

## Self-Regulatory Development in Children from Chinese Immigrant Families: Evidence for Commonality and Specificity

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A central theme of acculturative specificity is the heterogeneity of the immigrant experience. This study integrated this application of the Specificity Principle with intergenerational transmission models of self-regulation and identified both common and specific pathways in the self-regulatory development of Chinese American children in immigrant families ( $N = 169$ ,  $M_{\text{age}} = 9.2$  years). Consistent with intergenerational transmission models, results indicated associations between parents' and children's effortful control, with the mediation of these associations via authoritarian parenting. Parental education, family income, and children's bilingual proficiency were also uniquely associated with children's executive function and effortful control. Together, findings provide new directions for research with ethnic minority immigrant families, and underscore the utility of within-group approaches in advancing research on ethnic minority children's development.

Children's self-regulation—broadly conceptualized as their abilities to manage their emotions, behaviors, and cognitive processes (McClelland et al., 2007)—plays a central role in their social-emotional development (Eisenberg, Hofer, Sulik, & Spinrad, 2014). In particular, two self-regulatory constructs—effortful control and executive function—have been consistently associated with better social and emotional functioning in children across different racial, ethnic, national, and socioeconomic groups (Lonigan, Lerner, Goodrich, Farrington, & Allan, 2016; Miech, Essex, & Goldsmith, 2001).

A recent theoretical model (Bridgett, Burt, Edwards, & Deater-Deckard, 2015) proposes that children's self-regulatory capacities may be shaped

by intergenerational mechanisms. In this intergenerational transmission model, parents' and children's self-regulation are linked through several pathways, including parenting behaviors. Specifically, parents' self-regulatory capacities are theorized to underlie a range of both adaptive and maladaptive parenting behaviors, which in turn, may foster or hinder the development of children's own self-regulation.

Although the intergenerational transmission model is well-supported by previous research (see Bridgett et al., 2015, for a review), there is limited evidence for its generalizability across sociocultural groups. Critically, few investigations have examined the intergenerational transmission model within contexts of immigration or considered its relation to specificity principles in acculturative science. At its broadest level, the Specificity Principle proposes that the development of specific, individual-level characteristics such as self-regulation are affected by specific experiences, through specific pathways, and at specific periods in development (Bornstein, 2017). Applied to contexts of immigration, principles of acculturative specificity further emphasize acculturation as a multifaceted process in which variations in specific

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sociocultural experiences such as language, socioeconomic status (SES), and socialization processes can contribute to variations even within seemingly homogenous immigrant groups (Bornstein, 2017).

Applying principles of acculturative specificity to the intergenerational transmission model raises two research questions of commonality and specificity. First, which pathways of the intergenerational transmission model can be generalized to ethnic minority immigrant families? Second, which socio-culturally specific experiences relevant to acculturation and immigration can also be associated with children's self-regulation, above and beyond the effects proposed in the intergenerational model? To bridge these theoretical perspectives, this study used a sample of Chinese American immigrant families to identify both common and specific processes in children's self-regulatory development. Specifically, we examined the generalizability of two pathways in the intergenerational transmission model (i.e., the direct associations between parent and child self-regulation, and the indirect associations via parenting behaviors); and also tested how children's self-regulation varied as a function of their bilingual language proficiency and family SES—two factors with demonstrated relevance to self-regulatory development in ethnic minority immigrant youth.

#### *Parenting and Self-Regulation in Chinese Immigrant Families*

Chinese American immigrant families present a compelling population in which to examine the commonality of the intergenerational transmission model's parent-centered pathways. The generalizability of parenting behaviors and their effects on Chinese American youth has been the focus of substantial research and debate over the past two decades (Chao, 1994; Chuang, Glozman, Green, & Rasmi, 2018; Kim, Wang, Orozco-Lapray, Shen, & Murtuza, 2013). These investigations have focused largely on Baumrind's (1971) typologies, or styles, of authoritative parenting, typically characterized by high levels of parental warmth, control, and democratic reasoning; and authoritarian parenting, typically characterized by high levels of parental hostility, demandingness, and nonreasoning. From this line of investigation, a number of independent studies with Chinese American immigrant families have demonstrated positive effects of authoritative parenting and the negative effects of authoritarian parenting on children's self-regulatory processes (Cheah, Leung, Tahseen, & Schultz, 2009; Lee,

Zhou, Eisenberg, & Wang, 2013). Other studies focusing on specific elements of authoritative and authoritarian parenting, such as child-directed warmth or hostility, have also demonstrated similar effects on Chinese American children's self-regulation (Chen, Zhou, Main, & Lee, 2015; Yu, Cheah, Hart, & Yang, 2018). Despite this established body of research, no research to our knowledge has examined whether Chinese immigrant parents' parenting styles can be shaped by their own self-regulatory capacities. As such, the commonality of this component of the intergenerational transmission model remains largely untested. However, this study is informed by previous investigations that demonstrate how executive function and effortful control—two distinct, but related self-regulatory constructs—can shape parenting behaviors.

Executive function is a higher level cognitive process comprised of core components of attention shifting, inhibition, and working memory (Miyake et al., 2000). In their theoretical model, Bridgett et al., (2015) conceptualize parent executive function as being primarily involved in the regulation of parents' behaviors. Consistent with this conceptualization, a growing body of research indicates consistent links between poorer executive functions and features of authoritarian parenting, such as corporal punishment, expressions of negative affect, and other harsh caregiving behaviors (Crandall, Ghazarian, Deater-Deckard, Bell, & Riley, 2018; Cuevas et al., 2014; Deater-Deckard, Wang, Chen, & Bell, 2012). As such, we expected that Chinese American parents' executive function would be negatively associated with authoritarian parenting.

Effortful control refers to the ability to inhibit a dominant, prepotent response in order to perform a subdominant response and detect errors (Rothbart & Bates, 2006). Although the conceptual and empirical overlap between effortful control and executive function has been well-documented (Zhou, Chen, & Main, 2012), some theoretical perspectives suggest that effortful control may be differentiated from executive function by its role in the regulation of emotionally responsive behavior. Furthermore, in contrast to measures of executive function, which typically involve abstract behavioral tasks of inhibitory control or working memory, the measurement of effortful control in adulthood frequently assesses regulation of behaviors in emotionally laden situations, such as performing an action despite strong aversive tendencies or inhibiting emotionally inappropriate behavior (Evans & Rothbart, 2007). Indeed, previous investigations indicate that

parental effortful control may play a role in both authoritative and authoritarian behaviors, including reactions to children's negative emotions (Valiente, Lemery-Chalfant, & Reiser, 2007), expressions of parental warmth (Cumberland-Li, Eisenberg, Champion, Gershoff, & Fabes, 2003) and negative caregiving behaviors (Bridgett, Laake, Gartstein, & Dorn, 2013). Thus, we expected that Chinese American parents' effortful control would be positively associated with authoritative parenting and negatively associated with authoritarian parenting.

### *SES, Acculturation, and Self-Regulation*

For children of Chinese immigrant parents, self-regulatory development may also be shaped by factors related to SES and acculturation. The substantial socioeconomic and acculturative diversity among Chinese American immigrants is well-documented (Echeverria-Estrada & Batalova, 2020; López, Cilluiffo, & Patten, 2017) and, consistent with principles of acculturative specificity, illustrates how socioeconomic inequalities can lead to divergent acculturative outcomes, even within co-ethnic members of an immigrant group (Bornstein, 2017). In particular, two factors—family SES and children's proficiency in English and their family's heritage language—are central to the immigration and acculturative experiences of Chinese immigrant families. For Chinese immigrants to the United States, the settings and levels of their formal education, the transferability of employment credentials, and the ethnic composition of their surrounding communities are among many factors contributing to variations in their socioeconomic and acculturative trajectories (Walton, Takeuchi, Herting, & Alegria, 2009; Zeng & Xie, 2004; Zhou, 2014). Chinese American immigrants have higher median household incomes, but also higher poverty rates compared to other foreign-born and U.S.-born adults (Echeverria-Estrada & Batalova, 2020). Measures of educational attainment among Chinese American immigrant adults also indicate substantial within-group variation, with 27% completing postgraduate degrees and 36% attaining only a high school diploma or less (Pew Research Center, 2017). Likewise, Chinese American immigrants vary in their acquisition of the host language: among those who speak the Chinese language at home, 44% acquire English proficiency while 30% speak English poorly or not at all (Ryan, 2013).

While both family SES and multilingualism have been associated with children's self-regulatory development, there is limited evidence for the

generalizability of these associations among Asian American youth. For example, while the associations between higher family SES and better executive function in children have been consistently demonstrated across sociocultural groups (Obradović et al., 2019; Obradović & Willoughby, 2019), investigations of family SES and self-regulation among immigrant families from any Asian American ethnic group are limited and indicate mixed or nonsignificant associations between family SES, EF, and other indicators of children's self-regulation, such as effortful control and behavioral regulation (Chen, Zhou, Main, & Lee, 2015; Chen et al., 2015; Liew, Kwok, Chang, Chang, & Yeh, 2014; Williams, Uchikoshi, Bunge, & Zhou, 2019). Furthermore, while family SES is commonly operationalized as a composite variable of household income and education, previous studies with Chinese immigrant families indicate that income and education level are dissociable aspects of social status that have distinct associations with socioemotional processes (Chen, Zhang, Liu, & Wang, 2020; Chen & Zhou, 2019).

Likewise, a number of investigations have documented links between bilingualism and performance on tasks of executive function, in which bilingual children outperform their monolingual peers (see Bialystok, 2017, for a review). Although the precise mechanisms contributing to the "bilingual advantage" have yet to be definitively identified, a leading hypothesis is that the cognitive demands of a bilingual context—namely, the process of selecting between jointly activated languages—shape the development of attentional processes over time (Bialystok, 2017). Most relevant to this study, the specificity of the bilingual advantage in executive function is a topic of ongoing debate. In particular, studies of bilingualism and executive function have almost exclusively utilized between-group comparisons of bilingual and monolingual children, which are subject to confounds of SES, immigration background, and other sociocultural differences (Paap, Johnson, & Sawi, 2015). By contrast, only a few studies have demonstrated how variations in the bilingual advantage can also be observed among children as a function of their degree of bilingual proficiency (Bialystok & Barac, 2012; Riggs, Shin, Unger, Spruijt-Metz, & Pentz, 2014; Thomas-Sunesson, Hakuta, & Bialystok, 2018). These limited studies include two independent investigations of Chinese American children (Chen, Zhou, et al., 2014; Williams et al., 2019) and found positive associations between children's degree of bilingual proficiency and their self-

regulation. Thus, we expected that children's bilingual proficiency would be positively associated with children's executive function and their effortful control.

### *The Present Study*

In sum, previous research and theory suggest that while some components of the intergenerational transmission model may be generalizable to the context of the Chinese American immigrant family, other factors relevant to immigration and acculturation, namely, family SES and bilingual proficiencies, would play a role in children's self-regulatory development. We examined these processes in middle childhood, a developmental period that is often overlooked in research, yet crucial in the socioemotional development of ethnic minority children of immigrant parents (García Coll & Marks, 2009; García Coll & Szalacha, 2004). Between the ages of 6–12, children's social contexts undergo dramatic change through increased regular engagement with nonfamilial agents and institutions (García Coll & Szalacha, 2004) and a corresponding decline in their face-to-face interactions with their parents (Collins, Madsen, & Susman-Stillman, 2002). For children of immigrant parents, these changes in social contexts can have direct impacts on both their host and heritage language proficiencies (Kim & Chao, 2009; Mu, 2015), and may result in variations in bilingual proficiency within a single ethnic minority immigrant group (García Coll & Marks, 2009). As such, middle childhood has been identified as a key developmental window for ethnic minority children's maintenance and development of their heritage language (Montrel, 2008). Indeed, previous research with Chinese American children of immigrant parents has highlighted middle childhood as a period of substantial variation in their English and Chinese proficiencies (Chen, Hua, et al., 2015; Chen, Zhou, & Uchikoshi, 2018).

Middle childhood is also a period of significant growth and individual variability in self-regulation (King, Lengua, & Monahan, 2013). The decline in direct interactions between parents and children during middle childhood is accompanied by shifts in parenting behaviors, from direct disciplinary practices to more distal practices that foster children's independent self-regulatory processes (Collins et al., 2002; Maccoby, 1984). Accordingly, individual variations in self-regulatory capacities during middle childhood have been associated with variations in parenting behaviors, including

parental warmth, physical punishment, and other features of authoritative and authoritarian parenting (Colman, Hardy, Albert, Raffaelli, & Crockett, 2006; King et al., 2013). The development of self-regulatory processes, in turn, is particularly critical for children's successful adaptation to the new academic, social, and behavioral demands of middle childhood (Liew, 2012), and while limited, research with elementary-age children from ethnic minority families provide support for the sociocultural commonality of these relations (Chen et al., 2015; Liew, Carlo, Streit, & Ispa, 2018; Li-Grining, McKinnon, & Raver, 2019).

As noted, previous investigations of intergenerational, self-regulatory processes in Chinese immigrant families are limited and have yielded mixed results. Thus, aside from the confirmatory hypotheses detailed above, other aspects of our investigation were exploratory in nature. While we hypothesized that parenting styles would mediate the associations between parents' and children's self-regulatory processes, we did not have a priori hypotheses differentiating between the effects of authoritarian or authoritative parenting on children's executive function or effortful control. Likewise, while we expected to find positive associations between family SES, children's bilingual proficiency, and children's self-regulation, we did not have specific hypotheses regarding the unique effects of family income and parent education on children's executive function or effortful control.

## **Method**

### *Participants*

Participants in this study were 169 first-generation Chinese immigrant parents (85.8% mothers) and children (49.1% girls) between the ages of 7 and 11 ( $M = 9.2$  years,  $SD = 1.1$ ). All parents identified as Chinese or Chinese American, and were born in China, Taiwan, or Hong Kong, while most children (68%) were born in the United States. On average, participating parents had lived in the United States for 12.0 years (range  $\leq 1$ –33 years;  $SD = 7.29$ ).

### *Procedure*

Data for this study were collected between 2015 and 2018. All research procedures were approved by the Institutional Review Board at Wellesley College as part of a larger research study on Chinese

American immigrant families. Participants were recruited from Boston, Massachusetts, and surrounding suburban neighborhoods through community centers, social media, and participant referrals. Parents and children meeting eligibility criteria (parents born outside of the United States and identifying as Chinese/Chinese American; children between 7 and 11 years old) participated in a 2- to 2.5-hr assessment at Wellesley College or a community center in Boston. After providing informed consent, parents and children were interviewed by bilingual research staff in their preferred language (Mandarin, Cantonese, English), then completed self-reports, standardized questionnaires, and behavioral tasks. Almost all parent participants (98%) completed study measures in Chinese. Measures that had not been previously used with Chinese-speaking populations were forward and back-translated by bilingual, bicultural research staff. Parents received gift cards and children received a small prize at the end of the visit.

### Measures

#### Parent and Child Self-Regulation

Parents and children independently completed a computerized task of executive function adapted from Baym, Corbett, Wright, and Bunge (2008) and used previously with Chinese American families (Chen, Zhou, et al., 2014). To assess parents' effortful control, parents completed English or Chinese versions of the Effortful Control scale of the Adult Temperament Questionnaire (Evans & Rothbart, 2007), a measure which has been used previously with Chinese adults (Lin, Hsu, Chen, & Chang, 2013). To assess children's effortful control, parents completed English or Chinese versions of the inhibitory control and attention focusing scales of the Child Behavior Questionnaire (Rothbart, Ahadi, Hershey, & Fisher, 2001). Additional details on the self-regulation measures are provided in Supporting Information.

#### Parenting Styles

Parenting styles were assessed using the authoritative and authoritarian scales of the Parenting Styles and Dimensions Questionnaire (PSDQ; Robinson, Mandleco, Olsen, & Hart, 1995). Parents reported their behaviors toward the target child on a 5-point scale ranging from 1 (*never*) to 5 (*always*). The authoritative scale was comprised of 27 items assessing warmth/acceptance, reasoning/induction,

easygoing/responsiveness, and encouragement of child's democratic participation. The authoritarian scale included 19 items assessing nonreasoning/punitive strategies, corporal punishment, verbal hostility, and directiveness. The PSDQ has been used previously with Chinese immigrant parents (Chen, Hua, et al., 2015), and all measures indicated good internal consistency in the present sample ( $\alpha = .93$  for authoritative parenting;  $\alpha = .85$  for authoritarian parenting).

#### Family SES and Child Bilingualism

Participating parents provided estimates of their total household income over the past 12 months (including welfare, disability benefits, and child support) and their years of formal education. Children's degree of bilingual proficiency was assessed using parents' reports. Parents rated their child's speech and aural comprehension of English and Chinese on a 5-point scale ("How well does your child speak/understand spoken Chinese/English?"; 1 = *extremely poor*; 3 = *average*; 5 = *very good*). Parent ratings were used to create a continuous composite scores for bilingual proficiency in both speech and aural comprehension ranging from 0 ("*poor*" or "*extremely poor*" proficiency in either Chinese or English) to 3 ("*very good*" proficiency in both Chinese and English). Composite scores for speech and aural comprehension were averaged to create a final bilingualism score.

### Results

Descriptive statistics and zero-order correlations between the main variables are available in Supporting Information. All variables met criteria for normality based on cutoffs of two and seven for skewness and kurtosis (Curran, West, & Finch, 1996). In partial support of the intergenerational transmission model, positive associations were found between parents' and children's effortful control ( $r = .29$ ;  $p = .000$ ), but not between parents' and children's performance on the executive function task. Also in partial support of the intergenerational transmission model, authoritarian and authoritative parenting styles were negatively and positively associated, respectively, with children's effortful control ( $r_s = -.31$  and  $.23$ ;  $p_s = .000$  and  $.003$ ); however, neither parenting style was associated with children's performance on the executive function task. Consistent with hypotheses and previous research with Chinese American children in

immigrant families, children's bilingual proficiency was positively associated with both executive function ( $r = .15$ ,  $p = .05$ ) and their effortful control ( $r = .26$ ,  $p = .001$ ). Also consistent with hypotheses and previous research, participating parents' years of formal education and household income were positively associated with children's executive function ( $r_s = .31$  and  $.27$ ;  $p_s = .000$  and  $.001$ ) and effortful control ( $r_s = .21$  and  $.34$ ;  $p_s = .006$  and  $.000$ ). Zero-order correlations also identified higher executive function and effortful control among girls compared to boys ( $r_s = .20$  and  $.25$ ;  $p_s = .01$  and  $.001$ , respectively), and higher executive function among older children in the sample ( $r = .22$ ,  $p = .005$ ). As such, children's gender and age were included as covariates in the path analysis.

#### *Path Model*

Path analysis was used to identify the unique, direct, and indirect associations of parent self-regulation, family sociocultural factors, and parenting styles on children's self-regulation (Figure 1). To identify direct associations with children's self-regulation, direct paths were specified from five variables (parent effortful control, parent executive function, child bilingualism, parent education, and estimated household income) to children's executive function and effortful control. Effects of covariates (child gender and age) on children's executive function and effortful control were controlled. The model was estimated with Mplus 8.3 (Muthén & Muthén, 1998-2017) using full-information maximum likelihood (FIML) to handle missing data and maximum likelihood robust estimation to correct standard errors for non-normality. The raw data were analyzed. Based on previous guidelines for model fit (Hu & Bentler, 1999), the model fit the data well,  $\chi^2(df = 14, N = 169) = 14.11$ ,  $p = .44$ , comparative fit index = 1.00, root mean square error of approximation = .01; standardized root mean square residual = .04. Contrary to the intergenerational transmission model, no direct associations were found between any measures of parents' and children's self-regulation above and beyond other predictors in the full path model. However, in partial support of the intergenerational transmission model, parent effortful control was negatively associated with authoritarian parenting ( $\beta = -.22$ ;  $p = .03$ ) and positively associated with authoritative parenting ( $\beta = .17$ ;  $p = .002$ ); and authoritarian parenting was negatively associated with children's effortful control ( $\beta = -.22$ ;  $p = .01$ ). Consistent with the hypotheses, children's bilingual proficiency was

uniquely and positively associated with their effortful control ( $\beta = .19$ ;  $p = .01$ ). Also consistent with the hypotheses, parent education was positively associated with children's executive function ( $\beta = .24$ ;  $p = .01$ ), and family income was positively associated with children's effortful control ( $\beta = .30$ ;  $p = .000$ ).

To test whether authoritative and authoritarian parenting mediated the effects of parent self-regulation on child self-regulation, indirect effects were examined using the bias-corrected bootstrap confidence interval approach (MacKinnon, Lockwood, & Williams, 2004). In partial support of the intergenerational transmission model, examination of indirect effects indicated that authoritarian parenting mediated the relations between parent and child effortful control (95% CI [.01, .12]). However, no significant indirect effects were found for paths with authoritative parenting as a mediator or with parents' executive function as a predictor.

#### **Discussion**

Principles of sociocultural commonality and specificity are central to understanding the developmental experiences of children from ethnic minority immigrant families. This study applied these principles in our examination of children's self-regulation, a construct associated with the social and emotional development of children across sociocultural groups. By testing the generalizability of intergenerational transmission models of self-regulation in the context of the ethnic minority immigrant family, findings from this study provide additional evidence for the commonality of parent self-regulation and parenting behaviors as factors in children's self-regulatory development. At the same time, our findings also affirm principles of acculturative specificity by demonstrating how within immigrant families, children's self-regulatory capacities can vary as a function of their bilingual proficiency, parental education, and household income. By identifying variations in these processes in a single, ethnic minority immigrant group, our findings underscore the utility of similar within-group approaches in advancing research on ethnic minority children's development.

#### *Common and Specific Pathways in Children's Self-Regulatory Development*

This study provides some support for the mechanisms of children's self-regulatory development

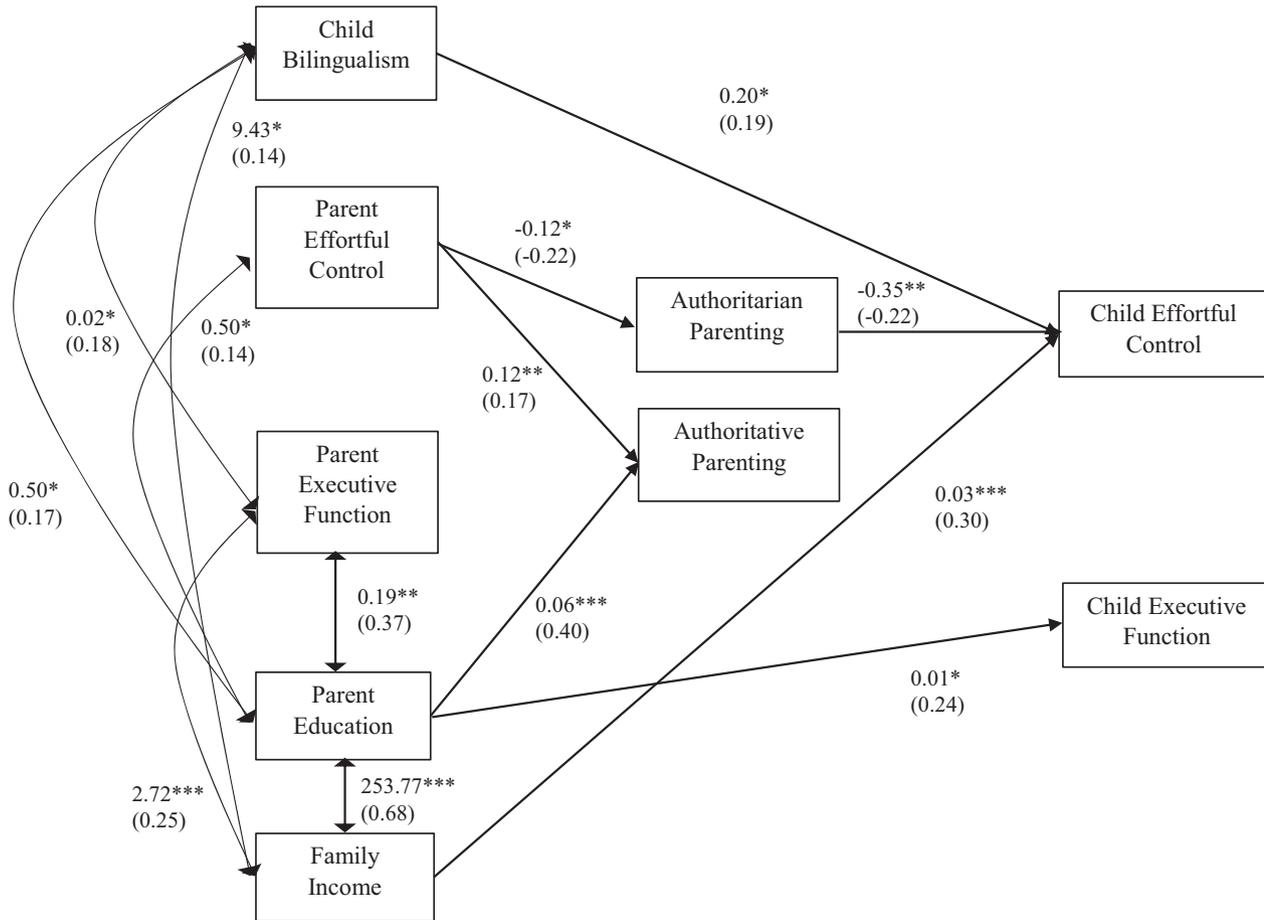


Figure 1. Path analytic model testing the direct and mediated effects of parent self-regulation, bilingualism, and family socioeconomic status on child self-regulation. Though not shown in the model, effects of child gender and age on child self-regulation are controlled. Numbers within parentheses represent standardized path coefficients. Only significant paths are shown. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .  $\chi^2(df = 14, N = 169) = 14.11, p = .44$ , comparative fit index = 1.00, root mean square error of approximation = .01; standardized root mean square residual = .04.

proposed in the intergenerational transmission model. Consistent with this model, our results indicated bivariate-level associations between parents' and children's effortful control. Results from the full path model also indicated associations between parents' effortful control and their parenting styles and associations between parenting styles and children's effortful control. Of note, examination of indirect associations in the model provides some support for one of the central mechanisms of the intergenerational model, in that parents' lower effortful control was associated with higher authoritarian parenting, which in turn was associated with children's lower effortful control. Although these results provide some evidence for common pathways in children's self-regulatory development, the study's cross-sectional design limits conclusions of causal, mediated relations between these constructs. As previous studies have demonstrated longitudinal

effects of parenting on children's self-regulation in middle childhood (King et al., 2013; Liew et al., 2018), future investigations are needed to test the cross-time effects of parent self-regulation in these associations.

More broadly, and critical to questions of socio-cultural specificity, incorporating children's bilingual proficiency and aspects of family SES into the full path model indicated that within-group variations in these sociocultural factors are uniquely associated with variations in their self-regulatory development. The unique associations between children's bilingual proficiency and aspects of their self-regulation are consistent with two previous studies of Chinese American children of immigrant parents (Chen, Hua, et al., 2015; Williams et al., 2019). Together, each of these studies contribute to the growing arguments for examining how within-group differences in levels of bilingual proficiency

relate to self-regulation (Bialystok, 2017; Sorge, Toplak, & Bialystok, 2017), and underscore the importance of including both bilingualism and family SES as independent predictors of executive function (Krizman, Skoe, & Kraus, 2016).

The results from this study also make a strong case for examining parental education and household income as separate indicators of family SES, particularly within the context of the ethnic minority immigrant family. Despite strong support for higher SES as a socioculturally common asset in children's executive function (Obradović et al., 2019), in our sample, these effects were uniquely associated with caregiver education, rather than household income, in the full model. Moreover, results from the full model also indicated unique associations between parents' levels of formal education and authoritative parenting styles. Although not assessed directly in this study, it is possible that Chinese immigrant parents with higher levels of formal education, particularly education completed in North America, would be more exposed to models of authoritative parenting as a cultural ideal.

#### *Strengths, Limitations, and Future Directions*

One of the chief strengths of this study is its investigation of intergenerational self-regulatory processes in an acculturatively and socioeconomically diverse sample of Chinese immigrant parents and children. This within-group approach addresses a central limitation of between-group approaches, in which assumptions of group homogeneity overlook how group members may differ in their orientation or exposure to the sociocultural mechanism of interest (Chiu, Gelfand, Yamagishi, Shteynberg, & Wan, 2010; Grossman & Na, 2014; Leung & Cohen, 2011). By highlighting variations in individual-level characteristics within an ethnic minority group, our findings help to rectify cultural misattribution biases in developmental research (Causadias, Vitriol, & Atkin, 2018), in which the traits and behaviors of racial/ethnic minorities are attributed primarily to cultural, rather than psychological processes. This limitation has been particularly evident in research with Asian American youth, which has historically subsumed differences between Asian American ethnic groups, overlooked sociodemographic variations within these groups, and placed a disproportionate emphasis on traditional cultural constructs (e.g., collectivism), rather than individual factors, as drivers of psychological development (Okazaki, 2018). As such, results from this study strengthen recent calls for advancing

research with Asian American youth by attending to how variations in acculturative and sociodemographic factors shape child development (Yoshikawa, Mistry, & Wang, 2016).

By indicating how within-group variations in children's bilingual proficiencies, parental education, and household income can be uniquely associated with variations in self-regulatory processes, our findings affirm principles of acculturative specificity that argue for disentangling constructs of SES and moving beyond nativity status or years of residence in a host country as proxy measures of acculturation (Bornstein, 2017). The study also helps to advance our understanding of the intergenerational transmission of self-regulation, both by examining these processes in the context of the ethnic minority immigrant family and by bridging this theoretical framework with principles of acculturative specificity. Moreover, by integrating both behavioral and parent-reported measures of self-regulation, and demonstrating their unique associations with bilingual proficiency and family SES, results from our study emphasize the multifaceted aspects of self-regulation and support the conceptualization of executive function and effortful control as related, but separable constructs (Zhou et al., 2012). Finally, despite decades of research on Chinese American parenting styles and their effects on children's development, this study is, to our knowledge, the first to test how variations in parenting styles within this sociocultural group can be attributed in part to individual differences in self-regulation. In doing so, our findings support arguments for individual-difference characteristics as meaningful predictors of acculturative adjustment (Bornstein, 2017).

Future investigations of parents' and children's self-regulatory processes can also address two of the study's main limitations. The first limitation is an issue of common method variance, in that a majority of the study's measures relied on parent-report. Thus, while they support the commonality of the intergenerational transmission model, the significant associations between parents' effortful control, authoritative parenting, and children's effortful control need to be tempered in light of this limitation. The reliance on primarily parent-reported measures may also explain the nonsignificant associations between parent executive function and authoritarian parenting, which has been documented in previous studies using behavioral measures of parents' self-regulation and observed measures of their parenting behaviors (Bridgett et al., 2013; Cuevas et al., 2014; Deater-Deckard et al., 2012). Since parental executive function is

theorized to underlie the inhibition of reactive caregiving behaviors, particularly in the context of challenging child behaviors (Deater-Deckard et al., 2012), these associations may be more likely to be captured through in vivo, observational measures. Indeed, in previous research with Chinese immigrant parents, parents' observed expressions of anger toward their child during a frustration task were unrelated to their self-reported negative emotion, but were associated with poorer child effortful control in the classroom context, based on teachers' reports (Chen et al., 2015).

As noted, interpretations of the causal and mediated relations between the study's main constructs are limited by the study's cross-sectional design, and support for the generalizability of the study's findings should be considered in light of the relatively small sample size. The limitations of the study's cross-sectional design, in particular, are critical in considering the bidirectional relations between parents' and children's self-regulation. Whereas the intergenerational transmission model focuses primarily on a unidirectional path of self-regulatory transmission via parenting styles, bioecological theories emphasize the transactional relations between microsystem-level factors of parenting behaviors and individual-level factors of children's self-regulation (Bronfenbrenner & Morris, 2006). As few studies have tested the cross-cultural generalizability of these transactional models of child self-regulation and parenting (Laukkanen, Ojansuu, Tolvanen, Alatupa, & Aunola, 2014; Lee et al., 2013), these processes present a rich area for future investigation.

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### Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

- Table S1.** Descriptive Statistics of Main Variables
- Table S2.** Zero-Order Correlations of Main Variables
- Appendix S1.** Description of Self-Regulation Measures