales may be differentially important for predicting psychological health and outcomes and we encourage researchers to fully examine these associations.

Limitations

We believe that the MABS is an important and useful measure of biculturalism in Mexican Americans, but this exact measure cannot be used to assess biculturalism in other ethnic minority groups. However, we do think that other researchers can use the format of the MABS to develop biculturalism scales for other ethnic groups by identifying items that assess the content domains (i.e., knowledge, behaviors, affiliation patterns, attitudes, and values) that are particularly relevant for those groups. We were limited in the range of construct validity measures we could use in this report. Future research can address how the MABS is related to other theoretically relevant constructs. Additionally, we acknowledge that the MABS is a lengthy measure, but we believe that its depth, breadth, and multicomponent nature are an important contribution to the field of measurement of biculturalism.

Conclusions

The main goal of developing the MABS was to develop a measure that operationalizes biculturalism in Mexican Americans as a psychological construct that reflects individual differences in degrees of biculturalism, rather than a demographic dichotomy of individuals who are exposed to two cultures versus individuals who are only exposed to one culture. That is, the MABS was designed to capture nuances in biculturalism by identifying individuals who differ in their degree of perceived comfort, facility, and advantages associated with living in a dual cultural context. In addition to identifying those who are relatively bicultural, the items on the three subscales can also be used to identify those individuals who are uncomfortable and have difficulty living in a dual cultural context, and who find living in a dual cultural context disadvantageous. The MABS was not designed to measure acculturation types such as marginalization, assimilation, and separation. We

believe that the bicultural subscales of bicultural comfort, bicultural facility, and bicultural advantages were successful in achieving the intended goal of the current study. The three subscales of the MABS also captures the construct of bicultural competence through the measurement of not only one's perceived ability to navigate the two cultural worlds (i.e., bicultural comfort and bicultural facility), but also how the individual evaluates the value of being bicultural (i.e., bicultural advantages). Further, presenting the items in a way that allows participants to evaluate their dual cultural involvement closely resembles their experience in real life and gives participants the opportunity to evaluate their experiences with both cultures simultaneously.

Acknowledgments

Preparation of this manuscript was supported in part by NIMH Grant RO1 MH68920 (Culture, context, and Mexican American mental health). The authors are thankful for the support of Jenn-Yun Tein, Jaimee Virgo, our Community Advisory Board and interviewers, and the families who participated in the study.

Appendix: The Mexican American Biculturalism Scale: Bicultural Comfort, Facility, and Advantages for Adolescents and Adults

Bicultural Comfort Subscale

Mexicans/Mexican Americans may act differently when they are with other Mexicans/Mexican Americans than when they are with Whites (Gringos; individuals of European American backgrounds). In the following items we will be asking you how comfortable you are in these different situations.

Example Response Options

- 1 = I am only comfortable when (I need to speak in Spanish)
- 2 = I am only comfortable when (I need to speak in English)
- 3 = I am sometimes comfortable in both of these situations
- 4 = I am often comfortable in both of these situations
- 5 = I am most of the time comfortable in both of these situations
- 6 = I am always comfortable in both of these situations.

- 1 Sometimes you may need to speak Spanish, and other times you may need to speak English. Which of the following best describes you?
- 2 Sometimes you may feel a part of the Mexican/Mexican American community, and other times, you may feel a part of the White (Gringo) community. Which of the following best describes you?
- 3 Sometimes you may need to work with a group for the group to be successful, and other times you may need to compete with others for you to be successful. Which of the following best describes you?
- 4 Sometimes you may need to solve a problem in a Mexican/Mexican American way, and other times you may need to solve a problem in a White

Subescala de la Comodidad Bicultural

Los Mexicanos/México-Americanos pueden actuar de manera diferente cuando están con otros Mexicanos/México-Americanos que cuando están con los blancos (gringos: individuos de origen europeo americano). En las siguientes frases, le vamos a preguntar qué tan cómodo(a) está en estas distintas situaciones.

- 1 = Solamente estoy cómodo(a) cuando (necesito hablar en español)
 - 2 = Solamente estoy cómodo(a) cuando (necesito hablar en inglés)
 - 3 = Algunas veces estoy cómodo(a) en ambas situaciones
 - 4 = A menudo estoy cómodo(a) en ambas situaciones
 - 5 = La mayoría de las veces estoy cómodo(a) en ambas situaciones
 - 6 = Siempre estoy cómodo(a) en ambas situaciones.
- 1 Algunas veces puede ser que necesite hablar en español, y otras veces, puede ser que necesite hablar en inglés. ¿Cuál de las siguientes respuestas le describe mejor a usted?
 - 2 Algunas veces puede sentirse parte de la comunidad Mexicana/México-Americana, y otras veces, puede sentirse parte de la comunidad de los blancos (gringos). ¿Cuál de las siguientes respuestas le describe mejor a usted?
 - 3 Algunas veces puede ser que necesite trabajar en grupo para que el grupo tenga éxito, y otras veces, puede ser que necesite competir con otros para que usted tenga éxito. ¿Cuál de las siguientes respuestas le describe mejor a usted?

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>(Gringo) way. Which of the following best describes you?</p> <p>5 Sometimes you may need to interact with other Mexican/Mexican Americans, and other times you may need to interact with Whites (Gringos). Which of the following best describes you?</p> <p>6 Sometimes you may need to make an important decision on your own, and other times you may need to ask your family for advice. Which of the following best describes you?</p> <p>7 Sometimes you may need to participate in Mexican/Mexican American traditions, and other times you may need to participate in White (Gringo) traditions. Which of the following best describes you?</p> <p>8 Sometimes you may feel proud to be part of the Mexican/Mexican American community, and other times you may feel proud to be part of the US community. Which of the following best describes you?</p> <p>9 Sometimes you may be obligated to satisfy your family's needs, and other times you may satisfy your own needs. Which of the following best describes you?</p> | <p>4 Algunas veces puede ser que necesite resolver un problema a la manera Mexicana/México-Americana, y otras veces, puede ser que necesite resolver un problema a la manera de los blancos (gringos). ¿Cuál de las siguientes respuestas le describe mejor a usted?</p> <p>5 Algunas veces puede ser que necesite tratar con otros Mexicanos/México-Americanos, y otras veces, puede ser que necesite tratar con los blancos (gringos). ¿Cuál de las siguientes respuestas le describe mejor a usted?</p> <p>6 Algunas veces puede ser que necesite tomar una decisión importante por si solo(a), y otras veces, puede ser que necesite pedirle un consejo a su familia. ¿Cuál de las siguientes respuestas le describe mejor a usted?</p> <p>7 Algunas veces puede ser que necesite participar en las tradiciones Mexicanas/México-Americanas, y otras veces, puede ser que necesite participar en las tradiciones de los blancos (gringos). ¿Cuál de las siguientes respuestas le describe mejor a usted?</p> <p>8 Algunas veces puede ser que se sienta orgulloso(a) de ser parte de la comunidad Mexicana/México-Americana, y otras veces, puede ser que se siente orgulloso(a) de ser parte de la comunidad de los Estados Unidos. ¿Cuál de las siguientes respuestas le describe mejor a usted?</p> <p>9 Algunas veces puede ser que se sienta obligado(a) a satisfacer las necesidades de su familia, y otras veces, a satisfacer sus propias necesidades. ¿Cuál de las siguientes respuestas le describe mejor a usted?</p> |
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Bicultural Facility Subscale

Now we would like you tell us how easy or difficult you find the kind of situations we have been asking you about.

Response Options

- | | |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | = very easy |
| 2 | = easy |
| 3 | = neither easy or difficult |
| 4 | = difficult |
| 5 | = very difficult |
| 1 | Needing to speak Spanish sometimes, and English other times is _____. |
| 2 | Being considered a part of the Mexican/Mexican American community sometimes, and a part of the White (Gringo)community other times is _____. |
| 3 | Needing to work with a group for the group to be successful sometimes, and needing to compete with others for me to be successful other times is _____. |
| 4 | Needing to solve a problem in a Mexican/ Mexican American way sometimes, and in a White (Gringo) way other times is _____. |

Subescala de la Facilidad Bicultural

Ahora, nos gustaría que nos diga qué tan fácil o difícil encuentra el tipo de situaciones sobre las que le hemos estado preguntando.

- | | |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | = muy fácil |
| 2 | = fácil |
| 3 | = ni fácil ni difícil |
| 4 | = difícil |
| 5 | = muy difícil |
| 1 | El necesitar hablar español algunas veces, y otras veces inglés es _____. |
| 2 | El considerarme a mí mismo(a) parte de la comunidad Mexicana/México-Americana algunas veces, y otras veces considerarme parte de la comunidad de los blancos (gringos)es _____. |
| 3 | El necesitar trabajar en grupo para que el grupo tenga éxito algunas veces, y otras veces necesitar competir con otros para que yo tenga éxito es _____. |
| 4 | El necesitar resolver un problema a la manera Mexicana/México-Americana algunas veces, y otras veces a la manera de los blancos (gringos) es _____. |

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>5 Needing to interact with other Mexicans/Mexican Americans sometimes, and with Whites (Gringos) other times is _____.</p> <p>6 Needing to make important decisions on my own sometimes, and asking my family for advice other times is _____.</p> <p>7 Needing to participate in Mexican/Mexican American traditions sometimes, and White (Gringo) traditions other times is _____.</p> <p>8 Being proud to be part of the Mexican/Mexican American community sometimes, and being proud to be part of the US community other times is _____.</p> <p>9 Being obligated to satisfy my family's needs sometimes, and satisfying my own needs other times is _____.</p> | <p>5 El necesitar tratar con otros Mexicanos/ México-Americanos algunas veces, y otras veces con los blancos (gringos) es _____.</p> <p>6 El necesitar tomar decisiones importantes por mí mismo(a) algunas veces, y otras veces necesitar pedirle un consejo a mi familia es _____.</p> <p>7 El necesitar participar en las tradiciones Mexicanas/México-Americanas algunas veces, y otras veces en las tradiciones de los blancos (gringos) es _____.</p> <p>8 El estar orgulloso(a) de ser parte de la comunidad Mexicana/México-Americana algunas veces, y otras veces el estar orgulloso(a) de ser parte de la comunidad de los Estados Unidos es _____.</p> <p>9 El ser obligado(a) a satisfacer las necesidades de su familia algunas veces, y otras veces satisfacer sus propias necesidades es _____.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Bicultural Advantages Subscale

Now we would like you to tell us how much advantage or disadvantage you find in the kind of situations we have been asking you about.

Response Options

- | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 = many advantages</p> <p>2 = advantages</p> <p>3 = no advantages or disadvantages</p> <p>4 = disadvantages</p> <p>5 = many disadvantages</p> <p>1 For me, being able to speak Spanish sometimes, and English other times has _____.</p> <p>2 For me, being able to feel part of the Mexican/ Mexican American community sometimes, and being able to feel part of the White (Gringo) community other times has _____.</p> <p>3 For me, being able to work with a group, for the group to be successful sometimes, and being able to compete with others for me to be successful other times has _____.</p> <p>4 For me, being able to solve a problem in a Mexican/Mexican American way sometimes, and being able to solve a problem in a White (Gringo) way other times has _____.</p> <p>5 For me, being able to interact with other Mexicans/Mexican Americans sometimes, and being able to interact with Whites (Gringos) other times has _____.</p> <p>6 For me, being able to make important decisions myself sometimes, and being able to ask my family for advice other times has _____.</p> <p>7 For me, being able to participate in Mexican/ Mexican American traditions sometimes, and being able to participate in White (Gringo) traditions other times has _____.</p> <p>8 For me, being proud of being part of the Mexican/ Mexican American community sometimes, and being proud of being part of the US community other times has _____.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Subescala de la Ventajas Bicultural

Ahora, nos gustaría que nos diga cuánta ventaja o desventaja encuentras en el tipo de situaciones sobre las que le hemos estado preguntando.

- | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 = muchas ventajas</p> <p>2 = ventajas</p> <p>3 = ni ventajas ni desventajas</p> <p>4 = desventajas</p> <p>5 = muchas desventajas</p> <p>1 Para mí, el poder hablar en español, algunas veces, y otras veces en inglés tiene _____.</p> <p>2 Para mí, el poder sentirme parte de la comunidad Mexicana/México-Americana algunas veces, y otras veces el poder sentirme parte de la comunidad de los blancos (gringos) tiene _____.</p> <p>3 Para mí, el poder trabajar en grupo para que el grupo tenga éxito algunas veces, y otras veces el poder competir con otros para que yo tenga éxito tiene _____.</p> <p>4 Para mí, el poder resolver un problema a la manera Mexicana/México-Americana algunas veces, y otras veces el poder resolver un problema a la manera de los blancos (gringos) tiene _____.</p> <p>5 Para mí, el poder tratar con otros Mexicanos/México-Americanos algunas veces, y otras veces el poder tratar con los blancos (gringos) tiene _____.</p> <p>6 Para mí, el poder tomar decisiones importantes por mí mismo(a) algunas veces, y otras veces el poder pedirle un consejo a mi familia tiene _____.</p> <p>7 Para mí, el poder participar en las tradiciones Mexicanas/México-Americanas algunas veces, y otras veces el poder participar en las tradiciones de los blancos (gringos) tiene _____.</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- | | | | |
|---|--------------------------------------------------------------------------------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9 | For me, being obligated to satisfy my family's needs sometimes, and satisfying my own needs other times has _____. | 8 | Para mí, poder estar orgulloso(a) de ser parte de la comunidad Mexicana/México-Americana algunas veces, y otras veces poder estar orgulloso(a) de ser parte de la comunidad de los Estados Unidos tiene _____. |
| | | 9 | Para mí, ser obligado(a) a satisfacer las necesidades de mi familia algunas veces, y otras veces satisfacer mis propias necesidades tiene _____. |

Scoring

The response options and their associated values presented in the appendix are values prior to recoding.

Comfort Subscale: Response options 1 and 2 are recoded to a score of 1, option 3 to a score of 2, option 4 to a score of 3, option 5 to a score of 4, and option 6 to a score of 5.

Facility Subscale: All responses are reverse coded so that higher scores indicate higher bicultural facility.

Advantages Subscale: All responses are reverse coded so that higher scores indicate higher bicultural advantages.

Survey responses were collected through computer-assisted interviews and the labels “Mexican” and “Mexican American” were self-selected by the participants and were then used during the administration of the MABS.

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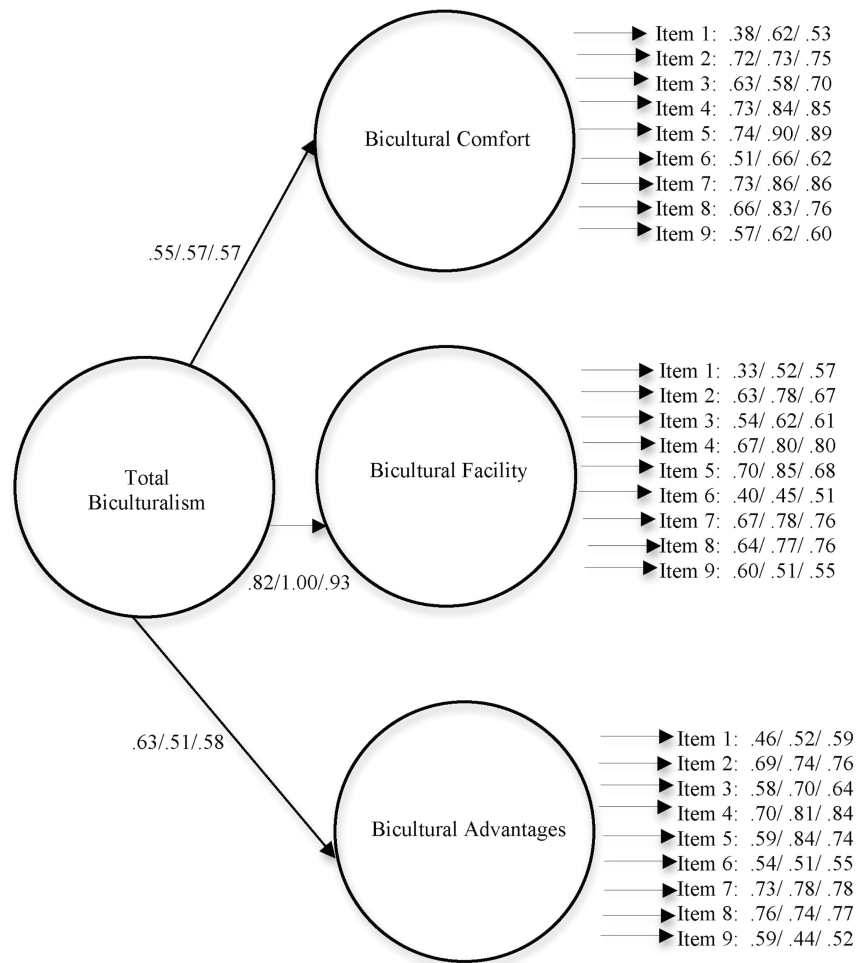


Figure 1. Confirmatory factor analysis results for the three-factor Mexican American Biculturalism Scale for adolescents, mothers, and fathers (respectively). Numbers reported are standardized factor loadings and are not significantly different across reporters.

Table 1

Means (standard deviations), Cronbach's Alpha Coefficients [95% CI], and median [range] of inter-item correlations for the subscales bicultural comfort, bicultural facility, and bicultural advantages, and overall biculturalism for adolescents, mothers, and fathers.

	Bicultural Comfort	Bicultural Facility	Bicultural Advantages	Overall Biculturalism
Adolescents (<i>n</i> = 316)				
Means (SD)	3.24 (.98)	3.67 (.55)	3.91 (.55)	3.60 (.54)
Cronbach's Alpha [CI]	.85 [.83, .88]	.81 [.77, .84]	.86 [.83, .88]	.88 [.86, .90]
Inter-item Correlation Median [Range]	.38 [.19 to .57]	.33 [.11 to .56]	.37 [.23 to .65]	-
Mothers (<i>n</i> = 308)				
Means (SD)	2.84 (1.14)	3.39 (.70)	3.93 (.59)	3.39 (.64)
Cronbach's Alpha [CI]	.92 [.90, .93]	.88 [.86, .90]	.88 [.86, .90]	.92 [.91, .93]
Inter-item Correlation Median [Range]	.52 [.39 to .79]	.42 [.15 to .73]	.40 [.16 to .74]	-
Fathers (<i>n</i> = 177)				
Means (SD)	2.86 (1.14)	3.55 (.68)	4.04 (.63)	3.49 (.64)
Cronbach's Alpha [CI]	.91 [.89, .93]	.88 [.85, .90]	.89 [.86, .91]	.92 [.90, .93]
Inter-item Correlation Median [Range]	.50 [.33 to .80]	.41 [.24 to .72]	.47 [.23 to .76]	-

Table 2

Means and standard deviations for scale scores on construct validity measures for adolescents, mothers, and fathers.

	Adolescents <i>n</i> = 316	Mothers <i>n</i> = 308	Fathers <i>n</i> = 177
English Use	4.61 (.46)	3.26 (1.30)	3.26 (1.21)
Spanish Use	3.16 (1.04)	3.88 (1.19)	3.74(1.09)
Language Conflict	.50 (1.01)	–	–
English Pressures	–	2.00 (1.07)	1.79 (.80)
Spanish Pressures	–	1.25(.53)	1.22 (.46)
Perceived Discrimination	1.18 (.31)	1.21 (.38)	1.27 (.39)
Ethnic Identity	4.24 (.50)	4.28 (.48)	4.20 (.46)

Table 3

Construct validity for the test scores from MABS across reporters for bicultural comfort, bicultural facility, bicultural advantages, bicultural facility, bicultural advantages, and overall biculturalism. Construct validity measures were used as predictors of the latent variables of bicultural comfort, bicultural facility, bicultural advantages, and overall biculturalism. For the language items, English (use and pressures), Spanish (use and pressures), and the interaction between English and Spanish (use and pressures) were simultaneously entered into the model. The numbers reported are unstandardized path coefficients.

	Bicultural Comfort			Bicultural Facility			Bicultural advantages			Overall Biculturalism		
	Adol	Moms	Dads	Adol	Moms	Dads	Adol	Moms	Dads	Adol	Moms	Dads
English Use	.14+	.46***	.40***	.09*	.25***	.23***	.11*	.08**	.32***	.13*	.69***	.37***
Spanish Use	.06	-.39***	-.24***	-.01	-.17***	-.12***	.09**	-.00	-.01	.04	-.17**	-.12*
Lang Conflict	-.06	-	-.06**	-.06**	-	-	-.03	-	-	-.06**	-	-
Eng Pressures	-	-.50***	-.47***	-	-.33***	-.33***	-	-.12***	-.20***	-	-.40***	-.39***
Span Pressures	-	.16	.28*	-	.10	.03	-	-.03	-.01	-	.06	.06
Perceived Disc	-.46***	-.24	-.10	-.18**	-.24*	-.07	.01	.07	-.20***	-.08	-.16*	-.39***
Ethnic Identity	.16*	.25*	.54***	.07+	.17*	.32**	.32***	.25***	.30***	.19**	.13	.40**

Note. Lang = Language, Eng = English, Span = Spanish; Disc = Discrimination.

+ $p < .10$,

* $p < .05$,

** $p < .01$,

*** $p < .001$