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Relations Among Neighborhood, Parenting, and Effortful Control in Chinese American Children

By

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## Abstract

Relations Among Neighborhood, Parenting, and Effortful Control in Chinese American Children

by

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Although an extensive literature links children's self-regulation abilities with both distal (e.g., neighborhood) and proximal (e.g., parenting) contexts, scarce attention has been paid to identifying potential cultural factors (e.g., ethnic density) in this association. Methodologically, most research has utilized cross-sectional data, with few studies examining the cumulative impact of multiple contexts on children's development and adjustment. Furthermore, it is unknown how these contexts are linked with different self-regulation outcomes among Asian American children. To address these gaps in the literature, I studied 258 first- and second-generation Chinese American immigrant children, using a combination of structured interviews, questionnaire measures, and behavioral tasks completed by children, parents, and teachers. Across two waves of data collection, I investigated the mediated and interactive relations of neighborhood (disadvantage, ethnic density) and parenting style (authoritarian, authoritative) to children's effortful control outcomes. Contrary to expectations, parenting style did not mediate the relation between neighborhood disadvantage and children's effortful control. However, children of families residing in neighborhoods with a higher Asian concentration were more likely to rate their parents as using an authoritarian parenting style, which subsequently predicted lower levels of effortful control. I also found that authoritative parenting for these children had a weaker benefit on their effortful control compared to children residing in less ethnically dense neighborhoods, as rated by their teachers. Taken together, these findings suggest that use of an authoritarian parenting style is more culturally normative in ethnically dense Asian American neighborhoods and may serve as a risk factor for poorer effortful control in this population. Additionally, residing in ethnically dense neighborhoods may confer some risk to Chinese American immigrant children's development of effortful control, regardless of their parents' parenting style. As children reach middle childhood, their perception of their parents' parenting style appears to play a role in determining their self-regulation outcomes, and this extends to both home and school contexts (i.e., both child and teacher reports of effortful control).

## **Relations Among Neighborhood, Parenting, and Effortful Control in Chinese American Children**

Bronfenbrenner's ecological model posits that children develop within a series of dynamic, nested environments and that children both actively shape and are shaped by their multiple environments (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998). As an application of the ecological theory to explain the impact of low socioeconomic status on child development, family systems theory hypothesizes that economic stress increases parental stress and psychological distress, leading to disruptions in parenting (e.g., harsh, inconsistent, or uninvolved parenting). In turn, these negative parenting behaviors increase children's risk for behavioral problems (e.g., Barnett, 2008; Conger, Conger, & Martin, 2010; Leventhal & Brooks-Gunn, 2000). The indirect relationships between parenting behavior and children's adjustment highlight the significant multi-level impact of context on parent and child behavior, including person-context and context-context interactions. In addition to family processes like these, researchers are increasingly investigating how broader contexts like neighborhood may influence child outcomes via more proximate mechanisms (Hurd, Stoddard, & Zimmerman, 2013; Leventhal & Shuey, 2014).

At the individual level, a critical developmental and behavioral undertaking in childhood is the development of self-regulation. A well-established literature supports the influence of context on children's self-regulation outcomes, including family and neighborhood contexts (e.g., Lengua, 2002; Leventhal & Brooks-Gunn, 2000; Raver, 2004). At the family level, one of the most studied influences on the development of children's emotional and behavioral control is parenting (e.g., Eisenberg, Smith, Sadovsky, & Spinrad, 2004; Kochanska, Murray, & Harlan, 2000). At the neighborhood level, studies have found direct effects of neighborhood environment on children's self-regulation (e.g., Pratt, Turner, & Piquero, 2004), as well as indirect effects, whereby distal neighborhood contexts affect child outcomes via more proximal mechanisms like family functioning (e.g., Gibson, Sullivan, Jones, & Piquero, 2010; Leventhal & Brooks-Gunn, 2000). However, few researchers have examined the role of neighborhood environment as both an independent variable and a moderator in the development of children's self-regulation.

Despite substantial evidence supporting the role of family and neighborhood contexts in the development of self-regulation, less attention has been paid to identifying potential cultural factors in these relationships. For instance, little is known about the role of neighborhood ethnic composition (i.e., ethnic density, or the proportion of one's residential neighborhood that consists of members of the same ethnic background) on children's self-regulation. Moreover, researchers have largely studied family and neighborhood within European American, African American, and Latino samples, leaving it unclear how these contexts result in different self-regulation outcomes among Asian American children. Despite the importance of self-regulation in early and middle childhood, we still know little about immigrant children during these developmental periods (Takanishi, 2004). Further, though the relation between neighborhood quality and adjustment may not generalize across ethnic groups (Roosa, Deng, Ryu, Burrell, Tein, & Jones et al., 2005), there has been scarce exploration of potential cultural mechanisms by which neighborhoods influence individual outcomes (e.g., parents' cultural values have been found to buffer the risk of neighborhood disadvantage on children's behavior; White, Roosa, & Zeiders, 2012). There is also a sparse literature examining the cumulative impact of multiple levels of context on the development of children's self-regulation (e.g., what are the mechanisms by

which family, neighborhood, and cultural environments jointly affect children's self-regulation development?).

To fill these gaps, in the present study I aimed to test (1) parenting style (authoritarian and authoritative parenting) as a mediator of relations between neighborhood environment (economic disadvantage and ethnic density) and children's effortful control; and (2) neighborhood environment as a moderator of relations between parenting style and children's effortful control in a sample of Chinese American immigrant children participating in a longitudinal study. By investigating the mediated and moderated relations of family and neighborhood environments to children's self-regulation within an understudied but quickly growing minority group, I aimed to expand our understanding of minority children's contextual risk and protective factors.

### **Individual Level: Self-Regulation and its Role in Children's Psychological Adjustment**

One of the most important developmental tasks in childhood is the mastery of self-regulation skills. According to Karoly (1993), self-regulation refers to "those processes, internal and/or transactional, that enable an individual to guide his/her goal-directed activities over time and across changing circumstances (contexts)" (p. 25). A key component of temperament, self-regulation is thought to be biologically rooted, emergent across development, and relatively stable over time, but also malleable by environmental factors (Rothbart, Ahadi, & Evans, 2000). High self-regulation has been linked to an individual's ability to modulate reactivity, delay gratification, persist at difficult tasks, and forsake short-term pleasures with longer-term negative consequences (Gottfredson & Hirschi, 1990; Rothbart et al., 2000). Conversely, poor self-regulation has been associated with increased social and behavioral problems in childhood, including internalizing, externalizing, and antisocial behaviors (e.g., Eisenberg, Valiente, Fabes, Smith, Reiser, & Shepard et al., 2003; Lengua, 2003; Pratt & Cullen, 2000).

**Effortful control.** A core facet of self-regulation is effortful control, which Rothbart and Bates (2006) defined as "the efficiency of executive attention - including the ability to inhibit a dominant response and/or to activate a subdominant response, to plan, and to detect errors" (p. 129). I focused on two components of effortful control in the present study: (1) inhibitory control, and (2) voluntary attention focusing. Inhibitory control refers to a child's ability to plan, control frustration, and decide between options when making decisions, whereas voluntary attention focusing refers to a child's ability to concentrate on a task when needed, shift and focus attention, and regulate emotional experience (Lengua, Bush, Long, Kovacs, & Trancik, 2008). These skills enable a child to flexibly respond to changing situations in ways that are consistent with social norms or long-term goals (Posner & Rothbart, 2000) and are important for the regulation of internal emotional states (Eisenberg, Fabes, Guthrie, & Reiser, 2000).

Indeed, children with high levels of effortful control are better at taking turns, persisting during difficult tasks, and staying focused in the face of distraction (Kochanska et al., 2000). Additionally, there is evidence that effortful control facilitates individuals' successful regulation of emotion and boosts their resilience during stressful life events (Rutter, 1993), such that those with high effortful control exhibit lower levels of irritability (Rothbart et al., 2000), are less easily overwhelmed by negative emotion (Gross & Thompson, 2007), and are better able to redirect their attention when distressed (Joormann & Gotlib, 2010). This protective effect has been found in youth residing in impoverished neighborhoods (Buckner, Mezzacappa, & Beardslee, 2003; Raver, 2004), suggesting that emotion regulation and coping skills are key

mechanisms underlying the positive link between self-regulation and resilience (Masten & Coatsworth, 1998).

**Self-regulation in Chinese culture.** Although children in Chinese American families balance two sets of cultural expectations, self-regulatory skills are an important part of both Eastern and Western cultural norms. Trommsdorff (2012) noted that independent (e.g., Western) cultures may value self-regulation for the purpose of achieving autonomy and individual achievement, whereas interdependent (e.g., Asian) cultures may prioritize self-regulation for its role in fostering interpersonal relationships and maintaining social harmony. Families in which the social and cultural benefits of self-regulation are emphasized may thus produce children with greater effortful control abilities. Indeed, higher effortful control has been associated with fewer behavioral problems and higher social and academic competence in samples of both European American and Chinese children (Porter, Hart, Yang, Robinson, Olsen, & Zeng et al., 2005; Zhou, Lengua, & Wang, 2009; Zhou, Main, & Wang, 2010), and the association between low effortful control and increased adjustment problems in European American children has also been found in Chinese samples (Zhou et al., 2009; Eisenberg, Ma, Chang, Zhou, West, & Aiken, 2007). Using the Wave 1 data from the same sample as the present study, Chen, Main, and Zhou et al. (2014) found that higher effortful control (measured by a multi-method and multi-informant battery) was associated with higher academic skills in Chinese American children when controlling for family SES, parenting, and other demographic factors. Importantly, consistent with the generally greater societal, family, and school emphasis on self-control in Chinese culture compared to North American culture, self-regulation (or effortful control) was more strongly related to lower behavioral problems in Chinese children than in American children (Zhou et al., 2009). Moreover, parents' greater orientation toward Chinese culture was marginally associated with higher self-regulation (effortful control) skills among Chinese American children (Chen et al., 2014), supporting the idea that self-regulation is a culturally valued trait in Chinese culture and may be promoted by culture-specific socialization practices in immigrant Chinese families.

### **Family Level: Influence of Parenting on Children's Self-Regulation**

As noted above, previous work suggests that risk factors within child, socio-demographic, and psychosocial domains may produce changes in parenting behaviors (Middlemiss, 2003; Klebanov, Brooks-Gunn, & Duncan, 1994), which are then thought to more directly influence child adjustment. An examination of multiple levels of a child's environment is thus incomplete without accounting for the role of parenting and its impact on child behavior.

**Parenting styles.** Parenting style is defined as "a constellation of attitudes toward the child that are communicated to the child and create an emotional climate in which parents' behaviors are expressed" (Darling & Steinberg, 1993, p. 493). Parenting styles are generally differentiated by variations in parental responsiveness and demandingness (Morris, Silk, Steinberg, Myers, & Robinson, 2007). Authoritative parenting and authoritarian parenting are two parenting styles widely studied among children from both European American and East Asian backgrounds (see Steinberg, 2001 and Sorkhabi, 2005 for reviews). Authoritative parenting is characterized by warmth and acceptance, encouragement of children's autonomy, discipline through reasonable limit setting, and the use of reasoning and induction. Conversely, authoritarian parenting is characterized by a lack of warmth, restrictions on children's autonomy, and frequent use of verbal hostility, physical coercion, and other punitive disciplinary strategies (Baumrind, 1996; Maccoby & Martin, 1983).

The use of different parenting styles has been consistently associated with variability in children's self-regulation, with factors such as parental warmth, control, monitoring, and the quality of the parent-child attachment relationship strongly implicated in the development of children's self-regulation (e.g., Eisenberg et al., 2004; Eisenberg, Zhou, Losoya, Fabes, Shepard, & Murphy et al., 2003; Kochanska et al., 2000). For example, whereas parental warmth, responsiveness, clear and consistent limit setting, and non-punitive discipline have been found to predict higher levels of effortful control (e.g., Colman, Hardy, Albert, Raffaelli, & Crockett, 2006; Lengua, Honorado, & Bush, 2007; Olson, Bates, & Bayles, 1990), parental coercion, punitive discipline, and power assertion have been associated with decreases in effortful control (e.g., Colman et al., 2006; Karreman, van Tuijl, van Aken, & Deković, 2008). Additionally, studies in the neighborhood literature have shown that parenting mediates the effect of neighborhood risk on children's self-regulation outcomes (e.g., Evans & English, 2002; Lengua et al., 2007).

**Parenting styles across cultures.** The value of self-regulation has been found to be higher in East Asian versus Western cultures (Lansford, Chang, Dodge, Malone, Oburu, & Palmérus et al., 2005). This finding has been hypothesized to relate to a cultural emphasis in traditional East Asian societies on parents' firm control and filial piety (Wu, Robinson, Yang, Hart, Olsen, & Porter et al., 2002). Indeed, cross-national and cross-ethnic comparative studies reported that on average, parents in East Asian cultures scored higher on authoritarian parenting and lower on authoritative parenting than European American parents (e.g., Chao, 2001; Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Supple & Small, 2006). However, despite the mean level differences in parenting styles between these groups, the direction of the relations between authoritative and authoritarian parenting and child adjustment in East Asian families has been shown to be largely similar to those in European American families (see Sorkhabi, 2005 and Zhou, Tao, Chen, Main, Lee, & Ly et al., 2012, for reviews), such that authoritative parenting is associated with better child outcomes (e.g., Cheah, Leung, Tahseen, & Schultz, 2009).

The cultural norm in favor of authoritarian parenting in Asian American families also appears to be related to their neighborhood environment. For instance, a previous examination of Chinese American immigrant families found that those residing in neighborhoods with a higher ethnic density (i.e., a larger proportion of Asian residents) had parents who were more likely to endorse authoritarian parenting behaviors (Lee, Zhou, Ly, Main, Tao, & Chen, 2014). Although the influence of culture and ethnicity on parenting and childrearing is well recognized (e.g., Garcia-Coll, Meyer, & Brillion, 1995), little empirical research has focused on how cultural heritage may directly or indirectly affect parenting behavior (Kotchick & Forehand, 2002), especially among immigrants of the same ethnic group.

### **Neighborhood Level: Effects of Neighborhood Disadvantage on Children's Self-Regulation**

Although a substantial literature has examined the role of parenting in children's self-regulation development, most studies have not empirically accounted for the nesting of parenting and development within a broader ecological and influential context (e.g., neighborhood disadvantage; Wikström & Sampson, 2003). Neighborhood economic disadvantage refers to hardship due to the simultaneous absence of economic, social, and family resources in a residential neighborhood (Ross & Mirowsky, 2001). It is commonly assessed using objective indicators from census data, such as the proportion of families living in poverty, the percentage of families receiving public assistance, and the unemployment rate (e.g., McBride Murry, Berkel,



Gaylord-Harden, Copeland-Linder, & Nation, 2011; Xue, Leventhal, Brooks-Gunn, & Earls, 2005).

Although it is well known that neighborhood disadvantage has lasting developmental effects on children that influence later life outcomes (e.g., Miller, Chen, & Parker, 2011), few studies have attempted to discern whether the neighborhoods in which children grow up explain differences in their self-regulation above and beyond individual and family characteristics (Gibson et al., 2010). Empirical studies have found that children's self-regulation is directly influenced by the amount of neighborhood disadvantage and the level of community social control found in their neighborhoods (i.e., the degree to which residents monitor each other and supervise children's behavior; Pratt et al., 2004). Neighborhood-based social processes often deteriorate in disadvantaged neighborhoods (e.g., those characterized by low socioeconomic status, high crime, or low neighbor cohesion), and children of both genders have been found to exhibit more impulsivity when residing in less advantaged neighborhoods, after controlling for baseline self-control (Pratt et al., 2004; Wikstrom & Loeber, 2000).

Furthermore, whereas studies have tested self-regulation as a mediator between neighborhood risk and children's behavior problems (e.g., Aber, Jones, & Cohen, 2000; Maughan & Cicchetti, 2002), few studies have examined the ways in which parenting norms are influenced by neighborhood environment, and in turn, how these parenting behaviors subsequently influence children's self-regulation outcomes (i.e., how parenting may mediate the influence of neighborhood to effect development of children's self-regulation). There is also a paucity of studies utilizing longitudinal data, which allow for better tests of the causal impact of neighborhood characteristics on children's self-regulation.

**Heightened risk for immigrant families.** In addition to contending with unique psychosocial challenges such as intergenerational cultural dissonance (Costigan & Dokis, 2006), children in immigrant families are also more likely to live in socioeconomically disadvantaged neighborhoods than non-immigrant children (Leventhal, Xue, & Brooks-Gunn, 2006). Though the "model minority myth" has continued to misrepresent economic and educational success for all Asian Americans, Kwong and Chen (2010) noted that there is great heterogeneity in this broad group. For example, though Asian Americans' median household earnings are greater than the national average, per capita income (i.e., total household income divided by number of household members) is actually significantly less than that of European Americans. Moreover, Chinese Americans often reside in diverse neighborhoods that are more likely to be characterized by economic hardship (Kwong & Chen, 2010). In metropolitan areas and ethnic enclaves, a large proportion of Chinese Americans live in poverty (Kwong & Chen, 2010). However, little is known about how neighborhood poverty and economic disadvantage might influence self-regulation development in Chinese American children.

**Neighborhood and parenting may interact.** There is limited evidence that neighborhood characteristics and parenting interact to influence child adjustment, although much of the literature that has examined interactions of neighborhood by family risk factors has focused on adolescent samples (e.g., Beyers, Bates, Petit, & Dodge, 2003; Meyers & Miller, 2004). In a sample of mostly African American 5-7 year olds, Lima and colleagues (2010) found that a negative neighborhood social environment (e.g., physical/social disorder) moderated the effect of family risk on children's behavior problems, such that a worse neighborhood was associated with a larger increase in behavior problems for children in high-risk families neighborhoods. To my knowledge, only one study to date has investigated the interaction between neighborhood and family factors (e.g., parenting practices) in relation to Asian

American children's adjustment. In a sample of Chinese American adolescents, Liu et al. (2009) found that neighborhood disadvantage did not moderate the association between maternal acculturation and parenting practices.

### **Neighborhood Level: Role of Neighborhood Ethnic Density on Children's Self-Regulation**

In addition to neighborhood socioeconomic characteristics such as socioeconomic disadvantage, neighborhood cultural characteristics such as ethnic density may shape immigrant children's psychological adjustment through multiple processes. First, immigrant groups may have access to social cohesion (Leventhal & Shuey, 2014) and culturally based resources that mitigate the effect of assimilation pressures (Portes & Zhou, 1993), increasing the likelihood that immigrant children and families will succeed. For example, affiliation with co-ethnic communities can provide a sense of belonging and valuable professional and social resources (Zhou & Kim, 2006). Living in these communities may also nurture residents' ethnic identity and decrease the need to assimilate. Second, neighborhood ethnic density may influence children's psychological adjustment through its effects on parents' cultural values. For example, White, Roosa, and Zeider (2012) found that for Mexican American mothers living in neighborhoods they reported as more risky, endorsements of familialism - a traditional cultural belief emphasizing support, interdependence, and family obligation - moderated the impact of neighborhood risk on the use of harsh parenting strategies.

On the other hand, there is also evidence to suggest that neighborhood ethnic density might be a risk or vulnerability factor for minority children. First, two studies have suggested that living in neighborhoods with a high concentration of co-ethnic members may heighten ethnic minority residents' awareness of racial/ethnic discrimination (Juang & Alvarez, 2011) and cultural alienation (Miller, Birman, Zenk, Wang, Sorokin, & Connor, 2009). However, these studies did not further examine whether the elevated perceived discrimination or cultural alienation were associated with greater mental health problems in ethnic minority residents. Second, via Wave 1 data from the same sample as the present study, it was found that neighborhood Asian concentration was associated with Chinese American parents' greater use of authoritarian parenting, which was in turn associated with Chinese American children's higher risk for behavioral problems (Lee et al., 2014).

Thus, the existing literature on the links between neighborhood ethnic density and ethnic minority children's mental health adjustment suggests a complex and mixed picture: neighborhood ethnic density might shape minority children's development through multiple processes (including both protective/asset and vulnerability/risk processes). To my knowledge, no researchers have examined the links between neighborhood ethnic density and minority children's self-regulation, nor have investigators tested for moderated relations between neighborhood ethnic density and parenting in predicting minority children's self-regulation.

### **The Present Study**

In summary, there are several limitations in the existing literature on the mediated and interactive relations of neighborhood and family environments to children's psychological adjustment in ethnic minority and immigrant families. First, despite the critical role of self-regulation in children's psychological adjustment in multiple cultures, few researchers have examined the mediated and interactive relations of neighborhood and family environments to minority children's self-regulation outcomes. Second, there has been a shortage of longitudinal studies and studies that apply multi-level analyses to test for the mediated and moderated links of

neighborhood and family environments to children's self-regulation. Third, the research on how neighborhood and family environments are linked to self-regulation outcomes in Chinese American children is almost nonexistent, despite the fact that Chinese Americans now comprise the second fastest-growing minority group in the United States (Hoeffel, Rastogi, Kim & Shahid, 2012).

Using two-wave (1.5 years apart) longitudinal data of 258 first- and second- generation Chinese American children (initially in 1<sup>st</sup>- to 2<sup>nd</sup>-grades), I investigated how neighborhood and family contexts jointly and interactively relate to school-age children's self-regulation development. By focusing on a single ethnic group, I was able to examine the within-cultural heterogeneity in the socioeconomic and cultural characteristics of Chinese American children's neighborhood and family environments, as well as explore the complex mediational and moderational mechanisms involved in these contextual factors. Moreover, the present study allowed testing of whether the existing developmental theories on self-regulation development apply to children growing up in bicultural contexts (e.g., Garcia Coll, Lamberty, Jenkins, McAdoo, Crnic, & Wasik, 1998). The specific aims and hypotheses of the dissertation were as follows:

**Aim 1: Test parenting style as a mediator of relations between neighborhood environment (i.e., economic disadvantage, ethnic density) and children's effortful control.**

**Hypothesis 1.** Similar to previous studies showing that parenting quality mediates the impact of neighborhood disadvantage on child outcomes (e.g., Bolger, Patterson, Thompson, & Kupersmidt, 1995; Deng, Lopez, Roosa, Ryu, Burrell, & Tein et al., 2006; McCoy, Frick, Loney, & Ellis, 1999), I hypothesized that *authoritative* parenting style would mediate the associations between neighborhood *disadvantage* and child *effortful control*. Specifically, I hypothesized that W1 neighborhood disadvantage would be negatively related to W2 authoritative parenting (as previously found in this sample and summarized in Lee et al., 2014), and that W2 authoritative parenting would subsequently be positively related to W2 effortful control, such that any direct association between neighborhood disadvantage and effortful control would be attenuated with the inclusion of authoritative parenting.

**Hypothesis 2.** Based upon previous research showing that minority parents residing in low income neighborhoods are more likely to exhibit high levels of parental control (Leventhal & Brooks-Gunn, 2000), I hypothesized that *authoritarian* parenting would mediate the association between neighborhood *disadvantage* and child *effortful control*. Specifically, I hypothesized that W1 neighborhood disadvantage would be positively related to W2 authoritarian parenting, which would in turn be negatively related to W2 effortful control, such that any direct association between neighborhood disadvantage and effortful control would be attenuated with the inclusion of authoritarian parenting.

**Hypothesis 3.** Building upon earlier research with this sample (Lee et al., 2014), I hypothesized that *authoritative* parenting would mediate the relation between neighborhood *ethnic density* and *effortful control*. Specifically, I hypothesized that W1 neighborhood ethnic density would be negatively related to W2 authoritative parenting, which would be positively related between to W2 effortful control, such that any direct association between neighborhood ethnic density and effortful control would be attenuated with the inclusion of authoritative parenting.

**Hypothesis 4.** Also based upon the findings from Lee et al. (2014), I hypothesized that *authoritarian* parenting style would mediate the associations between neighborhood *ethnic density* and child *effortful control*. Specifically, I hypothesized that W1 neighborhood ethnic

density would be positively related to W2 authoritarian parenting, which would be negatively related to W2 effortful control, such that any direct association between neighborhood ethnic density and effortful control would be attenuated with the inclusion of authoritarian parenting.

**Aim 2: Test neighborhood environment (i.e., ethnic density) as a moderator of associations between parenting style and children's effortful control.**

**Hypothesis 5.** Given prior literature on the influence of neighborhood ethnic composition on parenting, I hypothesized that W2 parenting style and W2 neighborhood ethnic density would interact to predict W2 children's effortful control, controlling for W1 levels of effortful control. Specifically, I expected that for parents high on *authoritative* parenting, residing in ethnically dense neighborhoods would be positively associated with children's effortful control at W2. In contrast, for parents high on *authoritarian* parenting, neighborhood ethnic density would be unrelated to or negatively related with children's effortful control.

## Method

### Participants

Data for this study were collected from an ongoing longitudinal study of 258 first-generation (i.e., born outside the United States) and second-generation (i.e., born in the United States with at least one foreign-born parent) Chinese American children and their parents. The following conditions were set as eligibility criteria for the study and assessed through a phone interview with interested parents: (a) the child was in 1<sup>st</sup>- or 2<sup>nd</sup>-grade at the time of screening; (b) the child lived with at least one of her/his biological parents; (c) both biological parents identified as ethnic Chinese; (d) the child was either a first- or second-generation Chinese American; and (e) the parent and child were able to understand and speak English or Chinese (Mandarin or Cantonese). At Wave 1 (1<sup>st</sup> and 2<sup>nd</sup> grade), a total of 258 children and their parents and teachers participated in the assessment. At Wave 2 (1.5 years after Wave 1), 239 (93%) children from the original sample were re-assessed. At W1, children in the sample (51.9% boys) were between 5.9 and 9.1 years of age ( $M = 7.4$  years,  $SD = .71$ ) and in the 1<sup>st</sup> (48.8%) or 2<sup>nd</sup> grade. 23.6% of the children were first-generation, or born outside the United States, and 76.4% of the children were second-generation, or U.S.-born. Children in the W2 sample (51.9% boys) were between 7.5 and 11 years of age ( $M = 9.2$  years,  $SD = .73$ ). Parent and family demographic characteristics for both waves of the sample are presented in Table 1 as percentages of the full sample.

### Recruitment

To recruit a socioeconomically diverse sample of Chinese American immigrant families in the San Francisco Bay area, the research team used multiple recruitment strategies, including conducting on-site recruitment fairs (63.6% of the sample), distributing fliers at schools (17.4%), and seeking referrals from community organizations (19%). Given our goal of studying underserved families, we intentionally over-sampled low-income families by concentrating our recruitment efforts in Asian American communities with high economic disadvantage (e.g., Chinatowns).

### Procedure

At both waves, the child and one parent (usually the mother) arrived at the university laboratory to participate in a 2.5-hour assessment that included structured interviews,

questionnaire measures, and behavioral tasks. After obtaining parental consent and child assent to participate, two bilingual interviewers led each parent and child into separate rooms to administer interviews and questionnaires. Interviewers were undergraduate students who had received extensive training before conducting assessments. Interviewers followed a scripted manual to administer the batteries. All of the questionnaires and tests were administered in the parent's or child's preferred language (English, Mandarin, or Cantonese) indicated at the beginning of the visit. All written materials (including consent and assent forms and questionnaires) were available in English, simplified Chinese, or traditional Chinese. In the present sample, 81.8% of children had mothers and 18.2% had fathers serve as the participating parent.

The majority of parents (80.4% at W1, 82.6% at W2) completed the questionnaires in Chinese. After the lab assessment and with parental permission, the child's classroom teacher was asked to fill out a teacher questionnaire by mail. Teacher questionnaires were collected for 85.3% of the sample at W1 and 90% of the sample at W2. At the end of data collection, a brief written feedback report summarizing the child's performance on the academic test and his/her overall emotional and behavioral adjustment (based on their parent's and teacher's ratings on standardized instruments) was mailed to the parent. Both parents and teachers were paid for their participation, and children were given a small prize.

## Measures

A multi-method and multi-reporter approach was used to assess the majority of study constructs (Epstein, 1983). Because the majority of parent participants were non-native English speakers, parent questionnaires were available in both English and Chinese (Mandarin or Cantonese). The majority of child participants were comfortable with speaking and understanding English and thus were administered the child assessment in English. For measures that had not been previously used with a Chinese-speaking sample, the following procedures were used to translate the scripted verbal instructions for each measure into Chinese. First, the original instructions were translated into Chinese by a bilingual researcher. Second, another bilingual researcher back-translated the instructions into English. Next, the two translators and the principal investigator (who is fluent in both languages) met to review and resolve any discrepancies between the two English versions.

**Effortful control.** Children's effortful control was measured using a combination of parent and teacher reports and laboratory tasks. Two components of effortful control were measured: (1) inhibitory control, and (2) attention focusing.

**Parent and teacher reports of effortful control.** Parents and teachers completed the Inhibitory Control and Attention Focusing subscales of the Children's Behavior Questionnaire (CBQ; Rothbart, Ahadi, Hersey, & Fisher, 2001), a commonly used measure of child temperament. Items were rated on a 7-point scale ranging from 1 (*extremely untrue*) to 7 (*extremely true*). The Inhibitory Control subscale assesses a child's ability to regulate his or her behavior (e.g., "Can lower his/her voice when asked to do so"), and the Attention Focusing subscale assesses a child's ability to concentrate on a task when needed (e.g., "When drawing or reading a book, shows strong concentration"). In a previous study examining Mainland Chinese children, both parent and teacher reports on the Inhibitory Control and Attention Focusing CBQ subscales showed satisfactory internal and test-retest reliabilities (Zhou, Wang, Deng, Eisenberg, Wolchik, & Tein, 2008). Moreover, cross-cultural comparisons between Chinese and U.S. samples showed similarities in the interrelations between inhibitory control, attention focusing,

and children's behavioral problems (Zhou et al., 2009). In the present sample, the W1 alphas for inhibitory control were .70 (11 items) for parents and .80 (10 items) for teachers, while the alphas for attention focusing were .73 (11 items) for parents and .87 (12 items) for teachers. At W2, the alphas for inhibitory control were .72 (11 items) for parents and .81 (10 items) for teachers, and the alphas for attention focusing were .78 (11 items) for parents and .88 (12 items) for teachers.

Consistent with the perspective that inhibitory control and attention focusing are two theoretically and empirically salient components of effortful control (Rothbart & Bates, 2006), the Inhibitory Control and Attention Focusing subscales were correlated at expected levels within reporters,  $r_s$  (251 and 215) = .52 and .68 for parents' and teachers' W1 reports, respectively. At W2, the  $r_s$  (235 and 208) were .66 and .73 for parents' and teachers' reports, respectively. To reduce the number of variables in the main analyses, for both parents' and teachers' reports, an effortful control composite was computed by averaging the two subscale scores. This data reduction approach is supported by empirical work on the factor structure of effortful control (Rothbart et al., 2001) and commonly used by other research groups (e.g., Valiente, Lemery-Chalfant, Swanson, & Reiser, 2008).

**Observed behavioral persistence.** Children's behavioral persistence, an index of effortful control that involves both inhibitory control and attention focusing (Zhou, Hofer, Eisenberg, Reiser, Spinrad, & Fabes, 2007) was assessed with a puzzle box task (Eisenberg, Zhou, Spinrad, Valiente, Fabes, & Liew, 2005). Children were instructed to assemble a wooden shape puzzle in a large box without looking inside the box. Although an opaque cloth blocked the child's view of the puzzle, the child could easily "cheat" during the task by lifting the cloth to peek. Children were told that if they finished the task within five minutes, they would receive a prize. They were then left alone in the room for up to five minutes while completing the task and were videotaped by a visible video camera. Two trained undergraduate students independently coded the videos for the number of seconds the child persisted on the puzzle without cheating or going off-task (inter-rater  $r = .97$ ). Children's behavioral persistence was calculated as the proportion of time persistently spent solving the puzzle, divided by the total time spent on the task (see Eisenberg, Cumberland, Spinrad, Fabes, Sheppard, & Reiser et al., 2001). In a longitudinal study of European American children, Eisenberg and colleagues (2005) found that children's persistence score on this task showed satisfactory rank order stability from middle to late childhood and loaded positively on the latent factor of effortful control together with parent and teacher reports of inhibitory control and attention focusing.

**Go/No-Go task.** Children were administered a computerized Go/No-Go task (Eriksen & Eriksen, 1974) to assess attention and inhibitory control. Similar to other Go/No-Go or continuous performance tasks, children were presented with a series of images of cartoon characters, only one of which necessitated a response. They were instructed to press a key as fast as they could when the target stimulus appeared and to refrain from pressing the key when other stimuli appeared. Images were presented for an average of 2 seconds and at consistent intervals. Designation of cartoon characters as target or non-target stimuli was counterbalanced for each child. A low rate of omission errors (i.e., failing to press the button in response to the target stimulus) on this task is generally thought to reflect sustained attention, while a low rate of commission errors (i.e., responding to non-target stimuli) is thought to reflect inhibition (Barkley, 1991). Thus, total numbers of omission and commission errors were used in the analyses as indicators of low effortful control.

**Cognitive flexibility.** To assess children's cognitive flexibility, a computerized task was

modified from a measure originally developed by Baym, Corbett, Wright, and Bunge (2008). In the task, target stimuli were cartoon characters colored in shades of red or blue that faced either a leftward or rightward direction, with slight variations in the angle of their orientation between trials. Children were instructed to use one of two visually presented rule cues (the word “Color” or “Direction”) to determine the appropriate button response to each stimulus. Color and Direction trials were randomly intermixed, requiring children to flexibly switch between rule cues. The rule cue for each stimulus was either the same (Repeat) or different (Switch) from the previous trial. Additionally, the color and direction features of the stimulus were either associated with the same response (Congruent) or conflicting responses (Incongruent). Thus, the task taps children’s ability to switch flexibly between task instructions (Repeat or Switch), while ignoring the irrelevant stimulus feature (Color or Direction, depending on the currently relevant rule). The task was administered in a 32-trial practice session, followed by a 98-trial testing session.

Performance on Incongruent-Switch trials is a sensitive measure of cognitive flexibility, because accurate performance on these trials is only possible when participants have switched flexibly from one rule to the other and are also successful at ignoring the stimulus dimension that was relevant to the immediately preceding trial (Baym et al., 2008). By contrast, accurate performance on congruent trials does not necessarily mean that the participant is following the correct rule, and accurate performance on Repeat trials does not require task switching. Thus, the indicator of cognitive flexibility used in analyses was the accuracy percentage on Incongruent-Switch trials (correct responses divided by total number of trials).

**Confirmatory Factor Analysis.** A confirmatory factor analysis (CFA) was conducted to test the factor structure of the effortful control battery in the present sample. Because previous studies using multi-method batteries of effortful control or executive function with young children have suggested that a single factor model provides the best fit (Allan & Lonigan, 2011; Willoughby, Blair, Wirth, & Greenberg, 2012), I tested a confirmatory factor model of Effortful Control (EC) using both W1 and W2 measures. As shown in Figure 1, at each wave, the latent factor of Effortful Control was indicated by six observed variables: parent-reported EC, teacher-reported EC, omission errors and commission errors on the Go/No-Go task, behavioral persistence on the puzzle task, and cognitive flexibility (overall accuracy on the cognitive flexibility task). The two-factor model fit the data well,  $\chi^2$  ( $df = 48$ ,  $N = 246$ ) = 56.22,  $p = .19$ , CFI = 0.98, RMSEA = 0.026, SRMR = 0.46. All the model-estimated loadings were significant and in the expected range (the absolute values of standardized loadings ranged from 0.28 to 0.67).

**Neighborhood economic disadvantage (census data).** I used tract-level data from the 2000 U.S. Census to assess neighborhood at both waves. Although this study was conducted in 2008-2009, tract-level data from the 2010 Census has not yet been made available to the public. These indicators are commonly used in prior empirical work as measures of neighborhood disadvantage (e.g., Xue et al., 2005; Roosa et al., 2005). The three variables were highly correlated with each other in the present sample ( $r_s > .70$ ). Based on a confirmatory factor analysis performed to reduce census tract variables for the current sample (Lee et al., 2014), neighborhood disadvantage comprised the following: the percentage of residents receiving public assistance, percent unemployment, and percent poverty rate. Following the procedure commonly used in neighborhood studies to avoid issues of multicollinearity (e.g., Deng et al., 2006; Liu, Lau, Chen, Dinh, & Kim, 2009), I converted each indicator to a standardized value according to the current sample’s scores and then averaged them to create the neighborhood disadvantage composite. Four percent of families in this sample lived in neighborhoods with poverty rates

equal to or higher than 40%, 25% lived in neighborhoods with poverty rates between 20% and 40%, and 68% lived in neighborhoods with poverty rates lower than 20%. Between the two waves of data collection, 19% of families ( $n = 47$ ) reported moving. W1 neighborhood data was used for both waves.

**Neighborhood Asian concentration (census data).** I used a single variable calculated from Census data to represent neighborhood ethnic density: percentage of residents who self-identified as being of Asian only descent. At W1, 28% of families in the present sample lived in ethnic enclaves with Asian densities above 50%, and 22% lived in neighborhoods with Asian densities lower than 20%. W1 neighborhood data was used for both waves.

**Authoritative and authoritarian parenting (parent and child report).** Parents (W1 and W2) and children (W2 only) rated parents' authoritative and authoritarian parenting styles with the Parenting Styles and Dimensions Questionnaire (PSDQ, Robinson, Mandlco, Olsen, & Hart, 1995), using a 5-point scale (from 1 = Never to 5 = Always). The authoritative parenting scale includes four subscales: warmth/acceptance, reasoning/induction, easygoing/responsiveness, and encouragement of child's democratic participation. The authoritarian parenting scale includes four subscales: non-reasoning/punitive strategies, corporal punishment, verbal hostility, and directiveness. The PSDQ is available in English and Chinese languages, and has shown an invariant two-factor structure in samples of native Chinese and U.S. parents (Wu et al., 2002). In this sample, the W1 alphas for authoritative parenting (26 items) and authoritarian parenting (17 items) were .83 and .84, respectively, for parent ratings of parenting style. At Wave 2, both parents and children reported on parenting style. W2 alphas for authoritative parenting were .93 for parent reports (27 items) and .90 for children (17 items), and .84 for parents (19 items) and .87 for children (13 items) for authoritarian parenting.

**Family demographic information.** Information regarding family demographics was obtained through parents' reports on a demographics questionnaire. Parents answered questions regarding family income, highest education obtained, and household size. Based on their responses, three socio-demographic factors were created: parents' education, family per capita income, and household density. For education, parents indicated the extent of their education, and also their partner's highest level of education (if applicable). The family per capita income variable was created by dividing the total family income for the past year by the number of individuals living in the household (Datta & Meerman, 1980).

## Results

### Descriptive Statistics

Descriptive statistics of study variables are presented in Table 2. Variables were first screened for normality. Using the cutoffs of two and seven for skewness and kurtosis, respectively (West, Finch, & Curran, 1995), all of the main variables were normally distributed, with the exception of W1 Go/No-Go Omission Errors (which was positively skewed, meaning that most children made few omission errors) and W2 Behavioral Persistence (which was negatively skewed, meaning that most children had high scores on this task at W2). Because of the presence of nonnormally distributed variables, I used robust estimation in subsequent path analysis models testing the study hypotheses.

### Zero-order correlations

Zero-order correlations between main study variables are presented in Tables 3a and 3b.



## Path Analyses Testing the Study Mediation Hypotheses

**Analysis for Hypotheses #1-4: the mediation hypotheses.** To test the mediation hypotheses, a series of path analytic models were tested (see Figure 2 for an example). In these models, W1 neighborhood disadvantage and ethnic density were hypothesized to predict W2 parenting styles (parents' and children's reports of authoritative and authoritarian parenting), which in turn predict W2 effortful control controlling for W1 effortful control. In addition, the effects of child age, sex, generation status, and family SES on W2 parenting styles and W2 effortful control variables were controlled in the models. Because an inspection of the zero-order correlations among neighborhood, parenting, and effortful control variables (Tables 3a and 3b) suggested that the associations of neighborhood and parenting to effortful control varied by different measures of effortful control, separate path models were tested for predicting each effortful control measure at W2. Thus, a total of six path analysis models were tested (see Table 4). If the mediated paths (i.e., neighborhood environment → parenting styles → child self-regulation) were significant, the significance of the indirect/mediated effects was tested using the bias-corrected confidence interval approach.

The results (including the overall model fit indexes, estimates and significance tests of path coefficients) are reported in Table 4. All the models fit the data well based on the CFI, RMSEA, and SRMR. I have summarized the results regarding the hypothesized paths below.

***Hypothesis 1. W1 neighborhood disadvantage will be negatively related to W2 authoritative parenting, which will in turn be positively related to W2 effortful control.***

Hypothesis 1 was not supported. W1 neighborhood disadvantage did not uniquely predict W2 authoritative parenting style (by parents' or children's reports), and W2 authoritative parenting style did not uniquely predict W2 effortful control controlling for W1 effortful control and the covariates.

***Hypothesis 2. W1 neighborhood disadvantage will be positively related to W2 authoritarian parenting, which will in turn be negatively related to W2 effortful control.***

Hypothesis 2 was not supported. W1 neighborhood disadvantage did not predict W2 authoritarian parenting style (by parents' or children's reports). Thus, authoritarian parenting did not mediate the relation between neighborhood disadvantage and child effortful control.

***Hypothesis 3. W1 neighborhood ethnic density will be negatively related to W2 authoritative parenting, which will in turn be positively related between to W2 effortful control.***

Hypothesis 3 was not supported. W1 neighborhood Asian concentration did not predict W2 authoritative parenting (by parents' or children's reports). Thus, authoritative parenting did not mediate the relation between neighborhood ethnic density and child effortful control.

***Hypothesis 4. W1 neighborhood ethnic density will be positively related to W2 authoritarian parenting, which will in turn be negatively related to W2 effortful control.***

Hypothesis 4 was partially supported. W1 neighborhood Asian concentration positively predicted W2 child reports of authoritarian parenting ( $r = .01, p < .05$ ), which in turn negatively predicted W2 parent reports of effortful control ( $r = -.12, p < .05$ ). However, the estimate of the indirect effect (W1 neighborhood Asian concentration → W2 authoritarian parenting → W2 parent report of effortful control) was not significant based on the bias-corrected confidence interval test. Moreover, although the mediated effects were not significant, W1 neighborhood Asian concentration significantly and positively predicted W2 teacher reports of effortful control ( $r = .01, p < .05$ ) and behavioral persistence ( $r = .01, p < .05$ ), and W2 child report of authoritarian parenting negatively predicted W2 parent report of effortful control.

## **Hierarchical Linear Modeling Testing the Study Moderation Hypothesis**

**Analysis for Hypothesis #5.** To test the hypothesis that the association between W2 parenting style and children's effortful control is moderated by W2 neighborhood ethnic density (i.e., that neighborhood ethnic density interacts with parenting style in predicting children's effortful control), a series of hierarchical linear models were tested (see Figure 3 and Table 5). In these models, the dependent variable was W2 effortful control (one model for each effortful control measure). The Level-1 predictors included (a) covariates (child age, sex, generation status, and family SES) and (b) W2 children's reports of parenting styles. The Level-2 predictors were (a) W1 neighborhood disadvantage and Asian concentration and (b) the interactions between W1 neighborhood and W2 parenting style variables. The results of regression coefficients are reported in Table 5. We also performed the same analyses using W2 parents' reports of parenting styles, and none of the interaction effects were significant. Thus, these results are not reported.

**Hypothesis 5. W1 neighborhood Asian concentration will moderate the relations between W2 parenting styles and W2 child effortful control.** Hypothesis 5 was partially supported. Specifically, there was a significant interaction effect of W1 neighborhood Asian concentration  $\times$  W2 child report of authoritative parenting style in predicting W2 teacher report of effortful control. Specifically, for those children residing in a neighborhood with a high concentration of Asian residents, the protective effect of authoritative parenting on their effortful control (as reported by teachers) was weaker. There were no other significant interaction effects.

## **Discussion**

To my knowledge, the current study was the first to investigate the links of both neighborhood (disadvantage and ethnic density) and parenting (authoritarian and authoritative parenting style) to self-regulation (effortful control) outcomes in Chinese American immigrant children. I did not find evidence that parenting style mediated the relation between neighborhood disadvantage and Chinese American children's effortful control. However, children residing in neighborhoods with a higher Asian concentration were more likely to rate their parents as using an authoritarian parenting style, which subsequently predicted lower levels of effortful control. Furthermore, for these same children, parents' utilization of authoritative parenting had a weaker protective effect on children's effortful control (as rated by their teachers) than for children residing in less ethnically dense neighborhoods.

## **Measures of Effortful Control and their Links to Parenting Styles and Neighborhood Factors**

In line with previous studies that suggested a single factor model provides the best fit when using multi-method measures of effortful control (Allan & Lonigan, 2011; Willoughby, et al., 2012), I found that a single factor model of effortful control fit the data well. However, different measures of effortful control in the current study correlated differently to parenting styles and neighborhood characteristics.

**Parenting and effortful control.** Parent reports of children's effortful control at both W1 and W2 had similar and expected relations to parenting styles (i.e., positively related to authoritative parenting and negatively related to authoritarian parenting; see Tables 3a and 3b). However, though W1 and W2 parenting styles were significantly and positively correlated, the

significant associations between parenting styles and individual effortful control measures varied by wave. At W1, parent report of authoritative parenting was significantly and negatively associated with W1 cognitive flexibility, while W1 parent report of authoritarian parenting was significantly and negatively associated with W1 teacher report of effortful control. At W2, child report of authoritative parenting was significantly and negatively related to W2 Go/No-Go Omission Errors, and child report of authoritarian parenting was significantly and negatively related to W2 parent report of effortful control. Although these relations were all in the expected directions, these findings suggest that differences between parent and child reports of parenting may underlie the association between parenting style and specific aspects of effortful control. They also suggest that children's perception of parenting style increases in salience as children age.

**Neighborhood and effortful control.** W1 neighborhood Asian concentration was significantly and negatively associated with W1 parent report of effortful control, which was in line with our hypotheses. However, this was the only significant association between W1 neighborhood and individual effortful control variables in our study at either wave. This finding highlights the distal relationship of neighborhood characteristics to individual child adjustment and suggests that children's development of effortful control is sensitive to the cultural environment in which they reside. Although I anticipated that neighborhood disadvantage would have similar associations to children's effortful control, it may be that neighborhood cultural factors are more salient for Chinese American children's functioning in this domain and allow for a more accurate measurement of neighborhood-level effects in middle childhood than neighborhood disadvantage.

### **Findings on the Mediation Hypotheses**

I did not find evidence that parenting style mediates the relation between neighborhood disadvantage and children's effortful control in a sample of Chinese American immigrant children (Hypotheses 1-2). In a previous study with this sample and consistent with findings with children from other ethnic groups, neighborhood disadvantage directly increased risk for children's externalizing problems. In the current study, it may be that the relationship between neighborhood disadvantage and self-regulation is a mediated pathway that transmits effects through variables I did not examine. Alternatively, the lack of significant association between neighborhood disadvantage and parenting style may be due to the larger influence of culture on parenting in this model or the relative lack of severe disadvantage in this sample.

The absence of relation between parenting style and effortful control may also be linked to the fact that computer tasks of effortful control are distally related to parenting behavior, particularly when parenting is more moderately authoritarian as in this study, versus abusive as is commonly discussed in the literature (e.g., Patterson, 1982). I found significant correlations between parenting and reports of effortful control, but significance was not consistent across all measures of effortful control used in the study. This lack of coherence may point to the need for an examination of specific measures of effortful control rather than a global construct. I was also unable to control for child emotionality at either wave of data collection, and it is well established that children's temperament and parenting style reciprocally influence each other (e.g., Lee, Zhou, Eisenberg, & Wang, 2013).

Using ethnic density as an indicator of cultural context, the current study assessed neighborhood-level cultural influences on parenting and child adjustment. Although I found that neighborhood ethnic density did not affect authoritative parenting, neighborhood Asian

concentration positively predicted child reports of authoritarian parenting at Wave 2, which subsequently negatively predicted W2 parent reports of children's effortful control (Hypotheses 3-4). Similar to the team's previous study that found families who lived in more ethnically dense neighborhoods were more likely to have children with internalizing problems (Lee et al., 2014), parent reports of authoritarian parenting mediated the relation between neighborhood and child outcomes. Given the importance of self-regulation skills in both Chinese and American cultures (Trommsdorff, 2012), the finding that culturally-normative authoritarian parenting has negative effects on children's effortful control suggests that parenting behavior may be a prime intervention target.

The current study extends these findings and suggests that child perspectives on parenting may play an important role as children reach middle to late childhood and that their reports of parenting style may be more informative than parent self-reports at this age. Residing in ethnically dense neighborhoods may also increase children's awareness of cultural sameness/difference and subsequently heighten their awareness of authoritarian parenting behaviors (Juang & Alvarez, 2011). A within-group examination of parenting style, as in the present investigation, provides a perspective on the impact of particular parenting behaviors nested within a specific cultural niche (Kotchick & Forehand, 2002).

It is interesting that mediated effects were found without the concurrence of direct effects of neighborhood disadvantage or ethnic density on effortful control. Whereas researchers have not historically examined indirect effects without significant direct effects (Baron & Kenny, 1986) a direct pathway is not necessary for testing indirect pathways (Hayes, 2009; Shrout & Bolger, 2002). That is, because neighborhood factors are likely to exert their influence on children's adjustment through many complex pathways, not all significant indirect effects will accompany direct effects. Although I focused on one potential mediating variable (parenting style), there is a wide variety of other variables that likely play a role in transmitting neighborhood level effects on children's effortful control outcomes.

### **Findings on the Moderation Hypothesis**

In addition to unidirectional and reciprocal effects of children's contexts, factors across different levels may interact to create effects on child adjustment. I examined the interaction between W2 neighborhood Asian concentration and W2 parenting style and found partial support for my hypothesis, with W2 child report of authoritative parenting interacting with neighborhood Asian concentration to negatively predict W2 teacher reports of effortful control (Hypothesis 5). Despite the small sample size relative to most neighborhood studies, my finding of a significant interaction effect points to the complex relation between neighborhood and parenting characteristics and children's effortful control outcomes. Specifically, I found that the positive effect of authoritative parenting on teachers' reports of effortful control was weaker among Chinese American children living in neighborhoods with a greater density of Asian residents.

This finding is consistent with previous investigations into the function of parenting in Asian American families. Ruth Chao (1994) has posited that the functions of authoritative and authoritarian parenting may differ between Chinese and Western families: because of the greater cultural emphasis on strict and controlling parenting in Chinese families, the benefits of authoritative parenting (which also encourages and supports children's autonomy) might be weaker in Chinese families than in Western families. Similarly, other researchers have found that the negative consequences of harsh discipline on children's mental health adjustment were weaker among countries in which the perceived norms for parental use of harsh discipline are

higher (Lansford et al., 2005), supporting the idea that cultural norms could modify the function of parental discipline.

In sum, the current findings suggest that culture could influence parenting and children's adjustment through two different pathways: (a) a mediated pathway, in which Chinese American parents residing in neighborhoods with higher Asian concentrations are more likely to utilize authoritarian parenting due to cultural parenting norms in those communities, which in turn put children at higher risk for developing low effortful control; and (b) a moderated pathway, in which neighborhood Asian density dampens the benefits of authoritative parenting on children's effortful control. Although it is important for future research to replicate these findings in other Asian samples, it is also critical for researchers to investigate the potential mechanisms or processes underling these cultural pathways. For example, questions that remain to be explored include the following: through what interpersonal (e.g., modeling, observational learning) and socio-cognitive processes are cultural norms or values on parenting transmitted to parenting practices in individual families? How do cultural norms modify the impact of authoritative or authoritarian parenting on children's adjustment (e.g., through modifying children's perception of parenting, or through creating culturally-specific barriers for parents to using childrearing practices that are not considered typical for a given culture)?

Although previous research with Chinese American children found that parents' greater orientation toward Chinese culture was marginally associated with children's higher self-regulation (Chen et al., 2014), the tendency toward authoritarian parenting in this culture may dilute parents' ability to effectively promote self-regulation in their children when parenting authoritatively. This effect may be particularly detrimental to Chinese American children, for whom the cultural emphasis on high self-regulation is strong, as well as to children living in disadvantaged neighborhoods, where high levels of effortful control have been found to increase resilience (Buckner et al., 2003; Raver, 2004).

To my knowledge, this is the first study to find that a neighborhood-level cultural factor can moderate the relationship between parenting style and children's self-regulation. The inconsistencies found on the impact of parenting on effortful control in Chinese American families may be the result of many factors moderating these relationships (e.g., SES, acculturation, ethnic density, etc.). Alternatively, it may be the case that parenting style moderates the effects of neighborhood on children's self-regulation, buffering them against the negative effects of living in a particular neighborhood context. Again, given the small sample size relative to most neighborhood studies in the literature, the current findings may also reflect a lack of power to fully detect interaction effects.

### **Limitations and Future Directions**

Limitations of the study design include the aforementioned small sample size for conducting neighborhood analyses. The sample size was especially small for testing moderation hypotheses. Secondly, the study examined unidirectional relationships between parenting and child outcomes, but parenting and child adjustment are known to exert reciprocal effects on each other (e.g., Eisenberg & Fabes, 1994; Lee et al., 2014). It is crucial that researchers pay closer attention to reciprocal relationships between neighborhood, family, and individual environments. This study and others have provided strong evidence that broader influences at the neighborhood level such as disadvantage or ethnic density are the start of a contextual cascade, such that these factors have effects that ripple down through family functioning to influence children's behavioral outcomes. These behaviors may then start a reciprocal cascade in the opposite

direction, altering parenting behavior and impacting the larger neighborhood environment. Similarly, it is also important to assess parent and child participation in neighborhood selection, as this may also sway reciprocal cascades (e.g., how much choice do parents or children have in where they reside? Which family or child needs do parents consider if they have a choice of neighborhood?). It is critical that examinations of parenting or family functioning consider the broader ecological context in which families reside, in order to explain or predict parenting behavior.

Third, the study had only collected two waves of data, and the time interval between the two waves was relatively short (1.5-2 years). For estimating mediated effects, it is ideal to have at least three waves of longitudinal data (Cole & Maxwell, 2003). Moreover, a longer time interval between waves would allow for the observation of greater changes in both family functioning and children's adjustment across development, which would provide more statistical power for detecting patterns of co-changing among these developmental constructs. Future studies should utilize this kind of longitudinal design to allow for stronger conclusions on cause and effect, particularly in models that include factors at different levels of influence on youth as they progress through different developmental stages, as effects and perceptions are likely to change over time.

Fourth, a small number of families (19%) moved during the study, and we did not exclude them from the analyses due to sample size concerns. Future studies should recruit larger sample sizes and account for families who have moved. Fifth, the single census measure of neighborhood concentration of Asian residents does not fully capture the variations in cultural resources (e.g., community centers, Chinese language schools, churches), activities (e.g., community cultural events), and interactions (e.g., relationships with neighbors) in neighborhoods, which might be more strongly associated with parenting and child adjustment in Chinese American immigrant families.

Sixth, this study did not consider the cultural orientations of family members (e.g., parents' and children's levels of acculturation and enculturation) or the cultural environment of children's schools, which might interact with the cultural environment of neighborhoods in impacting parenting and children's adjustment. Moreover, the importance of neighborhood ethnic composition on both child and family behavior warrants further investigation of the specific mechanisms by which ethnic density impacts child and family adjustment. For example, it is not yet known whether a specific type of ethnic density is most impactful (e.g., own-group, overall Asian, or Asian immigrant ethnic density) and how this may intersect with parents' and children's cultural orientations.

The current study findings are consistent with theory and previous literature on neighborhood, parenting, and children's self-regulation and build on previous research by examining how these multi-level contextual factors may simultaneously contribute to children's behavioral problems in Chinese American immigrant families. Our results suggest that neighborhood ethnic density plays an important and thus far understudied role in determining parenting style in this population. In conjunction with previous studies on this sample (Lee et al., 2014), use of an authoritarian parenting style appears to put Chinese American immigrant children at risk for poor effortful control, particularly for families residing in ethnically dense neighborhoods where cultural norms for parenting may impact families regardless of parenting style. Moreover, as children reach middle childhood, it is their perception of their parents' parenting that appears to matter most for determining effortful control outcomes, and this extends to both home and school contexts (i.e., both child and teacher reports of effortful control).

To ultimately attain a comprehensive understanding of neighborhood, family, and cultural contexts on youth and family adjustment and to inform intervention development, it is critical that researchers simultaneously examine the influence of multiple factors at multiple levels of a child's ecosystem. The factors that shape children's behavior do not exist in isolation, but rather work together in complex relationships that may increase or decrease children's risk for maladjustment at home and school. To effectively address mental health disparities among minority populations, an integrative approach is needed to inform interventions to reduce such disparities. A deeper understanding of the multi-faceted relationships connecting contextual risk factors is an important step on the way to disrupting the pathways through which neighborhood and parenting can negatively influence children's development. Additionally, fewer studies have included an investigation of how co-occurring neighborhood and parenting characteristics may increase resilience and help predict positive behavioral outcomes in minority children. Studies like the current one can extend the ability of researchers, clinicians, and laypeople to conceptualize child development and parenting as occurring within families' socioeconomic and cultural contexts, with implications for interventions, public policy, and minority family well-being.

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Table 1.  
*Parent and Family Characteristics as Percentages of the Study Sample (Census Data in Parentheses<sup>a</sup>)*

Parent and Family Characteristics	W1 Participating Mothers (N = 211)	W1 Participating Fathers (N = 47)	W2 Participating Mothers (N = 191)	W2 Participating Fathers (N = 48)
<b>Parent Birthplace</b>				
United States	1.4	6.4	1.0	6.3
Mainland China	75.8	68.1	75.9	68.8
Hong Kong	10.0	4.3	9.9	6.3
Taiwan	3.3	2.1	3.1	2.1
Other	9.5	19.1	9.9	16.7
<b>Parent Language Preference<sup>b</sup></b>				
English	20.4	21.3	16.8	18.8
Chinese	79.6	78.7	82.7	77.1
<b>Parent Education Level<sup>c</sup></b>				
Junior high and below	10.1	9.1	5.9	4.3
Some high school	5.7	4.5	13.6	10.8
High school or GED	38.7	31.8	32.4	32.6
Technical/Associate's degree/ Some college	25.3	22.7	28.0	21.8
Bachelor's degree or higher	20.1	31.9	19.9	30.4
<b>Parent Employment Status<sup>d</sup></b>				
Employed (full- or part-time)	78.3	88.1	66.0	83.3
Unemployed	10.6	11.9	7.8	4.2
Homemaker	11.1	0.0	15.2	6.1
<b>Family Income<sup>e</sup></b>	<b>Sample (N = 258)</b>		<b>Sample (N = 239)</b>	
\$25,000 or less	28.0		28.2	
\$25,001-\$50,000	37.4		35.0	
Greater than \$50,000	34.6		36.8	

*Notes.* <sup>a</sup> All the Census data is calculated for the ethnic Chinese (alone) population across the four counties where the sample was recruited. <sup>b</sup> Census data for language preference is by household and refers to the language spoken in the home by all residents ages 5 and older. <sup>c</sup> Census data for education level is for females and males ages 25 and older. <sup>d</sup> Census data for employment status is for females and males ages 25 and older. <sup>e</sup> Census data for family income is for families with two parents and children younger than 18 years.



Table 2.  
*Descriptive Statistics of Main Study Variables*

Variable	Range	Mean (N)	SD	Skewness	Kurtosis	Reliability (Items)
<b>W1 Neighborhood Environment (Census)</b>						
Disadvantage	-1.21-3.98	.00 (246)	.93	1.61	3.61	.92 (3)
Asian Concentration	1.21-93.54	38.42 (246)	21.70	.68	.00	--
<b>Parenting Style</b>						
W1 Authoritative Parenting (Parent)	2.00-4.93	2.07 (254)	.48	-.60	1.34	.90 (27)
W1 Authoritarian Parenting (Parent)	1.26-4.61	2.15 (252)	.43	1.40	4.55	.78 (19)
W2 Authoritative Parenting (Parent)	1.70-4.96	4.02 (234)	.55	-1.09	2.52	.93 (27)
W2 Authoritative Parenting (Child)	1.06-4.76	2.85 (239)	.82	-.04	-.55	.90 (17)
W2 Authoritarian Parenting (Parent)	1.11-4.42	2.15 (233)	.50	1.23	2.79	.84 (19)
W2 Authoritarian Parenting (Child)	1.00-4.69	1.89 (239)	.69	1.05	1.30	.87 (13)
<b>W1 Child Effortful Control</b>						
Parent Report	2.73-6.18	4.65 (253)	.68	-.09	-.23.73	.81 (22)
Teacher Report	1.83-6.87	5.04 (215)	.95	-.61	.21	.91 (22)
Go / No-Go Omission Errors	0-62	5.68 (246)	8.75	3.46	14.27	--
Go / No-Go Commission Errors	0-46	9.61 (246)	6.49	1.34	3.72	--
Behavioral Persistence	.05-1.00	.82 (245)	.22	-1.47	1.45	--
Cognitive Flexibility	.43-.97	.74 (242)	.14	-.30	-.71	--
<b>W2 Child Effortful Control</b>						
Parent Report	2.77-6.59	4.74 (235)	.74	.19	-.32	.85 (22)
Teacher Report	2.33-6.96	5.26 (208)	.93	-.62	-.08	.91 (22)
Go / No-Go Omission Errors	0-20	1.94 (239)	3.09	2.75	9.45	--
Go / No-Go Commission Errors	0-38	9.37 (239)	5.64	1.49	4.25	--
Behavioral Persistence	.09-1.00	.94 (229)	.15	-3.71	14.95	--
Cognitive Flexibility	.50-1.00	.82 (237)	.13	-.61	-.31	--

Table 3a.

## Zero-Order Correlations between W1 Neighborhood, W1 Parenting, and W1 Effortful Control Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. W1 Neighborhood Disadvantage (Census)	---											
2. W1 Neighborhood Asian Concentration (Census)	.00	---										
3. W1 Authoritative Parenting (Parent)	-.10	-.09	---									
4. W1 Authoritarian Parenting (Parent)	.04	.17**	-.08	---								
5. W2 Authoritative Parenting (Parent)	-.04	-.07	.63***	-.07	---							
6. W2 Authoritarian Parenting (Parent)	.02	.03	-.09	.59***	.07	---						
7. W1 Effortful Control (Parent)	-.04	-.15*	.38***	-.25***	.32***	-.16*	---					
8. W1 Effortful Control (Teacher)	.04	-.02	-.11	-.17**	-.05	-.07	.23***	---				
9. W1 Go / No-Go Omission Errors	.02	-.07	-.05	-.02	.02	.03	-.08	-.23***	---			
10. W1 Go / No-Go Commission Errors	-.06	.09	.01	.04	-.08	-.03	-.10	-.16*	-.02	---		
11. W1 Behavioral Persistence	-.07	.01	-.10	-.04	.05	.01	.13*	.16*	-.14*	-.18**	---	
12. W1 Cognitive Flexibility	-.10	.05	-.13*	-.10	-.08	-.08	.12	.18*	-.21***	-.27***	.20**	---

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 3b.

*Zero-Order Correlations between W1 Neighborhood, W2 Parenting, and W2 Effortful Control Variables*

	1	2	3	4	5	6	7	8	9	10	11	12
1. W1 Neighborhood Disadvantage (Census)	---											
2. W1 Neighborhood Asian Concentration (Census)	.00	---										
3. W2 Authoritative Parenting (Parent)	-.04	-.07	---									
4. W2 Authoritative Parenting (Child)	-.13*	.05	-.03	---								
5. W2 Authoritarian Parenting (Parent)	.02	.03	.07	-.04	---							
6. W2 Authoritarian Parenting (Child)	.08	.17**	-.10	-.10	.11	---						
7. W2 Effortful Control (Parent)	-.05	-.04	.44***	.02	-.29**	-.27**	---					
8. W2 Effortful Control (Teacher)	-.04	.02	.15	.03	-.05	-.11	.34***	---				
9. W2 Go / No-Go Omission Errors	.08	-.06	.09	-.14*	.10	-.06	-.16**	-.18**	--			
10. W2 Go / No-Go Commission Errors	-.01	-.03	-.02	.01	-.07	-.06	-.10	-.13	.03	--		
11. W2 Behavioral Persistence	.07	-.05	-.08	.04	-.02	.03	.20**	.23***	-.18**	-.16	--	
12. W2 Cognitive Flexibility	-.04	.33	-.04	.03	-.03	-.06	.14*	.23***	-.18**	-.23***	.20**	--

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 4.  
 Path Analysis for W2 Parenting Style Mediating Relations Between W1 Neighborhood Environment and W2 Effortful Control

	W2 Effortful Control Parent Report		W2 Effortful Control Teacher Report		W2 Effortful Control Go / No-Go Omission Errors	
	B (SE)	$\beta$	B (SE)	$\beta$	B (SE)	$\beta$
W1 Neigh Disadv →						
W2 Authoritative Parenting (P)	.01 (.03)	.28	.00 (.04)	.00	.01 (.04)	.16
W1 Neigh Disadv →						
W2 Authoritative Parenting (C)	-.08(.06)	-1.60	-.08 (.06)	-1.59	-.08 (.06)	-1.30
W1 Neigh Disadv →						
W2 Authoritarian Parenting (P)	-.01 (.04)	-1.15	.00 (.04)	-.06	.01 (.04)	.22
W1 Neigh Disadv →						
W2 Authoritarian Parenting (C)	.07 (.04)	1.56	.07 (.04)	.57	.07 (.04)	1.51
W1 Neigh Asian Conc →						
W2 Authoritative Parenting (P)	.00 (.00)	-.42	.00 (.00)	-.24	-.00 (.00)	-.50
W1 Neigh Asian Conc →						
W2 Authoritative Parenting (C)	.00 (.00)	.91	.00 (.00)	.90	.00 (.00)	.95
W1 Neigh Asian Conc →						
W2 Authoritarian Parenting (P)	.00 (.00)	.07	.00 (.00)	-.07	-.00 (.00)	-.47
W1 Neigh Asian Conc →						
W2 Authoritarian Parenting (C)	.01 (.00)*	2.27*	.01 (.00)*	2.27*	.01 (.00)*	1.88*
W2 Authoritative Parenting (P) →						
W2 EC	.07 (.06)	1.60	.10 (.07)	1.40	.48 (.33)	1.47
W2 EC	-.13 (.08)**	-2.49**	.00 (.09)	.03	.49 (.35)	1.38
W2 Authoritative Parenting (C) →						
W2 EC	-.03 (.05)	-.56	.07 (.07)	.94	-.20 (.26)	-.79
W2 Authoritarian Parenting (C) →						
W2 EC	-.11 (.06)*	-2.12*	-.15 (.12)	-1.3	.12 (.24)	.54
W1 Neigh Disadv → W2 EC	.02 (.03)	.51	-.01 (.09)	0.19	.11 (.17)	.64
W1 Neigh Asian Conc → W2 EC	.00 (.00)	1.60	.00 (.00)	1.12	.00 (.01)	.12
X <sup>2</sup> (df/s)	247.17 (45)***		152.30 (45)***		179.81 (63)***	
CFI	.96		1.00		.99	
RMSEA	.04		.00		.02	
SRMR	.05		.04		.03	

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , † marginal effect

Table 4 (cont.).

	W2 Effortful Control Go / No-Go Commission Errors		W2 Effortful Control Behavioral Persistence		W2 Effortful Control Cognitive Flexibility	
	<i>B (SE)</i>	$\beta$	<i>B (SE)</i>	$\beta$	<i>B (SE)</i>	$\beta$
W1 Neigh Disadv →	.01 (.04)	.16	.00 (.04)	.03	.01 (.04)	.22
W2 Authoritative Parenting (P)						
W1 Neigh Disadv →	-.08 (.06)	-1.30	-.08 (.06)	-1.29	-.07 (.06)	-1.27
W2 Authoritative Parenting (C)						
W1 Neigh Disadv →	.01 (.04)	.22	-.01 (.04)	-.23	.01 (.04)	.24
W2 Authoritarian Parenting (P)						
W1 Neigh Disadv →	.07 (.04)	1.51	.06 (.04)	1.36	.07 (.04)	1.57
W2 Authoritarian Parenting (C)						
W1 Neigh Asian Conc →	.00 (.00)	-.50	.00 (.00)	-.35	.00 (.00)	-.41
W2 Authoritative Parenting (P)						
W1 Neigh Asian Conc →	.00 (.00)	.95	.00 (.00)	.95	.00 (.00) <sup>+</sup>	1.19
W2 Authoritative Parenting (C)						
W1 Neigh Asian Conc →	.00 (.00)	-.47	.00 (.00)	-.26	.00 (.00)	-.66
W2 Authoritarian Parenting (P)						
W1 Neigh Asian Conc →	.01 (.00) <sup>+</sup>	1.88 <sup>+</sup>	.01 (.00)*	1.99*	.01 (.00)	1.96*
W2 Authoritarian Parenting (C)						
W2 Authoritative Parenting (P) →	-.09 (.61)	-.14	-.02 (.01) <sup>+</sup>	-1.97*	.00 (.02)	-.23
W2 EC						
W2 Authoritarian Parenting (P) →	-.59 (.68)	-.90	.00 (.02)	-.41	.00 (.02)	-.44
W2 EC						
W2 Authoritative Parenting (C) →	.57 (.47)	1.26	.00 (.01)	-.10	.00 (.01)	.34
W2 EC						
W2 Authoritarian Parenting (C) →	-.54 (.56)	-.97	.01 (.02)	.48	-.02 (.01)	-1.65
W2 EC						
W1 Neigh Disadv → W2 EC	.05 (.38)	.01	.01 (.01)	1.89 <sup>+</sup>	.01 (.01)	.96
W1 Neigh Asian Conc → W2 EC	.00 (.02)	.01	.00 (.00)	-1.05	.00 (.00)	-1.00
X <sup>2</sup> (dfs)	179.81 (63)***		118.55 (45)***		116.38 (45)***	
CFI	.99		.97		1.00	
RMSEA	.02		.03		.00	
SRMR	.03		.03		.03	

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , <sup>+</sup>marginal effect

Table 5.  
*Hierarchical Linear Modeling (HLM) Analyses Testing the Main and Interactive Relations of W1 Neighborhood and W2 Parenting Styles in Predicting W2 Child Effortful Control.*

	W2 Effortful Control Parent Report	W2 Effortful Control Teacher Report	W2 Effortful Control Go / No-Go Omission Errors	W2 Effortful Control Go / No-Go Commission Errors
	$\beta$	$\beta$	$\beta$	$\beta$
<b>Level 1</b>				
Child Age	.02	.02	-.12	-.48
Child Gender	.11	-.55***	.04	.56
Child Generation Status	-.01	-.21	.20	2.04*
Family SES	.17*	.08	-.09	1.00*
Authoritative Parenting (Child Report)	.18	.28 <sup>+</sup>	-.46	.31
Authoritarian Parenting (Child Report)	-.08	-.18	.61	-.35
<b>Level 2</b>				
Neighborhood Disadvantage	.02	-.19	.26	1.53
Neighborhood Asian Concentration	.02	.02	.01	.01
W1 Disadvantage x W2 Authoritative (Child)	-.03	-.09	.13	-.02
W1 Disadvantage x W2 Authoritarian (Child)	.05	.24	-.23	-.69
W1 Ethnic Density x W2 Authoritative (Child)	.00	-.01*	.01	.00
W1 Ethnic Density x W2 Authoritarian (Child)	.00	.00	-.02	.00

Note. \* $p \leq .05$ , \*\* $p \leq .01$ , \*\*\* $p \leq .001$ , <sup>+</sup>marginal effect

Table 5 (cont.).

	W2 Effortful Control Behavioral Persistence	W2 Effortful Control Cognitive Flexibility
	$\beta$	$\beta$
<b>Level 1</b>		
Child Age	.02	.02 <sup>+</sup>
Child Gender	-.06**	-.03
Child Generation Status	.01	-.02
Family SES	-.01	.01
Authoritative Parenting (Child Report)	.01	.01
Authoritarian Parenting (Child Report)	-.03	.00
<b>Level 2</b>		
	$\beta$	$\beta$
Neighborhood Disadvantage	-.01	.00
Neighborhood Asian Concentration	.00	.00
W1 Disadvantage x W2 Authoritative (Child)	-.02	-.01
W1 Disadvantage x W2 Authoritarian (Child)	.04	.01
W1 Ethnic Density x W2 Authoritative (Child)	.00	.00
W1 Ethnic Density x W2 Authoritarian (Child)	.00	.00

Note. \* $p \leq .05$ , \*\* $p \leq .01$ , \*\*\* $p \leq .001$ , <sup>+</sup>marginal effect

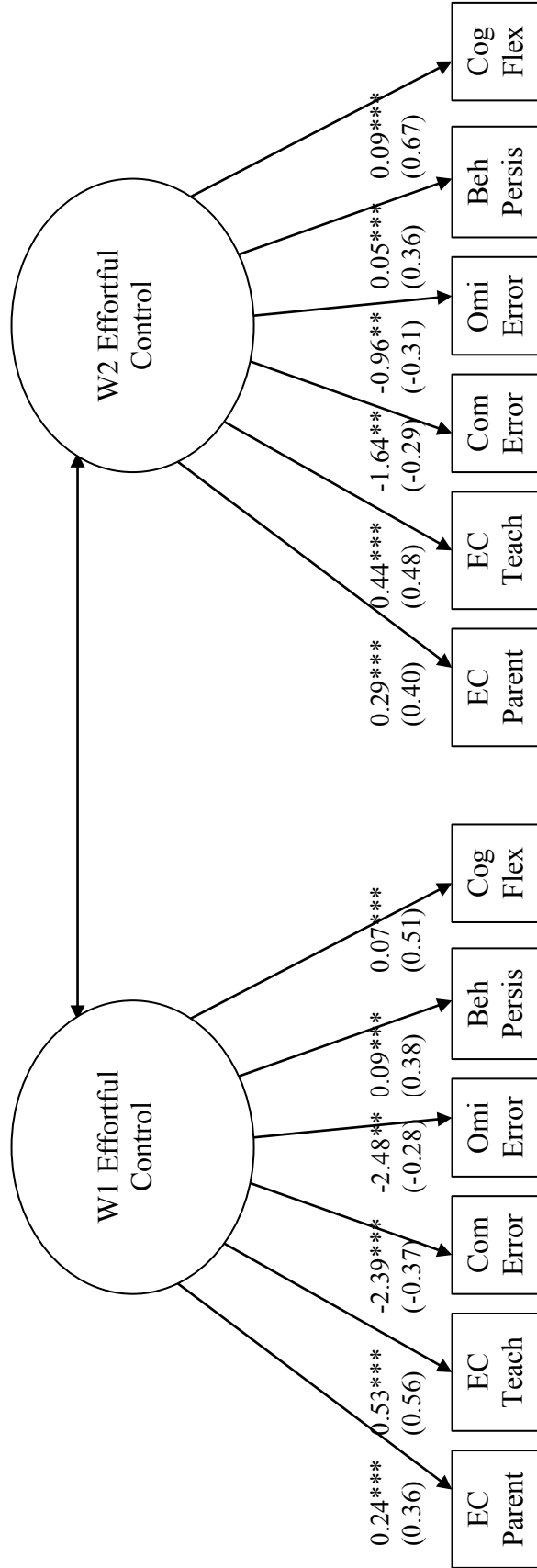


Figure 1. Effortful Control Model. Solid lines or arrows represent significant paths, loadings, or correlations, dotted lines represent non-significant paths. The numbers outside the parentheses are unstandardized loadings or path coefficients, the numbers inside the parentheses are standardized loadings, path coefficients, or correlations. Abbreviations for effortful control measures: EC Parent = parent-reported effortful control, EC Teacher = teacher-reported effortful control, Com Error = commission error on the Go/No-Go Task, Omi Error = omission error on the Go/No-Go Task, Beh Persist = % of time persisting on the puzzle task, Cog Flex = % of accuracy on the incongruent-switch trials of the cognitive flexibility task. \*  $p \leq .05$ , \*\*  $p \leq .01$ , \*\*\*  $p \leq .001$ .



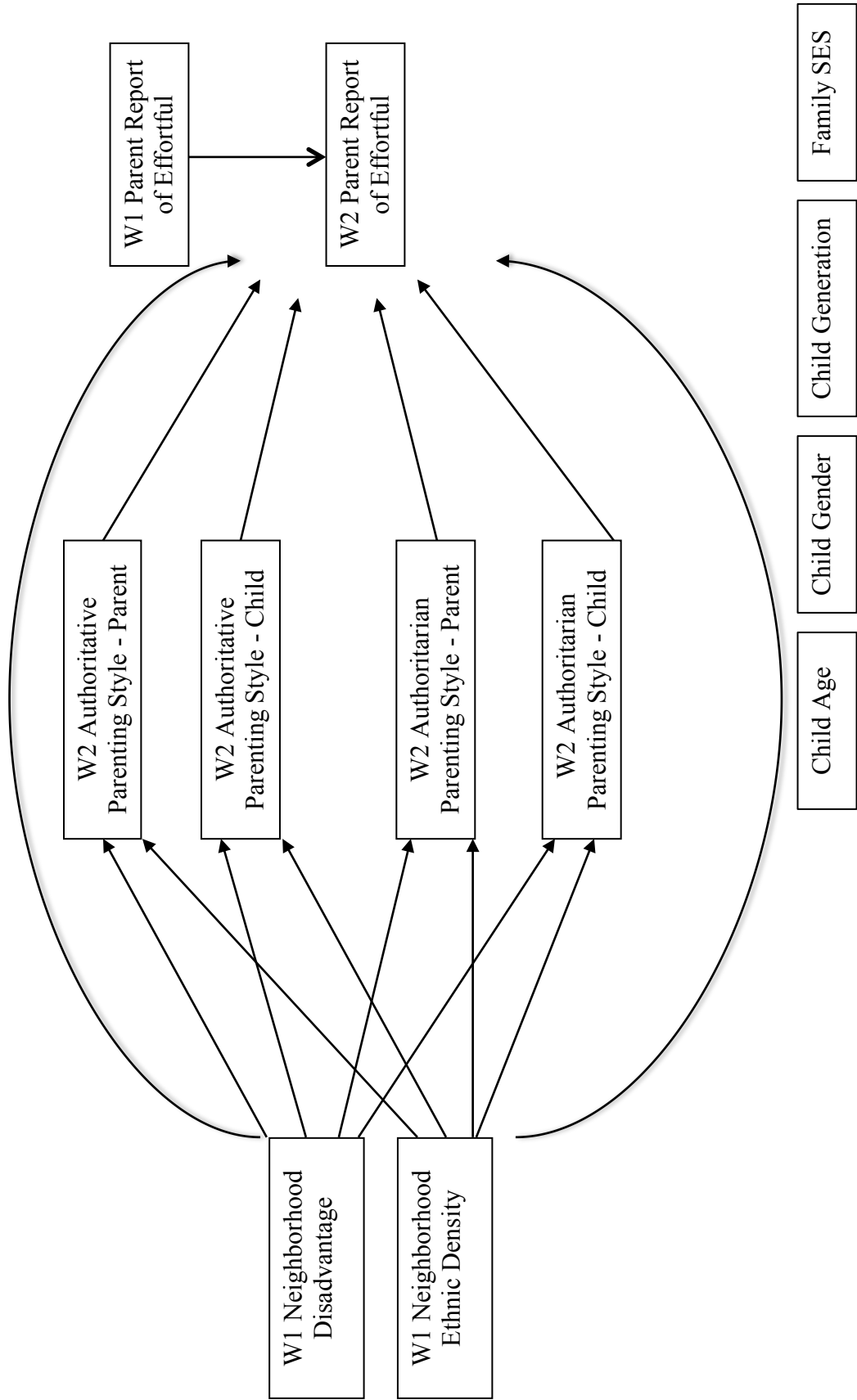


Figure 2. Hypothesized Mediation Model: Testing W2 Parenting Styles as Mediators in the Links between W1 Neighborhood and W2 Effortful Control. Note. The effects of covariates (child age, child gender, child generation status, and family socioeconomic status) on all parenting and effortful control variables are controlled.

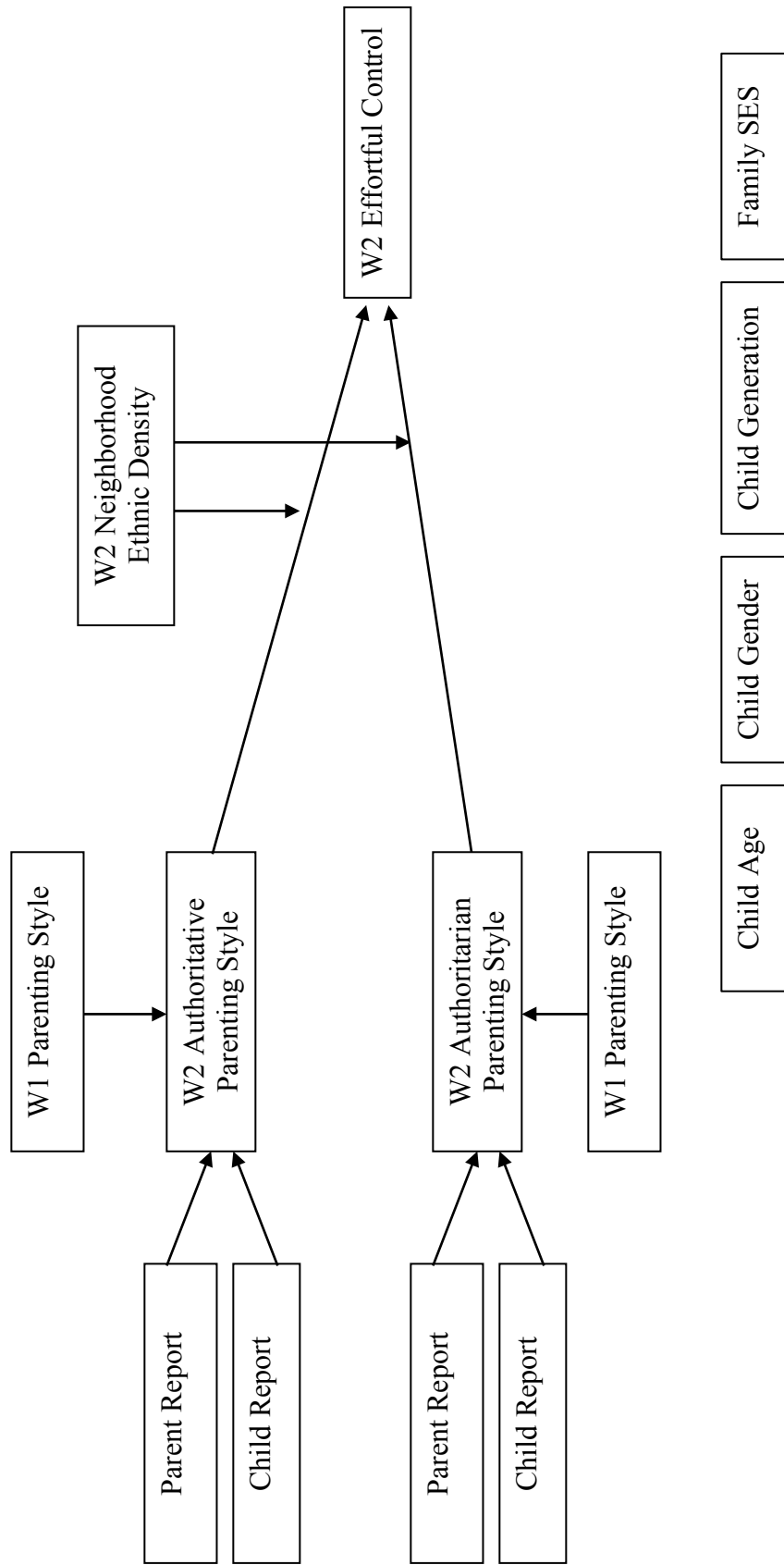


Figure 3. Hypothesized Moderation Model: Testing W2 Neighborhood Ethnic Density as Moderator in Links Between W2 Parenting Style and W2 Effortful Control. Note. The effects of covariates (child age, child gender, child generation status, and family socioeconomic status) on child effortful control were controlled.