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Understanding Cultural Variations of Parenting and Child Self-Regulation in Chinese American Families



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# Understanding Cultural Variations of Parenting and Child Self-Regulation in Chinese American Families

A dissertation submitted in partial satisfaction of the requirements

for the degree Doctor of Philosophy in Education

by

Keye Xu

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ABSTRACT OF THE DISSERTATION

Understanding Cultural Variations of Parenting and Child Self-Regulation in Chinese American Families

by

Keye Xu

Doctor of Philosophy in Education

University of California, Los Angeles, 2023

Professor Jennie K. Grammer, Chair

This 3-study dissertation explored the relations between parenting and child self-regulation in Chinese American families. A particular focus of this work involved examining the role of demographic backgrounds and cultural values of mothers in shaping maternal beliefs and practices. In Study 1, I collected online survey data from 110 Chinese American mothers ($M_{age}$ = 34.50, $SD$ = 6.49) to explore relations among mothers' family income, generational status, cultural values, maternal practices, and child executive functions (EF). Results revealed that mothers' generational status was negatively associated with collectivistic values. High familism values rather than collectivistic values were significantly associated with high maternal absolute authority and coercion/inconsistency. Moreover, the study demonstrated that only maternal coercion/inconsistency was negatively associated with child EF. In Study 2, I conducted virtual

Zoom meetings with 42 Chinese American mother-child dyads to examine Chinese American mothers' ($M_{age}$ = 39.11, $SD$ = 4.15) scaffolding strategies during a drawing game, and how those practices relate to children's ($M_{age}$ = 6.52, $SD$ = 1.08, $N_{boy}$ = 21) performance in different EF tasks. Results showed that mothers employed more explanation and directiveness with younger children and second-generation Chinese American mothers use more directive strategies than first-generation mothers. In Study 3, I conducted semi-structured interviews with 32 Chinese American mothers to explore maternal beliefs and practices among Chinese mothers that are specifically related to self-regulation in children's daily life. Results indicated that mothers' beliefs about self-regulation covered emotional, behavioral, and cognitive aspects of self-regulation. Most mothers also emphasized both collectivistic and individualistic regulatory goals, expecting children to be respectful and compliant, as well as independent and self-reliant. Further, Study 3 revealed that Chinese American mothers employed a variety of parenting practices to promote their children's self-regulation abilities, with variations observed depending on the domain of behavior, children's regulatory ability, and mothers' personal backgrounds. Taken together, these three studies revealed the complexity of Chinese parenting in facing demands and challenges across different domains of childrearing. The current dissertation also highlights the significance of mixing quantitative and qualitative methods to enhance our understanding of the nuances in parenting within Chinese American families.

The dissertation of Keye Xu is approved.

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2023

*For Kayden, "纸上得来终觉浅"*

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# GENERAL INTRODUCTION

Students with strong self-regulation, who are attentive in class, can closely follow multiple directions, behave according to requirements of the specific context, and appropriately regulate their emotions are viewed as ready to learn and are more likely to have a positive experience with peers and teachers in school (Zulauf-McCurdy & Loomis, 2023). Broadly, self-regulation refers to the ability to take in information, weigh different consequences, and make adaptive choice(s) to achieve goal-related behaviors (McClelland et al., 2015). The extant research on self-regulation and its conceptualization has suggested that self-regulation is a multidimensional construct, and that this umbrella term encompasses cognitive processes such as executive functions, complex behavioral regulation, and emotional components such as emotional regulation and engagement (Duckworth & Kern, 2011; Miyake et al., 2000). Self-regulation develops rapidly in early childhood and has been robustly linked to children's academic achievement (Ponitz et al., 2009), socio-emotional competence (Garner & Waajid, 2012), and long-term life outcomes (Moffitt et al., 2011).

An increasing number of studies have examined the development of self-regulation cross-culturally and have documented differences in several aspects of self-regulation between children from collectivistic societies (mostly East Asian) that value cooperation, social harmony, and self-control, and children from individualistic societies (mostly U.S. and European) that value independence and self-realization (e.g., Lahat et al., 2010; Lan et al., 2011; Olson et al., 2011). In particular, evidence indicates that children from collectivist cultural backgrounds (e.g., children in China, Japan, and ethnic-Chinese children in North America) exhibit higher behavioral regulatory scores (McClelland & Wanless, 2015), faster development of cognitive components of self-regulation such as attention shifting and inhibition (Lan et al., 2011), and

greater neural responses related to conflict monitoring (Lahat et al., 2010). These developmental differences in child self-regulation as a function of culture have generated an interest in differences in parenting that might contribute to developmental disparities.

**Maternal Practices and Child Self-Regulation**

Parenting practices have been consistently shown to be an important factor influencing children's self-regulation, particularly during early childhood. A closer examination of parenting has identified several positive parenting influences on the growth of self-regulation. For example, parental warmth, sensitivity, and autonomy support have been related to higher self-regulation in children (Bernier et al., 2010; Grolnick et al., 2019; Matte-Gagné et al., n.d.). On the other hand, harsh and over-controlling parenting, which frequently involves excess parental demands, verbal hostility, physical coercion, and the lack of reasoning and is often measured by parent self-reports, had been negatively associated with the optimal development of self-regulation (Valcan et al., 2018), However, effects of maternal control were found to be less consistent for children from Asian-Collectivistic societies (M. K. Lee et al., 2018; Olson et al., 2011). For instance, in a study of 95 Korean mother-child dyads (children's mean age at 55 months), Lee et al., (2018) found that Korean mothers' intrusiveness during the interaction showed no significant effect on child self-regulation. One possible explanation involves limitations in parenting construct of interest.

Previous measures of maternal control often encompass not only mother-initiated behaviors that are dominant, intrusive, and coercive, but also mothers' supervision and other behaviors that offer children guidance and discipline (Grolnick & Pomerantz, 2009). Such ambiguity makes it difficult to distinguish the effect of maternal control from maternal structure – another kind of mother-initiated behaviors that involve enforcement, discipline, and guidance

to facilitate children's competence. It is possible that mothers who endorse collectivistic values of interdependency and collective goals, engage in more adult-initiated (e.g., guiding children's attention and setting consistent rules) behaviors with the intention to facilitate children's competence instead of controlling children. Indeed, research has indicated that the higher level of authoritarian parenting and behavior control in Chinese families was driven by a stronger emphasis on the notion of *guan* (training) for immature children (R. K. Chao, 1994; R. Chao & Kanatsu, 2008).

Measures of the maternal structure were also limited in self-report surveys that focus on general behavioral monitoring, discipline, and rule-setting (Farkas & Grolnick, 2010). Few studies have examined maternal structure using direct observations in mother-child joint tasks or through an in-depth inquiry of the family's daily interactions (Cleveland & Morris, 2014), which consist of providing explanations, tools, feedback, and support for children's completion of a given task. This aspect of maternal structure might be more closely aligned with maternal scaffolding, which has been positively linked to child self-regulation (Valcan et al., 2018). Some studies involving Chinese and Mexican families have shown an absence of negative associations between maternal structure and children's self-regulation (Diaz et al., 2018; Heimpel et al., 2018), while intrusive control has been more consistently related to poorer self-regulation (Olson et al., 2011; Weis et al., 2016). Thus, studies that clearly distinguish maternal structure and maternal control are vital to further clarify conclusions about the effects of different mother-initiated behaviors on child self-regulation across cultures.

Cultural factors have been posited to play a crucial role in understanding important individual differences in the development of self-regulation (Jaramillo et al., 2017; Márkus & Kitayama, 1991; Trommsdorff, 2009), such that variations in adults' regulatory expectations may

influence children's self-regulation by altering their regulatory goals, socialization experiences, and resultant behaviors in a culturally specific manner. For instance, Trommsdorff (2009) has proposed that the conceptualization and the development of self-regulation and related cognitive processes might differ depending on whether self-regulation is used to achieve one's own needs and goals or is directed to adjust one's goals and behaviors to the goals and expectations of others. Yet few studies have investigated Chinese American mothers' understanding and expectations regarding child self-regulation and how those might be influenced by mothers' backgrounds and cultural values. The traditional self-report measures of parenting also make it challenging to fully capture cultural differences in maternal practices, given that most of the scales were developed and validated with Western populations and might fail to take into account practices that are common in other ethnic groups.

**The Current Dissertation**

Moreover, previous cross-cultural research has used ethnicity or countries of origin as proxies of culture, emphasizing the comparison of participants from more collectivistic ethnic groups to Western participants (e.g. Heimpel et al., 2018; Lan et al., 2011). As a result, much of this research has overlooked substantial variations in cultural values and parenting within each ethnic group. In line with this, parenting practices from Chinese American mothers are often characterized as more collectivistic-oriented and using higher levels of control than Caucasian mothers (R. K. Chao, 2000; Heimpel et al., 2018; Yu et al., 2015), neglecting the large heterogeneity among Chinese Americans caused by differences in immigration, areas of origin, and socioeconomic status (Mistry et al., 2016). With rapid economic development and social changes in mainland China, evidence has suggested that parenting beliefs and practices of mothers of Chinese descent underwent quick changes in the past decade (Cheah et al., 2013;

Greenfield, Keller, et al., 2003a; Zhou et al., 2018). By measuring cultural values directly, this dissertation explored how different levels of cultural endorsement and orientation influence maternal practices and children's self-regulation. Further, I pay particular attention to mother's demographic characteristics (e.g., acculturation and generational differences) that might influence Chinese American mothers' cultural orientation.

Thus, this 3-study dissertation aims to fill gaps in the literature by identifying pathways by which family demographic characteristics of Chinese American mothers and collectivist cultural values play a crucial role in shaping maternal beliefs and practices. The project also aims to comprehensively investigate the relations between parenting and child self-regulation in Chinese American families. Specifically, using mother-report surveys, Study 1 first explores relations among mothers' demographic characteristics, cultural values, maternal practices, and child executive functions (EF), key cognitive abilities of child self-regulation. Study 2 further examines the variations in maternal scaffolding strategies during mother-child interactions across Chinese American mothers of different generations and how they differentially relate to children's performances in several EF tasks. Last, Study 3 explores maternal beliefs and practices among Chinese American mothers that are specifically related to self-regulation in children's daily life.

**Overview of Theoretical Framework**

The development of this project was informed by two theories: the Cultural Pathway Theory of Child Development (Greenfield, Keller, et al., 2003a) and the Self-Determination Theory (SDT, Joussemet et al., 2008). Specifically, Cultural Pathway Theory provides insights into the role of culture in shaping parenting practices and children's skills. SDT speaks

specifically to the possible mechanisms through which parenting practices influence optimal child development.

### *Cultural Pathway Theory*

The Cultural Pathway Theory provides a framework for considering the ways in which broader society and culture shape children's self-regulation through parenting. This theory depicts cultural comparisons based on a widely utilized framework of the "cultural syndromes" of individualism and collectivism (Triandis, 1993), and centers on cultural construals of self as independent or/and interdependent (Markus & Kitayama, 2010). The Cultural Pathway Theory suggests that cultures use different approaches to achieve universal developmental tasks, in the current case, self-regulatory abilities. The theory proposes two idealized developmental pathways, one emphasizing individualization and autonomy, and the other emphasizing social relationships and interdependence. From this perspective, self-regulation is an important and universal requirement for children to perform adaptively in society, while the form and the expression of regulation might vary under different cultural contexts. This might reflect variations in children's ability in different aspects of self-regulation cross-culturally.

The theory further outlines three approaches through which influence the choice of one cultural pathway over another: ecocultural, cultural values, and sociohistorical approaches. The ecocultural approach highlights the effect of ecological (e.g., economic) conditions of the environment that makes a certain developmental pathway more adaptive than the other. The cultural values approach highlights the importance of shared ideas and meanings in shaping culturally relevant developmental goals. And the sociohistorical approach, in contrast, highlights causal influences of interactional processes (e.g., parenting practices) and symbolic tools (e.g., languages) used in cultural learning. Drawing on this, I argue that expectations for regulation are

often derived from one's environment (Jaramillo et al., 2017; Trommsdorff, 2009), thus maternal practices, organized around these distinct regulatory goals and influenced by the larger sociocultural environment (e.g., socioeconomic and immigrant status) and cultural values, would be one key mechanism through which they alter children's socialization experiences and developmental outcomes associated with self-regulation. Yet few studies have examined these processes simultaneously.

### *Self-Determination Theory and Parenting*

Another theory that guides the investigation of parenting in this dissertation is the Self-Determination Theory (SDT), which posits three basic psychological needs (autonomy, competence, and relatedness) that are essential for children's full internalization of external motivations and contextual expectations (Joussemet et al., 2008). Literature on parenting and child development has demonstrated that when these needs were satisfied through optimal parental practices, children showed better regulatory ability (Niemiec et al., 2006; Roth et al., 2019), school-related outcomes (Farkas & Grolnick, 2010), and less internalizing and externalizing problems (Van Petegem et al., 2015). While harsh and coercive control has been widely considered detrimental to the need for autonomy in children (Grolnick & Pomerantz, 2009; Van Petegem et al., 2015), one study from Farkas and Grolnick (2010) suggested that parental structure facilitated children's feelings of competence and was linked to various positive outcomes. Drawing on SDT, I argue that maternal structure and maternal control would differentially relate to children's self-regulation in Chinese American families.

## Overview of Methods

The three interrelated studies completed for this dissertation used a cross-sectional design and a multi-method approach to investigate associations among mother's demographic

background, cultural values, maternal beliefs and practices, and child self-regulation. Primary data sources included surveys conducted online (Study 1), as well as observational and interview data collected during virtual Zoom meetings with mother-child dyads (Study 2 and Study 3). Inclusion criteria for Chinese American mothers were 1) self-identified as Chinese American and 2) having a child between 4 to 8 years of age.

Below, I provide a brief summary of each study as well as their research method. Detailed information about the participants, procedures, and measures are described in the Method section for each respective study.

***Study 1***

Executive functions (EF) refer to a set of cognitive skills – including attention flexibility, response inhibition, and working memory - that develop rapidly between 4- to 8- years of age (McClelland et al., 2015). EF skills are cognitive processes that underlie children's ability to self-regulate. Although a growing body of literature has examined relations between maternal practices and child EF in different countries, results were not consistent. Even less is known about the within-group variations of maternal practices in Chinese American families caused by differences in mothers' demographic characters. The first study in my dissertation collected survey responses from 110 Chinese American mothers to identify demographic characteristics (e.g., generational status) that relate to mothers' cultural values (e.g., collectivism and Chinese familism). I also examined the relationships among mother's demographics, cultural values, maternal practices, and child EF. In particular, I focused on two specific mother-initiated behaviors, maternal structure and maternal control, and how they uniquely related to child self-regulation. Survey data were analyzed using linear regression models and structural equation models.

***Study 2:***

Evidence suggests that self-report surveys are limited in capturing all components of maternal structure and maternal control (Farkas & Grolnick, 2010). Direct observation of mother-child interactions allows for capturing nuance of specific ways in which mothers guide children through challenging situations. Accordingly, this approach was used in Study 2 to document particular maternal scaffolding behaviors. Moreover, direct measures of children's EF skills using cognitive tasks could potentially be more objective than adult-report. Prior research has also indicated that some EF components were more susceptible to children's socialization experience than others (Lan et al., 2009, 2011). Thus, the second study in my dissertation gathered data from 42 mother-child dyads and investigated variations in Chinese American mothers' scaffolding strategies with their children through a joint online task. Building on results from Study 1, I also examined whether the relations between maternal practices and child EF hold when measured by direct observations and EF tasks. Data for this study were analyzed using bivariate correlation and linear regression models.

***Study 3:***

Cross-cultural research that examined parenting and self-regulation development in children of Chinese descent has largely centered on the effects of different parenting practices (e.g., Heimpel et al., 2018; Huang et al., 2017). Little attention, however, has been paid to documenting Chinese American mothers' beliefs and socialization practices specifically concerning self-regulation. To understand the perspective of mothers, using qualitative interviews, the goal of Study 3 was to better understand ways in which sociocultural factors influence Chinese American mothers' beliefs and practices related to self-regulation, including those that might be culturally specific. I conducted semi-structured interviews with 32 1$^{st}$- and

2nd- generation Chinese American mothers. Following Braun and Clarke's (2019) reflective thematic analysis approach, I explored Chinese American mothers' understanding of and practices associated with self-regulation.

**Summary**

Taken together, these three studies illustrate variations in Chinese American mothers' beliefs and maternal practices relating to child self-regulation. By examining the influence of demographic and cultural factors on parenting, this dissertation highlights the importance of understanding and evaluating maternal socialization processes within the larger ecocultural context. Through these efforts, I also aim to better distinguish maternal structure and maternal control and how they might uniquely relate to children's self-regulation, with the goal of moving beyond stereotyped and/or deficit-oriented perspectives of certain parenting practices. Next, Study 1, Study 2, and Study 3 are presented. I conclude by discussing overall findings, insights gained from using a multi-method approach, and implications and future directions for research and practice.

# STUDY 1

## Re-examining Parental Control in Chinese American Mothers: Relations Among Mother's Background, Cultural Values, Maternal Practices, and Child Executive Functions

**Re-examining Parental Control in Chinese American Mothers: Relations Among Mother's Background, Cultural Values, Maternal Practices, and Child Executive Functions**

The academic and behavioral demands for children in early education settings have increased dramatically in the past 20 years. Related to these changes has been heightened attention to executive functions (EF), the cognitive foundation of self-regulation and a key aspect of children's school readiness. EF refers to a set of cognitive skills – including attention control, response inhibition, and working memory - that enable children to accomplish complex goal-oriented behaviors (McClelland et al., 2015). The rapid development of EF occurs between 3- to 7- years of age and has been highlighted as a key mechanism that predicts a variety of outcomes, including school readiness (Morrison et al., 2019), early academic achievement (Ponitz et al., 2009) and long-term educational and health outcomes (Moffitt et al., 2011).

During early childhood, parents play a crucial role in shaping children's daily experiences that might facilitate or hinder EF development. Further, cultural factors are thought to impact EF development through caregivers' socialization goals and expectations for children, as well as the practices that result from these goals (Jaramillo et al., 2017; Trommsdorff, 2009). One framework that has been widely adopted to explain cultural differences in cognition and behavior is the contrast between individualism and collectivism (Markus & Kitayama, 2010). In this conceptualization, individuals espousing an individualist/independent perspective view self as an autonomous, unique person whose behaviors are organized and made meaningful mainly by reference to one's own internal thoughts, feelings, and actions. In contrast, the collectivistic/interdependent construal of self places value on the connectedness to others, perceives oneself as part of an ambient social relationship, and recognizes that one's behavior is determined and contingent on the thoughts, feelings, and actions of others. Cross-cultural studies

have begun to reveal a more nuanced relationship between parental behaviors and child EF across different ethnic groups. For instance, maternal warmth and responsiveness seem to have a robust positive relationship with EF in both individualistic and collectivistic cultural groups, however, results are less consistent regarding maternal control and child EF from studies in East Asian collectivistic samples (M. K. Lee et al., 2018; Wong et al., 2018).

The inconsistent associations between parental control and child EF necessitate the need for a comprehensive investigation of what parental control entails in collectivistic cultural groups. Specifically, limited research has clearly distinguished parental control that is intrusive and coercive regardless of child's own wish with parental structure that involves guidance and discipline from the parent (Grolnick et al., 2019; Grolnick & Pomerantz, 2009). Moreover, a large body of cross-cultural literature used the country of origin as a proxy of culture, overlooking the substantial variations in cultural values and parenting within each ethnic group caused by differences in family demographics and immigrant experiences. Without measuring those variables, prior studies were not able to separate the effect of individualistic vs. collectivistic values on parenting and child outcomes from the influences of mothers' demographic factors. Focusing on Chinese American mothers with young children, the current study sought to examine: (1) demographic variables (e.g., generational status) that influence Chinese American mothers' cultural values, (2) variations in maternal practices that could be explained by differences in mother's cultural values and demographic characteristics, and (3) relations between maternal practices, specifically maternal control and structure, and child EF abilities.

**Parental Control and Child EF**

Parental control refers to parents' exertion of control over children to manage their behaviors and thoughts. The concept of parental control is often associated with negative parenting labels, such as *hostile*, *intrusive*, *punishment*, *coercion*, *strictness*, and *discipline* (Pomerantz & Wang, 2009; Rollins & Thomas, 1979). The large literature on parental control has linked the construct with several negative child outcomes, including low self-esteem (e.g., Park et al., 2021; Small, 1988) and more internalizing problems (Gray & Steinberg, 1999; Q. Wang & Pomerantz, 2009). In addition, in a recent meta-analysis of 42 studies on predominantly Western-Individualistic samples (only two studies had non-Caucasian subjects), Valcan et al (2018) demonstrated small but significant relationships between positive ($r$ = .25), negative ($r$ = -.22) and cognitive ($r$ = .20) parenting behaviors and EF development in children aged 0 to 8 years. Specifically, negative parenting behaviors in the analysis refer to parental control and harsh discipline that is often fearful and coercive to the child.

A small set of studies so far examining the effect of parenting control on EF in collectivistic societies has yielded less consistent results. For instance, research has found that Korean mothers' intrusiveness during a mother-child interaction game, operationalized as providing directions in the absence of the child's errors or requests, showed no significant effect on children's EF (M. K. Lee et al., 2018). Another study on relationships between parenting behaviors and 10-year-olds' behavior regulation in mainland China revealed similar null results (Heimpel et al., 2018), such that parents' perception of behavioral control showed no relation with children's behavioral regulatory abilities. However, in one comparison of U.S., Japanese, and Chinese mother-child dyads, Olson et al. (2011) discovered that harsh parenting predicted higher rates of aggression and attentional problems (one important aspect of EF) in preschoolers in all three countries.

One possible account for the above discrepancies relates to ambiguity in the conceptualization of parental control in cross-cultural research and variations across different measures. For instance, Olson and colleagues (2011) measured harsh parenting using a self-rated scale that captured two dimensions of negative parenting behaviors, non-verbal punishment, and public humiliation. These two dimensions were often included in the measures of parental control as negative affect (Cuevas et al., 2014; Valcan et al., 2018). On the contrary, in the studies of Lee et al. (2018) and Heimpel et al. (2018) where no negative effect of parental control was found, researchers did not include the affective dimension in their measures of parental control. The intrusiveness in Lee et al. (2018) was measured as a cognitive co-regulating strategy that emphasized helping and directing children before they made errors or requests, and behavior control in Heimpel et al. (2018) was measured as the frequency of parents monitoring and setting limits for their children (e.g., "restricted/stopped child from watching TV"). It is possible that only dimensions of parental control that involve punishment, forcefulness and negative emotions have a negative effect on child EF but not the others.

Some researchers proposed a multiple-form approach towards parental control, to separate forms of parental control that are intrusive and assaultive to children's individuality from those that provide supervision and guidance (e.g., Barber, 1996; Gray & Steinberg, 1999). One such attempt is the distinction between psychological control and behavioral control. Psychological control represents strategies parents use to manage children's emotional and psychological processes, which include love-withdrawal, guilt induction, and shaming. On the other hand, behavioral control refers to strategies that parents engage in to manage children's behavioral functioning, as well as parents' firm enforcement and supervision (Gray & Steinberg, 1999; Q. Wang & Pomerantz, 2009). However, confusion about terminology still existed in the

literature on parental control. Moreover, this approach conflates the dimension of parenting to the target of parenting, which limits the examination of parenting practices in more complex situations (Grolnick & Pomerantz, 2009).

**Parental Structure and Child EF**

To solve those problems, Grolnick and Pomerantz (2009) suggested the term "structure", to define adult-initiated behaviors that highlight clear and consistent guidelines, expectations, and rules for children, and behaviors that provide predictable consequences for and clear feedback about children's actions. Specifically, parental structure refers to parents' organization of children's environment to facilitate children's competence, which includes practices such as guidance, firm enforcement, and strict supervision. And parental control will only refer to behaviors that impose pressure, are intrusive, and are dominant. For instance, it includes parents' attempts to force children to meet demands, solve problems for children, criticize children when disobeyed, and take a purely maternal perspective. Under this definition, parental control and autonomy support are set at the opposite end of the same dimension of parental behaviors, while parental structure results in a relative orthogonal dimension in relation to control, as more of a teaching practice toward children's behaviors.

A clear distinction between maternal structure and maternal control might further clarify conclusions about the effects of adult-initiated behaviors on child EF across cultures. In one of few studies that clearly separated structure and control, Griffith and Grolnick (2014) found that parental structure was positively associated with academic-related regulatory abilities in British Caribbean six-graders, even though higher parental structure was related to higher perceived parental control in children. Although labeled as behavioral control, Heimpel and colleagues (2018) measured maternal behaviors that were well aligned with maternal structuring and found

no negative effect on child EF. A similar result was found among Mexican mother-child dyads, such that mothers reported monitoring and behavior disciplining of children showed no relationship with child EF (Diaz et al., 2018). To sum up, accumulating evidence has indicated that maternal structure shows no detrimental effect on children's EF ability.

**Control and Structure in Chinese Parenting**

Cross-cultural research has also paid greater attention to culturally specific factors that might contribute to such distinction in parenting practices, as well as to uncover meaningful differences in the effect of negative parenting behaviors across cultures (e.g., Chao, 1994; Yu et al., 2015). Evidence suggested that Chinese parents in general are more likely to endorse an authoritarian parenting style (Chao, 1994; Chao & Kanatsu, 2008), and to report more controlling behaviors than European-American parents (R. Chao & Kanatsu, 2008). This average differences in parenting behaviors might be related to differences in parents' collectivistic cultural orientation, such that the increased parent-initiated behaviors represent a proactive co-regulation strategy of directing and guiding children before they make mistakes in collectivistic cultures, instead of an intrusive dominance in some individualistic cultures. For instance, prior research has found that the cultural value of interdependence was positively linked to parental monitoring in a group of Asian American adolescents (Chao & Kanatsu, 2008). Parents might also use parental structure as a cognitive parenting practice that reflects the concept of "guan" and teaching in collectivistic values and fosters interdependency and closeness. Chao and Kanatsu (2008) also found that parental control was positively associated with the use of reasoning among Chinese parents. Comparing to Western-Caucasian parents who prioritize children's independence and imply a child-centered approach, parents in collectivistic societies

are more likely to prioritize appropriate behaviors to avoid negative social consequences and imply a task-centered approach (Markus & Kitayama, 2010).

Furthermore, originating from traditional Confucianism, Chinese culture places a stronger emphasis on parental authority and training for immature children ("*guan*") might also make parental structure more prevalent and parental control more acceptable among Chinese American families (R. K. Chao, 1994). Indeed, Chinese American parents were reported to have more monitoring and behavioral control than parents of some other Asian-Collectivistic groups in U.S. (e.g., R. Chao & Kanatsu, 2008). Thus, parenting behaviors that are viewed as intrusive from one cultural perspective might not be as detrimental as in another culture. Research has demonstrated that the extent to which children benefit or impede by a certain practice relied on whether the practice was aligned with cultural norms (Grusec et al., 1997). By measuring levels of collectivism and familism, the current study is able to better identify pathways through which specific cultural values influence parenting practices and child outcomes.

**Effects of Demographic Factors on Parenting**

In addition, mothers' generational status, immigrant experience, and acculturation to the U.S. culture also impact their cultural values and parenting, leading to substantial variations in maternal behaviors among Chinese American mothers. According to Greenfield's theory of cultural pathways on human development, an individual's cultural values and parenting behaviors shift to adapt to the larger ecological conditions, with immigration to an individualized society being one of the key contributing factors to one's adaption of individualist cultural values (Greenfield, Keller, et al., 2003a). Comparing Chinese mothers in Taiwan, Chinese immigrant mothers, and white English mothers in the UK, Huang et al. (2017) found that Chinese immigrant mothers reported a lower degree of control and dominance than both Taiwanese and

English mothers. However, it is unclear if this disparity in parenting is originated from differences in individualistic and collectivistic cultural values.

The Cultural Pathway theory further suggests one mechanism that leads to value changes is acculturation. Acculturation refers to individual's adaptation of beliefs and behaviors in the host culture through constant contact and immersion (Berry, 1997). According to the theory, Chinese American mothers who are more acculturated should hold more individualist values and adopt parenting practices that are less dominant and controlling. While limited studies have directly examined the relations between acculturation and individualistic-collectivistic values, one study on Chinese immigrants in Germany (another individualistic culture) has demonstrated positive associations between individualism and acculturation levels across both gender groups (Zhang et al., 2011). More research has focused on the effect of acculturation on parental beliefs and practices, although the findings were mixed (G. W. K. Ho, 2014 for review). For instance, one study with 67 first-generation Chinese Canadian mothers found that mothers' who were more acculturated showed higher endorsement of authoritarian parenting beliefs. On the other hand, some studies failed to identify the associations between parental acculturation and parental control, laxness, and the use of physical discipline. The lack of significant findings may be partially attributed to small and relatively homogeneous samples used in previous research, which were mostly first-generation Chinese immigrant parents. Thus, by examining the acculturation in both heritage and host cultures among Chinese American mothers of different generations, the current study might be able to reveal a more complexed relation between acculturation, cultural values, and parenting.

## Current Study

Maternal practices and the broader sociocultural contexts of children are important for positive EF development in children, however, there is limited and inconsistent research evidence from Chinese American population. The purpose of the current study, therefore, was to explore the extent to which mothers' demographic backgrounds contribute to their collectivistic values, as well as to examine relationships among mothers' collectivism, parenting practices, and children's EF skills. Drawing on survey data collected from Chinese American mothers, this study addressed the following research questions:

1. Does Chinese American mothers' self-reported collectivistic values, specifically collectivism and Chinese familism, vary as a result of their demographic characteristics (e.g., generational status and acculturation level)?
2. What are the relations of Chinese American mothers' demographics and cultural values to maternal practices of controlling and structuring?
3. What are the relations between different maternal practices and mothers' reports of child EF ability?

**Hypothesis**

Consistent with Greenfield's cultural pathway theory of child development, I expected that higher generation, higher level of acculturation, and longer length of time spent in the US would uniquely and negatively relate to mothers' collectivistic and familism cultural values. Given that extensive literature on parenting also suggests that socioeconomic (SES) characteristics of the family (e.g., educational levels and family income) would intertwine with mother's immigration background to influence their values (S. H. Chen & Zhou, 2019) and parenting (e.g., Chao & Kanatsu, 2008; Cheah et al., 2013; Curtis et al., 2020), the current study also measured mother's education level and family income as potential covariates.

Prior evidence suggests that maternal control is higher among mothers from Asian-Collectivistic societies than among mothers from Western-Individualistic societies (Chao & Kanatsu, 2008). Given that few studies have investigated maternal structure and maternal control separately, I expected that mothers' higher collectivistic and higher familism values are related to higher levels of reported structuring and controlling behaviors in their parenting.

Further, I expected that high levels of maternal control would be negatively related to child EF, while maternal structure will show no negative associations with child EF ability. Valcan and colleagues' (2018) meta-analytic results indicated that negative parenting, including parental control and intrusiveness, was related to lower EF ability in children. I also anticipated finding similar negative associations in the Chinese American sample in regard to mothers' forceful and coercive controlling behaviors. Although Farkas and Grolnick (2010) found that parental structure was positively related to children's perceived cognitive competence and school engagement among 7th- and 8th-graders, no study to my knowledge has explicitly examined the relations between maternal structure and child EF. Studies that have investigated behaviors similar to maternal structure have only identified nonsignificant results (Diaz et al., 2018; M. K. Lee et al., 2018)s. Thus, I expected an absence of negative correlation between maternal structure and child EF in Chinese American families.

## Method

### Participants

Participants were 110 mothers ($M_{age}$ = 34.50, *SD* = 6.49) who self-identified as Chinese American and reported having one child between 4 to 8 years old ($M_{age}$ = 5.97, *SD* = 1.20). In addition to their Chinese American self-identification, one hundred and five mothers reported their ethnicity/race as solely Asian, and 5 mothers reported as mixed ethnicity-race. Ninety-seven

mothers identified their child as Chinese American and 75% of mothers reported their child's ethnicity-race as solely Asian, 3% as White/European, and 22% as mixed. 91% of children in the sample lived with at least two caregivers in the household. Maternal education ranged from completing grade school to an advanced degree, with 94% of mothers holding a 4-year college degree or higher. The average reported family income was 4.77 (*SD* = 1.73) which corresponds to between $75,000 - $99,999 on a scale ranging from less than 15,000 to more than 200,000. Eighty-one out of 110 mothers reported to be first-generation Chinese American, 20 being second-generation, and 5 being third-generation. Mothers reported an average of 17.78 (*SD* = 12.09) years living in the U.S.

**Procedure**

The study procedure was approved by the University of California, Los Angeles's Institutional Review Board (IRB#19-001989). Participants were recruited from study flyers posted on various social media platforms, including Facebook parenting groups, WeChat groups, and Nextdoor. Study information and flyers were also shared with local Chinese language schools and Mandarin bilingual programs to disseminate to Chinese American families of interest.

After signing the informed consent virtually, mothers finished two inclusion questions regarding their self-identified ethnicity and children's age. Inclusion criteria for Chinese American mothers included that they 1) self-identified as Chinese American and 2) had a child between 4 to 8 years of age. Mothers were invited to participate regardless of their countries of family origin. Mixed-ethnicity families from which the father was not Chinese were also included in studies. Mothers who met the criteria were then guided to finish a survey through the online survey platform, Qualtrics. The survey consisted of questionnaires of mother's

demographic information (e.g., age, ethnicity, SES, and generational status), cultural values, and parenting practices. Mothers were also asked to report on children's EF ability. The survey required about 30min to complete on average. Although mothers were encouraged to complete all questionnaires in one sitting, they were allowed to save the survey progress and come back to it later in time. Mothers were provided with a 4-week window to finish with one email reminder after each week. All mothers who participated got the chance to win a lottery of $100 Amazon gift cards as compensation.

Mothers had the choice to complete the survey in either English or simplified Chinese. All questionnaires except one (the BRIEF-2 which already had English and Chinese versions available) were translated and back-translated by graduate researchers who were fluent in both languages.

Following data collection, initial data inspection was conducted to exclude incomplete responses (<50% completion, $N = 45$), responses that did not meet the inclusion criteria ($N = 32$), and suspicious survey responses ($N = 51$). The inspection was conducted using metadata recorded on Qualtrics of each response (IP address, responding starting and ending time, and total response duration), the validity of participants' email addresses, as well as the consistency of answers to repeated questions in the survey. Criteria used to exclude suspicious responses from the analysis includes 1) Repeated IP address with consecutive response time; 2) Repeated email address and signed consent with completely different survey responses; 3) Inconsistent answers on the child's age (difference > 1.5 years), the child's gender, and mother's years living in US (difference >5); 4) Survey response time shorter than 15 minutes; and 5) Questionable response patterns (e.g., the same answer for all Likert items on the survey). Participant

information presented in this paper is from the final sample of participants that have passed the initial data inspection, with a 46% data retention rate.

## Measures

### *Demographics*

Information including the mother's age, ethnicity, educational level, employment status, family income and composition, first language spoken, years living in the U.S., and generational status were collected in the demographic portion of the questionnaire. Mothers also reported on their child's age, gender, and psychiatric history (see Table 1-1).

**Acculturation Rating Scale for Chinese Americans (ARSCA).** The ARSCA was adapted from the acculturation scale for Mexican Americans (Cuellar et al., 1995), which includes 30 5-point-scale items measuring the bidimensional process of acculturation and captures experiences in multiple domains, including cultural identity (e.g., "I identify as Chinese American"), cultural activities (e.g, "I celebrate Chinese holidays"), and language proficiency (e.g., "I read in Chinese"). Mother responses ranged from not at all (1) to extremely often or almost always (5). The scale has shown excellent internal consistency among Latinx American samples ($\alpha = 0.87$, Cuellar et al., 1995) and good internal consistency with the current sample ($\alpha = 0.85$).

Confirmatory factor analyses following the procedures of Cuellar et al. (1995) were conducted to examine the two-factor structure of enculturation to Chinese culture and acculturation to US respectively. Since latent variable models with sufficient sample sizes often obtain a significant chi-square value (suggesting poor model fit) though only trivial differences exist between the predicted and the observed data, the current study used the common criterion of the chi-square divided by the degree of freedom being less than 2 as a sign of adequate model

fit (Stone, 2021). Besides, given the relative small sample size of the current study, Bentler's comparative fit index (CFI) greater than .90, root mean square error of approximation (RMSEA) smaller than .10, and standardized root mean squared residual (SRMR) smaller than .08 were used as additional fit criteria (T. A. Brown, 2015; Hu & Bentler, 1998). Three items (e.g., "My father identifies or identified himself as 'Chinese'") of Chinese enculturation that showed small multiple correlation with the factor (<.20) and low factor loading ( < .40) were deleted from the scale, resulting in a mediocre fit of the two-factor model, $X^2$ (298) = 834.46, $p < .001$, $X^2$ /df = 2.80, SMSR = 0.12, CFI = 0.68, RMSEA = 0.13, 90% CI [0.12, 0.14].

The average score from 14 items that are related to Chinese culture and practices was used to calculate an indicator of mothers' Chinese enculturation level, and the average score for items relating to US culture were calculated as an indicator of acculturation level.

### *Cultural Values*

**Individual-Collectivism Scale (ICS).** Mothers' endorsement of values of individualism and collectivism were measured using the Individual-Collectivism Scale. The scale consists of 8 items for the individualism subscale (e.g., "I'd rather depend on myself than others") and 8 items for the collectivism subscale (e.g., "I feel good when I cooperate with others"), on a 9-point Likert scale. It was originally validated in a racial/ethnically heterogeneous sample of undergraduates and showed good internal consistency and convergence with other measures related to self-construal (Triandis & Gelfand, 1998). To serve as a primary variable of interest, this measure has demonstrated strong internal consistency in a sample of Asian participants, with Cronbach's α of 0.86 for the individualism dimension and 0.85 for the collectivism dimension (Le & Stockdale, 2005). For the current study, internal consistencies using Cronbach's α were 0.78 for individualism and 0.76 for collectivism.

Confirmatory factor analysis with the existing sample indicated that two items (Item 6, 8, 10, and 15) from each subscale has low factor loading (<.40) and low multiple correlation (<.20) thus were removed from further analysis. The model fit for the remaining CFA model was still not ideal but acceptable given small sample size, $X^2$ (53) = 132.68, $p < .001$, $X^2$/df = 2.50, SMSR = 0.10, CFI = 0.81, RMSEA = 0.12, 90% CI [0.09, 0.15]. A collectivism score and an individualism score were created for each participant using the sum of each 6 corresponding items.

**Chinese Familism Scale (CFS).** A modified Chinese Familism Scale was used to measure Chinese traditional family values that originated from Chinese Confucianism. The scale was originally developed in Chinese by Yeh and Yang (1999) and validated in the Taiwanese Chinese population. The scale consists of three subscales and has been reported with high internal consistency: Solidarity and Harmony (e.g., "A person should be more forgiving in everything to maintain family harmony", $\alpha$ = 0.91~0.95), Lineage Prolongation and Expansion (e.g., "It is a great blessing to have more children in family", $\alpha$ = 0.78~0.81), and Family Prosperity (e.g., "A person should work hard to bring honors to the family", $\alpha$ = 0.81~0.87). Given that items in the Lineage and Prolongation and Expansion subscale were a little outdated and not relevant to the current research questions, only subscales of Solidarity and Harmony and Family Prosperity were used, resulting in a total of 40 items on a 6-point Likert scale ranging from extremely disagree (1) to extremely agree (6). Internal consistencies for the CFS was high, $\alpha$ = .94. Results from the confirmatory analysis suggested a moderate fit with the two-factor model, $X^2$ (433) = 925.66, $p < .001$, $X^2$/df = 2.14, SMSR = 0.09, CFI = 0.69, RMSEA = 0.10, 90% CI [0.09, 0.11]. Further analysis showed that two factors of the CFS scale were highly

correlated ($r$ = .94, $p$ = .01), thus mother's familism value was calculated as the average of all item ratings.

### *Maternal Practices*

Maternal structure and control behaviors were measured using two well-validated questionnaires.

**Parents as Social Context Questionnaire (PSCQ).** The PSCQ (Skinner et al., 2005) was used to assess maternal behaviors on three dimensions, structure versus chaos (e.g., "I make it clear what will happen if my child does not follow our rules"), autonomy versus coercion (e.g., "I can't afford to let my child decide too many things on his or her own"), and warmth versus rejection (e.g., "I let my child know I love him/her"). Mothers respond on a 4-point Likert scale (1-not at all true to 2-very true). For the purpose of the current study, only structure versus chaos and autonomy (reversed) versus coercion were used. The questionnaire has been validated in samples of both individualistic and collectivistic cultures (Skinner et al., 2005) and has shown acceptable reliability (0.61 for structure versus chaos and 0.72 for autonomy support versus coercion). Cronbach's $\alpha$ was 0.77 for structure versus chaos and 0.84 for autonomy versus coercion in this study.

**Parent Attitude Scale (PAS).** Two subscales with a total of 12 items from the PAS were used to assess mothers' beliefs about teaching and controlling behaviors (Gurland & Grolnick, 2005). An example statement from each subscale is: "It is up to the parents to provide the child with learning experiences at an early age" and "I do not like my child to disagree with me if my friends are around". Mothers answered each item on a 5-point Likert scale, ranging from strongly disagree (1) to strongly agree (5). PAS has been validated with parents with children of various developmental stages (Grolnick et al., 2007) and has good convergent and predictive validity

(Grolnick et al., 2007; Gurland & Grolnick, 2005). Two subscales used in this study also reported acceptable internal consistency ($\alpha$ = 0.61 and 0.71).

Factor structure of maternal practices were first explored given that the current study combined items from two different parenting scales. In addition, no previous research has examined the constructs of maternal structure and maternal control in Chinese parents. An exploratory factor analysis (EFA) using a Maximum Likelihood estimator and Geomin oblique rotations was conducted. After conducting a scree test of eigenvalues, a three-factor solution produced the cleanest factor structure with all item loadings above 0.25, no item crossloadings, and no factors with fewer than three items (Costello & Osborne, 2019). Three parenting factors identified by the EFA model were *structure* (10 items, $\alpha$= .71), *absolute authority* (4 items, $\alpha$= .74), and *inconsistency/control* (11 items, $\alpha$= .83). Detailed item loadings are presented in Table 1-2. The overall model fit for the three-factor model was acceptable given the small sample size, $X^2$ (207) = 403.47, $p < .001$; $X^2/df$ = 1.95; CFI = 0.77, RMSEA = 0.09. A closer inspection of items revealed that most of the items in the *parent as teachers* subscale from PAS and the *structure* subscale from PSCQ loaded on the new structure factor. Four items loaded on the absolute authority factor were all from the *controlling* subscale of the PAS. And all items in the *chaos* and the *coercion* subscales from PSCQ and one item in the *controlling* subscale of PAS loaded on the new chaos and control factor. Using EFA results, a confirmatory factorial model was defined, $X^2$ (227) = 419.21, $p < .001$; $X^2/df$ = 1.85; CFI = 0.77, RMSEA = 0.09, 90% CI [.00, .10]; SRMR = .09, and factors scores of structure, absolute authority, and inconsistency/control were extracted for each participant. As a result, all the analyses below with maternal practices were conducted using factor scores of three maternal practices.

***Child Executive Function***

**Behavioral Rating of Individual Executive Function 2 (BRIEF-2 Parent).** Mothers were asked to complete BRIEF-2 to evaluate children's EF in everyday settings on three categories, never, sometimes, and often. The scale is a standardized questionnaire with 63 items, falling under 4 indices of executive function: 1) inhibit (e.g., "Does not think before doing"), 2) self-monitor (e.g., "Does not realized that certain actions bother others"), 3) behavioral regulation (e.g., "Forgets his/her name"), and 4) emotion regulation (e.g., "Has explosive, angry outbursts"). The BRIEF has been widely used in measuring EF in children between 5 and 18 years of age and has been demonstrated to have good psychometric properties (Egeland & Fallmyr, 2010; Gioia et al., 2002). The BRIEF scales have been validated in samples of children from Asian cultures (Ahadi et al., 1993) and translated into multiple languages. Each child received composite a T-score of all indices to represent their global executive functioning problems, with higher scores indicating lower EF ability. If more than 14 items on the scale were unanswered, the survey was considered unscorable, and the data was labeled as missing (N = 5).

## Results

All the statistical analyses were conducted in RStudio (RStudio Team, 2020), using packages including "tidyverse" (Wickham et al., 2019), "psych" (Revelle, 2023), and "Lavaan" (Rosseel, 2012).

Preliminary analysis was done by exploring bidirectional correlations of all variables of interest (see Table 1-3). Following this, regression models were estimated with mothers' collectivistic, individualistic, and familism values as the outcomes. Mother-reported family income, immigration-related variables, and Chinese enculturation level were entered into the model simultaneously as predictors to examine how each of them relates to mothers' cultural values. Given the lack of variations in mother's education level and first language in the current

sample and power consideration for small sample size, those variables were not included in the following analysis. In addition, due to the small number of 2nd- and 3rd- generation Chinese American mothers in the sample, the two groups were collapsed as one in the following analysis.

Structural equation path modeling (SEM) was used to examine the relations among the mother's demographics, cultural values, maternal practices, and the child EF ability. Family income and all generation-related variables were used in the model as predictors of maternal practices. Informed by the bivariate correlations and previous research findings, regression coefficients of demographic factors and mother's cultural values on child EF were also estimated (See Figure 1-1 for model specification). Preliminary analysis showed that child gender was only positively associated with maternal structure ($r = .21$, $p < .05$). In addition, older children received significantly more structure from mothers ($r = .27$, $p < .01$) and were reported having fewer EF problems ($r = -.29$, $p < .01$). Thus, child gender and child age were entered the model as covariates for those variables. The significance of correlation and path coefficients was tested by test statistics based on estimated standard errors.

**Demographic-related Differences in Mother's Cultural Values**

Results for regression models were presented in Table 1-4. As shown and only the model for collectivism was significant, $F(5, 96) = 4.87$, $p < .001$. Mother's generational status significantly predicted collectivistic cultural values, with 1st generation Chinese American mothers showing higher collectivistic value. When controlling mothers' generational status, the relation between number of years in the U.S. and collectivism was tending, indicating that mothers who spent more years living in the U.S. reported higher levels of collectivism. Additionally, mothers' Chinese enculturation scores were positively and significantly related to collectivistic value.

For Chinese familism value, the overall family income was negatively associated with familism value, while the mother's U.S. acculturation level was positively associated with reported familism value.

Lastly, I examined if demographic variables predicted mothers' individualistic value. The results showed that only acculturation to U.S. was significantly predicting mothers' individualistic value ($p < .05$) when controlling all variables related to mothers' generational status. However, the association was positive meaning that higher acculturation was associated with higher individualistic value.

**Relations Between Mothers' Background, Cultural Values, and Maternal Behaviors**

The SEM path model results are presented in Figure 1-2. For presentation purposes, only significant predictors and path coefficients are presented. The model fit for the latent SEM model was good, $X^2$ (8) = 8.74, $p$ = .37; $X^2/df$ = 1.09; CFI = 1.00; RMSEA = 0.03, 90% CI [.00, .13]; SRMR = .02. Three maternal practices scores were significantly correlated with each other.

Results showed that Chinese enculturation levels were significant predictors of absolute authority. Thus, mothers with lower Chinese enculturation scores reported to have higher absolute authority when interacting with their children. When examining the relations between cultural values and absolute authority, both collectivism and Chinese familism yielded significant predictors in the model. Results showed that higher collectivistic value were associated with lower maternal absolute authority, while higher familism value were associated with higher absolute authority in mothers.

Similar to absolute authority, Chinese American mothers' collectivist value was negatively associated with maternal inconsistency/control. Mothers' higher familism value were linked to higher levels of maternal inconsistency/control. However, neither family income nor

generation-related variables were significant predictors of mother's inconsistency/control practices.

SEM results revealed that the second-generation mothers reported using less maternal structure, while number of years living in the U.S. was positively related to maternal structure when controlling mother's generation. Surprisingly, both mother's higher Chinese enculturation and US acculturation levels were positively associated with more maternal structure. Family income was also significantly and positively associated with maternal structure. Further, the higher collectivistic value was also significantly associated with higher levels of maternal structure, while no significant associations were identified between familism and structure.

### Relations Between Maternal Practices and Child EF

Maternal inconsistency/control scores were significantly and positively associated with children's BRIEF scores. Given that BRIEF is a measure of child EF problems, this result indicated that higher levels of chaos and control in maternal practices were linked to lower children's EF abilities. However, neither maternal structure nor mothers' absolute authority scores showed significant relations with child EF. In addition, child age was negatively associated with their BRIEF score. Among sociodemographic variables, only mothers' generational status was negatively related to the amount of EF problems in children. In addition, Chinese familism value had a significant direct effect on EF problems, meaning that mothers with higher familism values also reported more EF problems in their children.

## Discussion

The purpose of the current study was to examine maternal practices of control and structure among Chinese American mothers, to better identify mother's demographic characteristics and cultural variables that are related to parenting practices, and to understand the

degree to which maternal practices relate to children's EF ability. In sum, findings revealed three distinct constructs of maternal practices, maternal structure, absolute authority, and inconsistency/control. All three maternal practices constructs were related to the mother's cultural values and showed differentiated patterns of association with child EF.

**Factors Influencing Cultural Values**

First, I explored the extent to which mothers' cultural values were related to their family background, generational status, and acculturation. Literature on social changes and cultural values has demonstrated that advancement in socioecology (e.g., more formal education and increase in income) and the experience of immigration to an individualistic society are driving factors of an individual's increase in individualism and decrease in collectivism (e.g., Cheah et al., 2013; Greenfield et al., 2003a; Santos et al., 2017). Consistent with this, results from this study showed that second-generation Chinese American mothers reported lower collectivistic value. Although not a measure of cultural value directly, Chinese enculturation reflects individuals' cultural orientation through daily activities and interactions (Cuellar et al., 1995). Chinese enculturation aims to reflect the family's daily language preference, Chinese media use, and social group affiliations with Chinese or Chinese American groups. Individuals with a higher level of Chinese enculturation are more likely to endorse values that are traditional and central in Chinese cultures. Results showed that mothers' Chinese enculturation was linked to higher collectivistic values, confirming studies that identified Chinese culture as more collectivistic and focusing on relational interdependency (e.g, D. Y.-F. Ho & Chiu, 1994; Yeh & Yang, 1999).

Analyses also revealed that mother's Chinese enculturation was positively related to individualistic values, which is inconsistent with the notion that Chinese culture is more collectivistic. This finding might be explained by the measures of enculturation which focus

more on the behavioral practices of Chinese culture instead of the value endorsement. Additionally, recent studies with participants in mainland China also demonstrated an increase of individualistic values with rapid economic and societal changes (Zhou et al., 2018), highlighting the importance of understanding cultural environment as progressive instead of static in developmental research.

Unlike Chen & Zhou's (2018) study, here a negative correlation between family income and mothers' endorsement of Chinese familism was observed, although this association was not observed for collectivism. The Chinese familism scale used in our study distinguishes between family members (in-group) and individuals outside the family (out-group), potentially reflecting more self-oriented values compared to the broader scope of collectivistic scales, which encompass a wider range of others. However, higher family income was also linked with lower individualism among this group of Chinese American mothers. This discrepancy could be partially attributed to differences in the study sample, such that the average family income ($75,000 - $99,999) is much higher in the current sample than the one in Chen & Zhou's ($48,064). It is possible that the relation between family income and the mother's cultural values is moderated by the income level. In addition, Miyamoto et al. (2018) found that higher SES (e.g., education and job characteristics) was linked to higher other-orientation (interdependence) in Japan and other Confucian cultures, indicating a more complicated association between SES and collectivism/individualism depending on the societal context.

In the present study, it was observed that US acculturation, rather than Chinese enculturation, exhibited a positive correlation with familism values. While this finding diverges from previous research on familism (Yeh & Yang, 1999), it aligns with the multidimensional theories of acculturation that posit enculturation and acculturation as independent processes

(Garcia et al., 2020). One possible explanation is that mother's acculturation level has been conflated with other demographic variables such as types of immigration and SES of the mother's original family, which needs to be replicated in future studies. Last, Chinese American families are greatly different from each other in terms of their immigration experience, country of origin, and family history. Thus, analyzing each sociodemographic factor individually might fail to capture the complexity of Chinese American mothers' backgrounds and how they together relate to mothers' value endorsement. It might be beneficial for future studies with sufficient statistical power to identify different profiles of Chinese American mothers using multiple SES, and acculturation variables and to explore related value differences.

**Variations in Maternal Practices in Chinese American Mothers**

Parenting is heavily influenced by the parent's cultural and personal background that shapes their beliefs and childrearing goals. Indeed, results in the current study revealed associations between mothers' cultural values and all three types of maternal practices investigated. Inconsistent with the large body of literature (e.g., Chao, 1994b; Huang et al., 2017; Yu et al., 2015), the current study showed a negative relation between collectivism and absolute authority or inconsistency/control. Given that the majority of previous research used ethnicity or country as a proxy of culture and did not measure collectivistic value directly, it is less clear if high levels of authoritarian and controlling parenting are related to collectivistic values or other indigenous cultural values of the group. However, mothers' collectivistic endorsement was positively associated with maternal structure that consists of teaching and providing clear expectations and rules. Chao (1994) proposed the indigenous concept of *chiao shun* and *guan* to better characterize Chinese parenting that emphasizes training children for the appropriate or expected behaviors. It is possible that collectivism taps into the social relationships that highlight

mothers' responsibility of governing and teaching children in Chinese culture. This might partially explain why collectivism is linked to structuring behaviors measured in the current study that largely overlaps with the practices of training and meeting a set standard of conduct. Related, one study exploring parenting for Asian American adolescents has demonstrated that mothers' collectivistic values were related to maternal monitoring (Chao & Kanatsu, 2008). Although maternal monitoring is conceptually different from maternal structure and focuses on the knowledge of children's activities, it might be a more age-appropriate form of *guan* for adolescents.

On the other hand, Chinese familism might elicit another aspect of the Chinese view of child-rearing that focuses on the structured hierarchy within the family. Chinese familism is largely shaped by Confucian thoughts. It values the togetherness and harmony of the family, filial piety, and family honors (Yeh & Yang, 1999). Although not measured explicitly, this hierarchical view of parent-child relations sees the child as a subordinate member and requires the child to display compliance and respect to seniors in the family. Thus, mothers who endorse Chinese familism might use absolute authority as a way to maintain their hierarchical roles in the family. They are likely to prioritize family goals or/and honors over children's will. Although few study has linked Chinese familism with maternal behaviors, the finding is partly consistent with studies demonstrating that the indigenous concepts of *chiao shun* (that also originated from Confucianism) were associated with high maternal control and authoritarian parenting style in Chinese mothers (Chao, 1994a; Chen & Luster, 2002; Wu et al., 2002). Additionally, given the pronounced emphasis on prioritizing family members and the evident differentiation between in-group and out-group, mothers with higher familism values may perceive their children as extensions of themselves rather than independent individuals. This perception could potentially

be associated with a tendency toward more authoritarian and controlling parenting behaviors. Familistic values might also contribute to mothers' intention of taking a dominant role even facing struggles in parenting. Mothers may use more coercive and controlling practices when dealing with situations that they don't feel competent to handle. Mothers might also show more inconsistent parenting behaviors to avoid conflicts between family members. Indeed, one study with Mexican-originated families has found that parents' familistic values were negatively related to interparental conflict for both parents (Taylor et al., 2012).

This study also linked family income and generational status of the mother with different maternal practices. Although there are theories suggesting that more horizontal and egalitarian parenting practices are adaptive to advanced economic conditions (Greenfield, Keller, et al., 2003b; Zhou et al., 2018), empirical evidence linking family income and parenting practices is not strong (e.g., R. Chao & Kanatsu, 2008; Dooley & Stewart, 2007). Results from the current study showed that higher family income was found to be associated with higher ratings of maternal structure, while no significant associations was identified between family income and absolute authority or inconsistency/control. A note of caution is due here since the current study use a cross-sectional design with Chinese American mothers with relatively high education and income levels. It is possible that the theory characterizing the effect of large-scale ecological changes in broader societies might fall short to capture parenting differences relate to the economic conditions of individual families but needs to be carefully examined by future studies.

The study also found that mothers' Chinese enculturation was associated with more maternal structure and lower absolute authority, while the number of years in the U.S. and the self-reported U.S. acculturation were associated with more structure in parenting. However, second-generation Chinese American mothers reported using fewer structuring practices than

first generation mothers. These findings further reflect the multidimensionality of the acculturation process identified among Asian American, such that mothers' Chinese and US cultural orientations might be independently related to their parenting practices rather than in opposite directions. Findings are also in line with data from S. H. Chen et al.(2014) showing that Chinese American parents' English and Chinese media use were both associated with higher acceptance, warmth, and reasoning in parenting. However, when investigating Chinese parents' emotional expression, S. H. Chen et al. (2015) found that only a higher American orientation was associated with higher expressivity. Together, evidence suggests that relations between Chinese American mothers' cultural orientation and parenting practices might be more nuanced and dependent on the type of parenting practices of interest.

**Maternal Practices and Child EF**

The study hypotheses about the relations between maternal practices and child EF were mostly supported. Similar to what Valcan et al. (2018) found in the meta-analysis, maternal inconsistency/control was positively associated with more EF problems in the child. This finding is consistent with the notion that coercive and controlling behaviors from mothers fail to create an environment where children can feel safe and emotionally supported such that children can focus their attention on tasks required and be stimulated for cognitive development (Roskam et al., 2014). In addition to emotional disturbance, the current construct of maternal inconsistency/control also captures the unpredictability of mothers' controlling behaviors that might lead to more confusion in children regarding mothers' expectations and what appropriate behaviors are. This may further induce in children fear and anxiety, as well as lower levels of motivation for taking the initiatives to avoid unexpected punishment. Several previous studies have linked inconsistent parenting with poor EF ability in children (Hughes & Ensor, 2009;

Roskam et al., 2014; Sosic-Vasic et al., 2017). It is worth noting that some researchers argued that the consistency and firmness of rules should be separated from parental control and is indeed one key aspect of maternal structure (Farkas & Grolnick, 2010). Although the current factor solution of maternal practices warrants replication with a larger sample size, the grouping of coercive control and inconsistent behaviors suggests concurrence of negative parenting behaviors that might be specific to Chinese American mothers.

Consistent with prior research examining maternal behaviors that involve directing and limit-setting for the child (M. K. Lee et al., 2018), the current study did not identify a negative association between maternal structure and child EF. However, when investigating memory and motivational outcomes, several studies have found links between maternal structure and positive child outcomes (Cleveland & Morris, 2014; Farkas & Grolnick, 2010). Sierens et al. (2009) also demonstrated that structuring provided by teachers was associated with students' better self-regulated learning when coupled with moderate or high autonomy support. In fact, Farkas and Grolnick (2010) argued that maternal structure facilitates children's feeling of competence by providing guidance, delineating consequences, and offering informational feedback. They proposed six components of parental structure, including 1) clear and consistent rules, 2) predictability, 3) task-focused information feedback, 4) provision of opportunity for children to meet expectations, 5) provision of rationales, and 6) authority. While items on the current measure of maternal structure mainly focused on the mother's teaching responsibilities and the clarity of rules and expectations, it is possible that the provision of feedback, opportunity, and rationale aspects of structure are more closely related to children's EF development. Some components of structure seem to overlap maternal scaffolding, which has been widely

demonstrated as a promoting factor of child EF. Thus, an improved questionnaire for maternal structure is needed to capture the full scope of structure and explore its association with child EF.

Perhaps one of the most interesting results from this study is the identification of the absolute authority factor in the EFA model. In contrast to earlier findings linking authoritarian parenting with poorer child EF (Bertrand et al., 2023; Sosic-Vasic et al., 2017), however, no significant association between mothers' endorsement of absolute authority and child EF was found. A closer inspection of items on the absolute authority construct reveals that items on this factor largely measure mothers' global belief about the importance of authority instead of fine-grain behaviors while interacting with the child. Given that absolute authority and inconsistency/control were significantly correlated, one possible explanation is that absolute authority may be indirectly linked to child EF outcomes through concrete maternal practices such as coercive and controlling behaviors. An alternative explanation for this non-significant result relates to the type of child outcome variables of interest. Research conducted with Chinese American children and adolescents has suggested that authoritarian parenting might be more robustly linked to negative socio-emotional outcomes such as increased internalization problems (E. H. Lee et al., 2014; Muhtadie et al., 2013), but less so with academic achievement (Wong et al., 2018). When we separately investigate different components of EF as well as children's emotional-related abilities, we might be able to better understand the influence of maternal absolute authority on child outcomes.

**Limitations and Future Directions**

Results of the current study need to be evaluated in relation to the following limitations. First, a small sample size undermines the reliability of current SEM results. Thus, future replication is needed to test the robustness of parameter estimations in the model with larger and

more diverse samples. Related, the current sample failed to recruit enough Chinese American mothers of lower education levels and family income. The sample was also biased toward 1st generation Chinese American mothers and thus limited the generalizability of the findings beyond this group. More research with Chinese mothers from a wider range of SES and generational status is warranted to better understand the variations of parenting practice in this ethnic group and to facilitate accurate identification of sources of variations.

Furthermore, conceptualizations of maternal control and structure originated from studies mostly investigating parenting practices in the U.S. or other Western societies. The current study did not explore aspects of parenting practices that were emphasized in Chinese societies. For instance, Wu et al. (2002) identified five parenting constructs emphasized in Chinese culture, among which shaming/love withdrawal and directiveness might be more relevant to maternal control and protection and maternal involvement might be related to maternal structure. Another example of cultural-specific parenting practices relates to the concept of *chiao shun* proposed by Chao (1996). Thus, future investigations of those indigenous parenting practices and how they related to the mother's background and cultural values might better explain differences in Chinese American mothers' parenting. Finally, the findings of this study are limited given that only mother-report measures were collected. Evidence has pointed to the low correlations between parent-report and direct assessment of EF (Duckworth & Kern, 2011; Wei et al., 2023), indicating that two measures might capture different aspects of child EF ability. Thus, triangulation of findings linking different measures of parenting practices and child EF is needed to comprehensively examine associations between the two.

## Conclusion

Overall, the current study indicated that Chinese American mothers varied in their maternal practices with the child and such variations could be partially explained by the family income, mother's generational status and acculturation levels, as well as her endorsement of different cultural values. Further, the study was able to distinguish maternal structure from mothers' inconsistent/controlling behaviors and showed that two maternal practices were differentially associated with children's EF ability. The findings contribute to the growing literature on culture and parenting practices by further elucidating/characterizing the role Chinese mothers play in influencing children's cognitive ability.

Table 1-1

*Study 1 Participant Demographics (n = 110)*

| Demographic Variable | Freq. | % |
|---|---|---|
| Education Level | | |
| 1. Grade school or lower | 1 | 0.9 |
| 2. High school | 0 | 0 |
| 3. 2 year college, trade/technical school | 5 | 4.5 |
| 4. 4 year college | 61 | 55.5 |
| 5. Advanced degree (e.g., Master's, MD, Ph.D., etc.) | 43 | 39.1 |
| Family Income (US$) | | |
| 1. Less than 15,000 | 2 | 1.8 |
| 2. 15,000 to 34,999 | 9 | 8.2 |
| 3. 35,000 to 49,999 | 20 | 18.2 |
| 4. 50,000 to 74,999 | 21 | 19.1 |
| 5. 75,000 to 99,999 | 11 | 10.0 |
| 6. 100,000 to 199,999 | 23 | 20.9 |
| 7. 200,000 or more | 24 | 21.8 |
| Employment status | | |
| 1. Full-time employment | 72 | 65.5 |
| 2. Part-time employment | 17 | 15.5 |
| 3. Unemployed | 21 | 19.1 |
| First language | | |
| 1. Chinese | 87 | 79.1 |
| 2. English | 18 | 16.4 |
| 3. Bilingual | 5 | 4.5 |
| Immigration Status ($n$ = 106) | | |
| 1. 1st | 81 | 73.6 |
| 2. 2nd | 20 | 18.2 |
| 3. 3rd | 5 | 4.5 |
| Missing | 4 | 3.6 |
| Child Gender | | |
| Male | 56 | 50.9 |
| Female | 53 | 48.2 |
| Unknown | 1 | 0.9 |

Table 1-2

*Exploratory factor analysis results for maternal practices items (N =107)*

| Items | Absolute authority (f1) | Structure (f2) | Inconsistency/ Control (f3) | Communalities |
|---|---|---|---|---|
| It is up to the parents to provide the child with learning experience at an early age. | | 0.35 | | 0.10 |
| The most important thing to teach children is absolute obedience to parents. | 0.61 | | | 0.46 |
| I do not like my child to disagree with me if my friends are around. | 0.49 | | | 0.28 |
| Every child needs a good spanking once in a while. | | -0.37 | | 0.19 |
| My child does not know why he/she is supposed to do what I tell him/her to do. | | | 0.51 | 0.36 |
| Parents are their child's best teacher. | | 0.43 | | 0.17 |
| Children should not question the authority of their parents. | 0.84 | | | 0.76 |
| Parents should continue to teach their child even after the child enters school. | | 0.65 | | 0.49 |
| Once a child enters school, all of their education should take place there. | | -0.65 | | 0.49 |
| Children should always do what their parents say, no matter what. | 0.49 | | | 0.32 |
| I make it clear what will happen if my child does not follow our rules. | | 0.62 | | 0.41 |
| I make it clear to my child what I expect from him/her. | | 0.72 | | 0.50 |
| I expect my child to follow our family rules. | | 0.76 | | 0.52 |
| When I tell my child I'll do something, I do it. | | 0.57 | | 0.40 |
| If my child has a problem, I help him/her figure out what to do about it. | | 0.61 | | 0.45 |
| I let my child get away with things I really shouldn't allow. | | | 0.28 | 0.08 |
| When my child gets in trouble, my reaction is not very predictable. | | | 0.34 | 0.16 |
| My child doesn't seem to know what I expect from him/her. | | | 0.36 | 0.23 |
| I change the rules a lot at home. | | | 0.46 | 0.35 |
| I can get mad at my child with no warning. | | | 0.78 | 0.58 |
| My child fights me at every turn. | | | 0.51 | 0.45 |

| | | | | |
|---|---|---|---|---|
| To get my child to do something, I have to yell at him/her. | | | 0.59 | 0.41 |
| I can't afford to let my child decide too many things on his or her own. | | | 0.77 | 0.49 |
| I find getting into power struggles with my child. | | | 0.71 | 0.50 |
| variance | 0.16 | 0.14 | 0.08 | |
| Total variance | | | 0.38 | |
| Factor correlations | | | | |
| f1 | -- | | | |
| f2 | -.17 | -- | | |
| f3 | .29* | -.41* | -- | |

Note. All factor loadings are significant at $p < .05$ level. Factor loadings <.25 are not shown. Two items were removed because they did not load on any factors and one was removed because it positively loaded onto two factors.

* $p < .05$.

Table 1-3
*Means, Standard Deviations, and Significant Correlations for All Variables of Study 1*

| Variables | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Family income | 4.77 | 1.73 | | | | | | | | | | | |
| 2. Mother generation [a] | 0.24 | 0.43 | - .05 | | | | | | | | | | |
| 3.Years in the US | 17.78 | 12.09 | .29** | .54*** | | | | | | | | | |
| 4. Chinese enculturation | 3.52 | 0.74 | - .13 | - .33*** | - .45*** | | | | | | | | |
| 5. US acculturation | 3.35 | 0.76 | .26** | .44*** | .57*** | -.31** | | | | | | | |
| 6. Familism | 3.60 | 0.66 | - .21* | - .03 | .03 | .07 | .1 | | | | | | |
| 7. Collectivism | 6.46 | 1.18 | - .04 | - .22* | .03 | .28** | .07 | .40*** | | | | | |
| 8. Individualism | 6.34 | 1.25 | - .11 | .04 | .13 | .14 | .14 | .28** | .53*** | | | | |
| 9. Structure | 0.00 | 0.28 | .34** | - .20* | .25** | .20* | .29** | - .04 | .39*** | .20* | | | |
| 10. Absolute authority | 0.00 | 0.66 | .11 | .03 | .09 | - .27** | .12 | .37*** | - .14 | - .07 | - .35*** | | |
| 11. Inconsistency/control | 0.00 | 0.53 | - .05 | .12 | - .1 | - .17+ | - .1 | .13 | - .38*** | - .17+ | - .55*** | .56*** | |
| 12. Child EF problems | 53.33 | 8.11 | - .13 | - .21* | - .12 | - .15 | - .24* | .17+ | - .23* | - .19+ | - .34*** | .31** | .48*** |

*Note*. [a] 0 = 1st generation Chinese American and 1 = 2nd generation Chinese American.
+ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 1-4
*Unstandardized Regression Coefficients (B) with Standard Errors (S.E.) for Models of Cultural Values*

| | **Collectivism** | | **Familism** | | **Individualism** | |
|---|---|---|---|---|---|---|
| Predictor Variables | B | S.E. | B | S.E. | B | S.E. |
| Family income | -0.09 | 0.07 | **-0.11**** | 0.04 | -0.14+ | 0.08 |
| Mother's generation | **-0.98**** | 0.32 | -0.20 | 0.19 | -0.28 | 0.36 |
| Years in the US | 0.03+ | 0.01 | 0.00 | 0.01 | 0.02 | 0.01 |
| Chinese enculturation | **0.55**** | 0.17 | 0.07 | 0.10 | **0.41*** | 0.19 |
| US acculturation | 0.34+ | 0.18 | **0.22*** | 0.10 | 0.30 | 0.21 |
| Adjusted $R^2$ | .16 | | .06 | | .06 | |
| *F* | **4.87***** | | 2.23+ | | 2.21+ | |
| *Df* | (5, 96) | | (5, 95) | | (5, 95) | |

*Note.* + $p < .10$. * $p < .05$. ** $p < .01$.

Figure 1-1

Model Specification of Path Model

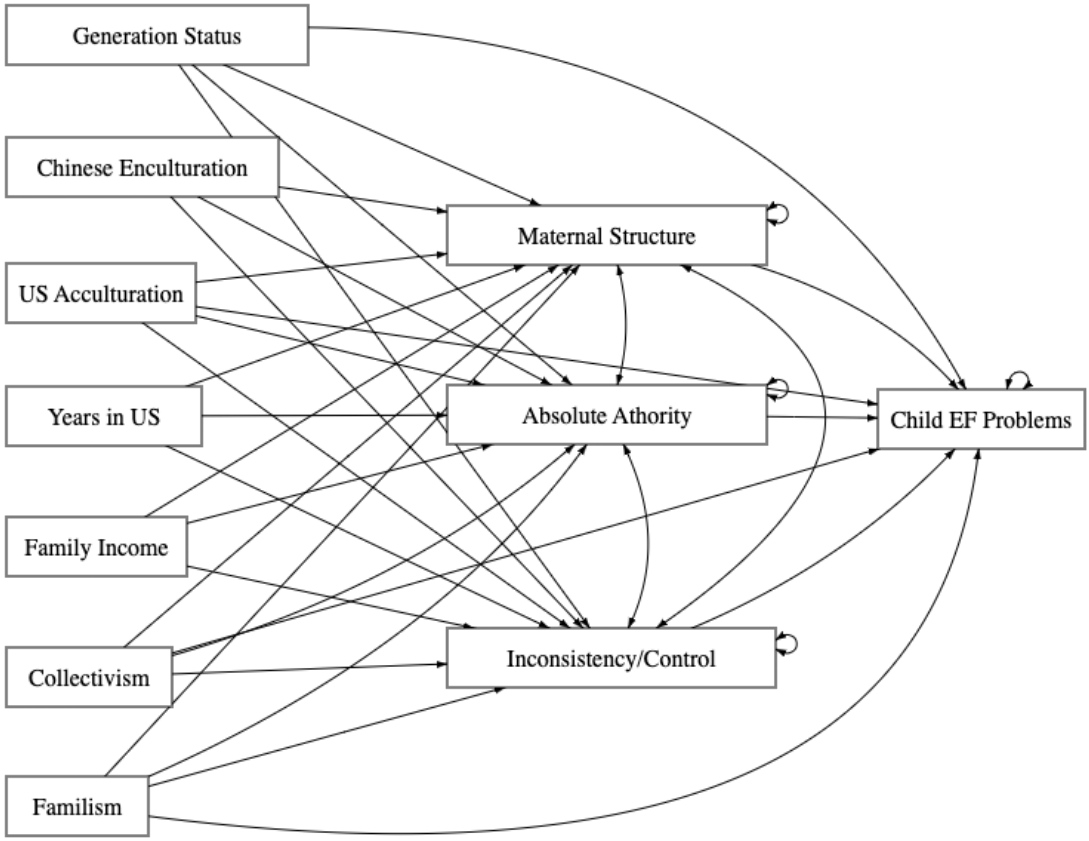
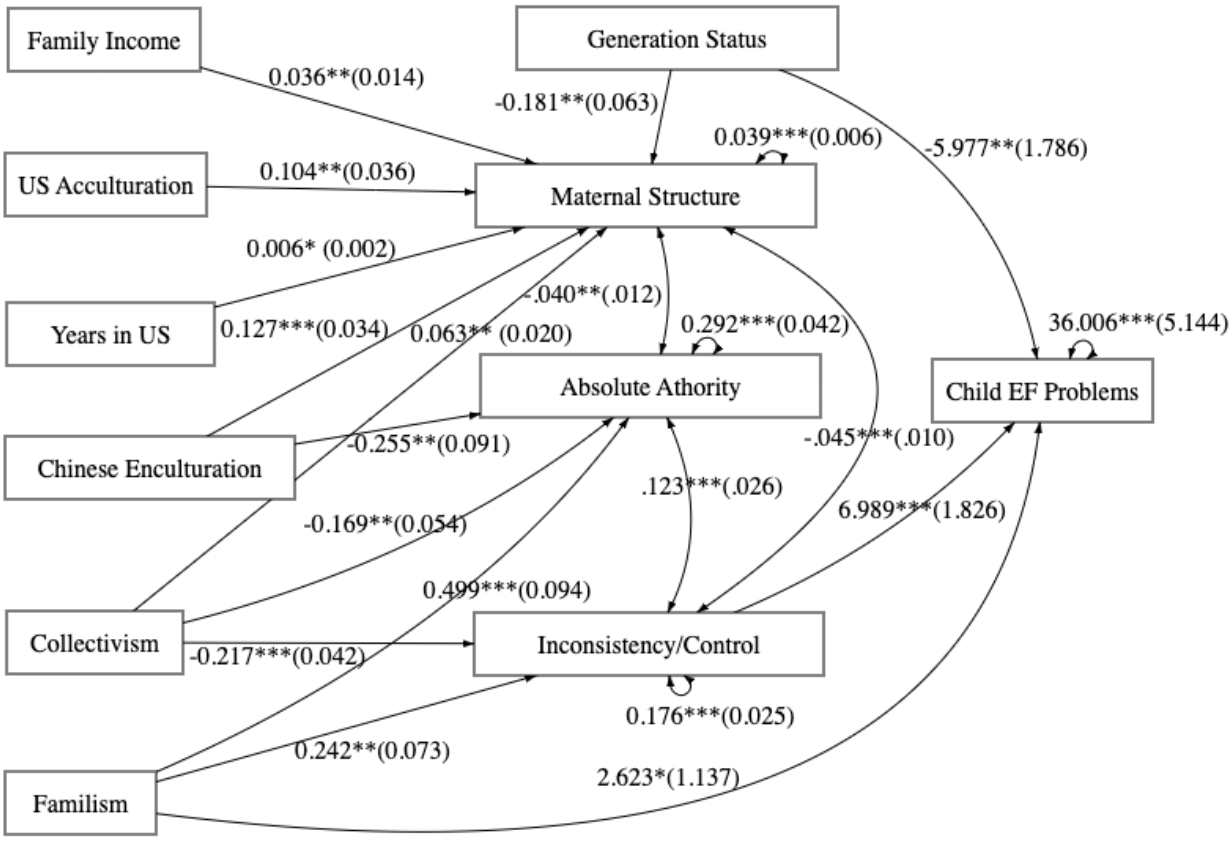


Figure 1-2

Path Model Results, with Path Parameters and Standard Errors.



# STUDY 2

## Relations between Chinese American Mothers' Scaffolding Strategies and Child Executive Functions

## Relations between Chinese American Mothers' Scaffolding Strategies and Child Executive Functions

The significance of parenting practices in shaping children's early cognitive development, particularly their executive function (EF) skills, has been well-established. Executive functions (EF) are a set of self-regulatory processes, including attentional control, response inhibition and working memory (Miyake et al., 2000; Willoughby et al., 2012). EF is considered the cognitive foundation of self-regulation, a key aspect of children's school readiness, academic achievement, and socio-emotional well-being (see McClelland et al., 2015, for review). A growing amount of research has indicated cultural differences in the association between certain parenting behaviors and child EF. For example, the negative correlation between maternal control and child EF has not been consistently found among children with an Asian-Collectivistic background (M. K. Lee et al., 2018; Wong et al., 2018). However, this area remains understudied, particularly concerning Chinese American children.

Among studies exploring parenting and child EF in Chinese/Chinese American population, the majority have focus on general parenting styles (e.g., sensitivity, control, hostility) and measured as parent self-report. In contrast, relatively little is known about Chinese American parents' scaffolding strategies when interacting in non-disciplinary situations. Parental scaffolding strategies including parents' efforts to provide explanations, directions, and guidance to promote child competence. Parental scaffolding has been conceptually linked to Vygotsky's theory of cognitive apprenticeship (Vygotsky & Cole, 1978). In general, prior research has suggested that strategies that are cognitively stimulating (e.g, mother's use of prompts, questions, and suggestions) are associated with higher child EF (Valcan et al., 2018, for review), while strategies that are controlling (e.g., doing the task for the child, directions with little explanation)

are associated with lower EF (Frodi et al., 1985; Landry et al., 2000). However, there is also evidence suggesting that these observed associations between parenting and children's behavior may differ across culture. For example, emerging evidence from low-income Latino mothers, who endorsed greater levels of collectivism, indicated that highly directive strategies might not interfere with Latina/o children's EF as was found in European American families (Power et al., 2020).

To expand the understanding of Chinese American mothers' parenting, the current study examined the relations between mothers' scaffolding in a mother-child interactive task and children's EF skills in a group of Chinese American mothers and their children between 4-8 years of age. Additionally, the study also aimed to explore the associations between mothers' demographic characteristics (e.g., language preference and generational status) and scaffolding strategies.

**Executive Functions in Children**

EF skills are cognitive processes that underlying children's ability to self-regulate. Literature on developmental science has suggested that EF emerges as a unitary cognitive process in younger children and develop distinct components as they develop, which includes attentional flexibility, response inhibition, and working memory (Miyake et al., 2000; Willoughby et al., 2012). Attentional control is the ability to pay attention to task-relevant information and selectively shift focus when needed (Rothbart & Posner, 2005). It is closely dependent on the basic attention capacities developing as early as infancy and help children intentionally navigate goal-relevant environment inputs. Response inhibition refers to the ability to inhibit a prepotent response and active a more adaptive response (Diamond & Kirkham, 2005), which is related and interference with the control of thought, attention and memory.

Response inhibition allows children to evaluate and optimize their responses within specific context and implies further-oriented actions. Children start to display intentional inhibition around 3 years of age, and it continues to develop throughout childhood, adolescence and into early adulthood (e.g., Hooper et al., 2004; Rothbart & Posner, 2005). Working memory includes the active storage and manipulation of information, which usually shown as a child's abilities to remember and follow multiple steps (Kail, 2003). Among these components of EF, working memory has been demonstrated to have the most robust association with early academic achievement and also develops throughout childhood and adolescence (Kail, 2003; Lan et al., 2011).

Child EF has been commonly measured through teacher/parent-reports and direct assessment through cognitive tasks. Although adult-report of child EF has the benefit of capturing the use of EF skills across a range of occasions and scenarios, it is more likely to be biased due to a number of factors, such as variations in raters' standards relate to ethnic and cultural backgrounds (Yung et al., 2019). On the other hand, direct assessments of child EF abilities are often conducted using cognitive tasks that are widely validated in laboratory-based research with adults and then adapted to be child-friendly. Those tasks include Dimensional Change Card Sort task (Fisher, 2011)and Fish Flanker for attentional flexibility (McDermott et al., 2007), Day/Night task (Gerstadt et al., 1994) and Go/No-Go task (Grammer et al., 2014) for response inhibition, and Backward Digit Span for working memory (Willoughby et al., 2012). Although children's performance across these types of tasks is often correlated, it has been a common practice to measure EF components separately to understand the unique developmental trajectories of each. This also allows researchers to examine the degree to which EF components may be differentially influenced by contextual factors, such as parenting and children's cultural

environments. For example, several studies have reported that Chinese children scored significantly higher in a range of direct assessment of inhibition and attentional flexibility tasks (Duh et al., 2016; Lahat et al., 2010; Sabbagh et al., 2006; Wanless et al., 2011). However, no consistent cultural differences have been found in children's working memory (Ellefson et al., 2017; Lan et al., 2011; Oh & Lewis, 2008). Therefore, one of the goals of the current study was to examine the relation between maternal scaffolding strategies and different EF components in children.

**Scaffolding and Child EF**

By providing appropriate guidance, support, and strategy suggestion in various learning opportunities, parents play a crucial role in fostering children's EF development. Several developmental theories support the conceptual link between high quality maternal scaffolding and child EF. For instance, following Vygotsky's sociocultural theory (1979), children's executive function development is shaped by their interaction and practices with parents. Self-determination theory (Joussemet et al., 2008) also argues that parents could support children's motivation and cognitive development by satisfying three fundamental psychological needs-those for competence, autonomy, and relatedness. Taken together, parents who assist children to understand a task, as well as clearly outline rules and possible strategies, may facilitate children's competence in successfully performing the task, help them develop strategies for further challenges, and thus promote EF development. Further, parental behaviors that satisfy children's needs for autonomy (e.g., asking questions and offering choices) are expected to foster children's cognitive engagement in tasks, thereby providing them with greater opportunities to practice and improve their EF skills (Fagot & Gauvain, 1997). On the other hand, directive strategies

including doing the task for the child or telling the child what to do without explanations are thought to hinder children's EF development.

The empirical findings regarding the association between parental scaffolding strategies and child EF are largely in line with the theoretical framework. In a meta-analysis of 42 studies, Valcan et al. (2018) found that cognitive parental behaviors were positively associated with global EF as well as each EF components (*r*s = .20). In the analysis, parental cognitive behaviors included explanation and provision of task-related information, using prompts, hints and question, and suggestion and autonomy support. In contrast, parental directive controlling behaviors was found to be related to lower task persistence and competence (behavioral correlates of EF) and lower cognitive skills among children older than 3.5 years of age (Frodi et al., 1985; Landry et al., 2006).

However, the results are less consistent in few studies that have investigated this relation in populations beyond middle-class European American families (M. K. Lee et al., 2018; Power et al., 2020; Wong et al., 2018). For example, Power et al. (2020) examined mothers' scaffolding strategies in a group of low-income Latina mothers and found no negative associations between mothers' verbal directiveness and children's delay of gratification either concurrently or longitudinally. Another study that investigated mother-child interaction quality among middle-class Korean families also reported non-significant association between mother's intrusiveness, (providing directions in the absence of the child's error or requests) and child EF (M. K. Lee et al., 2018). Further, Wei et al. (2023) found that maternal positive control (maternal supporting and scaffolding) and negative control (excessive control and direction) observed during mother-child interactions were both positively related to preschoolers' EF performances in middle-class Chinese families. Together, these findings suggest a more complex relations between mothers'

scaffolding practices and child EF in families of more collectivistic cultural background, which warrants more research in this area.

**Scaffolding Strategies in Chinese American Parents**

Even fever studies have examined mothers' scaffolding strategies in Chinese American families. The majority of past studies on Chinese parenting and child EF measured parental behaviors through parent- or child-report, which captures more general parenting styles (e.g., R. K. Chao, 2001; Cheah et al., 2013; Heimpel et al., 2018). Specifically, parental control is often measured as parents' approaches or reactions when engaging in child misbehaviors (e.g., "Yells or shouts when child misbehaves") and involves physical coercion and verbal hostility. Little is known about Chinese American mothers' interaction with children in teaching situations and how they guide and facilitate children's competence when performing a task together.

There are conceptual reasons to expect that Chinese mothers to engage in more strategies to provide children guidance and structure, as well as explicit direction during teaching. R. K. Chao (1994) argued that *guan* is a central concept in Chinese parenting, which involves teaching and training the child to be competent and to adhere to socially desirable behaviors. The emphasis on parents' responsibility to teach may lead to more parent-initiated guidance and help for children to complete tasks. Building on R. K. Chao (1994), researchers have identified five parenting dimensions that are unique to Chinese culture, one of which is directiveness (Wu et al., 2002). Directiveness entails parents taking a significant role in regulating children's behavior and academic achievement, and may reflect traditional Confucius beliefs that children are immature and incapable of making best choices (Huang, 1996). In line with this, Chinese mothers might employ more directive strategies with children in joint tasks, especially when they perceived the task as being difficult for the child.

Moreover, a growing body of cross-cultural research has shifted its focus away from comparing average differences between ethnic groups and has instead delved into understanding variations of behaviors, identities, and psychological functions within a single ethnic group that might be associated with individual characteristics (Garcia et al., 2020; Mistry et al., 2016). While prior research has suggested that Chinese American mothers employ more child-oriented strategies and fewer controlling behaviors than mothers in China (Huang et al., 2017), limited is known the diversity in scaffolding practices among Chinese American mothers. These variations may be linked to differences in generational status, language preference, and socioeconomic status within this population (Mistry et al., 2016).

## Current Study

The purpose of the current study was to examine variations in Chinese American mothers' scaffolding strategies during a mother-child joint task and the degree to which these strategies were associated with child EF abilities. Specifically, the study focused on four types of maternal strategies: (1) mothers' *explanation* to help the child understand the task; (2) mothers' *structure* behaviors involving restating the rules of the task and provision of further steps; (3) mother's *directiveness* involving explicit verbal directions about the child's behaviors; and (4) mother's *autonomy support* strategies that includes asking open-ended questions and offering the child choices. The specific research questions were:

1. Do maternal scaffolding strategies vary as a function of mother's generational status and language preference?
2. What are the associations between maternal strategies and child EF abilities?

### Hypotheses

Although fewer studies have compared scaffolding strategies directly in Chinese families, emerging evidence indicated that parents' endorsement of individualism is associated with more trial-and-error learning in children (Greenfield, Maynard, et al., 2003). Greenfield's cultural pathway theory has linked greater length of experience in the US (e.g., higher immigrant generation and longer immigrant experience) with higher individualistic values and the increase of individualistic practices (Greenfield, Keller, et al., 2003a; Greenfield & Quiroz, 2013). In addition, building on findings from Study 1 relating higher generation with less maternal structure, I expected that mothers who are with higher generational status and are English-speaking would show more explanation and autonomy support and less structure and directiveness during the drawing game.

Further, I expected that mothers' use of explanation, structure, and autonomy support would be positively associated with children's performance in tasks measuring attentional control, response inhibition, and working memory. I expected these associations to be positive as they are similar to cognitive parenting behaviors examined by Valcon and colleagues (2018). Finally, consistent with findings in Lee et al. (2018) and Wei et al. (2023), I expected to find a non-negative relationship between maternal directiveness and children's performances in EF measures.

## Method

### Participants

Forty-two mothers ($M_{age}$ = 39.11, $SD$ = 4.15) who self-identified as Chinese American and their children aged between 4.5 to 8 years old ($M_{age}$ = 6.52, $SD$ = 1.08, $N_{boy}$ = 21) participated in the study. All mothers in the study held a 4-year college degree, with 76% of mothers have received education in US ($M$ = 9.58 years, $SD$ = 8.70). All but one mother reported

their ethnicity-race as solely ethnical Chinese (including Chinese, Taiwanese, and Chinese Singaporean) and one mother also self-identified as Chinese-Australian. Twenty-four mothers identified as first generation Chinese American (born outside of U.S.), 7 mothers as 1.5 generation (born outside of U.S. but immigrated before 13 years old), and 7 mothers as second generation (born in the U.S. with at least one parent born outside of U.S.). More information regarding demographic characteristics of the sample is presented in Table 2-1.

**Procedure**

The study procedure was approved by the University of California, Los Angeles's Institutional Review Board (IRB#21-001989). Due to the COVID-19 pandemic and the social distance policy for human subject protection purpose, all study procedures were conducted virtually over email or Zoom. All participants were recruited from study flyers posted on various social media platforms, including Facebook parenting groups, WeChat groups, and NextDoor. Study information and flyers were also shared with local Chinese language schools and Mandarin bilingual programs to disseminate with Chinese American families of interests.

Mothers who expressed an interest in participating in the study first had to answer four eligibility questions. The inclusion criteria for participants included that they 1) self-identified as Chinese American; 2) had a child between 4.5 to 8 years of age; 3) had access to a private computer or laptop with a keyboard; and 4) were able to conduct Zoom video sessions. Mothers whose families immigrated from other oversea Chinese communities (e.g., Singapore, or Malaysia) and self-identified as Chinese were included. Mixed-ethnicity families from which the father was not Chinese were also included in studies.

Mothers who met the criteria were then invited to schedule a virtual meeting via Zoom to complete the parent and child tasks. While scheduling, mothers were provided the choice to

conduct the meeting in either Mandarin Chinese or English. The parent-child tasks consisted of an 8-minute joint drawing activity using an online version of the Etch-a-Sketch (ESO) task (Oliver & Pike, 2021), which was always conducted first. Following this, children were asked to finish three EF tasks with order counterbalanced. Oral assent was obtained from all children aged 7 and above. The mother sat alongside with the child during EF tasks to facilitate their understanding of task instructions but was asked to not intervene or assistant once the tasks started.

After the parent-child task session, the child was thanked for their participation with a $20 Amazon gift card. On average, the meetings lasted approximately 45 minutes. Additionally, some mothers in the current sample opted to participate in an optional mother interview after the meeting, with further details of the interview presented in Study 3. All Zoom meetings were led by the lead author or trained undergraduate research assistants who were fluent Chinese-English bilinguals.

## Measures

### *Maternal Teaching Strategies*

An online version of the ESO task (Oliver & Pike, 2021) was administered to capture the level of mother-child cooperation and teaching strategies. During the task, the dyad was instructed to collaboratively complete a drawing using designated keys on the keyboard. The mother was responsible of directing the line to go up and down and the child was responsible to draw the line left and right. The task also required the mother and the child to not touch each other's key throughout the task. Following task instructions and a brief practice session, each dyad was given 8 minutes to draw the stimuli, with the entire process being video recorded.

The videos were coded offline by trained research assistants to evaluate the nature of mother-child interactions using the Datavyu software. The coding system used was adapted from several well-established coding system, including PARCHISY (Deater-Deckard, 2000), DPICS (Eyberg & Robinson, 1981), and DOTS coding system (Chaplin et al., 2005). The coding system encompassed both event-based codes, which capture detailed maternal behaviors during the interaction, as well as global codes, which assess the overall quality of the interaction. Detailed description for each code is listed in Appendix B. Coding was conducted in the language of the videos and each video was view three times to ensure comprehensive coding. Event-based codes were assigned during the second viewing and global codes were rated after the third viewing. Six higher-order categories of event-based codes included child-directed talk, questions, positive talk, negative talk, ignoring, and emotion language. Given that the current study focuses on mothers' teaching strategies, only results pertaining to codes in the child-directed talk and questions were reported. All coders underwent highly structured training on the coding system and met weekly with the lead author to discuss coding questions to prevent coder drift throughout the course of the coding. Inter-rater reliability was assessed by randomly selecting 20% of the videos (n=8) to be double-coded by two coders, with reliability calculated using the interclass correlation coefficient (ICC) based on a single-rating, absolute-agreement, 2-way mixed-effect model. The average ICC across coders was 0.79, ranging from 0.61 to 0.96.

Composite scores for each maternal teaching strategy were derived by aggregating the total frequency of codes in the child-directed talk and the questions categories, except for explanation, which utilized the total frequency counts of the explanation code within child-directed talk. Structure was created by combining limited setting, prospective talk, and semantic question codes. For directiveness, the composite score was generated by summing the frequency

of explicit direction and question-as-direction codes. Finally, autonomy support was generated by aggregating open-ended question and choice question codes.

### *Demographic Information*

Twenty-eight mothers filled out a demographic questionnaire before or after the Zoom meeting to report on the mother's age, ethnicity, education level, US education status, and generational status. For the other 13 Chinese American mothers, demographic information was collected as part of the mother interview.

### *Child EF Measures*

To evaluate children's executive function (EF) ability, two computerized tasks and one behavioral task were employed. These tasks were selected based on established evidence of task reliability and suitability for children within the focal age range of this investigation (Camerota et al., 2019; Grammer et al., 2014; Willoughby et al., 2012). Careful modifications were made to task directions (e.g., adding scripts/audio of instructions) to adapt tasks for the virtual meeting protocol. For the Heart and Flower and Zoo game, children were required complete a minimum of 50% of each task and have an overall accuracy higher than 0.5 to be included in the analysis.

**Attentional Flexibility.** A developmentally appropriate online version of the Heart and Flower task was administered to measure children's attentional control (Diamond et al., 2007; McGinnis & Selmeczy, 2021). This version of Heart and Flower used pre-recorded instruction to guide the child though the task. The child was instructed to press the corresponding button on the keyboard based on the location of stimuli on the screen. The child needed to press the same-side button when they see the heart and the opposite button when they see the flower. The task consisted of three blocks: one heart block, one flower block, and one mixed block. Each block included 6 practice trials and 20 experimental trials. The task was administered through an online

experimental platform called Gorilla and lasted about 10 minutes. Given the high average accuracy achieved by the children, both task accuracy and reaction time (RT) were employed as indicators of children's attentional flexibility ability as suggested by prior research (Camerota et al., 2019).

**Response Inhibition.** A child-friendly Go/No-Go task (Zoo game) was administered to measure response inhibition (Grammer et al., 2014). Children were told that all the animals escaped today from the Zoo, and their job was to help the zookeeper catch the animals and put them back in their cages by pressing the space bar on keyboard every time they saw an animal (Go stimuli). Children were also instructed to not press the space bar when they saw the zookeeper's orangutan assistants (No-Go stimuli). Game narrative and instructions were provided within the task and read out load by trained researchers via Zoom. The Zoo game consists of 12 practice trials and 8 blocks of 40 experimental trials in each block. The child was allowed to take 1 to 7 breaks between blocks. The game was administered through Pavlovia platform and took about 15min to finish on average. Overall accuracy to the task was used as an indicator of children's response inhibition.

**Working Memory.** A standardized digit span (McCarthy, 1972) task was used to assess children's short-term memory and working memory span. In this measure, children were read a list of numbers by the experimenter that they need to remember. Children were instructed to listen and then to recall numbers either in the forward or backward order. A child's working memory span was determined by the length of largest the number of correct trials from the backward potion of Digit Span was used as indicator of children's working memory capacity.

## Results

*A priori* power analyses were conducted using G*Power software (Faul et al., 2007) to determine the sample size to detect a median effect (r = 0.25) between parenting and child EF as suggested by literature (Valcan et al., 2018; Wei et al., 2023). Following the traditional recommendation of 0.80 for power and alpha = 0.05 level and a regression-based approach, it is estimated that a sample size of 143 would be adequate to detect the effect for both research questions. Given that the current study is under-powered for small sample size, mother's education level was not included in further analysis because of the lack of variation in the sample. The statistical analyses were performed using RStudio (RStudio Team, 2020). Preliminary data analysis included exploring descriptive statistics and bidirectional correlations of all variables of interest (see Table 2-2) to inform the following regression models. First, regression models were estimated with maternal scaffolding strategies as outcomes. Child age, generational status, and language of the meeting entered the model simultaneously as predictors to examine their relations with mothers' strategies. Due to the small number of bilingual Zoom meetings, mothers used English and both languages in parent-child tasks were collapsed in the analysis. Secondly, a series of hierarchical linear regressions was conducted for each EF indicator. Child gender and age were included as covariates in the first step, followed by the introduction of mothers' scaffolding strategies in the second step. Missing data were handled through listwise deletion.

**Preliminary Analysis**

Overall, directiveness was the most common strategy category used by Chinese American mothers, followed by structure. Mothers showed relatively fewer autonomy support strategies as well as low frequency of explanations. Results from the bivariate correlation revealed that mother's generational status was significant related to their language preference,

such as mothers of 1.5 or second generation were more likely to use English during the virtual meeting. For maternal scaffolding strategies, the use of directiveness showed a significant negative correlation with maternal autonomy, while as positively correlated with structure. For children's EF task performance, only working memory score was significantly related to children's response inhibition and marginally related to attention flexibility ability measured as Heart and Flower task accuracy.

**Association between Child and Mother Characteristics and Maternal Strategies**

Results for regression models of child and mother demographic characteristics on each scaffolding strategy are presented in Table 2-3. The models for explanation ($R^2$ = .23, $F$ (4,32) = 3.69, $p$ < .05) and directiveness ($R^2$ = .17, $F$ (4,32) = 2.90, $p$ < .05) were significant. Specifically, child age was negatively related to mother's use of explanation, indicating that mothers of younger children engaged in more explanation during the task. However, no significant association was found between mother's generational status and the use of explanation. For directiveness, child age was also negatively linked with directiveness strategies. Additionally, mother's generational status showed to be a marginally significant predictor of the model, suggesting that 2nd generation mothers of younger children used more directive strategies in the task.

**Associations between Maternal Scaffolding Strategies and Child EF**

Results for hierarchical regression models of child EF are presented in Table 2-4. As shown in the table, child age significantly predicted children's performances on Heart and Flower and Zoo tasks (except the accuracy in Heart and Flower task), confirming that their attentional flexibility and response inhibition skills develop rapidly during 4-8 years of age. On the other

hand, child gender, but not age, was a significant predictor of children's task accuracy in the Heart and Flower, suggesting that boys had higher accuracy than girls in this task.

When examining the associations between mothers' scaffolding strategies and child EF, only maternal autonomy support was positively associated with children's performance (task accuracy) in the Heart and Flower task, $\beta = .35$, $p < .05$. However, adding maternal scaffolding variables did not significantly improve the amount of variance explained in the model. Maternal explanation, structure, and directiveness were not significantly associated with children's performance on any of the EF tasks measured.

## Discussion

The current study aimed to explore the variations in scaffolding strategies employed by Chinese American mothers during a joint drawing task with their children between 4-8 years old. We also examined to what degree are mothers' strategy use relate to children's performance on EF tasks. Findings from this study indicated that although all mothers demonstrated a high degree of directiveness in the task, there were notable differences in the use of explanation and directive strategies based on the age of the children. Mothers' use of directiveness also varied as a function of their generational status. When considering how mothers' interactions with their children are associated with EF skills, it was observed that only the use of autonomy support by mothers was associated with the children's attentional control.

### Maternal Scaffolding Strategies

Observations from this study revealed that mothers engage in various scaffolding strategies to facilitate the completion of tasks with children, including those provide information for the child to better understand the task or hints for more effective solutions, as well as explicit directions with little cognitive gains (Eisenberg et al., 2010). Researchers have suggested that

more directive strategies might be appropriate for younger children which act as a form of external regulation when they are not competent to self-regulate (Landry et al., 2000). Indeed, our results showed that mothers were more likely to utilize explanation and direction when interacting with younger children. To complete the ESO task, the dyads need to coordinate effectively and each press keys around the same times. Further, the game required mothers to not touch each other's key. Therefore, mothers might use more explanation to help young children better understand the task requirement. They are also likely to take a leading role in the game by offering explicit commands so that the child know their next moves. Literature on scaffolding have suggested that the adjustment of maternal behaviors according to children's ability is a sign of contingent scaffolding, which has been linked with several positive child outcomes (Mermelshtine, 2017).

Our findings also showed that comparing to first generation Chinese American mothers who mostly moved to U.S. after college, second generation mothers applied more directive strategies. Although the whole model did not reach the significant level, emerging evidence also suggested that mother who immigrated to U.S. as a child used more structure strategies than first generation mothers. Further, no differences were found regarding mothers' autonomy support practices between mothers of different immigrant generations. This is contrary to previous studies which have suggested that mothers' US orientation was associated with more authoritative parenting which involves more autonomy granting and less authoritarian practices (Yu et al., 2016) .

These results could be partially explained by the fact that the present study primarily focused on assessing mothers' verbal teaching strategies. Given that the online ESO task was conducted virtually, with minimal physical movement required from the mother-child dyad,

effective coordination primarily relied on verbal communication. Moreover, it is important to note that video recording of the mother-child interaction was not capable of capturing the dyad's actions below the chest line, further making mothers' verbalization the main focus of behavior coding. Previous research have shown that American orientation or European American backgrounds is associated with more distal parenting and verbal strategies in mothers (S. H. Chen & Zhou, 2019; Farver, 1993). Results maternal surveys in Study 1 showed a significant positive correlation between mother's generational status and U.S. acculturation. Although we did not measure mothers' acculturation levels in the current study, it is possible that 2nd generation Chinese American mothers in this sample also have higher American orientation and are more likely to use verbal strategies with children. Therefore, findings from the current study might be biased by higher levels of verbal strategies used by second generation mothers. More studies are needed to comprehensively compare both verbal and non-verbal scaffolding practices used by Chinese American parents.

**Relating Maternal Scaffolding to Child EF**

Regarding children's performances on EF tasks, the current study found that maternal autonomy support, measured as the number of open-ended and choice questions provided by the mother, was positively related to children's task accuracy in Heart and Flower task. In line with literature linking autonomy support with better child EF, it is possible that mothers who asked more questions during the game offering more cognitive stimulating experiences for children, as well as more opportunities for children to practice the shifting attention based on the task requirements. However, in contrast to other EF measures that showed an age-related difference, children overall accuracy from the Heart and Flower task was not associated with age but child gender. Evidence from prior research has indicated that children's reaction time in the Heart and

Flower task might be a more informative index of EF ability for children who had high accuracy (Camerota et al., 2019). It is possible that the accuracy of Heart and Flower task did not reflect children's true attentional control ability, but other characteristics that influences their task performances. For example, motivational factors have long been demonstrated as positively associated with maternal autonomy support, which could be another factor influencing task performance.

Additionally, mothers' directive strategies were not associated with child performance on all three EF tasks, confirming that directiveness does not interfere with child EF ability in families of collectivistic cultural backgrounds (M. K. Lee et al., 2018; Power et al., 2020). These findings suggest possible cultural differences in maternal directiveness during teaching situations. Although requiring careful coordination, it is worth noting that the current ESO task does not elicit many conflicts or negative emotions from either the mother or the child. It might be important for future investigations to explore teaching strategies and confirm this phenomenon in various teaching scenarios, especially in those that are more challenging and causing negative emotions in children.

**Limitations and Future Directions**

One major limitation of the current study is the small sample size that did not provide adequate statistical power for the detection of study effects. Although exercising caution during the selection of predictors and models to account for power considerations, it is worth noticing that all significant findings in the current study showed at least a median effect size ($r$ = .34). It is necessary for future research, conducted with larger sample size, to replicate the study and examine the potential associations between maternal scaffolding and child EF that manifest as smaller effect sizes. Another limitation of the study was the use of cross-sectional design. By

measuring maternal scaffolding strategies and child EF at the same time-point, we are not able to determine the directionality between two sets of variables. It could be argued that mothers' use of different practices was dependent on their perception of child EF abilities, which reflects sensitive mothering that caters their practices to individual child needs. The age-related differences in maternal explanation and directiveness partially confirmed this possibility. Moreover, in a study using longitudinal design, Eisenberg et al. (2010) found that children's high effortful control (an ability that overlaps with EF) at 30 months predicted more cognitive assistant and fewer directive strategies from mothers at 42 months. However, a predictive relation between maternal teaching strategies at 30 months and child effortful control at 42 months was not identified. Therefore, research employing a longitudinal design– allowing for additional examination of how these relations change across development and bidirectional interactions between mother's interactions and children's EF – is warranted to elucidate the directional relationships between parenting behaviors and child executive function (EF) skills.

Further, although increasing number of studies have started to examine relations between Chinese parenting and various child outcomes, most of them used maternal self-reports to measure mothers' general parenting style (e.g., S. H. Chen & Zhou, 2019; Heimpel et al., 2018; Huang et al., 2017). There is emerging evidence suggesting that the relationship between parenting and child EF might depend on the type of measurement methods used for both constructs. For example, Wei and colleagues (2023) explored the association between parental behaviors and child EF in a group of 126 Chinese preschooler using both mother-report and direct assessment. Their results showed that mother-report of parenting was associated with mother-report of child EF, while direct observation of maternal practices was associated with scores generated from performance-based EF tasks. It would be valuable of future studies to

gather multiple forms of parenting measures and explore how each measure might uniquely associated with child EF performances.

**Conclusions**

Overall, the results revealed that Chinese American mothers engaged in all four types of scaffolding strategies and adjusted their strategies according to their children's age. The study also illustrates the variability within Chinese mothering by identifying differences in their strategies as a function of mothers' generational status. This underscores the significance of comprehending distinct parenting practices in non-disciplinary contexts to gain deeper insights into children's daily experiences, which may contribute to their EF development.

Table 2-1

*Study 2 Participant Demographics (n = 42)*

| Demographic Variable | Freq. | % |
|---|---|---|
| Education Level (*N* = 40) | | |
| 1. Grade school or lower | 0 | 0 |
| 2. High school | 0 | 0 |
| 3. 2 year college, trade/technical school | 0 | 0 |
| 4. 4 year college | 14 | 33.3 |
| 5. Advanced degree (e.g., Master's, MD, Ph.D., etc.) | 26 | 61.9 |
| Missing | 2 | 4.8 |
| Meeting language | | |
| 1. Chinese | 15 | 35.7 |
| 2. English | 26 | 61.9 |
| 3. Bilingual | 1 | 4.5 |
| Immigration Status (*n* = 41) | | |
| 1. 1st generation | 24 | 57.1 |
| 2. 1.5 generation | 7 | 16.7 |
| 3. 2nd generation or higher | 10 | 18.2 |
| Missing | 1 | 3.6 |
| Child Gender | | |
| Male | 21 | 50.9 |
| Female | 21 | 48.2 |

Table 2-2
*Means, Standard Deviations, and Significant Correlations for All Variables of Study 2*

| Variables | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Child gender[a] | 1.50 | 0.51 | | | | | | | | | | | |
| 2. Child age | 6.52 | 1.08 | -0.15 | | | | | | | | | | |
| 3. Meeting language[b] | 1.67 | 0.53 | 0.28 + | 0.16 | | | | | | | | | |
| 4. Mother generation status[c] | 1.24 | 0.43 | 0.07 | -0.07 | 0.44 ** | | | | | | | | |
| 5. Explanation | 6.11 | 4.23 | 0.32 + | -0.37 * | 0.34 * | 0.29 + | | | | | | | |
| 6. Directiveness | 30.03 | 20.53 | 0.11 | -0.36 * | 0.2 | 0.38 * | -0.02 | | | | | | |
| 7. Autonomy | 8.59 | 6.91 | -0.17 | 0.18 | -0.08 | -0.27 | 0.03 | -0.45 ** | | | | | |
| 8. Structure | 14.89 | 6.81 | -0.1 | -0.18 | 0.01 | 0.2 | -0.02 | 0.29 + | 0 | | | | |
| 9. Working Memory | 2.17 | 0.99 | -0.16 | 0.39 * | 0.08 | -0.08 | -0.30 + | -0.08 | 0.11 | 0.11 | | | |
| 10. Attentional Control (Accuracy) | 0.91 | 0.08 | -0.32 * | 0.14 | 0.08 | -0.09 | -0.06 | -0.18 | 0.42 * | 0.13 | 0.32 + | | |
| 11. Attentional Control (RT-ms) | 710.18 | 116.46 | 0.28 + | -0.63 *** | 0.03 | 0.05 | 0.44 ** | 0.40 * | -0.17 | 0.15 | -0.19 | -0.01 | |
| 12. Response Inhibition | 0.85 | 0.08 | 0 | 0.51 *** | 0.16 | 0.02 | -0.27 | -0.16 | 0.07 | -0.22 | 0.34 * | 0.27 | -0.27 |

*Note*. [a] 1 = Boy and 2= Girl. [b] 1 = Chinese Mandarin and 2 = English and Billingual. [c] 1 = 1st generation Chinese American, 2 = 1.5 generation Chinese American and 2 = 2nd generation Chinese American.
+ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2-3

*Unstandardized (B) and Standardized (β) Regression Coefficients with Standard Errors (S.E.) for Models of Scaffolding Strategies.*

| | **Explanation** | | | **Structure** | | | **Directiveness** | | | **Autonomy** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Predictors | B | β | S.E. | B | β | S.E. | B | β | S.E. | B | β | S.E. |
| Child age | **-1.50*** | -.37 | 0.60 | -1.02 | -.16 | 1.07 | **-6.80*** | -.34 | 3.00 | 1.08 | .16 | 1.11 |
| Meeting language | 2.13 | .23 | 1.63 | -3.08 | -.21 | 2.90 | -0.93 | .02 | 8.18 | 1.40 | .09 | 3.03 |
| 1.5 generation | 2.88 | .27 | 1.83 | **7.17*** | .42 | 3.26 | 10.92 | .21 | 9.20 | -4.04 | -.23 | 3.41 |
| 2nd generation | 1.07 | .11 | 1.71 | 3.93 | .25 | 3.05 | **16.66+** | .35 | 8.60 | -4.74 | -.30 | 3.19 |
| Adjusted $R^2$ | | | .23 | | | .06 | | | .17 | | | .00 |
| *F* | | | 3.69* | | | 1.55 | | | 2.90* | | | 1.01 |
| *Df* | | | (4, 32) | | | (4, 32) | | | (4, 32) | | | (4, 32) |

*Note.* + $p < .10$. * $p < .05$.

Table 2-4

*Unstandardized(B) and Standardized (β) Coefficients of Hierarchical Regressions Predicting EF Performances.*

| | **Working Memory** | | | | **Attentional Control (Accuracy)** | | | | **Attentional Control (RT)** | | | | **Response Inhibition** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Predictors | B | β | B | β | B | β | B | β | B | β | B | β | B | β | B | β |
| Step 1: | | | | | | | | | | | | | | | | |
| Child gender | -0.25 | -.14 | -0.13 | -.07 | **-0.07**$^{**}$ | -.51 | **-0.06**$^{*}$ | -.44 | 21.58 | .09 | 9.52 | .04 | - 0.01 | -.05 | -0.01 | -.04 |
| Child age | 0.20 | .21 | 0.13 | .13 | 0.01 | -.17 | -0.01 | -.21 | **-77.95**$^{***}$ | -.68 | **-62.13**$^{***}$ | -.54 | **0.03**$^{**}$ | .44 | 0.03$^{+}$ | .39 |
| $R^2$ | | .08 | | | | .24 | | | | .50 | | | | .21 | | |
| *F* | *F*(2,33)=1.46 | | | | ***F*(2,32)=5.10**$^{*}$ | | | | ***F*(2,32)=16.1**$^{***}$ | | | | ***F*(2,32)=4.20**$^{*}$ | | | |
| Step 2: | | | | | | | | | | | | | | | | |
| Explanation | | | -0.05 | -.23 | | | 0.00 | -.04 | | | 5.60 | .20 | | | 0.00 | -.09 |
| Structure | | | 0.02 | .13 | | | 0.00 | .02 | | | 1.95 | .11 | | | 0.00 | -.10 |
| Directiveness | | | 0.00 | -.02 | | | 0.00 | -.04 | | | 1.38 | .22 | | | 0.00 | .04 |
| Autonomy | | | 0.01 | .06 | | | **0.00**$^{*}$ | .35 | | | -0.84 | -.05 | | | 0.00 | .02 |
| $R^2$ | | | | .14 | | | | .37 | | | | .59 | | | | .23 |
| $\Delta R^2$ | | | | .06 | | | | .13 | | | | .09 | | | | .02 |
| $\Delta F$ | | | | 0.49 | | | | 1.39 | | | | 1.58 | | | | 0.16 |

*Note*. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

# STUDY 3

## Understanding and Supporting Child Self-Regulation: Perspectives of Chinese American Mothers

## Understanding and Supporting Child Self-Regulation: Perspective of Chinese American Mothers

Self-regulation can broadly refer to the ability to take in information, weigh different options and related consequences, and make adaptive decision(s) to achieve goal-related behaviors (McClelland et al., 2015). Decades of research on self-regulation have recognized that self-regulation is a multidimensional construct, and that this umbrella term encompasses cognitive processes such as emotional regulation and engagement, executive functions, and complex behavioral regulations (Blair & Ursache, 2011; Duckworth & Kern, 2011; McClelland et al., 2015). The rapid growth of self-regulation from 3 to 8 years of age, along with the increasing social, behavioral, and cognitive demands during the transition to early elementary school, makes early childhood a critical period for self-regulation development.

Parental beliefs and practices have been demonstrated as important factors promoting or hindering children's self-regulation development. Prior research revealed differences in self-regulation processes and abilities between children of Chinese background and children of European American backgrounds (Lahat et al., 2010; Lan et al., 2011; Roth et al., 2019; Wanless et al., 2011), and have attributed those differences partially to parenting. One place of such parenting discrepancy might be the adults' view of self-regulation. Using a Collectivism-Individualism cultural framework, Trommsdorff (2009) suggested that parents' view of the independent and interdependent self would impact their socialization goals and practices around child self-regulation, which leads to differences in child regulatory outcomes.

Despite the theoretical cultural differences in mothers' perspectives on self-regulation, empirical research has yet to fully examine this topic. Most studies comparing cross-cultural self-regulation development have measured children's abilities using tasks or scales developed in

Western societies (e.g., Heimpel et al., 2018; Lan et al., 2011), which follow a more individualistic definition of self-regulation. Such measures may not fully capture the range of self-regulatory abilities valued by Chinese American parents (McClelland et al., 2015). Moreover, although more studies have recently examined emotional socialization practices of Chinese American parents (e.g., S. H. Chen et al., 2015; S. H. Chen & Zhou, 2019; Curtis et al., 2020), there is still limited knowledge on how they facilitate their children's self-regulation at a cognitive or behavioral level. Therefore, understanding maternal beliefs and practices concerning child self-regulation is vital to providing better support for the enhancement of self-regulatory abilities in Chinese American children.

**Self-Regulation as a Multidimensional Construct**

Self-regulation is a complex construct that involves cognitive, behavioral, temperamental, and socioemotional processes to situate individuals within the environmental context to achieve a particular goal (Blair & Ursache, 2011; McClelland et al., 2015). In the study of cross-cultural differences in self-regulation, researchers have focused on aspects of emotional, cognitive, and behavioral regulation (e.g., S. H. Chen & Zhou, 2019; Cole & Tan, 2007; Sabbagh et al., 2006; Wanless et al., 2011).

Emotion regulation represents children’s ability to appropriately and effectively regulate their emotions (e.g., anxiety, excitement, and sadness) and behaviors under the influence of such emotions (Bridges et al., 2004). Children’s early ability of emotion regulation originates from the regulating of affective and temperament-based reactions to stimuli in the environment in infancy (Calkins & Marcovitch, 2010). As children develop, emotion regulation is suggested to be more automatic and improve with practice so that children are able to manage increasingly complex and stressful environments. Prior research demonstrated that Chinese children rated emotions as

less intense than European American children (Q. Wang, 2003). Further, Grabell et al. (2015) found that Chinese and US children differ in physiological processes underlying emotion regulation.

Executive functions (EF) represent a set of cognitive skills underlying self-regulation, which include attentional flexibility, inhibition control, and working memory (Miyake et al., 2000; Willoughby et al., 2012). Although EF is conceptualized as separable cognitive components, several researchers suggest that EF emerges as a unitary cognitive process in younger children and develops distinct components for older individuals (Miyake et al., 2000). In comparison to children in the U.S., Sabbagh and colleagues (2006) reported that Chinese children scored significantly higher in a range of EF tasks (e.g., day/night and grass/snow Stroop task and DCCS). However, researchers reported that no performance difference was found between adults in two societies (Ellefson et al., 2017).

Lastly, complex behavioral regulation captures more holistic aspects of children's regulatory ability. It emphasizes both the inhibition of a dominant response and the activation of a non-dominant response to co-act with their contextual demands (McClelland et al., 2015). Behavioral regulation not only involves the integration of EF components but also captures consideration of general abilities of goal setting, performance monitoring, and evaluation, as well as motor skill development (McClelland & Cameron, 2012). These complex behavioral skills constitute important parts of school readiness, are connected to early academic performance (McClelland et al., 2014; Trentacosta & Izard, 2007), and even predict children's interpersonal skills (Ponitz et al., 2009). Research on behavioral regulation also found that Asian children showed higher performance than American children on a direct assessment of complex behavioral regulation, the Head-Toes-Knees-Shoulders task (Schmitt et al., 2019; Wanless et al.,

2011). However, this difference was less clear when measured by parent or teacher-report (Lan et al., 2009; Thorell et al., 2013), indicating a potential cultural difference in adults' perception of behavioral regulation.

Understanding mothers' beliefs about self-regulation is crucial for explaining cultural differences in self-regulation development presented above. Mothers' belief and childrearing goals have long been recognized as an important influence in their parenting practice and interaction patterns with children (R. K. Chao, 2000; Diaz et al., 2018). Therefore, mothers' beliefs about self-regulation are likely to play a significant role in determining the type of self-regulatory skills they prioritize, their expectation of child behavior, and their socialization practices related to self-regulation.

**Cultural Differences in Self-Regulation Goals**

Culture represents a socially interactive process of shared activities and shared meanings (Greenfield, Keller, et al., 2003a). The cultural pathway theory of child development suggests cultures use different approaches to achieve universal developmental tasks, in the current case, self-regulatory competence (Greenfield, Keller, et al., 2003a). Mothers from different cultural backgrounds might all recognize self-regulation as an important and universal developmental task for children to perform adaptively in society, while the form and the expression of self-regulation might vary across cultures (Jaramillo et al., 2017; McClelland & Wanless, 2015; Trommsdorff, 2009). Trommsdorff (2009) has proposed that conceptualization and process of self-regulation might differ depending on whether self-regulation is used to achieve one’s own needs and goals (e.g., planning and completing homework on time for school performance), or is directed to adjust one’s goals and behaviors to the goals and expectations of others (e.g., lowering the talking volume because grandpa is sleeping). Trommsdorff also suggested that the

former view of self-regulation might be more emphasized in societies valuing individualism, while the latter might be prevailing in cultures valuing collectivism.

Empirical evidence on Latino American families supports the difference in the conceptualization of self-regulation. For example, a study explored parental beliefs regarding self-regulation among low-income Mexican-American mothers demonstrated similar results (Díaz & McClelland, 2017). The study found that *respect* (an emphasis on obedience and respect for authorities) and *being well educated* (an emphasis on moral upbringing and being a good person) emerged as two key goals for Mexican-American mothers. Although no study has directly explored Chinese American mothers' beliefs on self-regulation, it is possible that most Chinese American mothers share the interdependent view of regulation, considering self-regulation as self-control and inhibition to achieve social harmony and fulfill group goals. However, studies on parenting and social changes has shown significant shifts in mothers' childrearing goals due to changes in mothers' sociodemographic background (Bian et al., 2022) and immigration experience (R. K. Chao, 2000; Cheah et al., 2013), suggesting potential heterogeneity in mothers' perspectives on self-regulation.

**Cultural Differences in Maternal Practices**

In addition to cultural-specific views of self-regulation, maternal practices that are organized around these distinct regulatory goals and are influenced by the larger ecocultural environment and cultural values may be another key mechanism by which alters children’s socialization experiences and developmental outcomes related to self-regulation (Greenfield, Keller, et al., 2003a; Jaramillo et al., 2017). The cross-cultural literature has documented important differences in parenting between Chinese and US parents. For example, in contrast to European American mothers who rated expressive encourage over emotional minimization,

studies with mothers from Hong Kong and Chinese mainland found that Chinese mothers shown no preferences between two kinds of emotional socialization practices (Chan et al., 2009b; Tao et al., 2010). Further, several studies have revealed that Chinese parents displayed more maternal control behaviors than European American parents (e.g., R. K. Chao, 1994; Heimpel et al., 2018; Huang et al., 2017), while the effect of parental control on self-regulation is less clear in Chinese children (Heimpel et al., 2018; Wei et al., 2023; Wong et al., 2018).

Contemporary cultural research has made increased efforts to document parenting practices specific to Chinese culture. One example is the exploration of the traditional Chinese concept of *guan* (training) (R. K. Chao, 1994; F.-M. Chen & Luster, 2002), which involves teaching children socially appropriate or expected behaviors. It has been linked to both authoritative and authoritarian parenting. Building on this, Wu and colleagues (2002) further identified five parenting dimensions that are specific to Chinese societies, including encouragement of modesty, protection, maternal involvement, and directiveness. While previous studies have investigated more general parenting practices and their association with child self-regulation (Heimpel et al., 2018; Olson et al., 2011; Yu et al., 2015), little is known about Chinese American mothers' practices aimed at facilitating children's regulatory ability. Moreover, much of the cultural research on Chinese parenting was conducted over 15 years ago, and more studies are needed to examine shifts in Chinese American mothers' parenting due to economic growth and globalization in US and Chinese societies.

## Current Study

The goal of the current study was to explore Chinese American mothers' understanding and practices related to child self-regulation in daily life. Specifically, we were interested in (a) mothers' beliefs and behavioral expectation about child self-regulation and (b) mothers' parenting

practices to help child meet those regulatory goals. Through semi-structured interviews with first and second generation Chinese American mothers of 4 to 8-year-old children, the study also aimed to explore way in which mothers' personal backgrounds influence their beliefs and practices of child self-regulation.

## Method

### Participants

Participants for the current study was a subsample of Study 2 which included thirty-two Chinese American mothers ($M_{age}$ = 38, $SD$ = 4) who have one child between 4.5 to 8.5 years of age ($M_{age}$ = 6.54, $SD$ = 1.06, $N_{boy}$ = 16). All participant characteristics are presented in Table 3-1. Pseudonyms were randomly generated for each child to protect anonymity. All but one mother reported their ethnicity-race as solely ethnical Chinese (including Chinese, Taiwanese, and Chinese Singaporean) and one mother also self-identified as Chinese-Australian. Twenty-five mothers identified as first generation Chinese American (born outside of U.S.) and 7 mothers as second generation (born in the U.S. with at least one parent born outside of U.S.). All mothers held a 4-year college degree, with 19 mothers also received graduate-level education. When examining educational attainment by immigration status, a similar percentage of first- and second-generation mothers had a graduate degree. In the current study, 15 mothers were interviewed using Mandarin Chinese and 17 were interviewed in English, with English or Chinese words/phrases frequently used intermittently in interviews of both languages.

### Procedure

The study procedure was approved by the University of California, Los Angeles's Institutional Review Board (IRB#21-001989). All participants were recruited from study flyers posted on various social media platforms, including Facebook parenting groups, WeChat groups,

and NextDoor. Study information and flyers were also shared with local Chinese language schools and Mandarin bilingual programs to disseminate with Chinese American families of interests. Participants were recruited as a part of a larger, mixed-methods investigation of parenting and child self-regulation development in Chinese American families.

Mothers who expressed an interest in participating in the study first had to answer four eligibility questions. The inclusion criteria for participants included that they 1) self-identified as Chinese American; 2) had a child between 4.5 to 8 years of age; 3) had access to a private computer or laptop with a keyboard; and 4) were able to conduct Zoom video sessions. Mothers whose families immigrated from other oversea Chinese communities (e.g., Singapore, or Malaysia) and self-identified as Chinese were included. Mixed-ethnicity families from which the father was not Chinese were also included in studies. Mothers who met the criteria were then invited to schedule a virtual meeting using Zoom to complete the mother-child tasks and mother interviews. Details for the mother-child tasks are presented in Study 2. Following the completion of the mother-child tasks, mothers who agreed to participate in the interview were asked to find a private and comfortable places for the interview.

**Semi-Structured Interview**

Mother interviews were guided by a semi-structured interview protocol (see Appendix B) developed based on current research questions and existing literature. Mothers first answered a question about their racial/ethnic identity and two warm-up questions to describe the child's personality and the mother's parenting philosophy broadly. The main interview protocol consisted for three sections. The first focused on mothers' general expectation and related practices to help children meet those expectations. Follow up question were asked to better understand daily mother-child interactions. Next, mothers answered questions about their

understanding of children's self-regulation, observations of the child's self-regulatory abilities, and strategies used to promote children's self-regulation skills. In the last session, mothers answered demographic questions regarding their immigrant experience, generational status, and family background. They also answered questions focusing on perspectives on children's self-regulation that are specific to Chinese/Chinese American, as well as how their parenting were similar or different from earlier generation (mothers' parents). Interviews ended by asking mothers about challenges faced during parenting and any additional information they want to share (e.g., is there anything else you would like to add or that I did not ask that you were expecting me to ask that can help me understand you more as a parent?). During the interview, mothers were also provided with two scenarios involving one child and the mother and were asked what they would do if they were the mother in each scenario. Due to differences in the nature of questions, mothers' responses to scenarios were not included in the current study.

Most of the mothers completed the interview in a private space, although a few had their children nearby or coming in and out of the room. The lead author conducted all interviews over Zoom, in the mothers' preferred language. The mothers were offered the option to turn off the camera if they preferred and were told that they could stop the interview at any point or skip any question if they felt uncomfortable. The interviews lasted between 43 minutes to 1.5 hours. The mothers each received a $30 Amazon gift card to compensate for their time. All interviews, except for four, were transcribed by Sonix, a transcription service available for Chinese and English audio. A subset of four English interviews were auto-transcribed by the built-in service in Zoom. All transcripts were checked and cleaned for accuracy from the original audio recordings by native Chinese and English speakers.

**Research Team**

The research team consisted of three primary coders - the lead author and two advanced undergraduate research assistants with training. The lead author identifies as a Chinese cisgender female who has 7-year experience in conducting research on self-regulation. She was motivated to investigate the beliefs and practices of Chinese American mothers regarding child self-regulation. Having lived in China from birth to college and being a mother of a Chinese American boy during data collection and analysis, her interactions with Chinese mothers and developmental research background informed the analysis of the data. The first undergraduate research assistant is a Chinese cisgender female who lived in China until college. The second undergraduate research assistant is a Singaporean Chinese cisgender female who lived in Singapore until college.

**Analysis**

The data analysis was conducted using reflexive thematic analysis (Braun & Clarke, 2019), which emphasizes the importance of valuing participants' perspectives and allowing the data to inform the analysis. The analysis followed the six phases of reflexive thematic analysis outlined by Braun and Clarke: (1) familiarization, (2) generating codes, (3) constructing themes, (4) revising themes, (5) defining themes, (6) producing the report. The analysis process took place over six months and involved weekly meetings between the primary coders to discuss coding issues and reach consensus on disagreements. The coding process utilized both deductive codes based on prior literature (e.g., R. K. Chao, 1994; Farkas & Grolnick, 2010; McClelland et al., 2015) and inductive codes derived from the data itself. The lead author generated codes and worked collaboratively with two research assistants to finalize the codes. Collated codes and data were then used to create potential themes, which were reviewed, refined using relevant literature and agreed upon by all coders.

## Results

The present study employed mother interviews to address two research questions. The first part of the results comprises five themes that reflect Chinese American mothers' beliefs and expectations about child self-regulation. Subsequently, we answer the question regarding mothers' parenting practices aimed at improving child self-regulation. We summarize the types of practices reported by Chinese American mothers in their daily interactions with the child, and then describe two common themes that emerged from mothers' descriptions of their parenting practices. Throughout the discussion of the themes, we provide supporting quotes from the mothers.

### Mother's Beliefs and Expectations about Self-Regulation

One of the main goals of the study was to investigate mothers' beliefs about children's self-regulation. In the interview, mothers were asked if they have heard of the term self-regulation. Most mothers had heard of the term self-regulation before, and all recognized its importance for children's development. When asked to rate on a 9-point scale, all mothers rated the importance of self-regulation at least 7. Three main themes emerged when mothers described what self-regulation ability entails, and two themes emerged when mothers answered the question regarding their expectations for children's behaviors. In the next section, we first present themes in mothers' beliefs about self-regulation, followed by themes in their behavioral expectations. And last, we present findings on mothers' beliefs and expectations that are linked to child age and gender. The definitions and detailed counts of each theme are presented in Table 3-2.

#### *Emotion as a crucial component of self-regulation*

Emotions are frequently described by researchers as important for self-regulation (Bridges et al., 2004; Calkins & Marcovitch, 2010; McClelland et al., 2015), which was reflected in the account provided by Chinese American mothers. Over half of the mothers mentioned child emotion as a crucial component of self-regulation. Most of these mothers viewed the ability to regulate their emotions, especially negative emotions, (e.g., "not throwing a tantrum") as examples of successful self-regulation. For example, one mother stated, "Self-regulation is the ability to control their emotions and to learn how to not just act on whatever " (Lena, mother of a 5-year-old girl), while another described it as "frustration, tolerance, being able to handle your emotions while you're doing the work" (Cara, mother of a 4.5-year-old girl). Further, Cara also added that children needed to recognize and understand different emotions for them to be able to regulate:

> Other abilities would be to understand, not just to understand the directions, but also to understand what emotion that they're feeling. So the ability to recognize that this is anger, this is fear, this is sadness, this is happiness. So it's recognize that this is how it makes you feel and also how this is how it makes me feel. So the ability to understand will also help them self-regulate as well because it's hard to self-regulate these behaviors or these emotions if we don't understand that. (Cara, mother of a 4.5-year-old girl)

Some mothers did not mention emotions in their initial definition of self-regulation; however, emotion emerged as a common theme when mothers were asked to elaborate. For example, when asked about other skills that are important for child self-regulation, Xally, mother of a 5-year-old boy shared (translated from Chinese),

> Do emotions count? I think in fact positive emotions is helpful for his regulation. For example, I think encouragement is quite important. Because sometimes you want him to

> well-regulate and to finish something. The result usually isn't good if you do not give him positive feedback or if you're forceful or something. Helping him to build a good mood, I think it is still [important]. Emotions can still help him, such that if he has better emotions now, he is more likely listens to your explanations and directions.

Here, Xally describes the intersection between emotion and motivation, and how children might better regulate themselves when becoming motivated. The link between motivation and self-regulation emerged in three other mothers' definitions.

When comparing mothers' beliefs of self-regulation across interview language and immigration status, mothers who had English interviews (76%) were more likely to include reference to emotions than mothers who were interviewed in Chinese (67%). In addition, all of the 2nd generation or higher Chinese American mothers mentioned emotions in contrast to 64% of the 1st generation Chinese mothers interviewed.

When discussing emotional aspect of self-regulation, mothers often highlighted that self-regulation is a set of abilities that is not only important in the early childhood, but also plays a critical role when children enter adulthood and become members of the society. Areas that mothers explained to be related to self-regulation include interpersonal skills, social emotional wellbeing, and mental health. Most of the mothers also acknowledged that children of 4-8 years old are still learning the skills to regulate their emotions, which requires "help", "effort", and "discipline and regulation" from parents. Some mothers (n = 6), particularly mothers with immigrant parents, further highlighted this emotional focus of children being one of the key shifts in parenting focus between different generations. Tali, mother of a 6-year-old girl, described the difference in her response,

> I mean, I know a lot of children of immigrants like the immigrant parents having come to the US, it's like they're just trying to survive. They're just trying to provide for their families. They just want their kids to get a good education and get good jobs. And so all of that. The emotional stuff was like not even a back burner. It was just like in the trash can. Like nobody consider that it's just like you do what you need to do to succeed. And and like, success is obviously like, get a high paying salary and start a family and marry well and whatever … now that I know a lot more, I do feel like it's incredibly important not just to help people be functional members of society, but just to be happier individuals overall.

***Self-Control and Inhibition***

Reference to children's ability to regulate negative emotions was frequently paired with their ability to control and inhibit their impulses behaviorally (n =12). For instance, mothers described self-regulation at this age as "if I'm upset, I'm not going to throw things. I'm not going to hit people" (Tali, mother of a 6-year-old girl), or inability to self-regulate as "got really upset and she started kicking the chair and screaming and yelling because her favorite song got skipped over" (Lena, mother of a 5-year-old girl). Some mothers defined self-regulation as equivalent to self-control and emphasized on the inhibition of emotions, behaviors, or even desires (e.g., snacks or TVs). For example, Jazia, mother of a 7-year-old boy, used self-control and self-regulation interchangeably. When describing her requirements for self-regulation, she shared (translated from Chinese),

> I think he has a lot of desires, for example, he wants to watch TV. Or when he comes back from school, he wants to watch TV when he doesn't finish his homework. It's children's nature to play. He wants to play games. So before he finishes his homework, he

> is not allowed to play those. I think he should be able to control that. So there is the control of their own desire to play. And then he has a lot needs and he has a lot of wants. When he goes to the supermarket he wants everything. I think it is not possible to get all he wants, he also need to have this and learn trade-offs. (Jazia, mother of a 7-year-old boy)

Here, the mother's response captures the intersection between emotional and behavioral aspects of self-regulation, the ability to delay gratification. Some mothers also described this ability using words such as "being patient" and "wait". In addition, mothers' emphasis on self-control and inhibition might also reflect their collectivistic socialization goals. That is, mothers viewed self-regulation as a tool that enables children to inhibit inappropriate behaviors based on the rules of social interaction, to adhere to social norms, and to fit into larger group or environment that the child was in (Jaramillo et al., 2017; Trommsdorff, 2009). This is evident in June's (mother of a 5-year-old girl) response,

> I think the part of self-regulation is, I guess like being able to control yourself. If, like so like being if you have a, what's the word? I'm losing my words today. Like an impulse. Being able to control your impulses and sort of understanding what's accepted social behavior. And being sort of like, once you know what being able to control yourself, you're like physically control yourself to do that.

In her answer, June emphasized the important of control in self-regulation and highlighted "accepted social behavior" to be the child's regulatory goals. Jill, who is a mother of a 7-year-old boy, also discussed that the child needs to "abide by the roles of the society and be socialized". However, when asked to rate the importance of self-regulation, Jill mentioned (translated from Chinese),

> But I still need to reserve a point so he can be himself, I guess. Because sometimes it's just too difficult to be self [regulated], and I can't do it myself. I teach in a university, and I also sometimes start doing other things when my students are reporting. ...It is very difficult. But at least he has, at least one point out of nine to keep his own will, to be true to himself, and to be confident. [I think] it is better [that way].

Here, Jill perceived regulation as the opposite of the freedom to be oneself. Similar to the theme of emotional regulation, the mother's responses also conveyed that behavioral regulation is an advanced skill and is still developing in children at this age, which is evidenced in other four mothers' descriptions. Self-control and inhibition were similarly presented in both Chinese and English interviews and has a higher representation among second generation or higher Chinese American mothers (71%) than in first generation mothers (52%).

***Regulation of Cognitive Processes***

A smaller group of mothers (n=6) captured some cognitive processes required for children to self-regulate in their description. However, this theme was only presented among interviews conducted in Chinese and with first-generation Chinese American mothers. Among those, five mothers discussed children's ability to plan different activities, rank priorities, and set goals while defining self-regulation. For instance, when describing her understanding Ceola, mother of a 7-year-old girl, said (Translated from Chinese),

> Um, I think it sounds like the degree to which a person matures, because the more she matures, the better she will self-regulate. Her planning and her uh ability to execute... Uh her execution and her final expectation of the outcome or the ability to plan or whatever, is definitely getting better and better.

Ceola then continued to provide examples of good self-regulation in the child, including (translated from Chinese),

> And for example, courses she likes to take..... I enrolled her in, in addition to Chinese uh Chinese classes, one online course for painting, and one online course for music. Then she herself will decide whether she likes it or not, or whether she wants to continue taking classes. Or the class for this week, for example, if she is sick, should she postpone it or not. She is able to arrange and plan these quite well.

Although still valuing school performance and teacher feedback, here Ceola's response reflects a different set of regulatory goals for the child that center around the child's perspectives and preferences. For children to successfully plan, execute, and achieve their goals, they are expected to not only inhibit inappropriate responses, but also up-regulate to get themselves motivated and engage in meaningful activities (Trommsdorff, 2009). Another form of up-regulating involves children setting higher standard for themselves (e.g., "The [high] expectation for herself, I think she does not have any expectations of herself. That is, basically [she] won't say that I am particularly motivated to improve anything..." -- Fawn, mother of a 6-year-old girl), which was mentioned by two mothers. Further, children's attentional skills were mentioned by two mothers, in that self-regulation can also mean "being focused" and quickly re-directing after distractions.

***Expecting children to be polite, respecting, and following rules***

Mothers were asked to provide their expectations for their children's behavior in addition to defining and discussing the importance of self-regulation. Over half of the mothers (n = 20) mentioned that they expected their children to be polite and respectful to others, particularly towards older family members. For instance, Lena, mother of a 5-year-old girl, mentioned,

> Being respectful is very important. I think you mentioned our cultural upbringing, you know, be respectful and listening to elders and teachers and things is very important. And I think that's very important to me. I mean, we have friends and family members who the kids are it's just really hard to, like take them out. It was hard to get them to do anything. If they don't have the behavior or the ability to understand instructions, or default to to listen, it's really hard to teach all the other skills. So that's why I think it's really important that that's one of the things that we do try to work on.

Here, Lena illustrates how her cultural background as a Chinese contributed to this value of respect. This emphasis of respecting elders and authority figures has been evident in cultures that value collectivism and filial piety, which has also been described as a key socialization goal among Chinese American and Latinx American mothers (R. K. Chao, 1994; Díaz & McClelland, 2017).

Further, Lena's response also highlighted her expectations for the child to follow instructions from authorities (e.g., parents, grandparents, and teachers). The same expectation for the child to follow and be obedient was evidence in six other mothers' responses that used the exact phrase "listen to" or "*ting hua*" (听话, which directly translate to "listening to words") and two others' that referred to as "following directions" or "well-behaved". Although this expectation seems consistent with what was identified in the group of Chinese American mothers in R. K. Chao (2000), the mothers in the current study focused on the child's willingness and ability to abide by the rules of conduct, instead of the unquestionable obedience to authority figures.

In addition, this expectation was more frequently mentioned during interviews conducted in English (82%), and among mothers of the second generation or higher (86%). Research has

shown that the immigration experience is often associated with an increase in individualistic orientations, but the changes in collectivistic cultural values are slower and less clear-cut (Ayçiçegi-Dinn & Caldwell-Harris, 2011; Rosenthal et al., 1989). This finding could also be attributed to a focus of maintaining Chinese culture amongst mothers who had been in the US for longer periods of time (R. K. Chao, 2000). Such mothers were also more likely to associate “Chinese culture and "being respectful" in their responses.

***Importance of Independence, or Self-Reliance***

Eighteen mothers stressed the importance of independence in children. When elaborating on what independence meant to them, 13 mothers described the child's ability to take care of themselves, learning grooming skills, and be responsible of house chores. For instance, Mirra, mother of a 7.5-year-old boy, shared,

> ... help children become independent and build their confidence in their work and in their everyday life tasks. Just building that independence. For example. I was making peanut butter jelly sandwiches for him at the beginning of summer, but now he's making his own and getting his own ingredients. And he feels really proud of that he's able to do that.

The life skills described by mothers involve the idea of self-reliance, instead of the idea of individuality or freedom among European American mothers (R. K. Chao, 2000), Some mothers also described that taking care of oneself would be a task for children of this age in particular and indicated a potential shift in their expectations of independence as children grow up.

Seven mothers' responses provided counternarratives to the explanation of independence above. For instance, Xally, mother of a 5-year-old boy, mentioned (translated from Chinese),

> I hope he can be brave enough to express his own views without having to cater to others. That is what I mean by independence more than anything else. Because other aspects of

> behaviors, like dressing himself, or doing things on his own, I think that's something that will come to him slowly and naturally as he gets older … I hope he can be more brave and more outgoing.

Similar to Xally's narrative of being brave, Joie, the mother of a 7-year-old girl, mentioned that she expecting the child to be " stronger", "have independence of mind", and be "less sensitive" to incidences in the girl's friendship. Three mothers linked independence with the child's ability to plan activities in reasonable way, while two described children's independence as "live your life" and physical separation from the parents. Further, two mothers described independences being that the child would make his/her decisions and owing up to the decisions. For instance, Micheal, mother of an 8-year-old boy, said,

> So he has chores around the house. And for those chores, he gets money, and he can spend that money anyway. I'll try and tell him, look, if you want to spend all of your money at one, go on, you know, ice cream or whatever, then you can do that. But just think about, what is it that you really want? So there are some things that he has to make his own choices.

These counternarratives illustrated the heterogeneity in mothers' understanding and expectations of children's independence.

***Gender Differences in Regulatory Expectations***

Previous research has debated on the potential gender differences in the development of child self-regulation. Some studies have reported the existence of gender disparities (Matthews et al., 2009; Størksen et al., 2015), while others have not (Gestsdottir et al., 2014). In the current study, only 7 mothers expressed distinct expectations regarding self-regulation that are explicitly linked with their children's gender. Among these, five mothers in Chinese interviews expressed

gendered regulatory expectations, while only 2 mothers in English interviews did so. Two mothers mentioned emotionally related expectation for their daughters, perceiving girls as more sensitive to their surroundings and adopting gentler parenting approaches toward them. Additionally, five mothers described boys as generally more prone to distraction and possessing lesser attentional skills. For instance, Caidy, mother of a 7-year-old boy, said,

> I mean, it's so typical of boys to be distracted. So, I mean, sometimes I feel like I'm talking to the wall, like I'm not being heard. So I have to repeat myself.

Here the mother described the lack of reciprocal responses from the child and correlated it with the child's attentional skills. This gender disparity is consisted with finding suggesting that girls demonstrated superior self-regulation skills than boys during early childhood (Matthews et al., 2009; Wanless et al., 2013). However, this difference was not observed when assessing children's EF ability across genders in either Study 1 or Study 2, indicating that mothers' gender-related expectations might be influenced by social norms rather than the actual abilities of the child.

***Summary***

These findings revealed that Chinese mothers' understanding involves emotional, behavioral, and cognitive components of self-regulation. Overall, a significant number of mothers defined self-regulation as the ability to control negative emotions and inhibit inappropriate behaviors to comply with social norms, reflecting interdependent regulatory goals (Jaramillo et al., 2017; Trommsdorff, 2009). Still, a subset of mothers emphasized independent regulatory goals focused on the child's ability to plan and achieve individual goals (Trommsdorff, 2009), and highlighted the cognitive skills associated with those goals. In contrast to prior research and theory suggesting that immigration and acculturation experiences may lead

to more individualistic childrearing goals (R. K. Chao, 2000; Huang et al., 2017), mothers holding this view of self-regulation in the current study were all first-generation Chinese American mothers with less experience living in the US.

This could be explained by the high socioeconomic status and education levels of the first-generation mothers in the study, as most come from middle-class families in mainland China and hold doctorate degrees. The rapid economic and social changes in China, as well as the prevalence of Westernized educational concepts among modern Chinese societies, might also contribute to the growth of more individualist view of self-regulation among Chinese mothers (Bian et al., 2022; Zhou et al., 2018). In addition, the mothers reported expecting their children to be respectful, compliance, and self-reliance, consistent with Chinese-specific childrearing beliefs reported in R. K. Chao (2000). However, highly educated Chinese American mothers also increasingly endorse children's individuality of having their own thoughts and eventual separation from their parents.

## Maternal Practices for Child Self-Regulation

Mothers were asked about how they helped the child to become self-regulated, as well as their strategies for addressing their child's misbehaviors. Mothers' responses can be summarized into seven categories: 1) Providing reasons, encouragement, and explanation; 2) Cultivating a supportive environment with role models; 3) Coaching and suggesting strategies; 4) Rewarding desirable behaviors; 5) Punishing inappropriate behaviors; 6) Time-out; and 7) Verbal reprimands. Definition of each practice and the exact count are presented in Table 3-2. Following this, two overarching themes emerged in the mothers' responses are explored.

### *Types of Practices Used by Chinese American Mothers*

**Providing Reasons, Encouragement, and Explanation.** Providing reasons, encouragement, and explanation were the only practice that was mentioned by all of the mothers. Mothers referred to this practice as frequently "talking through" emotions or feelings with the child, as well as explaining why certain behaviors are appropriate or inappropriate. For example, Lauren talked about how she helped her 6-year-old daughter acknowledge and regulate emotions,

> I think that's one of the things that we have done before to help her when she does get upset and then think like, you know, she's afraid or scared or sad, I think we usually talk about things differently. It depends on what it is. But we definitely tell her like. You know, it's okay to be sad or so you know, or you don't need to be afraid because it's not real or things like that. So it's usually we just try to talk her through her and help her through that thought process so that if it does happen again, maybe she can do that whole.

Some mothers also described that they would use books, cartoons, or other media to create the opportunity to discuss proper behaviors with the child (e.g., "we read a lot of books and stuff and we talk about it through things and I could say, 'Well, do you think this is a good choice?' Like make good choices. I found that a lot. 'Is this a good choice? Is that a good choice?' Think about it. -- Aaliyah, mother of an 8-year-old boy), or try emphasizing with the child using their own experience, such as:

> I would first tell her that if I were her age, what would I do if I were to experience such things? Like her, I would first identify with her, that I would identify with her reaction. For example, if she became sad, or if she became upset, or if she became angry, I would say that I would first identify with her, and I would say that I was like that at that stage of

your life, and you might have done better than I did. (Monira, mother of a 6.5-year-old girl)

**Cultivating a Supportive Environment with Role Models.** Another commonly mentioned maternal practice involves cultivating a supportive environment for the child with parents being role models of self-regulation. Included were mothers' efforts to install daily routines to make the child's life more predictable. For example,

> I think one of the things we've always done well in our family is that we have a strict routine. I know some families just don't care, the kids can do whatever they want when they want. But in our house we have a more regular time set from the time we get up in the morning to the time we go to bed at night. (Sellena, mother of a 6-year-old boy)

This practice also reflects some mothers' belief that children learn to behave by observing and interacting with their surrounding environment, as well as individuals within it. This is evident in Jazia's (mother of a 7-year-old boy) response, in which she described the child as " a piece of white paper" who could only "learn from the outside environment" and "learn from others". Further, some mothers (n=11) emphasized the importance of parents being role models for the child by behaving towards those expectations. For instance, Lauren, mother of a 6-year-old girl, mentioned that,

> Well, my philosophy it's, I teach them by orally and I show them ... It's a demonstration. It's an example that they learn all for society, even for adult, we wait too, we wait in line too, we take turn too, we share too. That little mind getting the expression on oh mom does the same thing too when she, oh now that things be what she taught me it's what she's doing right now.

Here, Lauren also highlighted the importance of pairing role modeling with verbal explanation, in order to "give her a little heads up what she already has the foundation of it". Mothers also pointed out that one aspect of being a role model was willing to admit mistakes and apologize to the child. For instance, Lena, mother of a 5-year-old girl, mentioned,

> So I think one way of teaching her about self-regulation is just showing her that I mess it up, too, and I'm going to try to do better at it … One of the reasons why I know that I mess up with this is that with my older kids, I can see some of the behaviors that they [had are] that I show them. I can see them doing it to their younger siblings. So I know I do this. And so with her, because I have admit that I did, I messed up, I did this wrong, this is how I should have done it, she does that to me, too. She'll come up to me when she threw a tantrum or something and she'll tell me, "I didn't. I'm sorry I lost my temper. I'm sorry I got mad at you. Can we be friends again?"

This concept of social learning has been found more prevalent in societies values collectivism (Mejía-Arauz et al., 2005). In fact, researchers have argued to include practices such as changing environment to support child success (e.g., routines) and demonstration into a more fluid interpretation of scaffolding as non-verbal elements (Rogoff, 1990).

**Coaching and Suggesting Strategies.** This includes helping the child figure out challenging situations, breaking down problems, and offering strategic suggestions. This would involve mothers helping the child to regulate both emotionally and behaviorally. For example, Lena, mother of a 5-year-old girl, explained how she taught self-regulation to the child,

> I try to explain to her this is not the way that you do it, and there's a better way to do it, because I can't understand you when you're screaming and it's not my fault that the song got skipped over, but if you scream like this, you're not going to get what you want. And

> I consciously try to make it an effort to not give in to these behaviors, or maybe ignore it sometimes too. But I do try to tell her, "Well, let's try this next time." And I tell her to have it demonstrate it and I try to tell her to copy it. So, for example, you can try asking Mommy nicely, "Mommy, can you please go back to that song?" And have her say that as well. So that's even though the moment is over, we still try to practice that.

In addition to coaching acceptable behaviors, Lena also highlights in her response that she would deliberately provide opportunities, or even reconstruct a past scenario, for the child to practice preferred behaviors or strategies. The provision of opportunities to practice was merged in three other mothers' responses. Some mothers also mentioned strategies they have suggested for the child to do better attentional regulation (e.g., " I've asked him to not have anything around him to distract him. So, put your crayons away" -- Emmy, mother of a 5-year-old boy), or planning daily activities (e.g., creating to-do lists with the child).

**Rewarding Desirable Behaviors.** Rewarding desirable behaviors was also a commonly used practices among over half of the Chinese American mothers in the study, which includes toys, snacks, extra screen time, and play dates. For example, Catina, mother of a 7-year-old girl, mentioned,

> Yeah, I have sticker charts. I have candy rewards. I give her like if you finish it before I come home, I'll take you to the park type of thing. Sometimes it works. It doesn't work all the time, you know, like, oh, she gets candy all the time.

Some mothers also mentioned that they have established a more structured rewarding system at home that the child could earn points by performing household chores, finishing extra work assigned by parents (e.g., reading/math worksheet, and piano practice), and meeting expectations. And when the child has earned enough, they could use the points in exchange for

money or rewards. However, similar to what Catina indicated in her responses, three other mothers expressed the frustration with the rewarding practices in their responses. They further attributed this lack of effectiveness to "[the child] got too many rewards, and then lost interests of them" (Jill, mother of an 8-year-old boy).

**Punishing Inappropriate Behaviors**. Relatedly, Jill said that canceling screen time was the only effective strategy to deal with misbehaviors of her 8-year-old son. She mentioned (translated from Chinese),

> I later found out that it was useless to talk to him, so it was better to just let him have a week without watching TV or playing video games. .....For example, talking to Mom and Dad with bad manner, no TV for a week. Not doing his homework, no computer for a week. So now he has been punished with no TV or computer games until December (Interview conducted in mid-October).

Like Jill, 18 other mothers reported introducing some kinds of "consequences" in their parenting practices, in particular when dealing with challenge situations or child misbehaviors. While none reported using physical or corporal punishment, mothers implemented punishment in forms of removing something the child desires, such as toys, TV time, or playdates. Some mothers also mentioned that they would first provide oral warnings (e.g., "1, 2, 3, stop" -- Joie, mother of a 7-year-old girl) before any punishment being enforced. This suggests that mothers have some consistent procedures in place when facing child misbehaviors, making their punishing behaviors to some degree predictable to the child.

**Time Out.** Time out is another practice used by over half of the mothers when facing child negative emotions or behavioral control issues. However, their approach to time-out did not entirely align with the traditional notion of leaving the child unattended in a secluded place

without any interactions. In fact, some mothers explicit mentioned that what they practiced was not time out, but rather "time in a cool down place versus a punishment" (Cara, mother of a 5-year-old girl) or "taking breaks" (Tali, mother of a 6-year-old girl). This highlights the reasoning behind the use of time-out being that the child is not able to think logically during moments of heightened emotions. Therefore, time-out also serves as way for mothers to allow children to experience and express their negative emotions, rather than repressing them. As Amanda, mother of an 8-year-old girl, put it,

> Yes, I would tell them, we will come, we'll talk when you come down. So I will leave them alone to cry. And then when they stop crying, are you feeling better? Can we talk now? If they say no, I'll say, okay, let's best wait then. If until they're ready, then we'll talk.

Similar to what Amenda mentioned, all 19 mothers indicated that they would often pair time-out practices with explanations and reasoning afterward, for example, asking the child to "think about what you should have been doing and why you didn't do it that way" (Emmy, mother of a 5-year-old boy).

**Verbal Reprimands** About one third of the mothers also mentioned the use of verbal hostility in the interview, which includes exploding in anger and yelling to the child when child misbehaved. For example, Ceola, mother of a 7-year-old girl, discussed (translated from Chinese),

> But of course there were times when I would melt down myself. Because there are times when ... I'm basically the only one with her and her sister for the whole summer. And then there would be times when it was very tiring, very annoying and definitely there were just times when she was having a meltdown and she pissed me off as well. And I

> would just kind of overpower her with uh uh my anger, and that definitely happened as well... I don't think it is a good way of handling it, but I also don't want to change or suppress myself completely because of being a parent.

Here, Ceola reflects on her own emotion-regulation struggles when discussing the level of verbal hostility in her parenting, which was also evident in many mothers' responses. In addition, while being aware of potential negative impacts of verbal hostility, Ceola and other three mothers expressed the importance of keeping their individuality despite of the maternal role. This is in contrast to more traditional Chinese parenting views that emphasize the complete devotion and sacrifice for the child (R. K. Chao, 1994, 1995). In addition, a few Chinese mothers mentioned the use of a milder version of negative emotional cues, such as "a glance" or "raising my voice", as reminders for children's inappropriate behaviors.

Six mothers also reported using verbal threats as a way to discipline, that they would claim to take away something the child desired but not actually do it. Jazia, mother of a 7-year-old boy, provide one example of such practice (translated from Chinese),

> Yeah, I will mostly threat. You know, if you do something, I won't do something. Or if you do something, I'm going to do something, it's just more of a threat, because we're not very good at teaching our kids, and then that's the one that feels like it's working.

When the researcher followed up by asking if they did take the Pokemon card or cancel something the child likes to do, Jazia answered,

> Mostly verbally. Often when his dad got very angry, he would say to throw his iPad away. And then, he would just say it every time, but never throw it away. So then, the child would know. He would also ask him and say you wouldn't do that, right?

***Thematic Analysis***

In addition to summarizing different practices mothers use to facilitate child self-regulation, the data were also analyzed to generate overarching themes about Chinese American mothers' parenting. These are now presented. The theme names, definitions, and example quotes for each theme are presented in Table 3-3.

**Theme 1: Offering Choices and Autonomy within Boundaries.** During the interview, most mothers indicated that they are responsible of setting rules and standards around children's behaviors, which were described as "boundaries", "setting parameters", "bottom lines", or "structure". For instance, Michael, mother of an 8-year-old boy, described her practices as,

> That I think you are a parent you are responsible, right, for teaching, giving the children the tools, the ways that they should think about and set the expectations. A child, by its very nature of being a child, doesn't have that. They've got total freedom. They are unfettered, they don't have boundaries. And so you as a parent are responsible for implementing what those boundaries should be and for explaining the reasons for those boundaries.

Michael's response also highlights her beliefs about the child being unfettered and unmature, which necessitates the need of parental guidance and regulation. This view was evidenced in other mothers' responses, such as using the metaphor that describing the child as "a piece of white paper". The idea of that young children are incapable of understanding and making best decisions was thought to be associated with Chinese parents' concept of *guan* (R. K. Chao, 1994; Wu et al., 2002). Besides verbally explaining what those boundaries are, four mothers described the use of punishment, time-out, and verbal hostility as ways to communicate their boundaries to the child. As Yasha, mother of an 8-year-old boy, said (translated from Chinese),

> I think self-regulation is something that, in the early stages of a child's life, it's up to us adults to observe, reward, punish to provide [boundaries]. Otherwise he is not aware of it. For example, if go out to play in the middle of doing homework, there are consequences. He thinks this does not matter, I am just tired, I want to play or I just go to play a round of my toys. I think it all depends on our observation. By giving him certain rewards and punishments, he can slowly improve.

Similar to Yasha, one other mother pointed out that children learn from external regulation or co-regulation with parents and then transition to self-regulation as they develop (Bernier et al., 2010), which could be linked to mothers' emphasis on setting boundaries for the child. Several mothers with more than one child also reported adjusting levels of structure based on individual child's temperament or ability (e.g., "so it's different for every kid, I didn't always have these rules, but I have more mainly to help with my second one" – Lena, mother of three daughters), indicating the flexibility and a child-centered approach in her parenting.

Although most of the mothers took the ownership of setting boundaries for the child, they also mentioned ways in which they provided children choices and rooms for negotiations, so that children can still feel a sense of autonomy (e.g., "He's able to choose. We have certain times for screen time. He's able to choose what he wants to watch. We then set parameters, he is able to and has been doing this for a long time, like choose what he wants to wear to school." --Michael, mother of an 8-year-old boy). It is worth noting that domains in which children can have choices are often related to their daily living, such as food, clothing, activities, or household chores. Thus, granting children autonomy in domains related to life skills could also be linked to Chinese mothers' idea of independence discussed above and their expectation for children to become self-

reliance. Centered around this bordered autonomy, Lena, mother of a 5-year-old, explicitly discussed how her parenting is different from controlling,

> I don't think I'm quite as controlling as she (Amy Chua) is simply because I don't have the energy or the time. I work full time. I give expectations. I help them create some structure. And but I don't think that I control it that much. I try to give them some independence ... So I like to think that I'm not as controlling because I negotiate with them. I do have stuff that I expect them to do, but I also try to discuss with them, "Okay, this is this is what we need to for the house to function well. And these are the things that we can do together."

On the other hand, three mothers reported intervening less and used mainly natural consequences to guide children's behaviors. For instance, when discussing her approach to deal with distraction during homework time, Xally, mother of a 5-year-old boy, shared (translated from Chinese),

> I will first remind him. I would tell him that this is your homework and you have to do it. But I certainly will not intervene, or to help him finish. If he really just don't want to do it, I will leave it alone.... If he feels that he can take the consequences of not doing homework every time, and he is still very happy about it, then I'm OK as well. But usually the teacher will criticize and he will have peer pressure [to do it].

**Theme 2: Shifting Practices from Prior Generations.** When discussing parenting practices, several mothers reflected on how they were "raised differently" and how their approach to parenting was shaped by unfavorable childhood experiences. Indeed, all mothers identified aspects of their parenting that were different from their own parents. This includes themes discussed above regarding the abandon of corporal punishment (e.g., "Corporal

punishment was very much part of my upbringing, and I don't feel that I want to take that on and share that with my children" -- Michael, mother of an 8-year-old boy), increased autonomy for the child (e.g., "You don't speak about, just do what you're told. I disagree with that" -- Aaliyah, mother of an 8-year-old boy), and more focuses on the socio-emotional wellbeing in children. This is consistent with prior studies in mainland China demonstrating more authoritative practices and increased attention to socio-emotional wellbeing among younger generations of Chinese mothers (Bian et al., 2022).

Relating to the lack of autonomy growing up, some mothers identified the use of extensive explanation as a key shift from the prior generation. For example, Emmy (mother of a 5-year-old boy) compared her childhood experience with her current practice,

> So when I was raised, there was just a lot of things I was told not to do. So things that you shouldn't do and things that you should do for like, actually, like parenting of like explaining why you shouldn't do anything or kind of helping you understand the situation more like none of those things happened when I was growing up. It was just very, you know, I'm the adult, I'm the parent, you just do this. And so all of those kind of things, I'm trying to take that in and make it a different experience for my children.

Here, what Emmy described aligns with the directiveness dimension involved in Chinese parenting practices (Wu et al., 2002), which was also sometime portrayed as another aspect of authoritarian parenting (R. K. Chao, 1994). Although the use of explanation for directions and rules has been documented in R. K. Chao (1995), mothers' responses indicated that the amount and the content of reasoning and explanation might have increased significantly.

Further, some mothers also discussed their parenting differences as providing more guidance and structure for the child, because their parents were too busy "making money for the family". For instance, Lena pointed out the differences between her and her parents,

> So they had expectations, but they relied on me to meet those expectations. So they weren't structured at all and they weren't controlling at all. They just said, "This is your end point. Figure out how to get there." … but for me, I think because I had to figure out how to do all of these things, I figured, I don't know, maybe I never even thought about that I did this, but maybe because I want my kids to have easier time, I create these. It took all my life to learn all these ways to organize and to outline and do all of these things, so I want my kids to have those skills way earlier than I had. (Lena, mother of a 5-year-old girl)

This was also evidence in several other mothers' (both first- and second-generation Chinese American) responses, indicating that certain level of structure could be beneficial to the child both behaviorally and emotionally (e.g., "[I] trying to, you know, be involved in all aspects. So that he feels that I care, you know, because I always grew up feeling oh, my parents don't care" -- Judy, mother of a 6-year-old boy). Some mothers also described their parents' practices as "less mindful", while themselves have more "resources" and "energy" in parenting. In contrast to the stereotypical view of all Chinese parents being dominant and controlling, this finding is consistent with some prior studies showing high levels of both authoritarian and permissive parenting existed among Chinese families (Yang & Zhao, 2020). Further, early research has also found lower parental involvement in Chinese immigrant parents than European American parents (R. Chao & Kanatsu, 2008; Sui-Chu & Willms, 1996). Thus, mothers' shifts toward more

guidance and structure might represent an increased level of maternal involvement among Chinese American mothers.

### *Summary*

The present study revealed that Chinese American mothers employed a variety of parenting practices to promote their children's self-regulation abilities, with variations observed depending on the domain of behavior (e.g., daily life, interpersonal, or school-related), as well as the child's regulatory ability perceived by the mother. These practices included providing explanations and reasoning for rules and behaviors, creating supportive environments, and providing direct coaching to help children meet expectations, as well as establishing maternal authority to set rules and expectations. These elements align with the components of maternal structure proposed by Farkas & Grolnick (2010), indicating high levels of maternal structure use among Chinese American mothers. In addition, mothers also reported the use of controlling behaviors (e.g., punishment and verbal hostility) mainly to discipline and guide children away from misbehaviors. This is consistent with prior research showing that Chinese mothers' higher endorsement of the concept of *guan* was related to both authoritative and authoritarian parenting practices (Chan et al., 2009a; F.-M. Chen & Luster, 2002). Findings from the thematic analysis further confirmed the direction of generational changes in Chinese American mothers parenting toward more individualized and horizontal approaches, including increased verbal communication, autonomy granting, and practices to promote the child's own ability and well-being (Bian et al., 2022; Cheah et al., 2013; Zhou et al., 2018).

## Discussion

The current study explored Chinese American mothers' beliefs, expectations and related parenting practices specifically about children's self-regulation abilities, which have been

understudied to date. Our findings suggest that Chinese American mothers primarily focus on the emotional and behavioral dimensions of self-regulation, while they were less aware of the cognitive processes involved in self-regulation. As a result, parent educational programs or interventions targeting the important cognitive skills for children to self-regulate (e.g., cognitive flexibility, working memory) could be effective means of promoting self-regulation development in Chinese American children. Our results also provide evidence that Chinese American mothers prioritize children's self-control and inhibition to meet the regulatory goals of others or social norms, which aligns with a collectivistic/interdependent view of self-regulation (Trommsdorff, 2009). This belief about self-regulation may partially account for Chinese children's higher performances on self-regulation measures that rely heavily on inhibitory skills (e.g., HTKS task; Wanless et al., 2011).

Moreover, while Chinese American mothers engaged in a variety of practices to promote self-regulation skills, the study found that most mothers used both structuring behaviors that provide guidance and regulation for the child, as well as some controlling behaviors that are more coercive and hostile. Further, mothers' discourse about children's abilities and the development of child regulatory skills is consistent with Chinese parenting concept of *guan* (R. K. Chao, 1994), which emphasizes the role of parents in teaching and cultivating children in expected behaviors. That is, mothers believed that a moderate level of maternal structure and control was beneficial for their children's development. These findings support the evidence from previous studies, demonstrating that Chinese American mothers endorse elements of parenting from both Chinese and US cultures, and attempt to gain a balance between supporting child autonomy for independent development and maintain traditional cultural values of parental authority, respect, and relational harmony (Chan et al., 2009a).

**Limitation and Future Directions**

One limitation of the current study is that the sample only included Chinese American mothers with very high levels of education and had limited number of Chinese American mothers of second generation or higher. It is possible that low-income Chinese American mothers or those with higher levels of acculturation to the US hold different beliefs and practices about child self-regulation. Indeed, previous research has shown that Chinese American parents from lower SES families displayed less emotional talks with their children than those of higher SES, which might be related to difference in children's emotional self-regulation (Curtis et al., 2020). More research is warranted to investigate potential similarities or differences in beliefs and practices about children's self-regulation among mothers with diverse backgrounds. Furthermore, it should be noted that mothers' generational status was partially confounded with their place of origin, with a significant proportion of 1$^{st}$-generation mothers originating from mainland China and the majority of 2$^{nd}$ – gen mothers originating from Taiwan. While sharing a lot commonality in Chinese culture values, research has started to unveil substantial differences in both parenting and EF development among different Chinese communities (Pomerantz & Wang, 2009; Wanless et al., 2013). Thus, conducting cross-cutting analyses with a more diverse sample with Chinese American parents is crucial to disentangle the influence of mother's generational status from other demographic variables.

Moreover, this study only focused on mothers' perspective and did not include the viewpoints of fathers or other caregivers in the household. Although limited research has examined the father's impacts in child behavioral and cognitive regulation, an increasing body of research has recognized the significant role of fathers in child emotional regulation (e.g., Hertz et al., 2019; McElwain et al., 2007) and suggests that father might engage in different parenting

practices than mothers (Han et al., 2015; Ren et al., 2020; Xie & Li, 2019). In societies value collectivism and familism, childrearing is often considered a group effort and the grandparents' involvement in children's socialization process is common in many Chinese American families (X. Wang et al., 2022; Zhou et al., 2018). It would be beneficial for future studies to investigate the perspectives from other caregivers in the child's life to address this limitation. Additionally, research on parental structure has indicated that the consistency in rules and guidance plays an important role in promoting positive child outcomes (Farkas & Grolnick, 2010). Thus, future studies should also investigate the potential conflicts in values among multiple caregivers in Chinese American households, as well as how these conflicts may affect the consistency of guidance and discipline practices for the child. This would provide a more comprehensive understanding of children's experiences in the home context.

**Conclusion**

In conclusion, the present study addressed the underexplored topic of Chinese American mothers' beliefs and parenting practices regarding children's self-regulation abilities. The study has revealed a complex picture of parenting perceptions among Chinese American mothers, highlighting their endorsement of both collectivistic and individualistic regulatory goals. Additionally, the study has shed light on the heterogeneity among mothers' practices, providing insights into the transformations Chinese American mothers have experienced when making decisions on how to raise their children. Last, more research is needed to gain a comprehensive understanding of child self-regulation development in this population, and to combat stereotypical views of Chinese American parenting.

Table 3-1

*Study 3 Participant Demographic Information (n = 32)*

| **Pseudonym** | Age | Child Gender | Child Age | Primary Language | Mother's Ethnic Identity | Immigration | Educational Level |
|---|---|---|---|---|---|---|---|
| **Judy** | 41 | Boy | 5.77 | English | Taiwanese/Chinese-American | 2 | Graduate |
| **Lindsay** | 41 | Boy | 6.00 | Chinese | Chinese living in America | 1 | Graduate |
| **June** | 38 | Girl | 5.24 | English | Asian/Chinese-Australian | 1 | Graduate |
| **Sellena** | 40 | Boy | 5.56 | Chinese | Chinese | 1 | Graduate |
| **Shana** | NA | Boy | 8.00 | English | Taiwanese-American | 2 | Graduate |
| **Fawn** | 34 | Girl | 6.27 | Chinese | Chinese | 1 | Graduate |
| **Thora** | 39 | Boy | 7.66 | English | Chinese American | 2 | Bachelor |
| **Emmy** | NA | Boy | 5.47 | English | Chinese | 1 | Bachelor |
| **Jo** | 39 | Girl | 5.00 | English | Chinese American | 1 | Graduate |
| **Lena** | 41 | Girl | 5.25 | English | Chinese American | 1.5 | Graduate |
| **Cara** | 41 | Girl | 4.50 | English | Taiwanese-American | 2 | Graduate |
| **Sabrinna** | 44 | Girl | 6.68 | English | Taiwanese-American | 1.5 | Bachelor |
| **Lara** | 33 | Girl | 6.50 | English | Chinese / Asian | 1 | Bachelor |
| **Caidy** | NA | Boy | 7.11 | English | Chinese American | 1.5 | NA |
| **Mirra** | 42 | Boy | 7.57 | English | Chinese/Taiwanese-American | 2 | Graduate |
| **Ceola** | 41 | Girl | 7.00 | Chinese | Chinese | 1 | Graduate |
| **Joie** | 39 | Girl | 6.83 | Chinese | Chinese | 1 | Graduate |
| **Xally** | 29 | Boy | 4.96 | Chinese | Chinese | 1 | Graduate |
| **Erin** | NA | Boy | 5.87 | Chinese | Chinese | 1 | Bachelor |
| **Michael** | 45 | Boy | 8.58 | English | Australian | 1 | Bachelor |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Lauren** | NA | Girl | 6.33 | English | Chinese American | 2 | Bachelor |
| **Amanda** | 35 | Girl | 7.83 | English | Chinese Singaporean | 1 | Bachelor |
| **Kelli** | 38 | Girl | 6.40 | English | NA | 2 | Bachelor |
| **Yvette** | 40 | Boy | 7.35 | Chinese | Chinese | 1 | Graduate |
| **Leslie** | 40 | Boy | 6.65 | Chinese | Chinese | 1 | Graduate |
| **Heather** | 35 | Girl | 7.22 | Chinese | Chinese | 1 | Bachelor |
| **Yasha** | 36 | Boy | 8.25 | Chinese | Chinese | 1 | Graduate |
| **Jill** | 45 | Boy | 7.74 | Chinese | Taiwanese-American | 1 | Graduate |
| **Monira** | 33 | Girl | 6.50 | Chinese | Chinese living in America | 1 | Graduate |
| **Tabitha** | 32 | Girl | 5.13 | Chinese | Chinese | 1 | Bachelor |
| **Jazia** | 38 | Boy | 7.36 | Chinese | Chinese living in America | 1 | Bachelor |
| **Catina** | 40 | Girl | 6.83 | English | Chinese American | 1.5 | Graduate |

Table 3-2

*Name, Definition, and Counts of Themes of Maternal Beliefs and Expectations/Types of Maternal Practices*

| Themes/Practices | Definition | Count | Chinese (15) | English (17) | 1st Gen (25) | 2nd Gen (7) |
|---|---|---|---|---|---|---|
| **Themes on Mothers' Beliefs and Expectations** | | | | | | |
| Emotion as a critical component of self-regulation | Describing emotional control and valuing the role of emotion in self-regulation. | 23 | 10 (67%) | 13 (76%) | 16 (64%) | 7 (100%) |
| Self-control and inhibition | Describing behavioral control and inhibition. | 18 | 9 (60%) | 9 (53%) | 13 (52%) | 5 (71%) |
| Regulation of cognitive processes | Describing cognitive processes (e.g. attention), planning, monitoring, evaluating, and goal-setting. | 6 | 6 (40%) | 0 (0%) | 6 (24%) | 0 (0%) |
| Expecting children to be polite, respecting and following rules | Expecting polite, good manners, and respect for elders. Expecting compliance and following rules. | 20 | 6 (40%) | 14 (82%) | 14 (56%) | 6 (86%) |
| Importance of Independence, or Self-Reliance | Expecting independence in children, including describing child's household responsibilities as independent. Value individualism. | 19 | 12 (80%) | 7 (41%) | 17 (68%) | 2 (29%) |
| **Types of Maternal Practices** | | | | | | |
| Providing reasons, encouragement, and explanation | Explaining rules, expectations, why certain behaviors are acceptable or inappropriate; Encouraging desirable behaviors | 32 | 15 (100%) | 17 (100%) | 25 (100%) | 7 (100%) |
| Cultivating a supportive environment with role models | Describing attempt to modify the child's environment to help self-regulation, including the use of daily routine. Importance of parents being positive role models. Learning from observation. | 23 | 9 (60%) | 14 (82%) | 18 (72%) | 5 (71%) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Coaching and suggesting strategies | Teaching and suggesting self-regulation strategies. Creating practice opportunities. | 27 | 12 (80%) | 15 (88%) | 20 (80%) | 7 (100%) |
| Rewarding desirable behaviors | Rewarding behaviors with reward systems or single reward. | 19 | 9 (60%) | 10 (59%) | 15 (60%) | 4 (57%) |
| Punishing inappropriate behaviors | Removing something the child desired, including toys and activities. | 21 | 9 (60%) | 12 (71%) | 15 (60%) | 6 (86%) |
| Time-out | Intentionally leaving the child alone to think or calm down. | 19 | 6 (40%) | 13 (76%) | 14 (56%) | 5 (71%) |
| Verbal reprimands | Using hostile language, such as yelling and insulting, or negative emotional cues to discipline. Using verbal threats. | 12 | 6 (40%) | 6 (35%) | 11 (44%) | 1 (14%) |

Table 3-3

*Themes, Definition, and Example Quotes for Maternal Practices*

| Themes | Definition | Example quotes |
|---|---|---|
| Offering choices and autonomy within boundaries | Mothers are responsible of setting rules and boundaries for children's behaviors. Children could have autonomy and choices within those rules. | *"That I think you are a parent you are responsible, right, for teaching, giving the children the tools, the ways that they should think about and set the expectations … you as a parent are responsible for implementing what those boundaries should be and for explaining the reasons for those boundaries"* |
| Shifting practices from prior generations | Mothers identified parenting differences between them and their own parents. | "*like explaining why you shouldn't do anything or kind of helping you understand the situation more like none of those things happened when I was growing up. It was just very, you know, I'm the adult, I'm the parent, you just do this*" |

# GENERAL DISCUSSION

The release of *Battle Hymn of the Tiger Mother* in 2011 sparked a significant discourse surrounding the traditional, strict upbringing commonly associated with "Chinese" Confucian-style parenting. Subsequently, popular media frequently adopted the term "tiger parents" to depict Chinese parenting as strict, disciplinary, and primarily centered on achieving academic excellence for their children. Even before the topic received popularity with the general public, scholarly research on parenting and child development reflected similar themes, describing Chinese parenting as authoritarian, displaying characteristics such as high levels of dominance, control, hostility, and physical coercion (e.g., B. B. Brown et al., 1993; Lin & Fu, 1990). Although a growing body of contemporary cross-cultural research has moved away from a Western-centric perspective and begun to recognize culturally specific aspects of Chinese parenting (R. K. Chao, 1994, 1995; Wu et al., 2002), the understanding of the similarities and differences in the association between Chinese parenting and child self-regulatory outcomes remains limited. Moreover, culture is not static, and neither is parenting, which both undergo continuous adaptations in response to broader social changes and globalization (Bian et al., 2022; Greenfield, 2016). Therefore, a comprehensive investigation is needed to better understand the complexity of modern Chinese parenting and the role it plays in children's early development.

The current dissertation examined the associations between Chinese American mothers' parenting and children's self-regulation, a crucial ability to various developmental outcomes. I paid particular attention to the variations of parenting within the Chinese American population that are related to mothers' demographic backgrounds and cultural values. Additionally, by utilizing a mixed-method approach, this dissertation sought to elucidate the nuances in Chinese American mothers' beliefs and practices on fostering self-regulation in young children, through

the use of surveys, direct observations of mother-child interactions, and qualitative interviews. Each of these approaches provided a unique source of information and perspective on the complexity of Chinese-American mothers' parenting.

**Summary of Key Findings**

In Study 1, I examined maternal practices of control and structure to identify SES, immigration, and cultural variables that are related to maternal practices, and to understand the degree to which maternal practices relate to children's EF ability. Results revealed three distinct constructs of maternal practices that were frequently grouped into 'maternal control', maternal structure, absolute authority, and inconsistency/control. And only inconsistency/control was found to be negatively associated with mother-report of children's EF ability. In Study 2, I examined variations in Chinese American mothers' scaffolding strategies during a mother-child drawing task and how they relate to child EF abilities as directly assessed by behavioral tasks. Findings indicated that mothers' use of explanation, structure, and directiveness was associated with their generational status as well as children's age. Further, maternal autonomy support was positively linked to children's performance in a task measuring attention flexibility. In Study 3, I explored Chinese American mothers' understanding and practices related to child self-regulation in daily life. Mothers' interviews illustrated that Chinese mothers endorsed both collectivistic and individualistic beliefs concerning child self-regulation and employed a wide range of parenting practices. Taken together, findings from my 3-study dissertation illustrate the influence of the collectivistic Chinese culture on mothers' parenting regarding self-regulation. Furthermore, the results underscore the undeniable diversity in parenting among mothers of different demographic backgrounds.

**Mixing Quantitative and Qualitative Methods in Understanding Chinese Parenting**

One strength of the current dissertation is the combination of multiple forms of data and multiple analyses to enrich the understanding of Chinese parenting and child self-regulation. Researchers have argued that mixing quantitative and qualitative approaches might be particularly beneficial in integrating studies of beliefs, goals, and practices in the socialization process, as it contains both symbolic and behavioral dimensions (Yoshikawa et al., 2016). The mixed method approach is informative and contributes to my ability to integrate information from multiple measures, examine self-regulation in cultural contexts, and reconsider the construct of maternal structure and control. Next, I discuss the methodological strengths of the mixed method approach by triangulating evidence from each study.

First, by collecting multiple forms of data, the current dissertation illustrates the strengths of each measurement method in capturing distinct aspects of similar parenting constructs, particularly maternal structure and maternal control. This approach provides a more comprehensive understanding of the multidimensional nature of maternal practices. Specifically, by surveying 110 Chinese mothers on their parenting practices, Study 1 was able to statistically differentiate maternal structure from maternal control behaviors and demonstrated their unique relations with child EF. However, similar to prior research that focused on general parenting styles (Farkas & Grolnick, 2010; Heimpel et al., 2018; Wong et al., 2018), the maternal questionnaires used in Study 1 may not fully capture mothers' strategy use in specific parenting contexts, such as teaching or problem-solving. Mother-report scales could also be potentially biased by differences in mothers' perceptions and social desirability (Yung et al., 2019). To address these limitations, Study 2 employed observations of mother-child interactions with the goal to understand mothers' use of structure and control (directiveness) in a task-based, non-disciplinary scenario.

Further, interview data from Study 3 complemented Study 1 by providing insights into additional aspects of maternal structure that were not covered in survey questions, such as providing rationales and resources for children (Farkas & Grolnick, 2010). Study 3 also enhanced the findings of Study 2 by shedding light on mothers' structuring and controlling behaviors in challenging and disciplinary situations.

Secondly, across these three studies, it was possible to examine aspects of children's self-regulation development that might be considered universal, but also enabled the examination of culturally specific practices and associations among Chinese American families. For example, the results from Study 1 provide statistical evidence for the negative correlation between coercive and inconsistent maternal practices and child EF, which is consistent with research findings from European American families (Valcan et al., 2018). However, in contrast to previous research suggesting a potential negative link between authoritarian parenting and child EF (Bertrand et al., 2023; Liu et al., 2018), mothers' absolute authority and structure were not significantly associated with child EF. Evidence from mother interviews provides a potential explanation for this discrepancy. Although most Chinese mothers place importance on maternal authority as a means of guidance and setting standards for children, they are still flexible in their parenting practices, make adjustments based on individual child's needs, and offer choices to promote child autonomy. Further, the interview results indicate that similar to European American parents (R. K. Chao, 1995, 2000), Chines American mothers value child self-regulation and independence. However, the interpretation of self-regulation and independence differs in a culturally specific manner among Chinese mothers. They place greater emphasis on inhibition and self-control as components of self-regulation, and their perspective on child independence largely overlaps with the concept of self-reliance (R. K. Chao, 1995).

Last but not least, convergent evidence from both quantitative and qualitative methods provides cross-validations and increases the reliability of conclusions regarding Chinese parenting. On the other hand, the discrepancies in study findings lead to a more nuanced understanding of Chinese parenting and their relations to child self-regulation, which highlights potential areas for further research. One interesting finding of this dissertation was the lack of association between mothers' use of directive strategies and child EF performances. Initially, this may appear contradictory to the results of Study 1, as explicit directions from mothers were often considered part of intrusive parenting and included in the conceptualization of maternal control (e.g., M. K. Lee et al., 2018; Power et al., 2020). However, a closer inspection of different parenting practices measured in two studies reveals that maternal directiveness during the tasks does not align with behaviors captured in the coercive/inconsistent dimension in maternal survey, which mostly focuses on physical coercion, verbal hostility, and inconsistency. In fact, mothers' verbal directive strategies could be solely informative which represent mothers' guidance for the children. Therefore, these strategies might be more closely related to the mother-report of maternal structure rather than maternal control (Grolnick & Pomerantz, 2009). These findings highlight the need for future studies to explore how different parental practices, as measured through multiple methods, are interconnected. For instance, future studies could use exploratory and confirmation factor analyses to examine factors of parenting practices across different measures and explore whether the factor structure is the same across different ethnic groups.

**Implications**

The findings from this dissertation highlight the importance of considering family cultural values when examining children's early socialization experiences and their associations

with developmental outcomes. Previous studies have demonstrated average differences in parenting practices in Chinese American families and started to reveal cultural-specific connections to child self-regulation (Heimpel et al., 2018; Huang et al., 2017). However, these studies paid less attention to differences in parents' beliefs and socialization goals regarding regulatory ability. These factors are crucial in guiding specific parenting behaviors. Moreover, the present dissertation reveals the significance of conducting in-depth investigations into cultures that surpass the simplistic dichotomy of collectivism and individualism.

This dissertation also underscores the need to examine diversity and variability in Chinese American parenting, which might be related to differences in parents' personal backgrounds and cultural values. It is important to acknowledge that the Chinese American population encompasses a wide range of families with varying SES backgrounds, immigration experiences, and origins from different countries or regions. Additionally, my dissertation provided some evidence that highly educated 1st-generation mothers placed great emphasis on child independence, suggesting that more studies are needed to examine the effect of social changes on Chinese parenting practices, particularly among immigrant Chinese mothers, to move beyond a stereotypical view of Chinese parenting.

Lastly, the findings of this dissertation have significant implications for the design and implementation of parental educational programs aimed at fostering self-regulation in Chinese American children. These findings emphasize the importance of providing parents with resources to enhance their understanding of the cognitive processes involved in self-regulation, as well as equipping them with accessible tools to effectively address child misbehaviors and overcome parenting challenges.

**Conclusion**

To conclude, this dissertation aimed to explore variations in Chinese American mothers' parenting related to their sociodemographic backgrounds and cultural values. The study also examined the extent to which maternal practices are associated with children's self-regulation. Results from three studies highlighted the wide range of practices employed by Chinese American mothers, which were influenced by their past experience and reflected mothers' endorsement of both collectivistic and individualistic values. Findings also revealed the complexity of Chinese parenting in facing demands and challenges across different domains of childrearing. The current dissertation calls for more research that utilizes multiple forms of measures to enhance our understanding of the diversity within Chinese American families, as well as the bidirectionally between parenting and child self-regulation. Further, more efforts in creating parenting programs and building stronger school-home connections with cultural sensitivity are needed to support children's self-regulation development.

# Appendix A

## Study 2: Summary of Event-based Codes for ESO Task

*Summary of Event-based Codes for ESO Task*

| Code Category | Sub-code | Definition |
|---|---|---|
| **Child directed talk** | Explicit directions | Apply this code when a parent gives exact directions during the task |
| | Explanations | Apply this code when the parent provides an explanation during the game that expands the child's understanding of the game or strategies to complete it, or provides a reason for a directive |
| | Prospective language | Apply this code when the parent describes at least one upcoming event to the child, in the form of a statement. |
| | Limit Setting | Apply this code when a parent sets a firm limit or boundary relating to the child's behavior or to the larger structure of the visit. |
| | Direction as Questions | Apply this code when the parent provides a specific direction of children's behaviors, but is framed as a question. |
| **Questions** | Semantic | Apply this code when the parent asks the child a question that has a correct answer or a truthful response. |
| | Open-ended | Apply this code when the parent asks the child an open-ended question. |
| | Choices | Parent gives child a choice related to the activity. |
| **Positive talk** | Praise | Verbal positive reinforcement of child behavior |
| | Narration | Statements/verbalizations of what the child is doing, or what child is doing together with family members (similar to a sportscaster doing a play-by-play). It also includes *persistence coaching,* which is a parent's commenting on the child's cognitive and behavioral states while the child is engaging in the activity |
| | Reflection | Repeating back the child's language, exactly or with some elaboration. |
| | General Encouragement | The general encouragement code should be used only when the child is neutral or positive. It includes encouraging statements from parents that do NOT rise to the level of praise or narration. |

| | | |
|---|---|---|
| | Comforting/Reassuring | Comforting or reassurance should be coded when a parent responds empathically to a child's display of negative emotions. |
| | General positive talk | Apply this code when the parent engages in positive talk that does not meet criteria for praise. |
| **Negative Talk** | Criticism | Apply this code when the parent uses critical statements directed to the child. |
| | General negative talk | Apply this code when the parent engages in negative talk that does not meet criteria for criticism. |
| **Ignoring** | Ignoring | Apply this code when the parent ignores the child's behavior or verbal requests. |
| **Emotion language** | Parent emotion language | The parent's verbalizing emotional experiences and coping strategies. |
| | Child emotion language | The child's verbalizing emotional experiences and coping strategies. |

## Appendix B:

## Study 3: Interview Protocol

### Warm-up

First, to make sure I am identifying you as you would prefer, how would you describe your racial/ethnic identity? (e.g. For instance I identify myself as Chinese or Asian American)

Next, could you tell me a little about (the child's name). What are they like?

Can you tell me what does parenting for 4-6 years old children consist of?

### Expectations and Practice

Children's behaviors are the easiest to observe and are reflected in children's interaction with family, schools and the larger community.
What are the expectations you have for your child's behaviors?

How do you help your child to meet your expectations?

Do you use any discipline methods to teach your child to meet your expectations? If so, what are they?

Can you think of a time when they did not meet your expectations? Can you reconstruct a recent instance and how you handled it?

### Self-Regulation in Children

Next, we are going to talk about self-regulation in children.
Are you familiar with the term 'self-regulation'?

Some people think early childhood is a time for children to start developing different skills to help them self-regulate. But not everyone defines self-regulation the same way.

What does children's self-regulation look like to you? (Emphasizing the child's age here).

When we study children's development, we are interested in their cognitive skills for regulating their thinking and behaviors. We look at their ability to do things like inhibit inappropriate responses, shift their attention from one task to the next, and hold information in working memory.

Have you seen your child using these abilities in school-related activities? What does that look like?

Have you seen your child using these abilities in daily activities (E.g., organizing toys)? What does that look like?

What other abilities are important for children's self-regulation?

How do your child learn to self-regulate?
Do you ever teach specific self-regulatory skills to your child? If yes, how?

How do you value self-regulation in children's development?

Next, I'm going to read to you two scenarios that involves two young children, and I would like you to think what you will do if you were the parent in the scenarios.

1. Extended Screen Time: Ming (Hong, if a girl) has agreed with his mom to only play 20min on the iPad today. However, when the time is up, Ming refuses to give up the iPad and begs for 10 more minutes to play. What would you do if you were Ming's mother?
2. Distraction: Yu (Xue, if a girl) is working on his math homework and seems to have some difficulties finishing it. He starts to play with his eraser and no longer focuses on the homework. What would you do if you were Yu's mother?

**Cultural and Generational Change**

Thank you for sharing your responses. Next, I am going to ask you some questions related to your background and experience as a Chinese American mother. Different people might have different understanding about things and that is totally fine. If you feel uncomfortable answering any of them feel free to skip them or respond to them in a different way.

Get the following demographic information:
1. Age; 2. Education level; 3. Country born; 4. Years in US; 5. Years in US Ed; 6. Occupation.

What are some resources you used to help you with parenting practice? (E.g., mommy's blog, books, podcast or Wechat/facebook groups).

a. What kind of information do you get from them?
b. How frequent do you use these resources?

Have your parents influenced your parenting?

a. Specifically, how is your parenting goals different from or the same as your parents?
b. How is your parenting methods different from or the same as your parents?

If so, what factors do you think contribute to these parenting differences?

Which group do you most frequently have parenting conversation with? Do they share your cultural background?

Do you think your beliefs about self-regulation are more different or more similar from your cultural community? (Please describe)

Do you think Chinese American parents have different beliefs and expectations about self-regulation than other parents in the US? If so, how?

**Closing Questions**

I have asked you questions about how you respond to your child's misbehaviors. Are there any stressors, challenges, or obstacles that get in the way of responding the way you would like to? If so, could you describe what they are?

Lastly, is there anything else you would like to add or that I did not ask that you were expecting me to ask that can help me understand you more as a parent?

Thank you (parent name) again for your time, we really appreciate your participation in our study. We will be in touch to send the compensation for your participation, and hopefully will soon share our study results with you!

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