The Influence of Ethnic-Racial Identity Developmental Processes on Global Bicultural Competence Development

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Abstract

This study investigated ethnic-racial identity developmental processes (i.e., exploration and resolution) as pathways for adolescents to develop global bicultural competence, or the ability to meet heritage and host cultural demands. The sample included 749 U.S. Mexican-origin youth (30% Mexico-born; 51% male) followed from early-to-late adolescence (M_{age} = 12.79 to 17.38 years). Longitudinal structural equation analyses revealed that youth's sequential engagement in ethnic-racial identity exploration and resolution (from early-to-middle adolescence) promoted global bicultural competence in late adolescence. Findings highlight the benefits of achieving clarity about one's ethnic-racial identity via self-exploration efforts for adolescents' ability to respond effectively to bicultural demands. This study advances mechanisms via which ethnic-racial identity development may support youth adaptation to multiple cultural systems.

Keywords: Biculturalism, Adolescents, Ethnic-Racial Identity

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Competence Development

Given the growing ethnic, racial, and cultural diversification of the U.S. (U.S. Census Bureau, 2019) and many other countries (United Nations, 2019), developmental research on biculturalism is important. Individuals who internalize knowledge from two cultural systems (e.g., ethnic-racial or heritage and national or host cultural systems; Hong et al., 2000) and who develop *global bicultural competence*, the ability to respond behaviorally, affectively, and cognitively to meet heritage and host cultural demands, are referred to as bicultural (LaFromboise et al., 1993). Developing global bicultural competence is an important developmental task for minority youth exposed to more than one cultural system, including ethnic-racial minority and immigrant youth (Motti-Stefanidi, 2018; Nguyen & Benet-Martinez, 2013; Umaña-Taylor & Updegraff, 2007).

Similarly, due to the salience of ethnicity and race in the U.S. (Barajas-Gonzalez et al., 2018; Umaña-Taylor, 2011), ethnic-racial identity (ERI) development is a key developmental task, especially for minority youth (Umaña-Taylor et al., 2014b). *ERI development* captures identity formation relative to one's membership in a specific ethnic-racial group and involves the developmental processes of exploration and resolution. How ERI development informs global bicultural competence development, however, is unknown. The current study bridges important gaps in developmental scholarship by examining these developmental tasks together. Specifically, we examined whether youth sequential engagement in ERI developmental processes in early and middle adolescence (i.e., exploration and resolution, respectively) would promote their global bicultural competence development in late adolescence (Figure 1). Adolescence is an important period to examine these associations because identity development

is a significant developmental task during these years (Erikson, 1968) and because advanced

cognitive abilities (e.g., introspection, perspective taking, and abstract thinking; Arnett, 2014)

support adolescents' understandings of affordances and demands associated with different

cultural systems. This study focuses on Mexican-origin individuals, the largest immigrant group

in the U.S. (U.S. Census Bureau, 2019), to support direct assessment of ERI and global bicultural

competence specific to heritage Mexican and host American cultural systems.

[Insert Figure 1 here]

Ethnic-Racial Identity Developmental Processes: Exploration and Resolution

In the last decades, researchers have significantly advanced scientific knowledge of the

antecedents and consequents of ERI development (Umaña-Taylor et al., 2014b). This scholarship

has provided tools to understand and study ERI development as a normative task involving the

developmental processes of exploration and resolution, which are informed by one's ethnic

heritage and racialized experiences. *ERI exploration* refers to efforts to search the meaning of

one's ethnic-racial group membership. *ERI resolution* refers to commitment to the meaning and

significance attached to one's membership in a particular ethnic-racial group (Umaña-Taylor,

2011; Umaña-Taylor et al., 2004). Consistent with Erikson's theoretical notions (1968), the

developmental processes of ERI exploration and resolution are critical aspects of ERI

development. By actively seeking information, considering different perspectives, and

participating in activities to learn about their ethnic-racial background (exploration), youth are

likely to achieve a confident, clear sense of the role that their ethnic-racial backgrounds play in

how they define themselves (resolution; Umaña-Taylor, 2011). ERI exploration, therefore, is

important for ERI resolution. Notably, ERI resolution achieved via ERI exploration reflects a

profound understanding regarding one's ethnic-racial background because it emerges from one's

own search and examination, rather than as a function of something provided by others and accepted without questioning (Umaña-Taylor et al., 2018). A secure or achieved ERI, therefore, is most likely to emerge when one's sense of clarity is actively developed rather than passively attained by blindly adopting others' views (Phinney, 2003; Umaña-Taylor et al., 2014b).

Prior work focused on ERI exploration and resolution has documented the age-graded and sequential developmental progression of these processes during middle and late adolescence. For instance, long-term growth in exploration and resolution was observed over a 4-year period among U.S. Latino female (but not male) adolescents (Umaña-Taylor et al., 2009a) and over a 5-year period among U.S. Mexican-origin adolescent females (Umaña-Taylor et al., 2015; this study's sample did not include males). Both studies examined each process separately and documented developmental changes over the period spanning middle to late adolescence, with the 2009 study showing accelerated growth for female compared to male adolescents. Importantly, and consistent with the theoretical model (Erikson, 1968), other studies have demonstrated that increases in ERI exploration predicted shorter-term increases in ERI resolution among U.S. ethno-racially diverse middle adolescents (Umaña-Taylor et al., 2018) and longer-term increases in ERI resolution from middle to late adolescence among U.S. Mexican-origin youth (White et al., 2018). Both studies controlled for earlier levels of resolution, suggesting that increases in exploration lead to increases in resolution. This prospective approach is critical for highlighting the importance of prior engagement in ERI exploration for changes in ERI resolution attainment, and establishing causal mechanisms. Notably, White et al. (2018) demonstrated that the sequential developmental progression of these processes did not differ by gender or nativity and Umaña-Taylor et al. (2018) showed that it did not differ between White and ethnic-racial minority youth. None of these studies, however, examined the association

between ERI exploration and ERI resolution from early-to-middle adolescence. Building on prior work demonstrating the developmental progression of ERI exploration and resolution in middle-to-late adolescence, and the salience of identity development throughout adolescence, this study examined the influence of early adolescent ERI exploration for middle adolescent resolution. Additionally, achieving a sense of ERI resolution as a result of one's thorough self-examination is expected to be linked to greater self-confidence and understanding regarding one's ERI, and, in turn, to be associated with additional psychosocial benefits (e.g., stronger self-concept, higher self-esteem; Umaña-Taylor et al., 2018). This investigation, therefore, provides insights into whether prior increases in ERI resolution, as a function of exploration, are beneficial for the development of other competencies in late adolescence, namely global bicultural competence.

Ethnic-Racial Identity Development and Global Bicultural Competence

Global bicultural competence is a complex, multifaceted ability that comprises an assortment of behavioral, affective, and cognitive bicultural skills and components enabling individuals to negotiate or respond to heritage and host cultural demands by employing culturally situated repertoires (LaFromboise et al., 1993). Bicultural skills include (a) *frame-switching*, the cognitive and behavioral capacity for shifting between heritage and host cultural frames of reference (Hong et al., 2000); (b) *integrative complexity,* the cognitive ability to acknowledge and build conceptual links between different perspectives (Tadmor & Tetlock, 2006); and (c) *bicultural identity integration,* further composed of two sub-skills: the affective capacity for resolving conflicts between heritage and host identities (*harmony*) and the cognitive-behavioral capacity for merging those two identities together (*blendedness*; Huynh et al., 2018). Research focusing on bicultural identity integration highlights the importance of distinguishing among behavioral, affective, and cognitive bicultural skills.

Components of bicultural competence include (a) *bicultural facility*, the behavioral proficiency in negotiating heritage and host cultural demands (e.g., participating with ease in heritage or host culture traditions); (b) *bicultural comfort*, the positive feelings associated with navigating heritage and host cultural demands (e.g., feeling comfortable participating in heritage or host culture traditions); and (c) *bicultural advantage*, the thoughts vis-à-vis one's ability to negotiate heritage and host cultural demands (e.g., perceiving benefits associated with one's ability to participate in heritage or host culture traditions; Basilio et al., 2014). Individuals who experience facility, comfort, and advantage when responding to bicultural demands may be more likely to seek opportunities to develop and practice behavioral, affective, and cognitive bicultural skills like frame-switching, integrative complexity, and bicultural identity integration. Bicultural facility, comfort, and advantage, therefore, are theorized to serve as the behavioral, affective, and cognitive bases for the development of the skills needed to navigate bicultural demands effectively and readily (Basilio et al., 2014), though these associations have not been tested empirically. Still, prior work has documented that the different bicultural skills are correlated with one another (e.g., blendedness and harmony; Benet-Martínez et al., 2002) and that the different bicultural competence components are also intercorrelated (e.g., facility and comfort; Carlo et al., 2016). These findings suggest that the same processes may be promoting the development of different facets (e.g., behavioral, affective) of bicultural competence. Further, greater behavioral, affective, and cognitive components of bicultural competence have been associated with higher adjustment (e.g., general self-efficacy, prosocial tendencies, life-satisfaction, and self-esteem; Carlo et al., 2016; David et al., 2009) and with lower maladjustment (e.g., internalizing and externalizing symptoms; Carrera & Wei, 2014; Safa et al., 2019; Wei et al., 2010). Thus, we focus on bicultural facility, comfort, and advantage, given their

theorized relevance for the development of behavioral, affective, and cognitive bicultural skills and because of their promoting influence on adjustment.

Both theoretical and empirical works lend support for an investigation of the links between the sequential engagement in ERI developmental processes and global bicultural competence. Psychosocial developmental theory postulates that social identities for which youth gain a sense of resolution via their exploration efforts are associated with many psychosocial benefits, such as a greater sense of inner strength and self-confidence and the ability to form positive relationships with others (Erikson, 1968). These benefits are theorized to arise, in part, from youth's active rather than passive understanding of a given social identity (e.g., ERI; Umaña-Taylor et al., 2018) and, in turn, expected to promote other developmental competencies (Phinney, 1991; Umaña-Taylor et al., 2014b). Further, for youth exposed to at least two cultural systems (e.g., heritage and host), developmental changes in ERI are theoretically situated within broader developmental changes known as dual-cultural adaptation, comprising enculturation and acculturation processes (Schwartz et al., 2006, 2010). *Enculturation* refers to the process of cultural change or adaptation to the heritage culture, whereas *acculturation* refers to the process of cultural change or adaptation to the host culture (Gonzales et al., 2002). Enculturation and acculturation are parallel processes that take place across multiple cultural domains including identities, values, and practices (Knight et al., 2018) and adaptation in one domain (e.g., ERI development) may lead to adaptation in other domains (Schwartz et al., 2010). Notably, global bicultural competence is conceptualized to emerge from dual-cultural adaptation (Nguyen & Benet-Martinez, 2007; Sam & Berry, 2006). Thus, it is expected that ERI development, as one important and developmentally salient domain of dual-cultural adaptation for adolescents (most specifically a key domain of the enculturation process), may promote global bicultural

competence during adolescence. In this way, then, the sequential engagement in the developmental processes of ERI exploration and resolution may have important implications for adolescent behavioral, affective, and cognitive components of bicultural competence (Garcia Coll et al., 1996; Phinney, 2003).

Importantly, enculturation is especially relevant for the development of minority youth's heritage culture competencies and identities (Knight et al., 1993; Umaña-Taylor et al., 2009b) required for global bicultural competence development. In addition, minority youth experience direct and continuous opportunities to learn about the host culture by attending host country schools - influenced by regional and national factors - and by interacting with teachers and peers (Motti-Stefanidi, 2018; Padilla, 2006). However, they may only experience limited and sometimes indirect opportunities to learn about the heritage culture through family members (Knight et al., 2011), co-ethnic communities (White et al., 2017), or media (Ferguson et al., 2016). For minority youth, therefore, the sequential engagement in ERI developmental processes of exploration and resolution may be key for global bicultural competence development. Youth who actively seek information and participate in activities to learn about their heritage background (exploration) are likely to achieve a clear sense of the role that their heritage backgrounds play in how they define themselves (resolution; Umaña-Taylor et al., 2014b). Youth's commitment to the meaning and significance attached to their heritage background, in turn, likely increases their capacity for developing global bicultural competence. Thus, consistent with theoretical work (Erikson, 1968; Phinney, 2003; Umaña-Taylor et al., 2018), we postulate that ERI developmental processes represent a pathway through which minority youth may develop global bicultural competence (Figure 1).

Furthermore, ERI developmental processes may inform key developmental tasks and competencies that further propel the development of global bicultural competence. Prior work suggests that having a clear sense of one's heritage background may afford youth with opportunities to develop other heritage culture competencies during adolescence. For instance, ERI resolution was associated with endorsement of familism (Kiang & Fuligni, 2009; Umaña-Taylor et al., 2009b) and Spanish fluency (Umaña-Taylor et al., 2009b) among U.S. Latino adolescents, and with heritage culture values among U.S. Mexican-origin adolescents (Knight et al., 2011). Further, these studies documented no gender (Kiang & Fuligni, 2009; Knight et al., 2011; Umaña-Taylor et al., 2009b) or nativity (Knight et al., 2011) differences in these associations. This literature supports the idea that ERI resolution promotes adolescent behavioral and socio-cognitive heritage culture competencies required for global bicultural competence, but the extant research has not examined whether ERI resolution, as a result of ERI exploration, promotes behavioral, affective, and cognitive components of bicultural competence.

Additionally, there is emerging evidence showing that clarity regarding one's heritage background may present youth with affordances to develop other identities and competencies. For example, prior research shows that ERI resolution was associated with higher host identity resolution among U.S. Latino college students (Fuller-Rowell et al., 2013; Meca et al., 2019). Further, increases in ERI resolution were related to increases in one's global, or overall sense of identity cohesion among U.S. ethno-racially diverse adolescents (Umaña-Taylor et al., 2018). Last, ERI resolution was associated with increases in social competencies with peers, including those from the host culture, among U.S. Mexican-origin adolescents (Umaña-Taylor et al., 2014a) and U.S. ethno-racially diverse adolescents (Rew et al., 2015). Three of these studies examined the role of social position variables in these associations and documented no

differences by gender (Rew et al., 2015; Umaña-Taylor et al., 2014a) or between White and ethnic-racial minority youth (Umaña-Taylor et al., 2018). These studies suggest that ERI resolution promotes the development of social competencies and increases clarity regarding one's multifaceted social identity and overall sense of self that may support youth global bicultural competence development, but they have not examined the role of ERI resolution, achieved via ERI exploration, on the development of bicultural facility, comfort, and advantage.

Last, there is limited evidence (e.g., mean-level differences and correlations) showing that more bicultural individuals, indicated by indirect and direct assessments of biculturalism (see Basilio et al., 2014, for a full discussion), report higher levels of ERI resolution compared to less bicultural individuals. For instance, higher biculturalism was associated with higher levels of ERI resolution among U.S. Mexican-origin adolescents (Knight et al., 2014) and U.S. ethno-racially diverse college students (David et al., 2009). Further, ERI resolution was positively associated with both affective (i.e., bicultural identity integration: harmony vs. conflict) and cognitive-behavioral (i.e., bicultural identity integration: blendedness vs. compartmentalization) bicultural skills among U.S. ethno-racially diverse college students (Huynh et al., 2018). Importantly, these studies did not examine pathways between ERI resolution and global bicultural competence, or tested the stability of these findings across gender or nativity. This work, however, highlights the importance of ERI resolution for multiple facets (e.g., behavioral, affective) of bicultural competence and underscores the relevance of engaging in ERI resolution for the development of bicultural skills.

Finally, bicultural facility, comfort, and advantage are positively correlated with one another (Carlo et al., 2016). Further, prior work has shown that ERI resolution influences the development of behavioral, affective, and cognitive competencies, including value endorsement,

language fluency, social skills, and global identity cohesion (Kiang & Fuligni, 2009; Knight et al., 2011; Rew et al., 2015; Umaña-Taylor et al., 2009b, 2014a, 2018). It is expected, therefore, that ERI resolution, attained via ERI exploration, will promote the development of all three components of global bicultural competence. However, individuals do not often achieve the same degree of competence across all bicultural skills and components (David et al., 2009; Safa et al., 2019) and prior work has suggested that bicultural facility and comfort differentially predict adjustment (Safa et al., 2019). Thus, it is important to consider that the associations between ERI developmental processes and each global bicultural competence component may not be the same.

The Current Study

This is the first study to examine the extent to which ERI developmental processes represent a pathway through which minority youth may develop behavioral, affective, and cognitive components of bicultural competence ("global bicultural competence" hereafter). Using prospective longitudinal structural equation modelling across early-to-late adolescence, we examined whether youth sequential engagement in the developmental processes of ERI exploration and resolution from early-to-middle adolescence would promote late adolescent global bicultural competence. This examination was confirmatory in nature. We controlled for previous levels of ERI resolution and global bicultural competence, offering a stronger test of mediation. Importantly, prior scholarly work suggests the developmental process captured in our hypothesized model does not vary between male and female youth, or between Mexico- and U.S.-born youth (e.g., Knight et al., 2011; White et al., 2018). However, based upon extant theory recognizing the influence of salient social position constructs, including gender and nativity, on youth developmental competencies (García Coll et al., 1996) and to follow best-

practice recommendations to avoid data analytic biases (e.g., Hartung & Lefler, 2019), we

examined whether the hypothesized developmental process applied equally well to male and

female youth, and to Mexico- and U.S.-born youth. The examination of gender and nativity was

exploratory in nature. Last, we conducted exploratory sensitivity analyses to examine whether

ERI developmental processes relate to each bicultural competence component in a similar

manner. We tested our models in a large and diverse sample of U.S. Mexican-origin adolescents.

Method

Data were from a longitudinal study (2004 – 2013) of U.S. Mexican-origin families

(Roosa et al., 2008). Participants included 749 youth (51% male), their mothers, and a subsample

of fathers (n = 467) selected from 5th grade classrooms in the Phoenix metropolitan area. To

obtain the large sample size, it was necessary to recruit families from two subsequent 5th grade

cohorts using identical recruitment strategies (the 2004-2005 and 2005-2006 academic years; see

Roosa et al., 2008 for additional details). Families were eligible if they had a target 5th grader

attending a sampled school; the participating mother was the biological mother, lived with the

youth, and was of Mexican-origin; the youth's biological father was of Mexican-origin; the

youth was not learning disabled; and no stepfather figure lived with the youth. Among eligible

families, 73.2% participated.

In the first wave (5th grade), 30.2% of mothers, 23.2% of fathers, and 82.5% of youth

chose to be interviewed in English and the remaining in Spanish. Most parents were Mexico-

born (74.3% to 79.9%). Most youth were U.S.-born (70.3%). On average, Mexico-born youth

had lived in the U.S. since five years of age (SD = 2.99). Mean age was 35.9 years (SD = 5.81)

for mothers, 38.1 years (SD = 6.26) for fathers, and 10.42 years (SD = .55) for youth. Parents

reported about 10 years of education (SD_M = 3.67; SD_F = 3.94). Annual family incomes ranged

from less than $5,000 to more than $95,000 (mean $30,000 – $35,000). Of the 749 families,

94.8%, 85.4%, and 84.9% participated in 7th, 10th, and 12th grade, respectively. Given our focus

on adolescence, the current study used data from the second (7th grade), third (10th grade), and

fourth (12th grade) waves, corresponding to early, middle, and late adolescence, respectively.

Participants completed computer assisted interviews at home in their preferred language, and

received $50, $55, and $60 at each respective wave.

Measures

All participants reported on demographic characteristics including gender (0 = male; 1 =

female) and nativity (0 = Mexico-born; 1 = U.S.-born). Parents reported on annual family

income (1 = $0,000–$5,000 to 20 = $95,001+). Because most youth completed interviews in

English in 7th, 10th, and 12th grades (87.5% - 94.3%), we provide overall Cronbach's alphas for

each scale.

ERI Exploration (7th Grade) and Resolution (7th and 10th Grades)

Adolescents reported on *ERI exploration* (7-items; e.g., "I have attended events that have

helped me learn more about my ethnicity") and *resolution* (4-items; "I have a clear sense of what

my ethnicity means to me") using respective subscales from the Ethnic Identity Scale (EIS;

Umaña-Taylor et al., 2004). Previous work supported the factor structure, construct validity, and

reliability of the subscales with U.S. Mexican-origin youth (White et al., 2011). The response

scale ranged from 1 *(not at all true)* to 5 *(very true)*. Means were computed for each subscale,

higher scores reflect higher levels of exploration and resolution. Cronbach's α were .73 (7th

grade exploration) and .86 (for both 7th and 10th grade resolution).

Global Bicultural Competence (10th and 12th Grades)

Adolescents reported on *behavioral, affective, and cognitive components of their bicultural competence* (i.e., facility, comfort, and advantage, respectively) using the Mexican American Biculturalism Scale (MABS; Basilio et al., 2014). Previous work supported the factor structure, construct validity, and reliability of the measure with U.S. Mexican-origin youth (Basilio et al., 2014). This scale was developed and validated on the second cohort during 10th grade data collection ($n = 316$); thus, the first cohort did not complete this scale in the 10th grade (planned missingness; Basilio et al., 2014). Planned missingness yields incomplete data that are missing completely at random (MCAR) because the missingness is planned and controlled by the research team; thus, necessarily meet the assumptions of MCAR (Little, 2013). All subscales included 9 items. The facility subscale (e.g., "Being obligated to satisfy my family's needs sometimes, and satisfying my own needs other times is ___") responses ranged from 1 (*very easy*) to 5 (*very difficult*). The comfort subscale (e.g., "Sometimes you may need to make an important decision on your own, and other times you may need to ask your family for advice.") responses ranged from 1 (e.g*., I am only comfortable when…)* to 5 *(e.g., I am always comfortable in both of these situations).* The advantage subscale (e.g., "For me being able to interact with other Mexican/Mexican Americans sometimes, and being able to interact with Whites (gringos) other times has ___") responses ranged from 1 (*many advantages)* to 5 (*many disadvantages).* Items were reversed coded for the facility and advantage subscales. Means were calculated for each subscale, higher scores reflect higher levels of facility, comfort, and advantage. Cronbach's α were .81 (facility), .85 (comfort), and .86 (advantage) in the 10th grade. Cronbach's α were .83 (facility), .85 (comfort), and .85 (advantage) in the 12th grade. Based on prior theoretical and empirical work (Basilio et al., 2014), subscales' mean scores were used as indicators of a global bicultural competence latent construct.

Analytic Strategy

We conducted preliminary analyses. Given our longitudinal design, there was the potential for two types of missing data. First, we conducted missing data analyses to examine missingness due to attrition (i.e., a family did not complete any study procedure at a particular wave of data collection). Missing data due to attrition are often missing at random (MAR); thus, missing for a potentially knowable and consequently predictable reason (e.g., income). Attrition analyses, therefore, examined any demographic variable predicting missingness at a given wave. Second, we examined missingness due to nonresponse (i.e., a participant did not complete some of the interview, but participated in a given wave; Little, 2013). Missing data due to nonresponse are often missing completely at random (MCAR; Little, 2013). Thus, we used Little's (1988) MCAR test to determine if nonresponse missing data were missing completely at random in our sample. Under data that are missing due to a combination of MAR and MCAR processes, full information maximum likelihood estimation (FIML) and auxiliary variables provide unbiased estimates (Enders, 2010; Little, 2013). Next, to support our planned main analyses (Figure 1), we conducted measurement invariance analyses. Specifically, we investigated the longitudinal factorial invariance of the ERI resolution (7th and 10th grades) and the global bicultural competence (10th and 12th grades) measures across time. To support our examination of social position variables (García Coll et al., 1996; Hartung & Lefler, 2019), we tested multi-group factorial invariance of the ERI exploration (7th grade), ERI resolution (10th grade), and global bicultural competence (12th grade) measures across gender and nativity groups. Evidence of partial scalar measurement invariance, where most loadings and intercepts are invariant across time and groups, is recommended to advance our primary analyses (Little, 2013)

For our primary analyses, we conducted longitudinal structural equation analyses using

Mplus 8 (Muthén & Muthén, 2010). Multiple fit indices were examined to assess global model fit; good (acceptable) model fit is reflected by CFI greater than .95 (.90), RMSEA less than .05 (.08), and SRMR less than .05 (.08; Hu & Bentler, 1999). Mediation effects were tested using the distribution-of-product method in *RMediation* (Tofighi & MacKinnon, 2011). We conducted multi-group structural equation analyses to assess stability of associations, and hence the generalizability of the associations, across adolescents' gender and nativity groups. Specifically, a fully unconstrained model was compared to a partially constrained model (i.e., constrained paths: (a) ERI exploration to resolution, (b) ERI resolution to global bicultural competence, and (c) ERI exploration to global bicultural competence) using a chi-square difference test. A non-significant chi-square suggested invariance across the grouping variable (Mackinnon, 2008).

Finally, we conducted sensitivity analyses to examine whether ERI developmental processes related to each bicultural competence component similarly. In addition to the measurement invariance analyses already described, to support our planned sensitivity analyses, we also investigated the (a) longitudinal factorial invariance and (b) multi-group factorial invariance of each of the MABS subscales separately. Similarly, evidence of partial scalar measurement invariance, where most loadings and intercepts are invariant across time and groups, is recommended to advance our sensitivity analyses (Little, 2013). We then tested a model in which bicultural facility, comfort, and advantage were included as observed variables instead of as indicators of one global bicultural competence latent construct and examined whether these associations generalized equally well across gender and nativity groups. Though prior work suggests that ERI resolution has similar implications for affective and cognitive-behavioral bicultural skills, our sensitivity analyses offer an incremental extension to the literature and supports future research questions and approaches.

Results

Preliminary Analyses

Attrition analyses examined whether families who participated in 7th, 10th, and 12th

grades differed on 5th-grade child demographic (i.e., age, nativity, gender) and parent

demographic (i.e., age, nativity, family annual income) variables from those that did not.

Families who participated in 10th grade ($n = 640$) reported higher family annual income [$t(730)$

$= -2.96, p = .003$] and youth were less likely to be Mexico-born [$\chi^2(1) = 4.68, p = .031$]

compared to those who did not participate in 10th grade ($n = 109$). Families who participated in

12th grade ($n = 636$) reported higher family annual income [$t(730) = -3.17, p = .002$] and youth

were less likely to be male [$\chi^2(1) = 8.43, p = .004$] compared to those who did not participate in

12th grade ($n = 113$). No other differences were observed. To reduce bias attributed to

missingness due to attrition (i.e., data MAR), therefore, we included 5th grade family income as

an auxiliary variable (Enders, 2010; Little 2013). Gender and nativity were not included as

auxiliary variables because they were included in multi-group analyses. Additionally,

comparison of the means and covariances of all study variables using Little's (1988) MCAR test

revealed that missing data due to nonresponse met the MCAR assumptions, $\chi^2(36) = 39.73, p =$

.308. Therefore, missing data were handled using FIML and 5th grade family income as an

auxiliary variable which is appropriate under data that are a combination of MAR and MCAR

(Little, 2013).

To test for measurement invariance that would support our main analytical approach, we

followed Little's (2013) recommendations (e.g., invariance holds if the difference in the CFI

between the constrained model and the unconstrained model is less than .01) and assessed

whether all (invariance) or most (partial invariance) item loadings (i.e., metric invariance) and

intercepts (i.e., scalar invariance) were invariant across time and group. We found evidence of

longitudinal scalar invariance for the ERI resolution (7th and 10th grades) and global bicultural

competence (10th and 12th grades) measures across time (Supplemental Analyses Table 1).

Similarly, we found evidence of multi-group scalar invariance for the ERI exploration (7th

grade; partial scalar invariance by gender; scalar invariance by nativity); ERI resolution (10th

grade; partial scalar invariance by gender; scalar invariance by nativity); and global bicultural

competence measures (12th grade; partial scalar invariance by gender; scalar invariance by

nativity; Supplemental Analyses Table 1).

Descriptive statistics are presented in Table 1. ERI exploration in the 7th grade was

positively associated with 7th and 10th grade ERI resolution and with 10th and 12th grade

behavioral, affective, and cognitive components of bicultural competence. ERI resolution in the

7th and 10th grades were positively associated with 10th and 12th grade behavioral, affective,

and cognitive components of bicultural competence. Last, the distributions of study variables

were acceptable (i.e., skewness < 2, kurtosis < 7; West et al., 1995).

[Insert Table 1 here]

Primary Analyses

Chi-square difference tests based on the multi-group structural equation model

comparisons indicated that the associations between ERI exploration and resolution, and between

those processes and global bicultural competence did not differ by adolescent gender, $\Delta\chi^2$ (3) =

1.09, $p = .779$, or nativity, $\Delta\chi^2$ (3) = .76, $p = .859$. These findings suggest that the examined

developmental pathways apply equally well (or generalize) to male and female youth, and to

Mexico- and U.S.-born youth. Subsequently, we included adolescent gender and nativity as

covariates in the model to control for any mean differences on 10th grade ERI resolution and 12th grade global bicultural competence.

The fit of the model – including gender and nativity as covariates – was good to acceptable, χ^2 (30) = 105.57, p < .01; CFI = .93; RMSEA = .06, 90% CI [.046, .070]; SRMR = .05 (see Figure 2). Further, consistent with prior work (Basilio et al., 2014), bicultural facility, comfort, and advantage related closely to the global bicultural competence latent factor with standardized loadings of .83 (p < .01), .58. (p < .01), and .70 (p < .01), respectively. Supporting our hypothesis, early adolescents' higher ERI exploration predicted higher ERI resolution three years later, β = .16 (.04), p < .01, controlling for prior levels of ERI resolution, gender, and nativity. In addition, middle adolescents' higher ERI resolution predicted higher global bicultural competence two years later, β = .18 (.05), p < .01, controlling for prior levels of global bicultural competence, gender, and nativity. ERI exploration did not directly predict global bicultural competence, β = -.03 (.06), p = .603. Middle adolescents' ERI resolution mediated the prospective association between early adolescents' ERI exploration and late adolescent global bicultural competence (ab = .01, SE = .01, 95% CI [.005, .028]).

[Insert Figure 2 here]

Sensitivity Analyses

Evidence of longitudinal factorial invariance and multi-group factorial invariance for the bicultural facility, bicultural comfort, and bicultural advantage measures is presented in Supplemental Analyses Table 2, with results supporting our sensitivity analyses according to Little's (2013) recommendations. Consistent with primary analyses, we included adolescent gender and nativity as covariates on endogenous variables, after multi-group chi-square difference tests indicated that the examined associations did not differ by adolescent gender, $\Delta\chi^2$

(7) = 9.68, p = .207, or nativity, $\Delta\chi^2$ (7) = 6.59, p = .473. Specifically, the associations found between ERI exploration and ERI resolution, ERI resolution and each bicultural competence component, and ERI exploration and each bicultural competence component generalized equally well to male and female youth and to Mexico- and U.S.-born youth. These findings further suggest that the examined developmental pathways apply equally well to youth across gender and nativity groups.

Further supporting our hypothesis, the tested alternative model replicated findings from primary analyses (see Figure 3). Specifically, the associations between ERI developmental processes and behavioral, affective, and cognitive components of bicultural competence were consistent. Additionally, a supplementary chi-square difference test indicated that constraining the paths between ERI resolution and each bicultural competence component and between ERI exploration and each bicultural competence component to be the same did not contribute to misfit, $\Delta\chi^2$ (4) = 7.74, p = .102.

[Insert Figure 3 here]

Discussion

This study extends psychosocial developmental theories (Erikson, 1968), ERI developmental theories (Phinney, 1991; Umaña-Taylor et al., 2018), and dual-cultural adaptation theories (Sam & Berry, 2006) by examining how ERI developmental processes may provide a pathway for adolescents to develop global bicultural competence. Consistent with the developmental model advanced herein, findings suggest that youth sequential engagement in the developmental processes of ERI exploration and resolution from early-to-middle adolescence promotes the development of behavioral, affective, and cognitive bicultural competence in late adolescence. Further, consistent with contemporary calls to address data analytic bias (Hartung

& Lefler, 2019), our explicit examination of possible gender and nativity differences in our hypothesized model showed that all prospective mediation findings generalized equally well across adolescent gender and nativity. This study advances a developmental understanding of the ways in which ERI developmental processes support global bicultural competence development across early-to-late adolescence. Importantly, it highlights the significance of early exploration efforts and of subsequent adolescents' clarity vis-à-vis their ethnic-racial or heritage group membership for their multifaceted ability to navigate bicultural demands and contexts. It also establishes that ERI development, a well-studied normative developmental competency for minority youth (Umaña-Taylor et al., 2014b), has important implications for the development of global bicultural competence, a less commonly examined developmental competency (Safa & Umaña-Taylor, in press) for large, growing segments of the U.S. (U.S. Census Bureau, 2019) and world (United Nations, 2019) populations.

ERI Developmental Processes and Global Bicultural Competence Development

Supporting our hypothesis, adolescents who demonstrated greater sequential engagement in the developmental processes of ERI exploration and resolution from early-to-middle adolescence exhibited higher global bicultural competence in late adolescence (controlling for prior levels of ERI resolution and global bicultural competence). This finding is consistent with developmental theory postulating that social identities for which youth gain a sense of resolution via self-exploration are linked to additional psychosocial benefits (Erikson, 1968) and underscores the significance of early youth's own exploration efforts for gaining a profound sense of clarity relative to the meaning of their heritage group membership. Further, it indicates that youth who increasingly and actively access opportunities to learn about their heritage group during early adolescence and, as a result, attain some degree of resolution during middle

adolescence may be better positioned – behaviorally, affectively, and cognitively – to navigate

bicultural demands and contexts in late adolescence. This finding extends the developmental

competencies that are influenced by ERI developmental processes to include global bicultural

competence, expanding prior work examining the benefits of ERI development for heritage

culture competencies (Kiang & Fuligni, 2009; Knight et al., 2011; Umaña-Taylor et al., 2009b),

social competencies (Rew et al., 2015; Umaña-Taylor et al., 2014a), and various aspects of

identity (Fuller-Rowell et al., 2013; Meca et al., 2019; Umaña-Taylor et al., 2018). This

extension is important because it highlights how ERI developmental processes may provide a

pathway for adolescents' development of behavioral, affective, and cognitive competencies

needed to successfully navigate demands associated with both heritage and host cultural systems.

ERI development is an important and developmentally salient domain of adolescents'

dual-cultural adaptation. Further, global bicultural competence is theorized to emerge from dual-

cultural adaptation (Schwartz et al., 2006, 2010). Several mechanisms may explain the observed

promoting influence of ERI development for global bicultural competence and each of these

should be explored in future research. First, the sequential engagement in the developmental

processes of ERI exploration and resolution may inform global bicultural competence by

affording youth with opportunities to develop and practice multifaceted heritage culture

competencies that are necessary for behavioral, affective, and cognitive bicultural competence

development. ERI development is a significant domain of the enculturation process (Knight et

al., 2018). Indeed, prior research documents that youth who engaged in ERI resolution exhibited

higher endorsement of heritage culture values (Kiang & Fuligni, 2009; Knight et al., 2011;

Umaña-Taylor et al., 2009b) and practices (Umaña-Taylor et al., 2009b). Minority youth may

only experience limited and sometimes indirect opportunities to learn about the heritage culture

compared to the host culture (Ferguson et al., 2016; Knight et al., 2011; White et al., 2017). For minority youth, therefore, achieving ERI resolution via their own exploration efforts is especially relevant for the development of heritage culture, or enculturative competencies (Knight et al., 1993; Umaña-Taylor et al., 2009b) required for global bicultural competence development. Youth who achieve a clear sense of the meaning of their heritage group memberships are more likely to internalize other cultural domains associated with the heritage culture (Tajfel & Turner, 1986) and to seek opportunities to practice those competencies. Youth who practice heritage culture competencies within the host country – where host culture competencies are consistently accessible – are better equipped to develop global bicultural competence.

Second, the sequential engagement in ERI exploration and resolution may inform global bicultural competence by supporting youth to engage in frequent, positive peer interactions. Prior research shows the promoting effect of ERI resolution for social competencies (Rew et al., 2015; Umaña-Taylor et al., 2014a) that may support youth's interactions with peers from both cultural systems. Importantly, identity development and peer relations are particularly interconnected during adolescence (Umaña-Taylor et al., 2020). Spending frequent and positive time with peers from heritage and host cultural systems – especially when holding a clear sense of the meaning associated with their heritage group memberships – likely affords youth with opportunities to further develop heritage and host identities and competencies. Youth who frequently practice heritage and host culture competencies with peers, learn to manage bicultural affordances and demands, thus, develop greater global bicultural competence.

Last, the sequential engagement in ERI exploration and resolution may inform global bicultural competence by supporting youth to explore and clarify the links between heritage and host identities. Prior research shows that engaging in ERI resolution has implications for the

development of one's host identity (Fuller-Rowell et al., 2013; Meca et al., 2019). It is likely that

minority youth who have attained a clear sense of their ERI would have more psychological

resources (Fuller-Rowell et al., 2013) to actively seek information and participate in activities to

learn about their host group membership. Alternatively, ERI and host identity development may

take place in conjunction with one another (Gartner et al., 2014). Youth may search for the

meaning of their heritage group membership in relation to their host group membership and

explore the degree to which their heritage identity informs their host identity and vice versa (e.g.,

compare themselves to family members living in heritage country). As youth explore other

aspects of their heritage background (e.g., practices, values), they might compare how those

aspects relate to their upbringing and to that of their peers and out-group communities.

Importantly, identity development involves synthesizing one's global identity among multiple

identities (e.g., heritage, host, gender) and domains (e.g., practices, values; Erikson, 1968). It is

likely that as youth engage in ERI resolution, they negotiate how to integrate their ERI with

other aspects of their global identities (Umaña-Taylor et al., 2018), including their host identities

(Huynh et al., 2018). Youth who successfully internalize and organize identities, values, and

practices associated with both cultural systems are more likely to develop global bicultural

competence (Benet-Martinez & Haritato, 2005; LaFromboise et al., 1993).

  Notably, findings from sensitivity analyses replicated findings from main analyses

suggesting that these mechanisms may explain the promoting influence of ERI development for

multiple bicultural competence components. This finding extends prior work documenting the

positive association of ERI resolution with affective (bicultural identity integration: harmony)

and cognitive-behavioral bicultural skills (bicultural identity integration: blendedness; Huynh et

al., 2018) by demonstrating that ERI resolution equally supports the development of behavioral,

affective, and cognitive components of bicultural competence. Although preliminary, this finding indicates that the same processes may be driving the development of different bicultural competence components. Alternatively, it may hint at a cascade effect whereby ERI developmental processes promote the development of one of the components and that, in turn, promotes the development of the other components. Future work should continue to examine the antecedents and consequents of bicultural facility, comfort, and advantage – the theorized underpinnings of bicultural skills – to elucidate the mechanisms that promote these components and understand the ways in which each of them relate to other youth developmental outcomes.

Ethnic-Racial Identity Development: Exploration and Resolution

In addition to demonstrating that ERI developmental processes have important implications for behavioral, affective, and cognitive bicultural competence development, the current study contributes incrementally to the literature on ERI development. In particular, it extends prior work to an earlier developmental period. Specifically, prior studies documented the age-graded developmental progression of ERI exploration and resolution across middle-to-late adolescence (Umaña-Taylor et al., 2009a, 2015), and documented the sequential shorter-term (Umaña-Taylor et al., 2018) and longer-term (White et al., 2018) promoting influence of middle adolescent ERI exploration for middle-to-late adolescent ERI resolution. The current study suggests that similar sequential effects are occurring from early-to-middle adolescence. Additionally, though prior research has examined whether the sequential developmental progression of ERI exploration and resolution generalized across social position variables (Umaña-Taylor et al., 2018; White et al., 2018), ours is the first study to examine the degree to which the EIS exploration and resolution subscales (Umaña-Taylor et al., 2004) demonstrated

the longitudinal and multi-group (i.e., gender and nativity) factorial invariance needed to support

such investigations (Little, 2003).

These findings suggests that earlier adolescent engagement in ERI exploration, reflecting

one's own search process, can support middle adolescents to develop an increasingly mature and

clear understanding regarding their own ethnic-racial background (regardless of their gender or

nativity group). Further, it suggests that youth who increasingly and actively access opportunities

to learn about their heritage group during early adolescence may observe additional psychosocial

benefits throughout adolescence for their ERI development and for the competencies promoted

by ERI resolution (Umaña-Taylor et al., 2014b). Last, given the increasing ethnic-racial tension

in the U.S. (Barajas-Gonzalez et al., 2018), early engagement in ERI developmental processes

may be especially important for youth development because it may provide youth with tools to

recognize and challenge negative and conflicting messages vis-à-vis their ethnic-racial

background rather than internalize them (Mathews et al., 2019).

Implications

The practical importance of this work relies on the sociohistorical contexts in which

individuals are embedded. First, the U.S. Latino population reached a record 60.6 million in

2019 with 62% of its population reporting a Mexican heritage background. Latinos are

approximately one fifth of the total U.S. population (18%) and represent the second largest

ethnic-racial group, behind White non-Latinos (U.S. Census Bureau, 2019). Notably, despite the

ethno-racial diversity of the U.S., the term "American" is often associated with being ethno-

racially White (Devos & Banaji, 2005). As a result, and irrespective of the long history of

residence in and contributions to U.S. society that Latino groups have made, many Latinos in the

U.S. continue to feel like perpetual foreigners and to be treated as such (Barajas-Gonzalez et al.,

2018). Importantly, for U.S. Latinos and other individuals from ethno-racial groups that are considered visible minorities, or not deemed White, their identity often involves incorporating both heritage (e.g., Latino) and national (e.g., American) cultural systems into their sense of self and developing the ability to successfully respond to demands associated with each of these systems (Padilla, 2006).

As the U.S. (U.S. Census Bureau, 2019) and many other countries (United Nations, 2019) grow more ethnically, racially, and culturally diverse, youth will be increasingly tasked with developing identities associated with (at least) two cultural systems (i.e., ethnic-racial or heritage and national or host). Insights into how youth develop these identities and associated competencies are important to understanding youth development in multicultural societies. Findings from the current study suggest that a clear understanding of one's heritage background not only influences the development of one's heritage identity, but it also has important implications for the development of competencies associated with the host culture. Notably, the content (e.g., attitudes, beliefs) of one's heritage identity is likely to differ across youth from various groups and within youth from the same groups who are embedded in diverse contexts. There is evidence, however, suggesting that the process of ERI development is similar across ethno-racially diverse youth (Umaña-Taylor et al., 2018). Thus, the sequential engagement in heritage identity developmental processes represents a pathway through which ethnic-racial minority and immigrant youth may develop competencies that enable them to (affectively, cognitively, and behaviorally) respond to demands associated with multiple cultural systems, and that likely increases their feelings of connection to the broader society. This study, therefore, highlights the need to support youth ERI development. A significant step toward supporting positive ERI development is to acknowledge and respect the diversity that characterizes

multicultural societies and redefine what it means to be a national (e.g., an American). This is especially important in sociohistorical contexts in which youth are often exposed to instances in which individuals are treated differently because of their memberships in specific ethnic-racial groups (e.g., Barajas-Gonzalez et al., 2018; Umaña-Taylor et al., 2014).

Strengths, Limitations, and Future Directions

The current study had several strengths that should be considered in light of its limitations. First, this study focused on the links between two salient developmental tasks for minority adolescents, namely ERI development and global bicultural competence development. For a more precise understanding of the links between the developmental trajectories of these salient developmental tasks, future work might consider testing additional intervening mechanisms including host identity developmental processes. Second, it tested important developmental hypotheses in a longitudinal, prospective analysis among a diverse sample of U.S. Mexican-origin adolescents. This sample, however, originated in the Phoenix metro area, a societal context with a long history of Mexican migration and an established U.S. Mexican population (Roosa et al., 2008). Such a context may offer youth with extra-familial affordances to develop their ethnic-racial identity (White et al., 2018) and global bicultural competence (Safa & Umaña-Taylor, in press). It will be important, therefore, to examine differences in the magnitude of the association between ERI development and global bicultural competence in more emerging immigrant destinations.

Further, the use of prospective structural equation analyses allowed us to capture early-to-middle adolescent ERI developmental processes that set into motion the development of late adolescent global bicultural competence. Additionally, controlling for earlier levels of ERI resolution and global bicultural competence afforded a stronger test of our mediational model.

Our approach, however, did not afford a test of bidirectional effects, in part because an assessment of global bicultural competence would not have been developmentally appropriate at earlier waves of data collection. Future work may consider examining bidirectional effects between ERI developmental processes and other developmentally appropriate cultural competencies (e.g., endorsement of heritage and host values) or examining bidirectional associations continuing into early adulthood. Moreover, investigating how the content associated with their ERI (e.g., private and public regard) contributes to the development of adolescent global bicultural competence may also be important. Last, this study focused on bicultural facility, comfort, and advantage, which are theorized to be the underpinning for the development of bicultural skills (Basilio et al., 2014). For a more comprehensive picture, future work may consider examining the associations between ERI development and adolescent bicultural skills (e.g., frame-switching, integrative complexity).

Conclusions

This study advances mechanisms via which ethnic-racial identity development may support youth adaptation to multiple cultural systems during adolescence. Findings suggest that youth sequential engagement in the developmental processes of ERI exploration and resolution, from early-to-middle adolescence, promotes the development of behavioral, affective, and cognitive components of bicultural competence in late adolescence. These findings elucidate early adolescence processes that set into motion the development of late adolescent global bicultural competence. Specifically, they indicate that earlier engagement in ERI exploration is capable of advancing resolution in middle adolescence, and that the resulting achieved clarity regarding one's heritage identity has important implications for one's multifaceted ability to navigate bicultural demands during late adolescence. Findings underscore the importance of

supporting adolescents' efforts to learn about their ethnic-racial or heritage background. This

knowledge is important as minority youth are tasked with developing identities and

competencies to successfully manage demands associated with their heritage group memberships

(e.g., Mexican) and their memberships within the host society (e.g., American).

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Figure 1

Developmental Model Linking Adolescent ERI Development and Global Bicultural Competence
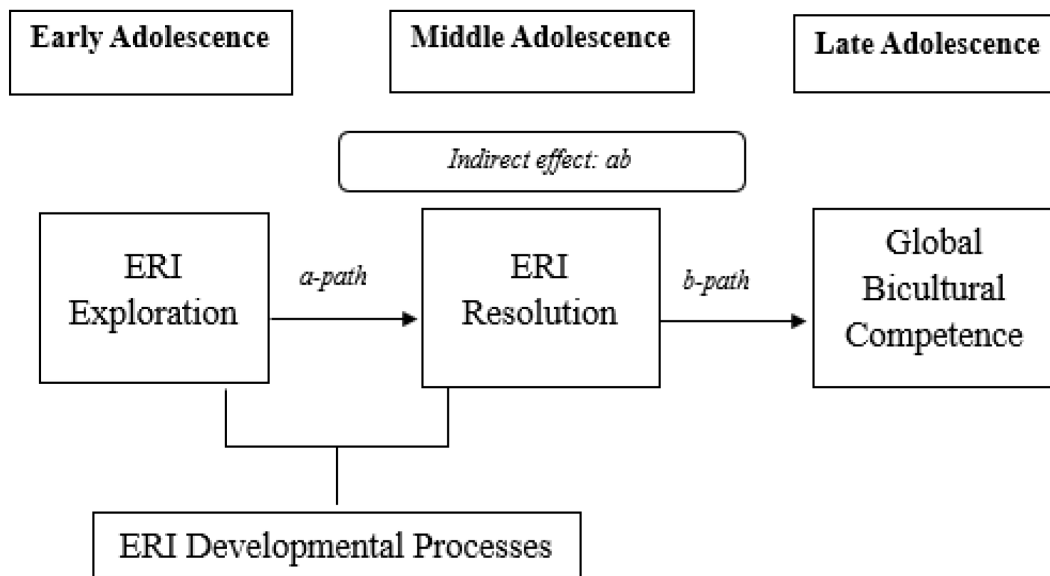
Table 1

*Descriptive Statistics and Intercorrelations for Study Variables*

Variable	1	2	3	4	5	6	7	8	*M*	*SD*	*n*
1. 7th grade ERI Exploration									3.73	.73	710
2. 7th grade ERI Resolution	.54**								4.31	.73	710
3. 10th grade ERI Resolution	.30**	.33**							4.27	.70	612
4. 10th grade Bicultural Facility	.15**	.18**	.14*						3.67	.55	316
5. 10th grade Bicultural Comfort	.18**	.17**	.14*	.38**					3.24	.98	316
6. 10th grade Bicultural Advantage	.27**	.30**	.23**	.46**	.32**				3.91	.55	316
7. 12th grade Bicultural Facility	.16**	.17**	.22**	.49**	.35**	.30**			3.87	.59	592
8. 12th grade Bicultural Comfort	.18**	.16**	.23**	.20**	.44**	.27**	.48**		3.51	.96	592
9. 12th grade Bicultural Advantage	.17**	.14**	.21**	.30**	.32**	.41**	.58**	.40**	4.10	.55	592

Note. Descriptive analyses were conducted in *SPSS* 25 using listwise deletion. ERI = Ethnic-racial identity.

p < .05. ** *p* < .01.

Figure 2

Test of Hypothesized Model Linking Adolescents' 7th Grade ERI Exploration to 12th Grade Global Bicultural Competence Via 10th Grade ERI Resolution
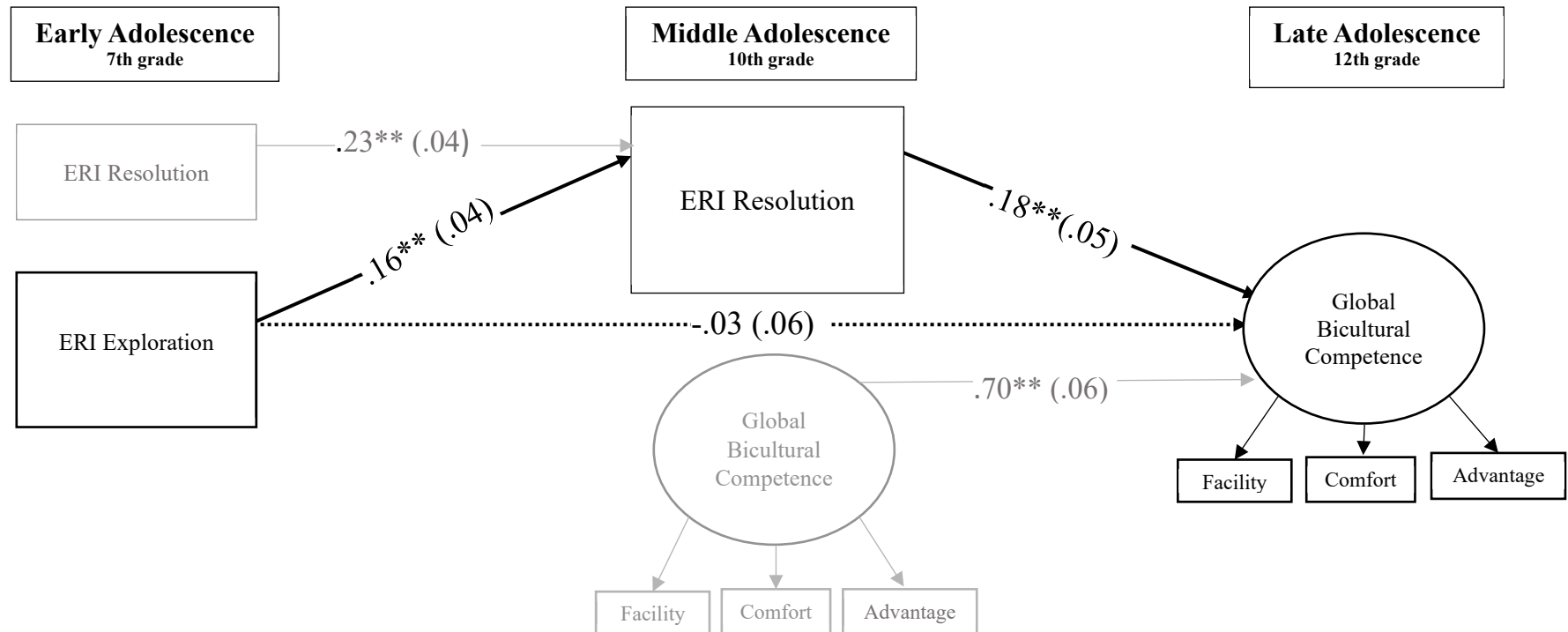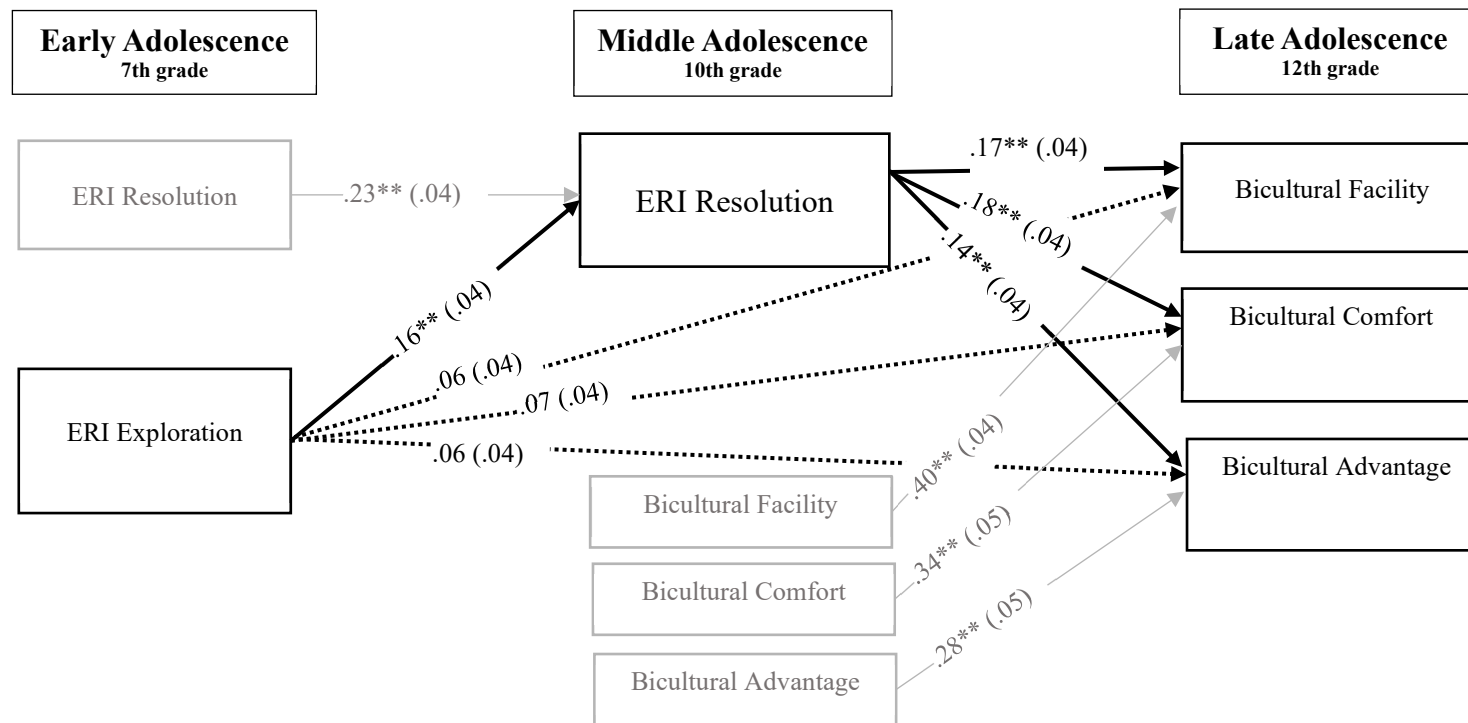

Note. N = 749. ERI = Ethnic-racial identity. Completely standardized coefficients are reported (STDYX in *Mplus*). Standard errors are reported in parentheses. 5th grade family income is included as an auxiliary variable. Adolescent gender and nativity are included as controls on endogenous variables. Solid lines represent significant paths. Dash lines represent non-significant paths ($p > .05$). Model fit: $\chi^2 (30)$ = 105.57, $p < .01$.; CFI = .93; RMSEA = .06, 90% CI [.046, .070]; SRMR = .05. Mediated effect: (ab = .01, SE = .01, 95% CI [.005, .028]).
** $p < .01$.

Figure 3

Test of Alternative Model Linking Adolescents' 7th Grade ERI Exploration to 12th Grade Bicultural Facility, Comfort, and Advantage Via 10th Grade ERI Resolution

Note. N = 749. ERI = Ethnic-racial identity. Completely standardized coefficients are reported (STDYX in *Mplus*). Standard errors are reported in parentheses. 5th grade family income is included as an auxiliary variable. Adolescent gender and nativity are included as controls on endogenous variables. Solid lines represent significant paths. Dash lines represent non-significant paths (p > .05). Model fit: χ^2 (12) = 35.02, p < .01.; CFI = .98; RMSEA = .05, 90% CI [.032, .071]; SRMR = .05. Mediated effects: bicultural facility, (ab = .02, SE = .01, 95% CI [.008, .039]); bicultural comfort, (ab = .04, SE = .01, 95% CI [.014, .067]); and bicultural advantage, (ab = .02, SE = .01, 95% CI [.005, .032]).

** p < .01.