Chinese American Adolescents' Cultural Frameworks for Understanding Parenting

by

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ABSTRACT

Parenting approaches that are firm yet warm (i.e., authoritative parenting) have been found to be robustly beneficial for mainstream White Americans youths, but do not demonstrate similarly consistent effects among Chinese Americans (CA) adolescents. Evidence suggests that CA adolescents interpret and experience parenting differently than their mainstream counterparts given differences in parenting values and child-rearing norms between traditional Chinese and mainstream American cultures. The current study tests the theory that prospective effects of parenting on psychological and academic functioning depends on adolescents' cultural frameworks for interpreting and understanding parenting. CA adolescents with values and expectations of parenting that are more consistent with mainstream American parenting norms were predicted to experience parenting similar to their White American counterparts (i.e., benefiting from a combination of parental strictness and warmth). In contrast, CA adolescents with parenting values and expectations more consistent with traditional Chinese parenting norms were predicted to experience parenting and its effects on academic and psychological outcomes differently than patterns documented in the mainstream literature.

This study was conducted with a sample of Chinese American 9th graders (N = 500) from the Multicultural Family Adolescent Study. Latent Class Analysis (LCA), a person-centered approach to modeling CA adolescents' cultural frameworks for interpreting parenting, was employed using a combination of demographic variables (e.g., nativity, language use at home, mother's length of

stay in the U.S.) and measures of parenting values and expectations (e.g., parental respect, ideal strictness & laxness). The study then examined whether prospective effects of parenting behaviors (strict control, warmth, and their interaction effect) on adolescent adjustment (internalizing and externalizing symptoms, substance use, and GPA) were moderated by latent class membership.

The optimal LCA solution identified five distinct cultural frameworks for understanding parenting. Findings generally supported the idea that effects of parenting on CA adolescent adjustment depend on adolescents' cultural framework for parenting. The classic authoritative parenting effect (high strictness and warmth leads to positive outcomes) was found for the two most acculturated groups of adolescents. However, only one of these groups overtly endorsed mainstream American parenting values.

DEDICATION

To my loving parents,

My deepest gratitude for all the "guan" they provided throughout the years.

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TABLE OF CONTENTS

Page

Page

Page

LIST OF TABLES

LIST OF FIGURES

Introduction

Parenting approaches that have been found to be robustly beneficial for adolescents' academic and psychological functioning among mainstream White Americans do not demonstrate similarly consistent effects among Asian Americans. Notably, the positive effects of authoritative parenting (an approach that couples firm discipline with affective warmth and responsiveness to the child's needs) on academic and psychological functioning is not consistently found among Asian American youths as it is among their mainstream White American counterparts (e.g., Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh's, 1987). Similarly, the negative impact of authoritarian parenting (an approach characterized by high demand, strict discipline, and unquestioned parental authority) has been found to be less deleterious for Asian American students' academic achievement than that of White American students (e.g., Chao, 2001; Dornbusch, et al.; Steinberg, Dornbusch, & Brown, 1992).

Scholars have hypothesized that these inconsistent findings may be attributable to mainstream parenting constructs and measures inadequately capturing parenting practices within Asian Americans families (Chao & Tseng, 2002; Crocket, Veed, & Russell, 2010; Kim & Wong, 2002). It has also been posited that Asian American adolescents may interpret and experience parenting differently from their White counterparts given differences in parenting and child-rearing norms between traditional Asian cultures and mainstream White American culture (Chao & Aque, 2009; Padmawidjaja & Chao, 2010). Implicated in these explanations is the role of cultural differences in adolescents'

expectations of parenting or cultural frameworks for understanding and interpreting parenting behaviors.

Previous studies in this area have focused on between group comparisons (e.g., Asian Americans versus White Americans). Significant differences between ethnic groups are often attributed to assumed cultural differences between those groups. These designs, although efficient for identifying intergroup variability, are greatly limited in their ability to inform our understanding of the role of specific cultural factors. A within group design that examines variability of specific cultural variables (e.g., values, beliefs, practices) among members of one ethnic-cultural group would more directly inform hypotheses about the specific influence of culture. Thus, the current study employs a within group design to examine adolescents' cultural frameworks for interpreting parenting as a putative moderator of prospective effects of parenting on academic and psychological functioning.

Given the vast ethno-cultural diversity within the Asian American population, the current study focuses on a single identifiable ethnic-cultural subgroup, Chinese Americans (including immigrant and U.S. born individuals of Chinese descent), so that interpretation of findings on cultural influences can be specific to the norms and traditions of this subpopulation. According to Census 2000, approximately 70% of Chinese Americans are born abroad, with 40% of foreign born individuals immigrating to the U.S. after 1990 (U.S. Census Bureau, 2000). Although many changes are expected to be seen in Census 2010 data, these demographics nonetheless suggest that substantial variability on immigration and

acculturation related variables will likely be detectable among adolescents, making this subpopulation an ideal group with which to examine influences of cultural factor on parenting effects. Specifically, the current study is interested in whether Chinese American adolescents who strongly endorse traditional Chinese cultural values and expectations for parenting differ in their experience of how perceived parenting prospectively influences academic and psychological functioning compared to Chinese American adolescents with more mainstream American values and expectations for parenting.

First, an overview of the historical context of the Chinese American population is provided along with a review of salient cultural constructs related to traditional Chinese parenting norms. Second, relevant studies of the association between parenting and academic and psychological outcomes of mainstream and Chinese/Chinese immigrant youths are reviewed. Based on the results of this integrative review, an approach to modeling parenting influences for the current study is outlined. Next, relevant literature on how cultural factors such as acculturation and cultural orientation may influence parenting and its relationship to child/adolescent academic and psychological outcomes will be reviewed. Then, a method for modeling adolescents' cultural framework for understanding parenting is outlined. Finally the proposed study is summarized with specific hypotheses for how adolescents' cultural framework was expected to moderate the prospective relationship between parenting and adolescents' academic and psychological functioning.

Background

Chinese immigration

The first major wave of Chinese immigration to the United States took place in the early 1850s when Cantonese speaking men from the Guangdong area in Southeastern China arrived in San Francisco, California to mine for gold. As the abundance of gold dwindled in the 1860s, the Central Pacific Railroad Company recruited Chinese immigrants in large labor gangs. By 1870, approximately 66,000 Chinese immigrants were living in the U.S. Fueled by European immigrants' dissatisfaction with the influx of Chinese laborers in the competitive job market and increasing discrimination, the Chinese Exclusion Act was passed to prohibited Chinese immigration from 1882 to 1943. It was not until the Immigration and Nationality Act of 1965, when exclusions and restrictive quotas were lifted, that a second wave of Chinese immigrants arrived in the United States. Prior to 1977, most ethnically Chinese immigrants in North America or Europe were from Taiwan and Hong Kong due to the People's Republic of China's (PRC) government ban on emigration. Many of those emigrating from Taiwan and Hong Kong were professionals and skilled laborers from urban city centers, some of whom came to the U.S. with considerable wealth and resources. By the mid 1980s, the PRC government had loosened restrictions on emigration and increasing numbers of mainland Chinese immigrants began arriving in the U.S., many of whom were also skilled laborers and graduate students (Library of Congress, 2003). Currently, individuals of Chinese decent make up approximately 23% of Asian Americans (U.S. Census Bureau, 2009).

Although the different sociopolitical histories of the diasporas of Chinese immigrants undoubtedly affects the socialization goals, parenting practices, and immigration experiences of these groups, distinctions among the different diasporas is beyond the scope and purpose of the current study. Thus, the terms Chinese American will be used to refer to individuals of Chinese ethnic descent living in the U.S. regardless of their location of origin, whereas "Chinese immigrants" will be used to refer more broadly to all individuals of Chinese descent living abroad. The term "Chinese" will be used to refer to individuals of Chinese ethnic descent including non-immigrant indigenous populations. Given the obvious cultural similarities among Chinese Americans, Chinese immigrants, and Chinese nationals, relevant literature on all three populations was reviewed.

Confucianism and Chinese Parenting

Confucianism was the prevailing philosophy in Chinese government, society, and family life for more than 2000 years (circa 200 BC to early 1910s). It is a school of thought focused on secular ethics and morality that espoused a large set of virtues and beliefs (Li, 2001). Confucian virtues of filial piety (孝*xiao*[1]) and propriety (礼*li*), as well as the belief in human malleability are particularly relevant to Chinese parenting norms. Filial piety or *xiao shun* (孝顺) literally means child-like obedience and devotion with utmost admiration and respect for a parent. The child fulfills his or her filial duty by demonstrating love, deference,

[1] Phonetic spellings that approximate the sound of Chinese words vary by Romanization systems employed as well as the Chinese dialect (e.g., Mandarin, Cantonese, and Taiwanese) approximated. The Romanization system employed in this paper is pinyin, which approximates the sounds of Mandarin Chinese, contemporarily known as Putonghua.

and absolute obedience through acts that contributes to the parents' material and emotional comfort and happiness, as well as honoring the parents and the ancestral family name through achievement and success (Fong, 2007). In corollary, a child's failure or lack of achievement also implicates his/her parents in the inadequate provision of guidance and training (Wang & Phinney, 1998). This set of values not only dictates a hierarchical parent-child relationship where parental authority is absolute, but also promotes a style of parenting that is characterized by proactive guidance, fastidious standards, and intense involvement in the child's socialization and training (Gorman, 1998). This indigenous Chinese style of parenting is known as *guan* (管), a term that denotes "governing, monitoring, interfering, and controlling," (D. Y. H. Wu, 1996, p. 13) but also implies parental care, support, and concern (Chao, 1994).

The virtue of propriety or *li* (礼) refers to the use of appropriate behaviors and etiquette in all situations, often dictated by clearly delineated rituals, promoting politeness, humility, emotional restraint, and self-control, all of which aids in the avoidance of conflict and maintenance of harmony. It is believed that appropriate behaviors are internalized through ritualistic practices socialized through intense parental guidance and negatively reinforced by avoiding consequences of inappropriate behaviors, which is bringing shame onto oneself as well as one's family (Ames & Rosemont, 1998). Scholars have reasoned that the value of emotional restraint contributes to Chinese parents' limited demonstration of physical affection toward their children (S.-J. Wu, 2001). Furthermore, psychological anthropologists have observed that Chinese parents are traditionally

concerned that affection and praise would spoil a child and make him/her less achievement oriented in thinking they were already good enough (D. Y. H. Wu, 1981, p. 154, as cited in D. Y. H. Wu, 1996, p. 21). The value of humility coupled with parents' duty to *guan* (管) promotes parenting practices that favor strict discipline and punishment over praise for the socialization of appropriate behaviors and academic achievement.

The Confucian belief in human malleability contends that through diligent "cultivation" or disciplined training, even a person of humble family background can become a "gentleman" (*jun zi* 君子) or an exemplar individual who is educated and follows the rites of propriety. Relevant to child socialization, the belief in human malleability is reflected in the proverb "children are like white paper" (Chao & Tseng, 2002), similar to the Western idea of *tabula rasa* or blank slate (Locke, 1690). Combined with the assumption that parents must provide a child with proper training and education, the "white paper" analogy suggests that children do not come with innate characteristics, but will grow however they are taught, and thus should be shaped and molded into an exemplar individual through intense family socialization. The emphasis on nurture over nature imparts the centrality of hard work and education in Chinese cultural values. The belief that innate ability is not as important as hard work for achieving excellence and success further supports parenting practices that emphasizes training and strict discipline over acceptance and accommodation for a child's innate characteristics (Chao & Tseng).

Together, this set of Confucian values promotes a parenting style characterized by fastidious standards, strict discipline, and a high level of directiveness, where parental care and concern is implied as opposed to demonstrated with physical affection or praise. Because parental authority is considered absolute, the parent-child relationship hierarchical, and children are thought of as "white paper," democratic decision-making and similar types of parenting approaches that incorporate give and take or consideration of the child's preferences or needs is antithetical to traditional Chinese parenting norms and child-rearing beliefs. Contemporary Chinese and Chinese immigrant parenting practices undoubtedly bare some variation from these traditional beliefs and practices. For example, qualitative research has shown that contemporary Chinese and Chinese immigrant parents have had to "redefine the meaning of filial piety" to fulfill their own filial duties as well as adjust their expectations of filial piety from their children (S. J. Wu, 2001, p.242). Moreover, contemporary Chinese mothers in one study reported that Confucius ideologies do not directly influence their parenting beliefs and practices (Chang, Schwartz, Dodge, & McBride-Chang, 2003). However, evidence suggests that even without explicit endorsements by name, traditional Confucian ideals such as filial piety and academic achievement are still valued by Chinese parents and continue to impact child rearing attitudes (Chao, 2000; Pearson & Rao, 2003; Rao, McHale, & Pearson, 2003; Xu, Farver, Zhang, Zeng, Yu, & Cai, 2005). Given the enduring relevance of Confucian values to Chinese and Chinese immigrant parenting, the

cultural themes presented in this section will serve as the theoretical foundation for the hypotheses of the current study.

Literature Review

Parenting Styles and Between Group Differences

Toward developing a cohesive theory of socialization and parent-child interactions, Baumrind (1971) observed in her research with mainstream White American families that natural variations in parental authority are associated with other aspects of parenting such as communication strategies, affective warmth, responsiveness, maturity demands, and behavioral control. She termed these qualitatively distinct configurations of parenting behaviors and attitudes "parenting styles." Specifically, Baumrind identified three parenting styles: authoritative, authoritarian, and permissive parenting. Authoritative parenting is marked by firm parental control, enforcing high standards through reasoning, explanation, and two-way communication, coupled with granting an appropriate level of autonomy and being responsive to the child's emotional needs. In comparison, authoritarian parenting is also characterized by a high level of control, but enforced without give and take or explanations, expecting unquestioned obedience. In essence, authoritative and authoritarian parenting differ not in the level of parental control but in how control is applied, with authoritative parents exercising democratic control that takes into consideration the child's needs and preferences and authoritarian parents applying control with hierarchical absolute authority. Permissive parenting is characterized by weak parental authority and laxness. Affectively, authoritarian and permissive parenting

have been found to be similarly detached and emotionally distant compared to the warmth and acceptance associated with authoritative parenting (Darling & Steinberg, 1993).

Research with mainstream middle class White American populations consistently finds that authoritative parenting is related to more positive academic and psychosocial outcomes for children and adolescents compared to authoritarian or permissive parenting (Baumrind, 1971; Steinberg, 2001). Equally consistent is the finding that Chinese parents tend to score higher on authoritarian parenting than White American parents (Lim & Lim, 2003; e.g., Chao, 1994, 2000b, 2001; Pearson & Rao, 2003; P. Wu, Robinson, Yang, Hart, Olsen, Porter, et al., 2002). However, Chinese youths do not demonstrate worse psychological or academic outcomes in the presence of authoritarian parenting (e.g., Chao, 2001). In fact, on average, Chinese American children have higher GPA and standardized test scores compared to White American children (Chao & Sue, 1996). This phenomenon has been dubbed a paradox in the literature, and inspired many studies to investigate whether parenting styles function differently within Chinese families compared to mainstream White American families. A review of studies that compared the effect of Authoritative/Authoritarian parenting styles on child academic and psychosocial outcomes among Chinese/Chinese American and mainstream White populations (Chao, 2001; K. Leung, Lau, & Lam, 1998; Pearson & Rao, 2003; Wang & Phinney, 1998) revealed that the nature of the relationship between parenting styles and child outcome variables do, in fact, differ between the two groups (F. F. Liu, 2008). Specifically, positive effects of

authoritative parenting on academic achievement found among mainstream White populations do not appear to generalize to Chinese youths, whereas negative effects of authoritarian parenting found with mainstream White populations are not as negative, and sometimes the effects are positive for Chinese students' academic achievement (e.g., K. Leung et al.; Wang & Phinney).

Researchers reasoned that these discrepant findings may be attributable to differences between traditional Chinese and mainstream American parenting norms (Chao and Sue, 1996). Chao and Sue contended that traditional Chinese parenting norms not only explain Chinese parents scoring higher on measures of authoritarian parenting, but also limit negative effects of authoritarian parenting on Chinese adolescents. Given that traditional Chinese ways of parenting are characterized by intense instruction and training, strict discipline, and a high level of directiveness, where parental love and concern is implied as opposed to demonstrated (Tobin, Wu, & Davidson, 1989), it is not surprising that Chinese parents would score higher on authoritarian parenting and lower on authoritative parenting than mainstream White American parents. Subsequently, adolescents who understand and accept this style of parenting as normative would interpret absolute hierarchical parental authority in a more positive manner, and subsequently experience better outcomes in response to authoritarian parenting than White American adolescents who may expect more democratic forms of parenting. Recent evidence suggests that Asian American adolescents indeed interprets parental strictness less negatively than White American adolescents

(e.g., reporting less anger) and such interpretations moderate the effect of parenting on adolescent psychological symptoms (Chao & Aque, 2009).

Other researchers have argued that the discrepant findings of studies using Baumrind's parenting styles are difficult to interpret given the configurational approach typically used, where each parenting approach encompasses many domains of parenting behaviors (e.g., rule setting, communication style, affective warmth). Although these constellations of parenting behaviors consistently manifest in the three typologies that Baumrind observed among mainstream White American families, these typologies are not consistently replicated among Chinese families (e.g., McBride-Chang & Chang, 1998), and may not capture relevant patterns of parenting for Chinese American families. For example, according to Baumrind's typology, the type of absolute parental authority enforcing fastidious standards that one might find in traditional Chinese homes only occurs within the context of a non-supportive parent-child relationship. Although parental strictness and hierarchical parent-child relationships are consistent with Confucian values of filial piety and incorporated in *guan*, as described above, both filial piety and *guan* imply a strong, positive parent-child bond. Because there is no allowance in the Baumrind typologies for strict absolute parental authority coupled with supportive parenting, a dimensional approach that allows both strictness and warmth to vary independently may be more appropriate for capturing how specific aspects of parenting influence academic and psychological outcomes among Chinese American youths (Lim & Lim, 2003).

Dimensions of Parenting

Alternative to Baumrind's (1971) configurational approach to parenting styles, other researchers have identified independent parenting dimensions. For example, Rollin and Thomas's (1979) review of the literature identified two primary dimensions of parenting—"control" and" support." Later researchers have combined these two dimensions of parenting to produce four parenting style typologies (Maccoby & Martin, 1983). Baumrind's authoritative (high control and support) and authoritarian (high control and low support) parenting styles were reproduced, but the permissive style was separated into indulgent (low control, and high support) and neglecting (low control and support) styles—a configuration of parenting that Baumrind did not observe among typical, non-distressed, middle class, White American families.

Although Baumrind's configurational approach to parenting styles captured ecologically valid types of parenting among typical middle class White American families, and was found to have consistent relationships with children's psychological and academic functioning, it did not allow for the examination of *how* the different parenting styles influenced child outcomes. In other words, it may be evidenced that authoritative parenting is related to positive academic outcomes for children, but the general category of authoritative parenting does not reveal anything about the process through which authoritative parenting promotes academic achievement. In contrast, a dimensional approach is not only able to capture a wider range of variability thus facilitating investigations of parenting processes with more diverse populations, but also allow for a more nuanced

examination of how parenting styles influence child academic and psychological outcomes. For instance, a dimensional approach would allow for the examination of whether it is parental control, affective warmth or the combination of the two in authoritative parenting that is associated with child academic achievement.

The fine-grain advantage of a dimensional approach, however, is quickly lost when continuous measures of parenting dimensions are split at the median or otherwise segmented and cross-tabulated to form typologies. In this unfortunately popular approach (e.g., Ang 2006; Chao 2001; Tam & Lam, 2003), participants who score above or below the median or some other arbitrary cut-point on different parenting dimensions (e.g., control and warmth) are categorized as authoritative or authoritarian parents based on the pattern of their dimensional scores (i.e., high control and warmth – authoritative; high control / low warmth – authoritarian). The effect of parenting style on child outcome variables (e.g., academic achievement) can then only be examined through mean comparisons by parenting style assignment. Not only are large amounts of statistical information lost when continuous dimensions are split into discrete categories, but the typologies are more empirical than theoretical, and often sample-specific. Dimensional approaches that lead to typologies, as well as other methods that transform continuous variables into discrete categories, are even less useful than configural approaches for understanding the process through which parenting styles influence child outcomes. Thus, the current study will examine the influence of parenting dimensions on adolescent academic and psychological outcomes maintaining the continuous nature of parenting dimension variables.

Findings involving the two primary dimensions of parenting, control and warmth, are reviewed next.

Control. The dimension of control describes how parents manage children's behavior, ranging from harsh punitive styles such as domineering control, punishment, verbal and physical coercion, to generally restrictive or demanding styles with high levels of strictness, expectations, and consistent rule enforcement without explicit negativity, to supervisory and more flexible forms of control such as monitoring, organization, decision-making, inductive reasoning, and autonomy granting. Similar to findings with mainstream White American populations, measures of parental control that are harsh, punitive, and coercive were associated with negative psychological outcomes such as internalizing problems and aggression among Chinese and Chinese immigrants (e.g., Nelson, Hart, Yang, Olsen, & Jin, 2006), whereas measures of supervisory and flexible control such as monitoring and inductive reasoning, and autonomy granting were associated with positive psychological outcomes such as high self-esteem (e.g., Bush, Peterson, Cobas, & Supple, 2002), and lower depressive symptoms and conduct problems (Kim, Chen, Li, Huang, & Moon, 2009; L. L. Liu, Lau, Chen, Dinh, & Kim, 2009). In contrast, parental control that is marked by a generally restrictive and demanding style without explicit negativity yielded inconsistent findings. For instance, whereas Chao and Aque (2009) found strictness to be positively associated with internalizing symptoms among ninth grade Chinese American adolescents, Chen, Liu, and Li (2000) found no significant relationship between maternal or paternal control and psychosocial outcomes of Chinese

children during the transition to middle school, yet, Cheung and McBride-Chang (2008) found restrictiveness to be positively related to academic achievement. The current study is specifically interested in this type of strict and demanding parental control for two reasons. Given the evidence that suggests affective valence of parental control measures drives the direction of effects, a measure of parental control that is affectively neutral is needed to assess the influence of control independent of warmth. Secondly, strict and fastidious standards are considered one of the hallmarks of traditional Chinese parenting (Shek, 2007), thus examining this type of highly demanding and restrictive parental control may be especially appropriate for the current population.

Warmth. The dimension of parental warmth has been operationalized as primarily expressions of positive affect toward the child, including acceptance, rejection (reverse coded), responsiveness, care, concern, nurturance, and support. This dimension of parenting has also evidenced findings consistent with those of mainstream White American populations: accepting, affectionate, caring, responsive, and warm approaches to parenting are beneficial for Chinese children's psychosocial functioning (e.g., Chiu, Feldman, & Rosenthal, 1992; Greenberger, Chen, Tally, & Dong, 2000). Two studies examined the influence of warmth on academic performance (Chen et al., 2000; C. Y.-W. Leung et al., 2004), and both found that warmth positively predicted Chinese middle school children's academic performance.

Interaction effects. Inferred in dimensional approximations of Baumrind's typologies is the idea that parental control and support interact to

affect child outcomes or that the effects of parental control depend on the presence of warm supportive parenting. Specifically, strict parental control in the context of high levels of parental warmth and supportiveness, such as the case of authoritative parenting, leads to positive academic and psychological outcomes; but strict control in low warmth and support contexts, as in the case of authoritarian parenting, leads to negative academic and psychological outcomes among mainstream White American youth (Steinberg, 2001). Although parental control and warmth have long been conceptualized as having interactive as opposed to independent or cumulative effects on child academic and psychological outcomes, empirical tests of this theoretical assumption have been largely inadequate even in the mainstream literature (Barber, Stolz, & Olsen, 2005). Recent efforts to address this deficit in the mainstream literature found evidence that suggests various types of parental control and support synergistically benefit adolescent psychosocial functioning (Barber et al.; Gray & Steinberg, 1999).

Given traditional Chinese parenting norms that promote parental strictness with absolute parental authority without explicit behavioral demonstrations of parental warmth, similar interaction effects between strict parental control and warmth would not be expected among adolescents raised in traditional Chinese homes. An adolescent who understood and accepted traditional Chinese ways of parenting would likely expect high levels of parental strictness without explicit behavioral indications of parental warmth, but infer love and concern from parental strictness and thus benefit from strict parental control independent of

overt parental warmth. The lack of such a synergistic interaction effect between strict parental control and warmth, where the effects of strict parental control did not depend on the presence of parental warmth, may be the crux of how Chinese American adolescents are not necessarily harmed by authoritarian parenting. However, no published study[2] has tested the interactive effect of strict parental control and warmth with Chinese or Chinese immigrant populations.

The influence of cultural orientation

Implied in the explanation for how strict parental control is not expected to interact with parental warmth among Chinese American adolescents is the idea that adolescents' cultural framework for understanding parenting moderates the effects of strict parental control and warmth, as well as their interaction, on adolescents' academic and psychological outcomes. In other words, adolescents with cultural frameworks that incorporate traditional Chinese parenting norms may be more likely to benefit from strict parental control independent of parental warmth. But adolescents with expectations for parenting more consistent with mainstream American parenting norms may not respond well to strict parental control in the absence of parental warmth.

Previous studies examining differential effects of parenting as a function of adolescents' cultural perspective have compared adolescents by nativity (Chao, 2001; Chiu et al., 1992). Specifically, Chao compared the effects of authoritative

[2] One unpublished study has tested the interactive effect of parental control and warmth on Chinese American adolescents' academic achievement (Chao & Tran, 2000, as cited in Chao & Tseng, 2002) and found that high levels of strict parental control are especially beneficial at high levels of parental warmth for White but not Chinese American high school students.

versus authoritarian parenting among first and second generation (foreign born and U.S. born, respectively) Chinese American as well as White American high school students. She found that authoritative parenting was significantly more beneficial than authoritarian parenting for White American students' GPA but not for Chinese American students. Moreover, Chao found that whereas the relative benefit of authoritative parenting on GPA was significantly different between first generation Chinese and White American students, second generation Chinese American students did not differ significantly from either first generation Chinese or White American students. This pattern of effects suggests that acculturation may be influencing the relationship between parenting and adolescents' academic achievement. In other words, Chinese American adolescents with more Americanized cultural frameworks (second generation) may expect more democratic forms of parenting and be more likely to benefit from authoritative as opposed to authoritarian parenting compared to adolescents with more traditionally Chinese cultural frameworks and expectations for parenting (first generation).

Chao and Aque (2009) examined adolescents' emotional perceptions or affective interpretations of parenting and its moderating effects by asking adolescents to report how mad and how loved they feel in response to specific descriptions of parental control (e.g., fastidious standards, strictness, and laxness). They found that Chinese American adolescents reported feeling less angry about parental strictness than did White American adolescents. Moreover anger about parental strictness reduced the benefits of this type of parental control on

adolescent psychological symptoms, but only for White American adolescents. These findings are consistent with the hypothesis that cultural frameworks may play a role in adolescents' interpretation of parenting, and such interpretation may moderate the influence of parenting behaviors on adolescent psychological outcomes.

A recent study with Asian American college students found acculturation to moderate the relationship between retrospective perceptions of parenting styles and intergenerational family conflict (Park, Kim, Chiang, & Ju, 2010). Specifically, authoritarian parenting was positively associated, whereas authoritative parenting was negatively associated with intergenerational conflicts more so for students with the most Americanized acculturation profiles (i.e., assimilated—high levels of identification and participation with mainstream European American culture with relatively low levels of engagement with culture of origins), than students of other acculturation profiles (i.e. integrated, separated marginalized[3]). Moreover, students with assimilated acculturation profiles also reported higher levels of intergenerational conflict than did students of other acculturation groups. These findings suggest that college students' cultural orientation (i.e. acculturation profile) not only affects their perceptions of the parent-child relationship (in terms of intergenerational conflict) but also moderates their experiencing of parenting (e.g. authoritative and authoritarian parenting).

[3] These acculturation profiles are derived from Berry's (1997) model of acculturation. See below for more details.

In contrast, when Chiu et al. (1992) examined the effects of parenting on adolescent psychological distress with Hong Kong Chinese, first and second generation Chinese immigrants, and non-immigrant White adolescents in both the U.S. and Australia, they found that the relationship between parenting (warmth and control) and adolescent distress was not significantly different among the groups. In other words, immigrant status and generation status did not moderate the relationship between parenting and adolescent distress. However, Chiu et al. did not examine the interactive effects between parental control and warmth. Taken together, the findings of Chiu et al., Chao and colleagues, and Park et al. (2010) suggest that the moderating effects of individuals' cultural orientation 1) may not be adequately captured by demographic variables or cross-ethnic comparisons, and 2) may not be readily apparent in the main effects of parental control and warmth, but may crucially influence how parental control and warmth work together, or interact, to affect adolescent academic and psychological functioning. To the best of my knowledge, no previous study has examined the interactive influence of control and warmth and how those effects are moderated by adolescents' cultural framework with Chinese Americans. Thus, the current study aims to address this gap in the literature by examining independent and interactive effects of strict parental control and warmth on Chinese American adolescents' academic and psychological outcomes as moderated by adolescents' cultural frameworks for interpreting and understanding parenting.

Modeling the Influence of Culture

Previous studies examining cultural influences on parenting and/or

immigrant youths' academic, psychological, and health outcomes have measured cultural influences in a variety of ways. Most comparative studies juxtapose immigrant and non-immigrant populations of host and sending societies (e.g., Chinese Americans vs. White Americans and/or Hong Kong Chinese, Chiu et al., 1992) and attribute group mean differences to differences in participants' cultural orientation or cultural framework (e.g., Chen, Hasting, Rubin, H. Chen, Cen, & Stewart, 1998). Studies examining cultural diversity within immigrant populations often use demographic variables as proxies for acculturation status or the extent to which individuals have adopted mainstream American norms. Common proxy variables include child or parent nativity, or years lived in the U.S., assuming that U.S. born youths and parents or those who have been in the U.S. longer would be more likely to adopt American cultural norms and values than foreign born immigrant youths and parents or those who have been in the U.S. for fewer years (e.g., Schwartz, Pantin, Sullivan, Prado, & Szapocznik, 2006; Weathers, Novak, Sastry, & Norton, 2008). Other studies use language fluency and language use to approximate cultural orientation toward both ethnic and mainstream American culture (more English fluency and use is assumed to imply stronger orientation toward mainstream American culture, more fluency and use of non-English native language, stronger orientation toward ethnic culture). These demographic variables have been widely used and accepted within the literature as reasonable proxies for cultural influences given expected correlations with scale measures of cultural orientation (e.g., nativity and length of stay in receiving country is positively associated with orientation toward American cultural values and

practices, Schwartz et al.). However, inconsistent and unexpected results have also been found and raise questions about the adequacy of demographic variables as proxies for cultural orientation. For example Ying, Han, and Wong (2008) found that among a sample of Asian American adolescents, nativity was unassociated with most dimensions of cultural orientation (social affiliation, food preference, and recreation) toward ethnic or American culture, except U.S. born adolescents endorsed higher levels of English use and proficiency. Contrary to their hypothesis, U.S. born adolescents reported higher levels of ethnic culture pride than foreign born adolescents. Another example is Schwartz et al.'s study with Hispanic immigrant adolescents and caregivers living in Miami, FL. They found that whereas nativity was associated with adoption of American cultural practice for the whole sample, length of stay in the U.S. was associated with adoption of American cultural practice for only girls and female caregivers, and neither nativity nor years in the U.S was associated with adoption or retention of ethnic cultural practices.

In recent years, more studies are using scale measures of cultural influences, often assessing multiple domains of orientation to both the mainstream culture (i.e., acculturation) and ethnic culture (i.e., enculturaton). For example, Costigan and Dokis (2006) examined the influences of parent and child acculturation on Chinese Canadian adolescents' feelings of depression and academic motivation. They measured cultural orientation both in terms of behavioral practices (Chinese/English language and media use) and endorsement of Chinese and Canadian cultural values. Parent and youth cultural orientation

interactively predicted adolescent adjustment. Adolescents' reported lowest levels of depressive symptoms when youth and father both endorsed relatively high levels of Chinese values. Similarly, adolescents reported highest levels of achievement motivation when youth and mother both endorsed relatively high levels of Canadian media use. Chao and Kanatsu (2008) assessed adolescents' cultural orientation toward independence and interdependence corresponding to individualistic and collectivistic values, respectively. They found that Asian American adolescents' endorsement of independence and interdependence were both positively associated with their report of parental monitoring and warmth above and beyond the effects of adolescent nativity, mother's number of years in the U.S., adolescents' and mothers' native language fluency, and mother's English use when speaking to the adolescent. Chao and Kanatsu, however, did not examine the interactive effect of independence and interdependence on parenting behaviors.

The latest innovation in capturing individuals' cultural orientation (values, affiliations, and practices) is person-centered approaches, where cluster analysis or latent class analyses (LCA) is conducted to identify groups that are different in their pattern of endorsements on culturally relevant variables. Most previous studies identified three to five acculturation or cultural orientations profiles that partially supported Berry's (1997) acculturation typologies. Berry theorized that when orientation toward and affiliation with both mainstream (i.e., acculturation) and ethnic cultures (i.e., enculturation) are accounted for, four possible typologies emerge: Assimilated—high adoption of mainstream cultural norms, values, and

practices with low retention of immigrants' ethnic cultural values and practices; Separated—high retention of ethnic cultural orientation with low adoption of mainstream cultural values and practices; Integrated—high endorsement of both mainstream and ethnic cultural values and practices; and Marginalized—low affiliation with both mainstream and ethnic culture. Studies using person-centered approaches consistently found some variation of assimilated, integrated, and separated profiles with little evidence of the marginalized group (Berry, Phinney, Sam, Vedder, 2006; Chia & Constigan, 2006; Coatsworth, Maldonado-Molina, Pantin, & Szapocznik, 2005; Jang, Kim, Chiriboga, & King-Kallimanis, 2007; Weaver & Kim, 2008). Results of these studies also demonstrated that the identified profiles cannot be adequately distinguished by nativity or number of years lived in the U.S. For example, Chia and Costigan found that for members of both the assimilated and integrated groups, approximately half were foreign-born, whose average number of years lived in Canada were the same across the two acculturation profiles. Similarly, Berry et al. found a roughly equal distribution of immigrant youths identified as "separated" among those who had lived in the receiving country for 0-6 years, 6-12 years, and 12-18 years. These findings, taken together with those of variable centered approaches that demonstrated moderating effects of generation status on the relationship between parenting and child outcomes (Chao, 2001), suggest that empirically identified cultural orientation profiles and traditional proxy variables (e.g., nativity, years lived in the U.S.) may represent different aspects of cultural influence. Thus, the current study will employ a person-centered approach that not only includes scale

measures of attitudes and values, but also traditional demographic variables to capture adolescents' cultural frameworks for interpreting and experiencing parenting.

Previous studies using person-centered approaches to capture distinct types of cultural orientation examined endorsements of general cultural practices and values. The current study is interested in Chinese American adolescents' cultural values and beliefs specific to parenting norms and the parent-child relationship, because the primary goal of the study is to investigate how adolescents' experience of strict parental control and warmth (and their interaction) is moderated by adolescents' interpretation of parenting through the possible types of cultural lenses or cultural frameworks. Based on earlier discussions of how traditional Chinese parenting norms differ from mainstream American parenting norms, several dimensions of beliefs and expectations about parenting may be especially useful in identifying adolescents with different cultural frameworks for interpreting parenting. First, given the central importance of filial piety in characterizing traditional Chinese parent-child relationships, a measure of respect and esteem for parents and their authority, concisely known as parental respect, is likely to capture variability on adherence to the Confucian virtue of filial piety. Secondly, because traditional Chinese parenting is marked by high levels of strict parental control, variability on how much strictness and laxness adolescents expect in "good parents" as well as how they feel (loved, mad) in response to strictness and laxness are likely to distinguish adolescents with more traditional Chinese cultural frameworks from those with more

mainstream American cultural frameworks for interpreting parenting. Finally, traditional demographic variables are also expected to be useful in identifying adolescents with distinct cultural frameworks for interpreting parenting. Length of exposure to mainstream American society and culture (marked by number of years lived in the U.S.), as well as adolescent and parent language fluency and use are all important socialization factors for adolescents' values, beliefs, and expectations for parenting.

Adolescents with cultural frameworks that incorporate traditional Chinese parenting norms were anticipated to endorse high levels of parental respect (acceptance and valuation of parental authority), expect ideal parents to display high levels of strictness and low levels of laxness, and feel relatively more loved and less mad about parental strictness, but less loved and more mad about parental laxness compared to adolescents with less traditionally expectations for parenting. Given traditional Chinese parenting norms where love and care is inferred from a high level of parental involvement and strictness, adolescents with traditional expectations for parenting may interpret laxness as a lack of care and concern and thus feel mad or less loved in response to parental laxness. Demographically, it was predicted that adolescents with more traditional Chinese cultural frameworks would be more likely to be foreign born, speak Chinese with a high level of fluency, have mothers who are relatively more recent immigrants and less fluent in English, and speak to their adolescent mostly in Chinese. In contrast, adolescents with more Americanized cultural frameworks for interpreting and experiencing parenting are expected to endorse lower levels of parental respect,

expect ideal parents to be relatively less strict and more lax, and feel more mad and less loved by parental strictness and less mad and more loved by parental laxness compared to adolescents with more Chinese cultural frameworks. Demographically, adolescents with more Americanized cultural frameworks were expected to be more likely to be U.S. born, be less fluent in Chinese and have parents who have lived in the U.S. for relatively more numbers of years, who are more fluent in English and use more English when speaking to their adolescent. Based on findings of previous studies using person-centered approaches, it is likely that at least one other group of adolescents will be identified.

Previous studies examining patterns of responses on cultural values and practices scales have identified groups that responded moderately on all scales and labeled them moderate or diffused (Berry et al., 2006; Coatsworth et al., 2005). However, previous studies employing person-centered approaches to identify cultural orientation profiles have not included demographic variables and relied solely on endorsements of cultural practices and values. Therefore, instead of a moderate group, the current study anticipates finding an additional group or additional groups with other combinations of demographic characteristics and parenting value endorsements. Specifically, one additional group was predicted to have values and expectations for parenting consistent with traditional Chinese parenting norms (high endorsement of parental respect and ideal strictness, low ideal laxness), but have personal demographic characteristic similar to adolescents with more Americanized cultural frameworks (e.g., U.S. born, less fluent in Chinese). However, this third group was predicted to have parents whose

demographics are more like those of adolescents with traditional Chinese cultural frameworks or fall between those of adolescents with traditional Chinese and mainstream American cultural frameworks. This prediction is based on the rationale that parents are primary socializing agents of cultural values and norms, thus adolescents with traditional Chinese cultural frameworks likely have parents who are relatively recent immigrants. Conceptually, it is possible to conceive of a group of adolescents with recent immigrant demographics, but a set of expectation for parenting that is more consistent with norms of mainstream American culture (endorsing low levels of parental respect and ideal strictness, but higher levels of parental laxness, and feeling relatively more mad and less loved by parental strictness and less mad and more loved by parental laxness). This may be a group that is actively rebelling against traditional Chinese parenting norms, perhaps consisting of recent immigrant adolescents who may be having difficulties adjusting to American life or high school and reporting high levels of psychological symptoms. Such a group was expected to have very few members who may not be representative of typical Chinese American adolescents. Thus, no further specific hypothesis was made about this or other possible groups that might emerge from the data.

Current Study

The current study aims to extend previous research on Chinese American parenting by examining whether and how adolescents' cultural framework moderate the prospective interactive effects of strict parental control and parental warmth on adolescents' academic achievement, psychological symptoms, and

substance use. Until recently, previous studies with Chinese Americans have focused primarily on academic outcomes. Studies that examined psychosocial variables were mostly conducted with non-immigrant Chinese samples; few studies examined substance use or other externalizing symptoms beyond school aggression. A number of studies published in 2009, including a special issue of *Journal of Family Psychology* entitled *On New Shores: Family Dynamics and Relationships among Immigrant Families* (June, 2009) have made great strides toward remedying these deficits in the literature (e.g., Kim, Chen, Li, Huang, & Moon, 2009; Lim, Yeh, Liang, Lau, & McCabe, 2009). Still, relatively little is known about the influence of parenting on Chinese American adolescents' psychological outcomes. Finally, previous investigations were also largely cross-sectional in nature (see Zhou, Wang, Deng, Eisenberg, Wolchik, & Tein, 2008 for an exception), such that few causal inferences can be made about how parenting approaches may lead to child outcomes. Therefore, the current study's examination of the longitudinal effects of parenting dimensions on adolescents' academic achievement, psychological symptoms, and substance use is expected to substantially contribute to current developmental literature on Chinese American parenting and adolescent adjustment.

Moreover, the current study's test of moderation by adolescents' cultural framework provides a direct examination of the role of culture on the effects of parenting on adolescent outcomes. Prior to examining moderation effects of adolescent cultural framework, this study proposes to employ a person-centered approach to identify distinct types of cultural frameworks. Following previous

findings in person-centered approaches with Chinese American adolescents, at least three groups are expected to emerge from the data as detailed above: 1) a group of mostly foreign born, bilingual adolescents, who maintain a cultural framework for interpreting parenting that incorporates traditional Chinese parenting and parent-child relationship norms, 2) a group of mostly U.S. born, monolingual English-speaking adolescents, who endorses a framework more consistent with mainstream American parenting norms, and 3) a group of perhaps mostly U.S. born bilingual adolescents who endorses traditional Chinese parenting and parent-child relationship norms. Other meaningful combinations of value endorsements and demographic variables are possible, but were considered less likely, and therefore not included in a priori hypotheses.

Primary Hypotheses

The interactive effects of parental control and warmth on adolescent academic achievement, psychological symptoms, and substance use are expected to be moderated by adolescents' cultural framework as indicated by adolescents' group membership in one of the anticipated cultural framework categories (see Figure 3 for conceptual representation).

1) For adolescents with cultural frameworks more consistent with traditional Chinese parenting norms, strict parental control and parental warmth are both expected to evidence significant main effects without a significant interaction effect. Specifically, strict control is expected to significantly increase GPA, and reduce externalizing and substance use, and warmth is expected to increase GPA, and decrease internalizing symptoms. These

adolescents with more traditional Chinese cultural framework are expected to benefit from strict parental control independent from parental warmth.

2) In contrast, for adolescents with cultural frameworks more consistent with mainstream American culture, strict parental control and warmth are expected to synergistically predict positive outcomes such as higher GPA, lower internalizing and externalizing symptoms, and drug use. In other words, adolescents with more Americanized cultural frameworks are more likely to experience benefits of parental control (increased GPA, decreased psychological symptoms and substance use) when they are also experiencing high levels of parental warmth. Thus, in conditions of low parental warmth, strict parental control may increase internalizing symptoms for Chinese American adolescents with more Americanized cultural framework, a finding that would be consistent with effects found among mainstream White Americans (e.g., Chao & Aque, 2009).
3) Finally, for the group that is expected to have demographic characteristics similar to the group with more American cultural frameworks but parenting values and expectation more like the group with more Chinese cultural frameworks, parenting effects are expected to function much like they do for the more Chinese group. The direction of this hypothesis is guided by the reasoning that it is adolescents' cultural values and expectations for parenting that influences their interpretation and experience of parenting, such that their endorsement of the value scales should influence effects more so than their demographic characteristics.

Method

Participants

The sample for the current study consists of 500 ethnically Chinese adolescents[4] from eight high schools in the Los Angeles metro area who participated in the Multicultural Families and Adolescents Survey (MFAS), a large-scale longitudinal study of family and cultural factors influencing academic and psychological adjustment of immigrant and non-immigrant adolescents (Chao & Aque, 2009). The initial wave of data collection was conducted in the fall of 2002, 2003, and 2004 across three cohorts of adolescents in ninth grade, with an average age of 14.42 years (SD = .40). Of the total sample for the current study, 255 adolescents were female (51.0%), 243 were male (48.6%), and 2 did not endorse either gender. Although most of the adolescents were born in the U.S. (n = 332), approximately one third of the sample (33.2%) were born abroad, and 2 adolescents did not report nativity. Of the 166 adolescents born abroad, 66 indicated that they were born in mainland China, 63 in Taiwan, 11 in Hong Kong, 4 in other Asian and Pacific Island countries, 8 in non-Asian countries, and 14 of these adolescents who were born abroad did not report birth place (see Figure 1). The median and mode age of when immigrant adolescents first came to the U.S. was 7 years old (M = 7.38, SD = .69). A large majority of immigrant adolescents born abroad (68.1%) had attended school outside the U.S.

[4] This sample also includes adolescents who identified both of his/her biological parents as ethnically Chinese and him/herself as Taiwanese or multiethnic because his/her parents were of different Chinese diasporas (e.g., dad from Taiwan, mom from mainland China).

Adolescents were asked to report on the parenting behaviors and approaches of "the parent who took care of [the target adolescent] the most" or the primary caregiver. Because adolescents were only asked to report on the ethnicity of their biological parents, it was impossible to determine with certainty the ethnicity and cultural background of primary caregivers who were not the adolescent's biological mother or father. Given the study's goals to better understand Chinese American ways of parenting, adolescents who did not identified and reported on a biological parent were excluded from the current study (n = 48). A predominant majority of Chinese American adolescents in MFAS identified biological mother as their primary care giver. In fact, only 69 adolescents reported on biological father. Given this small proportion of adolescents who reported on fathers, and potential differences in the effects of maternal and paternal parenting, the current sample includes only the 500 adolescents who reported on parenting of an ethnically Chinese biological mother. The majority of adolescents in the current sample, 82.2%, reported living with both biological parents, 11.8% (n = 59) lived with mother only, 2.8% (n = 14) lived with mother and step-father, the rest in other residential arrangements (2.0%) or did not report (1.2%).

Parent demographic information was gathered from adolescent report on a paper-pencil survey and through phone interviews conducted with the primary caregiver. When adolescents and parents provided overlapping information, parent reported information for self and spouse were used whenever available, and adolescent report was used when parent report was unavailable. Otherwise,

the available data point (usually adolescent report) is retained. Approximately half (52.2%) of the adolescents (n = 261) had a primary caregiver who participated in the parent telephone interview. Demographic information that were not expected to change from baseline to later time points of data collection (e.g., birth place, date of birth) were extrapolated from all time points of data collection to reduce missingness. An overwhelming majority of parents were born abroad (95.6% mothers, 95.2% fathers). Only 16 mothers (3.2 %) and 20 fathers (4.0%) were born in the U.S. Among parents who were born abroad, mothers have lived in the U.S. for an average of 16.05 years, while fathers have lived in the U.S. for an average of 17.05 years. Mothers' mean age was 43.92; fathers' mean age was 46.86 (see Table 1 for summary).

As a group, families in the current sample appear to be of relatively high socioeconomic status (SES). According to child and parent report, the mean level of parent education is between some college or vocational training and college graduates, with most mothers having completed college and most fathers having graduate level education. Specifically, of the 443 mothers and 438 fathers on whom education data were available, 19.4% of mothers and 32.6% of fathers have had graduate level education, 34.6% of mothers and 29% of fathers have completed college, 15.0% of mothers and 10.4% of fathers have had some college of vocational training, 13.6% of mothers and 9.2% of fathers have completed high school, and only 6.8% of mothers, and 7.3% of fathers have had less education (see Figure 2). Approximately half of mothers were employed fulltime (51.8%) compared to 81.8% of fathers; 12.8% of mothers and 5.2% of fathers were

employed part-time; and 31.8% of mothers were unemployed (including 17.6% homemakers and 1.6% students) compared to 6.4% of fathers were unemployed (including 1.6 % students and homemakers). According to child report only, 80.8% of parents were home owners (2.4% did not report).

Procedures

Adolescents in ninth grade were recruited from eight high schools in Southern California. Passive consent procedures were used to obtain parental consent. Information letters and consent forms in English, Spanish, Chinese, and Korean, along with a postage-paid, self-addressed envelope were mailed to all parents of ninth graders in participating schools. Parents were asked to sign and return the form only if they did not want their child to participate in the study. Adolescents assented to participation by affirmatively endorsing a statement of assent provided on the cover page of the written questionnaire. Of all ninth grade students eligible to participate, more than 5000 youths, 80.6% of adolescents completed the survey, 9.3% either refused or lacked parental consent to participate, and 10.1% were either absent on the day of data collection or reported that their parent(s) did not receive the permission slip in the mail. Adolescents completed the paper-pencil survey in class within a single 50-minute class period during the fall semester. Of the total sample of ninth grade adolescents who participated in the initial wave of data collection, 78.5% were retained at wave 2 of data collection in 10^{th} grade.

Families were contacted by phone and the primary care-giving biological parent of the target adolescents was invited to complete the parent telephone

survey, which was conducted by a national telephone survey research company during the spring semester after adolescent written surveys were administered in schools. In addition to parent demographic information, the telephone survey asked parents to report on their parenting behaviors (counterparts to those of the adolescent survey), values, and beliefs, their involvement in adolescents' school and academic activities, their language use and proficiency of English and Chinese, and the adolescent's language brokering activities for the parent. In the current study, only parent and family demographic information is gleaned from the parent survey whenever available because parents are considered more accurate reporters of their own age, education level, occupation status, and family income than adolescents.

Measures

The adolescent survey includes a wide range of measures for parenting behaviors and approaches, adolescent cultural orientation in terms of independence and interdependence, academic effort and achievement, mental health symptoms, and substance use behaviors. Only measures included in the current study are described below. Confirmatory factor analyses (CFA) were conducted when appropriate for measures that have not been used with the current or a similar population to validate anticipated factor structure prior to examining internal consistency by calculating Cronbach's alphas. Specifically, CFAs were conducted for the parenting measures and the construct of parental respect. Models were considered to have good fit if items had significant loadings on expected factors and global fit indices met two of the three following criteria. The

comparative fit index (CFI) was greater than .95, the root mean square error of approximation (RMSEA) confidence interval included .05, and the standardized root mean square residual (SRMR) was less than .08 (Hu & Bentler, 1999).

Parenting measures. All parenting measure questions for the adolescent to judge "how much each statement… describes or is like [his/her] parent." Adolescents were asked to report on the "person who takes care of [him/her] the most" or the primary caregiver. Items have the stem "My parent is a person who…" and 5-point Likert response scales with "1" being "not at all like" and "5" being "a lot like" the target parent.

Strict parental control. The firm-control items from the firm-lax control subscale of the Children's Report on Parent Behavior Inventory (CRPBI) adapted by Schludermann and Schludermann (1988) for adolescents were used to measure parental strictness. The original 10-item scale that assessed both strict and lax parental control did not demonstrate adequate psychometric properties as a single scale in previous studies with mainstream White or Chinese Americans (Barber et al. 2004; Chao & Aque, 2009). CFA with the current sample replicated previous findings suggesting that the firm-lax control items were better represented by two factors—strictness and laxness. The current study only uses the 6-items that loaded onto the strictness factor describing fastidious standards and consistent rule enforcement (e.g., "Insists that I do exactly as I'm told" and "believes in having a lot of rules and sticking with them") as a measure of strict parental control. The single factor, 6-item CFA yielded adequate global fit indices, $\chi^2(9) = 10.26$, $p = .33$; CFI = .99; RMSEA = .02, CI: {.00, .05}; SRMR = .02, and all

items loaded significantly onto the factor. This 6-item scale demonstrates adequate internal consistency, $\alpha = .76$, with the current sample, similar to those found in previous studies (Chao & Aque).

Parental warmth. The acceptance-rejection subscale of the CRPBI for adolescent report (Schludermann & Schludermann, 1988) will be used to assess the mainstream Western parenting dimension of affective warmth/acceptance. The 10-item subscale measures parenting behaviors that convey positive affect towards the adolescent (e.g., "smiles at me often" "praises me often") and parent-child interactions denoting emotional warmth and attachment (e.g., "makes me feel like the most important person in her/his life"). This 10-item scale demonstrated adequate internal consistency, $\alpha = .91$, similar to those found in previous studies with similar populations (Chao & Aque, 2009; C. Wu & Chao, 2008).

Indicators of cultural framework. Employing a person-centered approach, seven scale measures of adolescents' expectations, beliefs, and affective interpretations about parenting along with six immigration-related demographic variables were used to identify groups of adolescent with distinct types of cultural frameworks for interpreting parenting.

Parenting Ideals. Adolescents' beliefs about how "good parents should behave" in terms of strict parental control and parental laxness were assessed. Participants' were asked to indicate how much each of the CRPBI items for strict parental control (described above) and parental laxness is "like an ideal parent" (e.g., an ideal parent is a person who… is very strict with me). Adolescents

responded on a 5-point Likert scale from “not at all like” to “a lot like.” Parental laxness is described by the 4-items of the CRPBI firm-lax control subscale that were not included in the strict parental control scale (e.g., “lets me go any place I want without asking”). Separate scale scores were generated for ideal strictness (6-items) and ideal laxness (4-items) to be consistent with the scoring scheme of adolescent report of parenting behaviors. These parenting ideals scales were developed for the MFAS and have not been used in previously published studies. For the current sample, both ideal strictness ($\alpha = .75$) and ideal laxness ($\alpha = .90$) demonstrated adequate internal consistency.

Affective Interpretation of Parenting Behaviors. Adolescents’ affective interpretations in terms of how mad or how loved they felt in response to parental behaviors were measured separately. Adolescents were asked to indicate “how mad” or “how loved” they would feel if their parent did each of the behaviors described by the CRPBI firm-lax control items (e.g., how mad would I feel if my parent “is very strict with me”). Participants responded on 4-point Likert scales from “not mad”/”not loved” (1) to “very mad”/”very loved” (4). These affective interpretation measures were originally developed by Mason, Walker-Barnes, Tu, Simons, and Martinez-Arrue (2004), who found racial differences in affective interpretations of parental control (measured by the CRPBI firm-lax control) between African and European American adolescents. In total, four affective interpretation scale scores were calculated following the scoring scheme of the parental strictness and laxness scales described above. How loved and mad adolescents felt in response to parental strictness yielded Cronbach alphas ($\alpha =$

.63, .62, respectively) that were lower than the .70 convention (Nunnaly, 1978). Given that the scales only consists of 6 items each and the alphas are similar to those found in previous studies (Chao & Aque), they are considered acceptable for the current study. How loved and mad adolescents felt in response to parental laxness (α = .89, .81, respectively) demonstrated adequate internal consistency for the current sample.

Parental Respect. Parental respect was measured by a scale of the same named developed for the MFAS. This eight-item scale includes items that describe valuing parents' opinion, seeking parental approval, and overall respect and deference for one's parent (e.g., "I respect my parent's opinion about important things in my life" "I have a high regard for my parent"). This scale was designed to capture the type of reverence and valuation for one's parent and their parental authority implicated in the Confucian virtue of filial piety. CFA results confirmed a one-factor solution, $\chi^2(20) = 94.39$, $p < .001$; CFI = .95; RMSEA = .09, CI: {.08, .11}; SRMR = .04; reliability analysis demonstrated adequate internal consistency, α = .89.

Demographic and language variables. Adolescent and parent demographic and language variables expected to distinguish among different socialization experiences likely to support the hypothesized cultural framework typologies were selected to be included in the person-centered analyses. To represent variability in exposure to mainstream American culture in terms of duration of residence in the U.S. for both U.S. and foreign born individuals, a "proportion of life spent in the U.S." variable was created by dividing number of

years lived in the U.S. by the individual's age. For adolescents and parents who were born in the U.S., their proportion of life spent in the U.S. would equal 1. In a previous study, this variable was shown to be a parsimonious method that incorporates what is represented by both nativity and years lived in the receiving country (Berry, et al., 2006).

Linguistic acculturation was represented by single item measures of adolescents' Chinese fluency, mother's English fluency, the language adolescents use when speaking to their mothers, and the language mothers use when speaking to their adolescent. The language fluency items require adolescents to indicate on a 5-point Likert scale, from 1 "not well at all" to 5 "extremely well," how well the target adolescent speak and understand the non-English language spoken at home (for the current sample, Chinese), and how well their mothers speak and understand English. The language use items ask adolescents to report the language they use when speaking to their mothers and the language their mothers use when speaking to them by choosing between English, the non-English language spoken at home (Chinese), or sometimes English and sometimes the non-English language. The language use items are coded 1, 2, and 3 with 1 meaning English, 2 meaning some English some Chinese, and 3 meaning Chinese, such that group means on these variables indicate how much Chinese as opposed to English is used. Most adolescents and mothers reported using both English and Chinese when speaking to each other. Whereas 45% of mothers reported speaking to their adolescent only in Chinese, 23.9% of adolescents reported speaking to their mothers only in Chinese. In contrast, 15.5% of

adolescents reported using only English when speaking to their mothers, and 4.1% of mothers reported using only English when speaking to their adolescents. Zero-order correlations and descriptive statistics for variables that informed classification of cultural frameworks are presented in Table 2.

Outcome variables. Adolescent academic and psychological outcomes were represented by the following dependent variables. Separate models were tested for each outcome variable.

Academic achievement. Adolescents' grade point average (GPA) was gathered from school archival data. GPA was calculated on a 4-point system in which A = 4.0, B = 3.0, C = 2.0, D = 1.0, F = 0. Tenth grade cumulative GPA served as the dependent variable, whereas ninth grade fall semester GPA was covaried as baseline.

Psychological symptoms. Internalizing and externalizing symptoms were assessed by adolescent self-report using the Youth Self Report (YSR, Achenbach, 1991). The internalizing scale consisted of 31 items from three subscales, depression-anxiety (e.g. "I am unhappy, sad or depressed"), somatic complaints (i.e. "I feel overtired without good reason"), and withdrawal symptoms ("I would rather be alone than with others"). The externalizing scale consisted of 32 items with two subscales, delinquency (i.e. "I break rules at home, school, or elsewhere") and aggression (i.e., "I am mean to others"). Adolescents responded to each item on a 3-point Likert scale from "0" being "not true" to "2" being "very true or often true." Both internalizing ($\alpha = .89$) and externalizing ($\alpha = .88$) symptoms scales demonstrated adequate internal consistency for the current

sample. Internalizing and externalizing symptoms were predicted by two separate models.

Substance use. Adolescents' substance use was measured with items from the National Youth Survey revised by Huizinga, Menard, and Elliott (1989). Six items assessed the number of days in the past month on a 5-point Likert scale (i.e., 0 = "0 days" 1 = "1-2 days" 2 = "3-9 days" 3 = "10-19 days" 4 = "20-30 days") youths used alcoholic beverages, cigarettes, marijuana, cocaine, inhalants, and other illegal drugs within the past month. In a previous MFAS study, the items demonstrated good internal consistencies for the overall multiethnic sample ($\alpha = .85$), but not for the Chinese subsample ($\alpha = .50$), which makes up approximately 39% of the current sample. For the current sample, the items demonstrated poor internal consistency at baseline ($\alpha = .55$) but excellent internal consistency at follow-up ($\alpha = .94$). Given that 90% of adolescents who reported on their drug use indicated zero-use at Time 1 (ninth grade), this level of reliability is considered acceptable for purposes of the current study.

Covariates. Covariates routinely included in MFAS studies are adolescent gender, parent education, family residential configuration (e.g., adolescent lives with both biological parents, lives with mother only, mother and stepfather), and whether parents own their home. Independent sample t-tests revealed that the outcome variables at baseline or follow-up did not different significantly by parental home ownership or adolescents' residential caregiver configuration (e.g., living with both biologic parents versus other combinations of caregivers, e.g.,

living with mother only[5]), and thus were not included in the current study. Parent education was calculated by averaging mother's and father's highest level of education based on the rationale that both maternal and paternal education level contribute to the family's socioeconomic status and the child's academic and psychological outcomes. Adolescent gender and highest level of parental education were retained as covariates. To examine the influence of parenting on change in GPA, psychological symptoms, and substance use over time, corresponding baseline measure of the outcome variable were also included as covariates. Zero-order correlations and descriptive statistics for predictive model variables including covariates are presented in Table 3.

Data Analysis

Preliminary analyses. Prior to testing primary hypotheses, attrition analysis, and multivariate outlier analysis were conducted. To ensure the generalizability of the findings, attrition analysis was conducted to determine whether students who did not participate in the study at the second wave of data collection (10^{th} grade) differed significantly from the retained group on study variables measured at wave-1. Independent Sample T-Tests were conducted for each of the study variables. Two of 25 analyses yielded significant results: adolescents who did not participate at wave-2 of data collection reported less respect for their mothers, $t(421) = 2.60$, $p < .01$ and more externalizing symptoms, $t(491) = -3.00$, $p < .01$, at baseline than adolescents who remained in the study at

[5] The predominant majority of adolescents (82.2%) lived with both biologic parents. Other living situations consisted of very small subgroups and was therefore combined into one group for the purposed of mean-comparisons.

follow-up. However, neither finding remained significant after Bonferroni adjustments for multiple analyses (i.e., $p < .05/25 < .002$). Nevertheless, results were interpreted with caution given the potential that results may only generalize to adolescents with relatively lower levels of externalizing symptoms and relatively higher levels of respect and deference for their mother. Full Information Maximum Likelihood (FIML) was used to handle missing data. FIML provides better power and has been shown to improve upon traditional methods for handling missing data (e.g., listwise or pairwise deletion) when missing at random (MAR) or even when certain types of non-ignorable missingness occur (see Bollen & Curran, 2006; Schafer, 1997).

Multivariate outlier analyses were conducted using regression diagnostics in SPSS 17. Influential cases were identified by Cook's Distance > 1 (Cook & Weisberg, 1980; Stevens, 1984). One outlier was identified in predicting drug use: a female adolescent reported having used all six categories of substances at some frequency in the previous month at both baseline and follow-up, when most adolescents who reported any substance use endorsed only one item (most frequently alcohol) or a higher frequency of use only at follow-up. However, a detailed examination of data across all study variables for this case suggested that the relatively high frequency of substance use may be valid endorsements of poly-substance-use behaviors consistent with her endorsement of substance use items on the YSR. Moreover, partial regression plots revealed that this adolescent endorsed notably higher maternal warmth than other youths reporting high frequency substance use. Thus, this case was not automatically omitted, and

results of the semi-continuous models predicting substance use were reported for analyses with and without this outlier case.

Identifying cultural framework profiles. Latent Class Analysis[6] (LCA) was conducted to identify and enumerate latent classes of adolescents who hold distinct cultural frameworks for interpreting and experiencing parenting. LCA is the latent model analog to cluster analysis (Vermunt & Magidson, 2002) for identifying heterogeneity of the sample on a particular set of constructs. LCA examines the latent structure of cases similar to how CFA identifies the latent structure of variables. Unlike in CFA, where variables that inform the latent structure of a measure are known as indicators, variables that inform the group membership of cases in the sample are known as outcome variables. Most previous person-centered approaches for representing the heterogeneity of cultural orientation has employed cluster analysis (see Weaver & Kim, 2008 for an exception). The current study employed LCA because this probability-based approach has been demonstrated to be superior to the traditional cluster analyses in detecting latent taxonomy (Cleland, Rothschild, & Haslam, 2000; McLachlan & Peel; 2000).

[6] The terminology "Latent Class Analysis" is sometimes used to refer to models with only categorical outcome variables, and models with continuous outcome variables are sometimes distinguished as "Latent Profile Analysis." Given recent developments in statistical packages that has greatly increased the flexibility of the types of outcome variables that can be included in these models, the terms "Latent Class Analysis" are often used to describe models with any combination of types of outcome variables (Nylund, Asparouhov, & Muthén, 2007). Thus the current study used "LCA" to refer to models in the current study that includes both categorical and continuous outcome variables.

To determine the appropriate number of classes, mixture models were estimated, beginning with a two-class solution, and compared on a number of statistical indicators as well as conceptual interpretability and parsimony. Each LCA solution was compared with those of one additional class (e.g., two classes vs. three classes, three classes vs. four classes) until the set of statistical indicators suggested that the most optimal solution had been identified. Specifically, the Akaike Information Criteria (AIC, Akaike, 1987), Bayesian Information Criteria (BIC, Schwartz, 1978), and the sample size adjust BICs (Sclove, 1987) were plotted in separate graphs against the number of classes and visually inspected for a leveling pattern, much like the use of Scree plots for determining number of factors in exploratory factor analysis. Among these information criteria, the BIC has been shown in a simulation study to be the most accurate indicator of the appropriate number of classes compared to the AIC and adjusted BIC (Nylund et al., 2007). Therefore, special attention was given to the patterns generated by the BIC plot to decide on the number of classes. Substantial improvements in model fit, or the lack thereof, was also evaluated by the Vuong-Lo-Mendell-Rubin Likelihood Ratio Test (VLMR, Lo, Mendell, & Rubin, 2001), which generates a p-value that indicates whether the solution with the current number of classes is a statistically significant improvement in fit over a model with one fewer classes (e.g., a four-class solution with a significant VLMR indicates that it fits the data better than a three-class solution). Because none of these statistical values can be used by itself as a definitive indicator of the correct number of classes for the data, all of them are considered together, along with the size and proportion of

identified classes (e.g., avoiding solutions that identifies classes consisting of 5% or less of the sample) and the interpretability of the overall solution to determine the most appropriate number of classes. Because mixture models can be prone to producing local maximum as opposed to global maximum solutions (McLachlan & Peel, 2000), models were estimated with multiple, software-generated random start value sets until solutions were reproduced (Hipp & Bauer, 2006).

In totality, 13 variables (7 parenting-beliefs scales, 6 demographic/language use variables) were included in the LCA analyses, with two of the language variable (English and Chinese use when adolescent and mother speak to each other) being categorical, and the rest being continuous. Initially, mixture models were specified by allowing means and variances of the 11 continuous outcome variables and the thresholds of the 2 categorical variables to freely vary across latent classes. The covariances among these outcomes were held at zero given "conditional independence" or the assumption that outcome variables are uncorrelated within each latent class because pattern of covariation among the outcomes are accounted for by latent class membership (Lazarsfeld & Henry, 1968). However, these initial models failed to converge due to two outcome variables (percent of adolescents' life spent in the U.S., how mad adolescents felt in response to laxness) consistently generating zero variance in at least one latent class. The models were then estimated with the variance of these two variables constrained to be equal across classes. The classes identified by the optimal solution, with the best overall set of statistical and conceptual characteristics, were then given meaningful and representative labels.

Main analyses. To test hypothesized moderation effects by latent class, nested mixture models that included both the identified LCA solution (as described above) and the regression analysis were estimated. For mixture modeling in Mplus, all variables used in the analysis contribute to the identification of latent classes by default, thus a number of steps were taken to limit the regression analysis variables from influencing the previously determined LCA solution as much as possible (Muthén, 2002). First, the LCA portion of the combined model was fixed across the nested models at the previously estimated values (means, thresholds, variances) of the selected LCA solution. The means of independent variables (including covariates) of the regression were specified to be estimated at zero, the variance of these variables were specified to be equal across latent classes, and the intercepts were allowed to vary across latent classes. To test the hypothesis that the association between parenting and adolescent outcomes are not the same for adolescents with different cultural frameworks, the model with regression coefficients constrained to be equal across latent classes was compared to the model in which the regression coefficients were allowed to vary across latent classes. For ease of reference, the constrained model will be referred to as the fully constrained model, and the hypothesized model where regression coefficients were allowed to vary across latent classes will be referred to as the non-constrained model. The two models are nested models. For mixture models, a chi-square value is not generated in Mplus, instead a log likelihood value is generated along with a scaling correction factor[7], which was used to calculate chi-

[7] The scaling correction factor is the ratio by which a chi-square is rescaled to

square values for a chi-square difference test (Muthén & Muthén, 2005). This two-step process of first identifying the most appropriate LCA solution for the data, then using those estimates in nested models to test putative moderation effects of the latent classes is considered the most parsimonious method of testing moderation effects of a categorical latent class variable while minimizing changes to the meaning or composition of the latent classes (Muthén, 2002).

All predictive models had the same estimation specifications for the LCA portion of the model as well as the same set of predictors for the regression portion of the model. Specifically, the predictors include the covariates (i.e., adolescent gender, parent education, baseline measure of the dependent variable), the parenting dimensions of strict parental control and parental warmth, as well as their interaction term. Models for predicting adolescent internalizing, externalizing, and GPA consisted of the LCA and a single multiple regression equation. The models predicting adolescent substance use differed from those predicting other outcomes (which were continuous variables) in that a two-part, semi-continuous regression that simultaneously estimated the effects of the predictors on any substance use (vs. no use) and the frequency of any substance use, given some use (Duan, Manning, Morris, & Newhouse, 1983) was employed. This type of model is especially equipped to handle extremely skewed distributions with many zeros representing non-users (e.g., Little, Weaver, King,

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accommodate multivariable non-normality, given that typical chi-square tests require an assumption of normality. A scaling correction factor of "1" indicates that there is no multivariate non-normality. The size of the scaling factor indicates the severity of nonnormality (Curran, West, & Finch, 1996).

& Liu, 2008). Specifically, the original continuous dependent variable that measured adolescents' frequency of past-month substance use across the variety of substances was recoded into two variables, one continuous, one binary, as follows. If a case had a value of zero on the original dependent variable, indicating no substance use, this case was coded as missing on the new continuous variable, and coded as zero on the new binary variable. If a case had any value greater than zero on the original variable, indicating some substance use, the value for this case was copied for the new continuous variables and coded as zero for the new binary variable. The same set of predictors (as specified above) were then entered into two separate multiple regressions, one linear with the continuous dependent variable and one logistic with the binary dependent variable.

The effects of parental strictness, warmth, their interaction, and putative moderation by adolescent cultural framework (the latent classes) on adolescent psychological and academic outcomes were examined in separate pairs of nested models predicting GPA, internalizing, externalizing, and substance use. Initially, the fully-constrained model was compared to a non-constrained model where the regression coefficients were allowed to vary across all latent classes. However, when this comparison did not yield a significant chi-square difference test, yet the non-constrained model demonstrated patterns of significant effects that were notably different across latent classes, additional chi-square difference tests that compared the fully-constrained model and models where the regression coefficients of only one latent class was allowed to differ from those of the other

latent classes were conducted. In the fully-constrained model, the paths are estimated to be equivalent by averaging the effects across latent classes. In the non-constrained model, the paths are allowed to vary across latent classes and the subsequent fit of the regression model also varies across latent classes such that some latent classes may have better fit than others and contribute smaller chi-square values than the other classes. The chi-square values of the latent classes are averaged when the overall fit of the non-constrained model is compared to that of the fully-constrained model. So it is possible for the effects of one or two latent classes that are significantly different from the other classes and offer significantly better fit to the data than the average effect across all latent classes (the fully constrained model) to be masked when the nested models compared overall fit (average chi-squares). Thus, potential improvements to model fit by each latent class were examined separately if the non-constrained model with all classes freed did not yield a significant chi-square improvement over the fully-constrained model. See Table 6 for a complete list of nested models compared.

A significant chi-square difference test indicated that the model with one or all latent classes freed fits the data significantly better than the fully-constrained model, or the relationships tested in the multiple regression models differ among the latent classes. In other words, the way parental strictness, warmth, and/or their interaction affects adolescent outcomes depends on adolescents' cultural framework for understanding and interpreting parenting. Significant moderation effects of the latent classes was probed by examining the regression coefficients within each latent class, including the two-way interaction

effect of parental strictness x warmth. Significant two-way interaction terms were interpreted by plotting the regression line for the effect of parental strictness on the various outcomes at high (1 SD above the mean), moderate (at the mean), and low (1 SD below the mean) levels of parental warmth. These patterns of effects were compared to patterns found in the fully constrained model to further aid the interpretation of results. If no significant moderation effect was found for latent class membership, then regression results of the fully constrained model were interpreted for the entire sample.

Power Analysis. Difficulties of detecting significant interaction effects are well documented in the literature (McClellan & Judd, 1993). Thus, power analysis was conducted to determine level of achieved power with 500 cases and an anticipated small effect size. According to McClellan and Judd, two-way interaction effects tend to have effect sizes between $f^2 = .01$ to .03. Three way interactions are expected to be even more difficult to detect. Computed achieved power for detecting an interaction effect with 500 cases ranges from .61 to .97 (for f^2 of .01 and .03, respectively), which is a reasonable amount of power to detect hypothesized effects.

Results

LCA solution.

LCAs were estimated for two through six classes and values for the AIC, BIC, and adjusted BIC were plotted in separate graphs (see Figure 4 and Table 4). As stated previously, the BIC has been shown to be the most accurate of the three indicators for identifying the appropriate number of classes (Nylund et al., 2007). With

increasing random starts, LCA models for two through six latent classes generated solutions where the best log likelihood value was replicated. However, the six-class solution required an extremely large number (1000) of random starts to replicate the best log likelihood value, which tends to suggests that the model is asking for too many classes (Muthén, 2010). The information criteria (ICs) plots indicated that ICs continue to decrease with the estimation of additional classes, but reductions appeared to level at the 5-class solution. This pattern was particularly salient in the BIC plot (see Figure 4). Moreover, the VLMR of 2 through 5-class solutions generated *p* value less than .01 (i.e., the model with N classes had a better fit than the model with N-1 classes) whereas the 6-class solution generated a non-significant *p* value. Thus the 5-class solution was selected as the most optimal solution for describing the latent pattern of adolescent cultural frameworks for understanding parenting.

Various graphical representations were employed to interpret the resulting LCA solution. Specifically, estimated means for each latent class comparing percent of adolescent's and mother's life spent in the U.S. was represented by two separate sets of bar graphs (see Figure 5). Two separate portioned bar graphs (see Figure 6) illustrated the distribution of cases within each class that endorsed using mostly English, Chinese, or some of both languages when adolescents and mothers communicated with each other. Estimated means of the remaining nine scaled variables were presented in a line graph with each class represented by separate lines (see Figure 7). Combined, these estimates described five latent classes with distinct profiles of demographic/language characteristics and parenting value (see Table 5).

Class-1 described adolescents born in the U.S. with mothers who have lived in the U.S. for much of their life (43.5%). Most of Class-1 adolescents (61.9%) used some English and some Chinese when speaking to their mothers, whereas their mothers used either primarily Chinese or some of both languages when speaking to the adolescents. On average, these adolescents reported speaking and understanding Chinese nearly "very well" and said their mothers spoke and understood English better than "moderately well." In terms of parenting values, this group of adolescents reported the lowest levels of parental respect and ideal strictness, and highest levels of ideal laxness. They also reported feeling least loved and most mad about parental strictness, and most loved and least mad about parental laxness. Given this profile, Class-1 was labeled "second generation youths with mainstream American parenting values and expectations."

Class-2 captured recent immigrant youths who have lived in the U.S. for less than five years (came to the U.S. between ages of 9 and 15). They reported the highest levels of Chinese fluency, but the lowest level of English fluency for their mothers compared to those of the other latent classes. The majority of the adolescents (59.1%) and their mothers (76.6%) in Class-2 communicated with each other using primarily Chinese. These adolescents reported having parenting expectations that are mostly consistent with traditionally Chinese ways of parenting (e.g., relatively high levels of parental respect, less mad about parental strictness and less loved in the context of parental laxness). Thus, Class-2 was labeled "first generation youths with traditional Chinese parenting values."

Class-3 described foreign born youths who have lived in the U.S. for approximately half of their lives (having immigrated to the U.S. between ages of 3-9), they also reported the highest level of Chinese fluency, but described their mothers as having higher levels of English fluency than did youths of Class-2. Whereas the majority adolescents (54.0%) in this class spoke to their mothers in both English and Chinese with a high proportion of youths using primarily Chinese (42.2%), the majority of mothers (65%) spoke to their adolescents primarily in Chinese. Class-3 youths also endorsed a pattern of traditional Chinese parenting values (e.g., high parental respect and ideal strictness, lower levels of ideal laxness). Given their young age at immigration, Class-3 was labeled generation-1.5 (Rumbaut & Ima, 1988) youths with traditional Chinese parenting values and expectations.

Class-4 captured mostly monolingual English-speaking U.S. born youths, whose mothers were described as being most fluent in English compared to mothers of other Latent classes. This is the only class with some proportion of mothers who were born in the U.S. (21.1%) and/or used primarily English when speaking to their adolescents (27.3%). Interestingly, this class of adolescents also endorsed a traditionally Chinese pattern of parenting values. Class-4 was labeled generation-2.5 (Karthick Ramakrishnan, 2004) youths with traditional Chinese parenting values. Finally, Class-5 described mostly bilingual, U.S. born youths with mothers who have spent much of their life in the U.S. (42.6%). Demographically, Class-5 is very similar to Class-1, but youths of Class-5 endorsed traditional Chinese parenting values. Therefore, Class-5 was labeled second generation youths with traditional Chinese parenting values. Although characteristics of adolescents' mothers are an integral part

of the latent class solution, the class labels refer only to adolescent information for the sake of parsimony and to highlight the fact that cases classified are adolescents as opposed to mother-adolescent dyads or families[8].

In summary, Class-1, 4, and 5 are all U.S. born youths with mothers who have lived in the U.S. for much of their adult life. Class-1 differs from the other two groups in that these adolescents endorsed parenting values consistent with mainstream American beliefs of strictness balanced with warmth and relatively lower endorsements of parental respect. Class-4 and 5 is further differentiated in that adolescents of Class-4 appear to have mothers who are much more acculturated than those of Class-5 as evidenced by Class-4 mother's percent life spent in the U.S. and mothers' English fluency and use. Adolescents of Class-4 also appear less enculturated than adolescents of Class-5, as evidenced by Class-4 adolescents' predominant reliance on English and lack of Chinese fluency. Class-2 and 3 both describe foreign born adolescents with traditionally Chinese parenting values, but Class-2 adolescents are of more recent immigration status with more mono-lingual Chinese-speaking mothers than adolescents of Class-3 (see Table 4).

Main Analysis

The combined effects of parenting variables and covariates were found to differ significantly for at least one of the latent classes for each of the outcomes (internalizing, externalizing, GPA, and substance use). Log likelihoods, scaling correction factors, chi-squares, and *p* values for each pair of nested models compared can be found in Table 6.

[8] Although parent demographic information is gleaned from parent report whenever possible, data for the current study are predominantly generated by adolescent report.

Internalizing. The log likelihood test of chi-square differences indicated that the non-constrained model where regression coefficients were free to vary across all latent classes fit the data significantly better than the fully-constrained model predicting internalizing, $\chi^2(24) = 54.08$, $p < .001$. Thus, the regression coefficients for each latent class were interpreted separately. A significant interaction effect of parental control x warmth was found for latent Class-4: Generation-2.5 youths endorsing traditional Chinese parenting values. Plotting the interaction effect revealed a pattern of effects that was consistent with those found among the mainstream literature. Parental strictness in the context of low parental warmth appeared to worsen adolescent internalizing, but when parental warmth was high, parental strictness appeared to reduce internalizing symptoms (see Figure 8). This pattern was not found among any of other group. For latent Class-1, second generation youths with mainstream American parenting values and expectations, a significant negative main effect for parental strictness was found, $\beta = -0.10$, $p < .001$, but no other significant effects. For this class, parental strictness was related to a reduction in internalizing symptoms independent of parental warmth, which had a null main effect. No significant main effects for strictness and warmth were found for Class-2, -3, and -5. Interestingly, pattern of parenting effects for the fully constrained model for the entire sample were very similar to those of Class-4: parental strictness appeared to promote internalizing symptoms when parental warmth was low, but decrease internalizing when parental warmth was relatively high. See Table 7 for a complete list of regression coefficients of the full sample and each latent class.

Externalizing. Initial comparison of the non-constrained model (regression coefficients were free to vary across all latent classes) with the fully-constrained model predicting externalizing did not yield a significant chi-square difference, $\chi^2(24) = 26.90$, $p = .31$. When the fully-constrained model was compared to models where regression coefficients of only one latent class was freed at a time, Latent Class-1 generated a significant chi-square difference test, $\chi^2(6) = 17.35$, $p = .008$. In other words, the cumulative effect of parental strictness, warmth, their interaction term, and the covariates for latent Class-1 (2^{nd} generation youths with mainstream American parenting values) was significantly different from those of the other latent classes. Specifically, while parental strictness appeared to have no effect on adolescent externalizing when parental warmth was high, strictness was associated with increasing externalizing symptoms when parental warmth was low (see Figure 9). No other latent class generated a significant chi-square difference test when its coefficients were freed compared to the fully-constrained model. No significant main or interactions effects emerged among the other latent-classes held constant or the fully-constrained model. See Table 8 for a complete list of regression coefficients.

GPA. Initial comparison of the non-constrained model with the fully-constrained model predicting GPA did not yield a significant chi-square difference, $\chi^2(24) = 30.20$, $p = .18$. Allowing regression coefficients to be freely estimated one latent class at a time, the cumulative effect of parenting variables and covariates of Latent Class-4 (generation 2.5 youths endorsing traditional Chinese parenting values) was found to differ significantly from those the other latent classes, $\chi^2(6) = 13.06$, $p = .04$. Specifically, parental strictness was significantly associated with decreasing

GPA, $\beta = -.20$, $p < .01$, and parental warmth only marginally moderated the effect of parental strictness, $\beta = .10$, $p = .08$. In other words, for this class of adolescents, parental strictness was associated with decreasing GPA, but marginally less so for youths who also experienced relatively high levels of parental warmth (see Figure 10). No other latent class, when its coefficients were freed, generated a significant chi-square difference test compared to the fully-constrained model. No significant main or interactions effects emerged among the other latent-classes held constant. In contrast, the fully-constrained model evidenced a significant main effect of strictness being negatively associated with GPA, but no significant interaction effects (see Table 8).

Substance use. The non-constrained model where regression coefficients were allowed to vary across all latent classes failed to converge without errors due to the first-order derivative matrix being non-positive definite. This was most likely caused by limited variability of Time-2 substance use in certain latent classes. Given the small number of adolescents who endorsed any substance use (< 10% of reporting cases), it is probable that some of the latent classes had no adolescents who endorsed any substance use and therefore no variability on the dependent variable. Allowing regression coefficients to be freely estimated one latent class at a time, only Latent Class-1 generated a solution without non-convergence error messages. When compared to the fully-constrained model, the non-constrained model in which regression coefficients of Latent Class-1 was freely estimated demonstrated a significantly better fit for the data, $\chi^2(6) = 46.54$, $p < .001$. For Class-1 adolescents (second generation youths endorsing mainstream American parenting values), parental strictness was associated with increasing frequency of substance use (given some use)

and more severely for adolescents who are experiencing high levels of parental warmth, $\beta = .47$, $p = .01$ (see Figure 11). Parental strictness was also associated with increasing likelihood of substance use (versus no use), $\beta = 5.95$, $p = .042$, but no moderation effect of warmth was found. When the previously identified outlier was omitted, the cumulative effect of predictors and covariates of Class-1 still significantly differed from those all other latent classes, but the significant interaction effect for strictness x warmth on the frequency of substance use (given some use) was only marginal, $\beta = .43$, $p = .09$. However, parental strictness was still significantly associated with both increasing frequency, $\beta = 1.71$, $p < .001$, and likelihood of substance use, $\beta = 5.93$, $p = .04$. This loss of statistical significance for the interaction effect with the omission of the outlier indicates that the previously significant interaction effect was largely driven by this single case, consistent with the post-hoc observation that the multivariate outlier had notably higher maternal warmth than other adolescents reporting high frequencies of substance use. However, it is uncertain that this case needs to be excluded, and the effect found is not a representation of natural variability of the data given previous conclusions that this case's extreme scores are in fact valid.

The pattern of effects for the dichotomous portion of the semicontinuous model of Latent Class-1 was quite similar to those of the fully-constrained model: parental strictness increased the likelihood of substance use (compared to no use) regardless of whether the outlier was included. However, effects for the continuous portion of the regression in the fully-constrained model differed dramatically from those found with Latent Class-1. When the outlier was

included, strictness decreased the frequency of substance use (given some use) in the fully-constrained model, and parental warmth marginally increased the beneficial effect of strictness (i.e., strictness decreased frequency of substance use more so when parental warmth was high). When the outlier was omitted, no significant main or interaction effects were found to predict frequency of substance use in the fully-constrained model. In the fully-constrained model, the effect of strictness is actually opposite of those found for latent Class-1 suggesting that patterns found with the fully-constrained model may be substantially misrepresenting patterns of effects for adolescents with different cultural frameworks. See Table 9 for complete list of regression coefficients.

To summarize, models for all outcomes evidenced some significant moderation by latent class membership. Significant main and moderation effects were only found for latent classes 1 and 4, two groups of U.S. born adolescents with some notable differences. Class-4 is the most acculturated of the 5 latent classes in terms of adolescents' and their mothers' English fluency and use, and mothers' percent life spent in the U.S. Class-4 adolescents also endorsed the lowest levels of Chinese fluency and use compared to the other latent classes, though they highly endorsed parenting values consistent with those of traditional Chinese cultural norms. The classic authoritative parenting effect, where high levels of strict control and warmth combine to promote positive outcomes, was found for internalizing symptoms and marginally so for GPA of Class-4 adolescents. In contrast, a diverse set of significant effects were found for Class-1 adolescents, a group that was more likely to be bilingual with mothers who are less fluent in English compared to adolescents of Class-4. Class-1

adolescents were also the only group who endorsed a pattern of parenting values and expectation consistent with those of mainstream American parenting norms. The classic authoritative parenting effect was found for Class-1 adolescents' externalizing symptoms. For these bilingual youths with mainstream American parenting values and expectation, strictness decreased internalizing, independent of warmth. However, strictness increased the likelihood of substance use, and increased frequency of substance use (assuming some use) at high levels of maternal warmth.

Discussion

Findings of the current study suggest that distinct groups of Chinese American adolescents with different cultural frameworks for interpreting parenting can be identified by a combination of immigration related demographic variables and patterns of endorsement on measures of parenting expectations and values. Moreover, adolescents' experience of parenting behaviors (strictness and warmth), and its influence on psychological and academic outcomes is moderated by adolescents' cultural framework for interpreting parenting. Current results broadly support these overarching hypotheses, with partial support for specific hypothesized effects.

Although the current LCA solution identified three or more groups of adolescents with distinct patterns of demographic characteristic and endorsements of parenting values and expectations, only two of the three hypothesized groups were found among the 5-latent classes identified. Specifically, the anticipated group of mostly foreign-born, bilingual adolescents endorsing traditional Chinese parenting values and expectations were found as two separate groups—Class-2 (1st generation) and Class-3 (generation-1.5). Adolescents of both latent Class-2 and 3 endorsed highest

levels of Chinese fluency compared to adolescents of other latent classes. Class-2 consists of more recent immigrant adolescents who have only lived in the U.S. for approximately 3 years, and described their mothers as having the lowest level of English fluency compared to mothers of other latent classes. In contrast, Class-3 adolescents have lived in the U.S. for a little more than half of their life (approximately 8 years), and perceived their mothers as having significantly higher English fluency than adolescents of Class-2. Class-3 adolescents also endorsed a higher level of ideal strictness compared to Class-2 adolescents. These two groups did not differ on their endorsements of any other parenting values. The current 5-class solution clearly demonstrated support for the hypothesized group of mostly U.S. born, bilingual adolescents endorsing traditional Chinese parenting values and expectations, which is an accurate description of Class-5. This is, in fact, the most populous of the five latent classes. When cases are categorized to their most probably latent class, Class-5 consists of 46.8% of the sample (n = 234). Contrary to the hypothesis, a group of mostly U.S. born, mono-lingual English speaking adolescents endorsing mainstream American parenting values and expectations did not emerge. The monolingual English-speaking group (Class-4) endorsed patterns of parenting values that were consistent with traditional Chinese parenting norms. The group (Class-1) that endorsed parenting values and expectations most consistent with those of mainstream European American youths (Chao & Aque, 2009) was mostly bilingual. Although both groups of adolescents were U.S. born, Class-4 adolescents described their mothers as having spent a greater percentage of their life in the U.S. and having higher English fluency

and use, than did Class-1 adolescents. Class-4 adolescents also reported significantly lower Chinese fluency than did Class-1 adolescents.

These findings highlight the advantage of using a person-centered empirical approach in identifying variations in cultural frameworks that may not have been predicted from theory. Moreover, theoretically possible configurations of cultural frameworks (e.g., recent immigrants espousing mainstream American parenting values) may not be found in the data such that categorizing individuals based on arbitrary orthogonal combinations of dimensions to form typologies may misrepresent reality. The LCA approach, however, is not without limitations. In addition to being computationally taxing, the solution tends to be sensitive to even minor changes in constraints. For example, a model may fail to converge if a variable has zero variance in a particular class, or latent class sizes change with the addition of the regression model variables and parameters (i.e., mean, variance, covariance, intercept) even when LCA parameters were fixed to previously estimated values. Moreover, decisions about the appropriate number of classes and optimal solution relied heavily upon interpretability, with few established statistical decision points to support the process. These disadvantages of the LCA approach raises the question of whether including additionally relevant variables would yield vastly different solutions. Post-hoc analyses testing LCA models including only demographic variables, only parenting value variables, or all current variables except the affective interpretation of parenting variables (i.e., feeling mad or loved about strictness or laxness) were also conducted to assess whether a subset of variables were driving the LCA solution. It was reassuring that these other combinations of study variables yielded solutions that were much less

interpretable. It is also important to recognize that even if we assume that the current LCA solution is the most accurate representation of reality, the solution and interpretations may be entirely sample specific. Thus future replications of patterns found in the current solution is absolutely necessary to make broader interpretations of latent classes found in the current study.

Support for Primary Hypotheses

Notwithstanding the volatility of the LCA approach, the 5-class solution yielded meaningful adolescent cultural frameworks for interpreting parenting, which in turn significantly moderated the prospective effects of parenting on adolescent outcomes. It is important to note that the within class pattern of effects were substantially different from those of the fully-constrained model representing pattern of effects averaged across all latent classes or the entire sample. Sometimes, the latent class yielding significant main and interaction effects appeared to be driving pattern of effects found with the fully-constrained model (internalizing, GPA). Other times, significant effects found for specific latent classes were not detectable or entirely different in the fully-constrained model (externalizing, substance use). These differences clearly demonstrate the utility and importance of considering adolescent cultural frameworks in understanding the effects of parenting on Chinese American adolescent academic and psychological functioning. These results suggest that inconsistent findings for parenting effects on Chinese American adolescent adjustment may be in part attributable to inadequate considerations of the adolescents' cultural framework for understanding parenting.

Although significant moderation effects emerged as expected, some moderation effects were not in predicted directions. According to Hypothesis-1, strict control and warmth were expected to evidence significant main effects without interaction effects for a group of adolescents most likely to hold traditional Chinese cultural frameworks for interpreting parenting. The LCA solution yielded two such groups—Class-2 and 3 (1st generation and generation-1.5 youths, respectively). However, no significant main or interaction effects were found for either of these groups on any outcome measure. Current results suggest that these immigrant adolescents with traditionally Chinese cultural frameworks for interpreting parenting did not benefit from strict parental control independent of warmth as expected. Although, the lack of significant main effects for strictness on adolescent outcomes has been reported by at least one previous published study with Chinese/Chinese immigrant youths (Chen et al., 2000), the lack of significant main effect of warmth on any outcome variables is inconsistent with findings of previous studies (e.g., Chiu, et al., 1992; Greenberger, et al., 2000; Chen et al., 2000; C. Y.-W. Leung et al., 2004). It is possible that current measures of parenting, strict control and warmth from the CRPBI, may not be adequately capturing important aspects of parenting in the families of these classes of Chinese immigrant adolescents.

Hypothesis-2, which predicted that classic authoritative parenting effects would emerge for adolescents with cultural frameworks more consistent with mainstream American norms, was partially supported by current findings. Latent Class-1 and 4 of the current LCA solution best represent the originally hypothesized group, though in different ways. Class-4 was the most acculturated group in terms of adolescents' and

their mothers' demographic characteristics (generation 2.5). However, Class-4 endorsed parenting values consistent with traditional Chinese parenting norms. In contrast, Class-1 adolescents endorsed parenting values and expectations most consistent with mainstream American norms. The hypothesized interaction effect of strict control x warmth was found for Class-4 adolescents' internalizing symptoms and marginally for their GPA. Although this classic interaction effect was found for Class-1 adolescents' externalizing symptoms, findings for other outcome variables of Class-1 adolescents were less consistent with Hypothesis-2. These inconsistencies will be discussed in more details under the "Caveats and Limitations" section.

Finally, no support was found for Hypothesis-3, which predicted that a group of U.S. born, bilingual adolescents who endorsed traditionally Chinese parenting values would benefit from strict control independent of parental warmth. Although the LCA solution clearly identified this anticipated group of adolescents as Class-5, no significant main or interaction effects were found for this group with any of the outcome variables. This pattern of null effects echoes those found with Class-2 and -3, and suggests that these U.S. born, bilingual adolescents of Class-5 may be experiencing parenting in ways similar to their foreign-born counterparts of Class-2 and -3. This line of reasoning is further supported by the data that shows Class-2, -3, and -5 endorsing a very similar set of parenting values and expectations consistent with traditional Chinese parenting norms. Thus, it is possible that parenting practices salient for adolescents of Class-5, perhaps like those for adolescents of Class-2 and -3, are also not adequately captured by measures of strict parental control and warmth developed to describe parenting practice within mainstream European American families.

Interestingly, Class-5 adolescents were nearly identical to Class-1 adolescents in their demographics characteristics, but differed dramatically in their endorsement of parenting values and expectations. In fact, whereas Class-1 adolescents endorsed a set of parenting values and expectations that were most consistent with those of mainstream European American adolescents, Class-5 adolescents endorsed a pattern of parenting values and expectations that were most consistent with traditional Chinese parenting norms. Class-5 adolescents endorsed the highest level of parental respect and ideal strictness, lowest level of ideal laxness, and reported feeling most loved by parental strictness and least loved by parental laxness among all the latent classes. This juxtaposition, taken within the broader pattern of findings suggest that Chinese American adolescents' values and expectations for parenting significantly influence their experience of parenting or the effects of parenting when their mothers are less acculturated (i.e. having spent less than half of their life in the U.S. and having only moderate English fluency). However, for Chinese American adolescents with relatively highly acculturated mothers (Class-4), adolescents' endorsement of traditional Chinese parenting norms did not dilute the beneficial effects of having both high levels of strict parental control and warmth for the reduction of internalizing symptoms and the maintenance of GPA. Taken together, this set of results suggest that Chinese American adolescents' cultural framework that influences their experience of parenting is informed by a complex combination of adolescents' parenting expectations and their immigration history. It would be reasonable to infer from current findings that maternal acculturation level (as approximated by maternal demographic characteristics) and parenting values also likely influence Chinese American adolescents' experience of

parenting in important ways, probably via socialization practices not assessed in the current study.

Caveats and Limitations

Unexpected finding for Class-1. A number of unexpected significant effects found with Class-1 raise questions about the reliability and validity of these findings. Given that Class-1 was the only group of adolescents endorsing mainstream American values and expectations for parenting, it was important to consider whether this group of adolescents may be unique in other ways. When hypothesizing about the number of latent classes that would emerge, a group of relatively recent immigrant adolescents endorsing mainstream American parenting values and expectations were conceptualized but thought to be statistically unlikely. It was thought that such a combination of characteristics would represent a group of adolescents who may be actively rebelling against traditional Chinese parenting norms and perhaps having other adjustment difficulties (e.g., higher psychological symptoms and lower GPA). Although Class-1 adolescents are not recent immigrants and are born in the U.S., they may represent a group of adolescents who are actively rebelling against established norms, including traditional Chinese parenting values. Post-hoc analyses revealed that consistent with earlier conjectures about such a group having other adjustment difficulties, Class-1 adolescents reported higher rates of externalizing and substance use, and lower GPA at baseline than did adolescents of other latent classes. Therefore, when interpreting the moderation effect of latent class membership for adolescents of Class-1, these characteristics should be considered in conjunction with Class-1 adolescents' identified cultural framework for

interpreting parenting. Also unexpected is the substantial size of this group, albeit the smallest latent class, 12.6% is not a negligible proportion of youths who may be actively disagreeing with parenting norms of their cultural background and are on average experiencing more psychological symptoms and worse academic performance than youths of other latent classes. (See Table 10 for within-class means and significant differences.)

Class-1 adolescents' higher rate of externalizing problems may in part explain the unexpected main effect of strictness reducing internalizing symptoms independent of warmth. Given that adolescents at risk for externalizing problems tend to benefit from a higher level of parental control and consistent discipline (Goodnight, Bates, Pettit, & Dodge, 2009), the reduction in internalizing symptoms in response to strict parenting may be a result of experiencing fewer failures and having more opportunities for efficacy and mastery. This explanation, however, does not account for the finding that parental strictness increased the likelihood of substance use (vs. no use) independent of warmth, and increased the frequency of use (given some use) in conjunction with warmth (i.e., significant interaction effect) for Class-1 adolescents. However, the findings on substance use needs to be interpreted with great caution given the extremely low rate of substance use within the current sample. Given that no more than 40 adolescents endorsed any substance use at baseline or follow-up, the subsamples for each latent class may be too small to generate reliable and generalizable effects. Although the two-part semi-continuous model is well-equipped to handle the zero-inflated distribution of this outcome variable, the continuous portion of the model is still based on an extraordinarily small

number of cases. For Class-1, the only latent class for which the two-part semi-continuous mixture model converged, the frequency of use portion of the model is based on data of less than 10 people. Therefore, significant effects on substance use were not heavily weighted in the formulation of broader interpretations of current findings.

Covariation with latent class membership. Post-hoc analyses revealed that Class-4 adolescents have parents with significantly higher levels of education compared to that of Class-1 and -5, the other two latent classes of U.S. born adolescents. The positive relationship between parental education and the use of authoritative parenting is well documented in the literature including studies with Chinese American families (e.g., Magnuson & Duncan, 2002). Therefore, it is possible that the relatively consistent findings of classic authoritative parenting effects with Class-4 are partly attributable to this group's higher levels of parental education. However, for the current sample, parental education also may be an indicator of immigration pathways, which would likely covary with adolescent cultural frameworks. Because 21% of Class-4 adolescents' mothers were born in the U.S., and the rest having immigrated before the age of 30, a sizeable portion of this groups' parents presumably have had the advantage of being natural born citizens or achieving naturalized citizenship earlier in life, and arguably had more access to higher education compared to their counterparts of Class-1 and -5 (e.g., eligibility for funding sources such as federal student loans and grants). The predominant majority of Class-1 and 5's parents immigrated in their early 20s and 30s, presumably to pursue higher education. Interesting, adolescents of Class-2

and 3 reported that their parents were as highly educated as parents of Class-4 adolescents, suggesting that the two recent immigrant groups are highly educated. This finding likely reflects U.S. immigration policies toward individual from China, Taiwan, and Hong Kong during the 1990s, which significantly increased provisions for employment-based immigration, thereby boosting the entry of highly skilled workers (Shinagawa & Kim, 2008). Together, these post-hoc findings of unplanned latent class differences appear to represent natural intergroup differences that would reasonably be expected to covary with adolescents' cultural frameworks for interpreting parenting.

Statistical and methodological limitations. Patterns of significant effects are always limited by the statistical characteristics of one's sample. Although the current study was thought to be adequately powered to detect the hypothesized interaction effects with the full sample, it was not possible to predict the sample size and distribution of each latent class to know, a priori, whether certain effects would be difficult to detect for specific latent classes. Post-hoc analysis with cases "hard categorized" to their most probable latent class revealed that strict parental control had substantially less variation in Class-5 compared to other classes, which may explain the lack of significant effects with the largest of the latent classes. However, limited within class variability may be an inherent problem of LCA solutions as individuals with similar response patterns are often assigned to the same class by definition. Secondly, effects identified in the current study rely almost exclusive on adolescent report, such that most effects identified are those of perceived parenting on adolescents' self-report of outcomes. Moreover, adolescents' parenting values are likely influenced by their

experience of parenting behaviors, which was not able to be controlled in the current study given the lack of adequate parent-report of their own parenting behaviors. Third, given the within group nature of this study, measurement equivalence was not assessed for the current study. However, it may have been beneficial to test measurement invariance comparing the current sample of Chinese American adolescents to their White American counterparts in the overall MFAS sample. Evidence of measurement invariance would reduce the likelihood of null effects being a result of current parenting measures not adequately capturing important aspects of parenting experience by Chinese American adolescents. Finally, substantial missingness (approximately 25%) in follow-up measures of adolescent adjustment raises some concerns about the validity and generalizability of the findings, especially given findings of the attrition analysis (i.e., attritted group reported lower parental respect and higher externalizing symptoms at baseline than retained group). Although Bonferroni adjusted t-tests revealed no significant difference between retained and attritted adolescents on study variable at baseline, it is still possible that results are more generalizable to adolescents with relatively lower levels of externalizing symptoms and higher levels of parental respect for their mothers.

Future Directions

Future studies employing an LCA approach to identifying distinct cultural frameworks for interpreting parenting may consider including broader cultural constructs, such as collectivism/individualism or independence/interdependence. These variables were not included in the current study because the aim was to examine adolescents' cultural interpretations of parenting and how such interpretations

moderated the influence of parenting on psychological and academic outcomes. However, including broader cultural constructs may better contextualize adolescents' cultural frameworks for parenting, potentially increasing the stability of an LCA solution for identifying cultural frameworks. Similarly, including predictors in LCA models may also improve interpretability and validity of latent-classes identified.

Given that current findings suggest that the 5-class LCA solution may be representing variability in parental education, future studies need to consider including parental education and income (SES) as outcome variables of the LCA or covariates in the LCA model. Alternatively, the effects of SES may be tested for possible interaction effects with parenting behaviors. Finally, one of the most important ways in which the current study can be improved upon would be the inclusion of parent-report data on parenting behaviors and/or parenting values and other important variables that would shed light on the socialization processes contributing to adolescents' cultural frameworks for understanding parenting.

Conclusion

Recently, a Chinese American Yale Law School professor attracted much popular media attention with her portrayal of Chinese parenting as inflexibly harsh methods of imposing parental wills on children (Chua, 2011). She further asserted that such authoritarian methods are superior to mainstream American ways of parenting for producing academically successful and musically talented children. Chua's assertions captured national attention "bordering on obsession" (Fisman, 2011). Findings of the current study suggests that Chua's simplistic and extreme notions about parenting and its effects on adolescent outcomes clearly overlooks the crucial role of adolescents'

interpretation and expectations for parenting. Results of the current study provides support for the hypothesis that adolescents' values and expectations for parenting moderates parenting effect on psychological and academic outcomes. These findings suggest that assessing and addressing adolescent expectations for parenting may be a fruitful point of intervention in improving adolescents' experiences of parenting and its effects on psychological and academic functioning. Psychoeducation for parents regarding the potential influence of adolescent values and expectations for parenting may also help parents understand Chinese American adolescents' experiences of parenting and be more sensitive and effective in their parenting strategies. Most importantly, current findings indicate that Chinese American adolescents' cultural understanding and interpretation of parenting matters in the way they experience and benefit from parenting. Therefore, it is important to consider the adolescents' conceptualization and expectations for parenting in order to fully understand socialization processes that lead to positive adjustment and academic achievement for Chinese American and other immigrant youths.

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Table 1

Summary of Sample Demographics

Gender	Living arrangements	Age
- 255 girls (51%)	- 411 Both bio-parents in the home (82.2%)	- Adolescents' mean age: 14½ years old in 9th grade
- 243 boys (48.6%)	- 59 with mother only (11.8%)	- Mothers' mean age: approximately 44 years old
- 2 N/A (0.4%)	- 14 with mother & step-father (2.8%)	- Fathers' mean age: approximately 47 years old
	- 10 other arrangements (2.0%)	
	- 6 N/A (1.2%)	
	Mother Employment	Father Employment Status
	- 51.8% fulltime	- 81.8% fulltime
	- 12.8% part-time	- 5.2% part-time
	- 17.6% homemakers	- 0.6% homemakers
	- 1.6% students	- 1% students

Notes: N/A = no answer

Table 2

Zero-order Correlations and Descriptive Statistics for Indicators of Latent Profile Analysis

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. TC % life in US		.71**	-.26**	.28**	-.34**	-.27**	.01	.10*	.04	.09	.06	.02	-.06
2. Mom % life in US			-.38**	.39**	-.51**	-.45**	.03	.04	.07	.07	.01	.03	-.09
3. TC Chinese Fluency				.02	.38**	.29**	.15**	-.00	.03	.01	-.13*	.04	.12*
4. Mom English Fluency					-.32**	-.36**	.19**	.01	-.06	.12*	-.06	-.06	.15**
5. TC->M Chn/Eng ratio						.63**	.09	.02	.00	.04	-.10	-.02	.05
6. M->TC Chn/Eng Ratio							-.01	.05	-.03	-.02	-.04	.02	-.06
7. Respect for mom								.29**	-.28**	.17**	-.18**	-.03	.03
8. Ideal Strictness									-.51**	.42**	-.28**	-.17**	.12*
9. Ideal Laxness										-.23**	.27**	.44**	-.24**
10. Feel loved by Strictness											-.29**	-.39**	.14**
11. Feel mad about Strictness												.12**	-.23**
12. Feel loved by laxness													-.26**
13. Feel mad about laxness													
N	491	325	409	398	393	393	423	453	445	482	469	466	444
Min-Max	0-1	0-1	1-5	1-5	1-3	1-3	1-5	1-5	1-5	1-4	1-4	1-4	1-4
Mean	.84	.39	3.77	3.28	2.08	2.41	3.89	2.79	2.73	2.27	2.72	2.40	1.31
SD	.28	.22	1.01	1.00	.62	.57	.73	.68	1.03	.53	.50	.86	.53
Skew	-1.49	.78	-.41	-.09	-.06	-.31	-.46	.17	.34	.08	-.04	.23	2.08
Kurtosis	.82	.95	-.62	-.41	-.44	-.80	.25	.42	-.44	.20	.14	-.82	4.68

Note: *$p < .05$, **$p < .01$. TC->M Chn/Eng ratio = how much Chinese as opposed to English adolescent uses when speaking to mother; M->TC Chn/Eng Ratio = how much Chinese as opposed to English mother uses when speaking to adolescent.

Table 3:

Zero-order Correlations and Descriptive Statistics for Regression Model Variables including Covariates

	1	2	3	4	5	6	7	8	9	10	11	12
1. Adolescent Gender		-.01	.10*	-.09*	-.23**	-.09*	.11*	-.00	-.23**	-.07	.12*	.02
2. Parental Education			-.04	.13**	.15**	-.11*	-.06	-.12**	.18**	-.05	-.07	-.05
3. Parental Strictness				-.32**	-.12*	.13**	.20**	.06	-.20**	.09	.16**	.14**
4. Parental Warmth					.12*	-.26**	-.34**	-.12*	.18**	-.16**	-.28**	-.13*
5. T1 GPA						-.06	-.27**	-.19**	.73**	-.02	-.25**	-.18**
6. T1 Internalizing							.56**	.18**	-.05	.64**	.37**	.14**
7. T1 Externalizing								.44**	-.17**	.35**	.66**	.35**
8. T1 Substance Use									-.16**	.02	.23**	.46**
9. T2 GPA										-.04	-.20**	-.20**
10. T2 Internalizing											.58**	.29**
11. T2 Externalizing												.48**
12. T2 Substance Use												
N	498	482	500	500	492	493	493	481	383	377	377	373
Min-Max	0-1	1-8	1-5	1-5	0-4	0-2	0-2	0-6	0-4	0-2	0-2	0-6
Mean	.49	5.51	3.24	3.39	3.43	.44	.31	.12	3.46	.43	.32	.19
SD	.50	1.46	.71	.80	.54	.28	.23	.49	.47	.30	.26	.78
Skew	.05	-1.54	.27	-.41	-1.16	.86	1.28	6.62	-1.07	1.49	2.12	5.65
Kurtosis	-2.01	2.60	-.08	-.05	1.13	.51	2.43	58.83	1.21	3.94	9.11	35.66

Note: *$p < .05$, **$p < .01$. T1 = time 1 or baseline in fall of 9th grade; T2 = Time 2 or follow-up in fall of 10th grade.

Table 4

Information Criteria and Vuong-Lo-Mendell-Rubin Test (VLMR) p values.

	AIC	BIC	N-adj BIC	VLMR *p*
2-Class	9442.61	9657.56	9495.68	< 0.001
3-Class	9151.83	9472.14	9230.91	0.013
4-Class	8911.12	9336.80	9016.22	0.003
5-Class	8748.11	9279.15	8879.22	0.009
6-Class	8643.31	9279.72	8800.43	0.783

Note: AIC = Akaike Information Criteria, BIC = Bayesian Information Criteria, N-adj BIC = sample size adjust BICs, and VLMR = Voung-Lo-Mendel-Rubin Test; small values for the ICs indicate better fit.

Table 5

Patterns of Nativity, Language Use, and Parenting Values Profiles by Latent Classes

Latent Class #	Nativity	% of Mom's Life Spent in U.S.	Adolescent Language Use	Mother English Fluency	Parenting Values
1	U.S. born	43.5	English/Bilingual	Moderately Fluent	American
2	Foreign born	9.3	Chinese dominant	English limited	Chinese
3	Foreign born	19.4	Chinese/Bilingual	Moderately Fluent	Chinese
4	U.S. born	67.2	Monolingual English	Very Fluent	Chinese
5	U.S. born	42.6	English/Bilingual	Moderately Fluent	Chinese

	Latent Class Labels	N	% of sample
1	2nd Generation youths with mainstream American parenting values	63	12.6
2	1st Generation youths with traditional Chinese parenting values	63	12.6
3	Generation-1.5 youths with traditional Chinese parenting values	64	12.8
4	Generation-2.5 youths with traditional Chinese parenting values	76	15.2
5	2nd Generation youths with traditional Chinese parenting values	234	46.8

Note: Years mothers lived in the U.S. are estimation of average number of years mothers have lived in the U.S. extrapolated from the "percent of mother's life spent in U.S." variable. Under the column entitled "Parenting Values" American = mainstream American parenting values and expectations, Chinese = traditionally Chinese parenting values and expectations.

Table 6

Log Likelihood Values for Nested Models

	Log Likelihood	Scaling Factor	# of free parameters	χ^2(df)	χ^2 diff. *p*-value
Internalizing					
Fully Constrained	-7840.01	1.31	37		
Non-Constrained	-7811.38	1.21	61	$\chi^2(24) = 54.09$	< .001
Externalizing					
Fully Constrained	-7638.18	1.62	37		
All Classes Freed	-7618.54	1.55	61	$\chi^2(24) = 26.90$	.309
Class-1 Freed	-7628.52	1.55	43	$\chi^2(6) = 17.35$	.008
Class-2 Freed	-7634.49	1.64	43	$\chi^2(6) = 4.14$	.657
Class-3 Freed	-7633.65	1.67	43	$\chi^2(6) = 4.46$	.615
Class-4 Freed	-7631.55	1.62	43	$\chi^2(6) = 7.97$	.241
Class-5 Freed	-7635.25	1.59	43	$\chi^2(6) = 4.02$	.674
GPA					
Fully Constrained	-8539.91	1.17	37		
Non-Constrained	-8524.73	1.11	61	$\chi^2(24) = 30.20$	.178
Class-1 Freed	-8537.50	1.16	43	$\chi^2(6) = 4.54$	.604
Class-2 Freed	-8537.88	1.14	43	$\chi^2(6) = 4.22$	.646
Class-3 Freed	-8538.27	1.08	43	$\chi^2(6) = 6.97$	.324
Class-4 Freed	-8533.32	1.15	43	$\chi^2(6) = 13.06$	.042
Class-5 Freed	-8534.31	1.25	43	$\chi^2(6) = 6.60$	.359
Substance Use (outlier included)					
Fully Constrained	-4174.93	1.10	22		
Class-1 Freed	-4158.81	0.96	34	$\chi^2(12) = 46.54$	< .001
Substance Use (outlier omitted)					
Fully Constrained	-4163.36	1.15	22		
Class-1 Freed	-4149.18	0. 95	34	$\chi^2(12) = 49.47$	< .001

Table 7

Latent Class Specific and Full Sample Regression Coefficients for Internalizing

	Class-1	Class-2	Class-3	Class-4	Class-5	Full Sample
T1 Internalizing	.69*	.98*	.92*	.60*	.65*	.67*
Gender	.06	-.02	-.03	<-.01	-.04	-.01
Parental Education	.01	.05	-.06*	-.04	.02^	<-.01
Strict Control	-.10*	-.13	.01	.10	< .01	-.01
Warmth	< -.01	.07^	< -.01	-.02	.03	.01
Strictness x Warmth	< -.01	.05	.01	-.25*	-.02	-.07*

Note: * $p < .05$; ^ $p < .10$

Table 8

Regression Coefficients for Models Predicting Externalizing and GPA

	Externalizing			GPA		
	Class-1	Class-2 thru -5 constrained	Full Sample	Class-4	Class-1, -2, -3, & -5 constrained	Full Sample
Baseline	.39*	.86*	.76*	.50*	.63*	.63*
Gender	- .01	.03	.03	-.06	-.06	-.06^
Parental Education	.01	-.01	-.01	.09^	-.02	.03*
Strict Control	.06*	-.01	.01	-.20*	-.03	-.06*
Warmth	-.17*	.01	-.02	-.01	.01	.01
Strictness x Warmth	-.14*	-.03	-.04	.09^	-.02	.01

Note: Unconstrained model predicting Externalizing had Class-1 freed while other classes were held equal. Unconstrained model predicting GPA had Class-4 freed while other classes were held equal. Baseline = Time 1 measure of outcome variable. * $p < .05$; ^ $p < .10$.

Table 9

Class Specific & Full Sample Regression Coefficients for Semi-Continuous Models Predicting Substance Use

	Outlier Included						Outlier Omitted					
	Class-1		Class-2 thru -5 Constrained		Full Sample		Class-1		Class-2 thru -5 Constrained		Full Sample	
	Use vs. No-Use	Freq. of Use	Use vs. No-Use	Freq. of Use	Use vs. No-Use	Freq. of Use	Use vs. No-Use	Freq. of Use	Use vs. No-Use	Freq. of Use	Use vs. No-Use	Freq. of Use
T1 Substance Use	4.97*	1.03*	9.48*	0.31	3.96*	0.08	4.92*	1.22*	9.46*	0.30	3.95*	-0.68
Gender	- 9.80*	3.28*	-0.19	0.40	-0.60	0.72^	-9.76*	-3.35*	-0.20	0.42	-0.59	1.05
Parental Education	-0.06	-0.52*	-0.09	-0.05	-0.03	-0.26	-0.06	-0.55*	-0.09	-0.05	-0.03	-0.23
Strict Control	5.95*	1.69*	0.29	-0.67	0.76*	-0.50*	5.93*	1.72*	0.29	-0.66	0.76*	-0.40
Warmth	0.48	0.36*	-0.52	-0.19	-0.23	0.22	0.46	.44^	-0.52	-0.19	-0.23	0.07
Strictness x Warmth	1.86	0.47*	-0.51	-0.76	-0.27	-0.50^	1.86	.43^	-0.51	-0.75	-0.26	-0.40

Note: Unconstrained models had Class-1 freed while other classes were held equal. “T1 substance use” = frequency of use that includes zero-use. “Freq. of Use” = Frequency of use given some use. * $p < .05$; ^ $p < .10$.

Table 10

Mean differences between classes when cases classified to most probable class

	Class-1	Class-2	Class-3	Class-4	Class-5
Parent Education *	5.24[d]	5.51	5.66	6.05[a e]	5.37[d]
Strict Control *	3.19	3.05	3.37	3.39	3.23
Warmth *	2.97[b c d e]	3.52[a]	3.42 [a]	3.37 [a]	3.48 [a]
9th grade fall GPA *	3.23[c]	3.45	3.57[a]	3.43	3.45
10th grade total GPA *	3.28[c]	3.46	3.59 [a]	3.41	3.47
T1 Internalizing	.49	.48	.43	.45	.42
T2 Internalizing	.43	.44	.40	.43	.43
T1 Externalizing *	.41[b c e]	.30[a]	.28 [a]	.32	.30 [a]
T2 Externalizing	.42	.30	.29	.34	.30
T1 Substance Use *	.12[b c d e]	.03a	.01 [a]	.01 [a]	.04 [a]
T2 Substance Use	.16	.10	.04	.11	.05

Note: * significant overall effect in ANOVA. Post-hoc comparisons of mean differences: a = significantly (sig.) different from class-1, b = sig. different from class-2, c = sig. different from class-3, d = sig. different from class-4, e = sig. different from class-5,

Figure 1. Nativity and birth place of foreign born adolescents

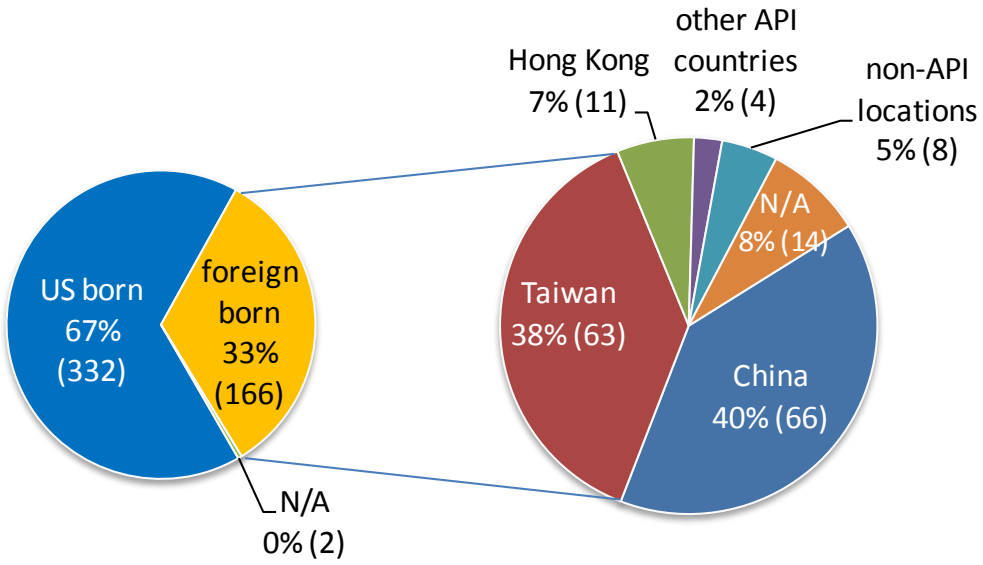
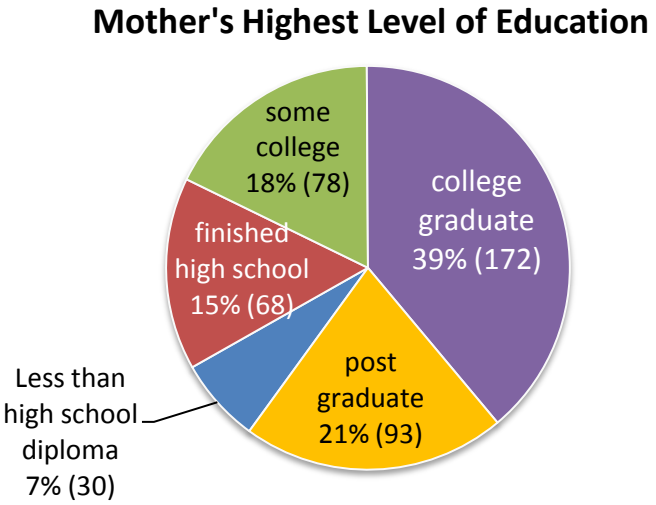


Figure 2. Parents highest level of education



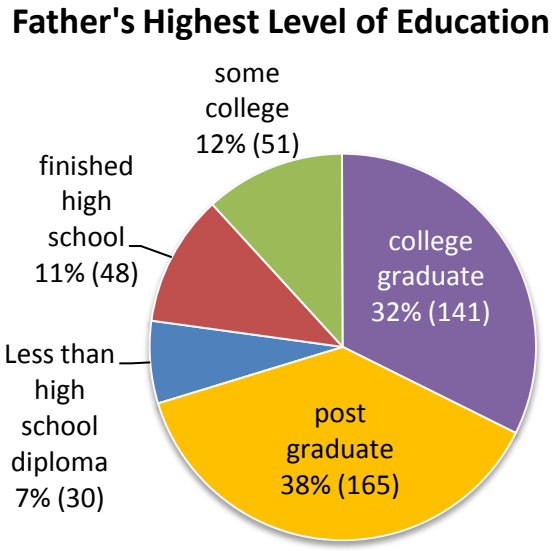
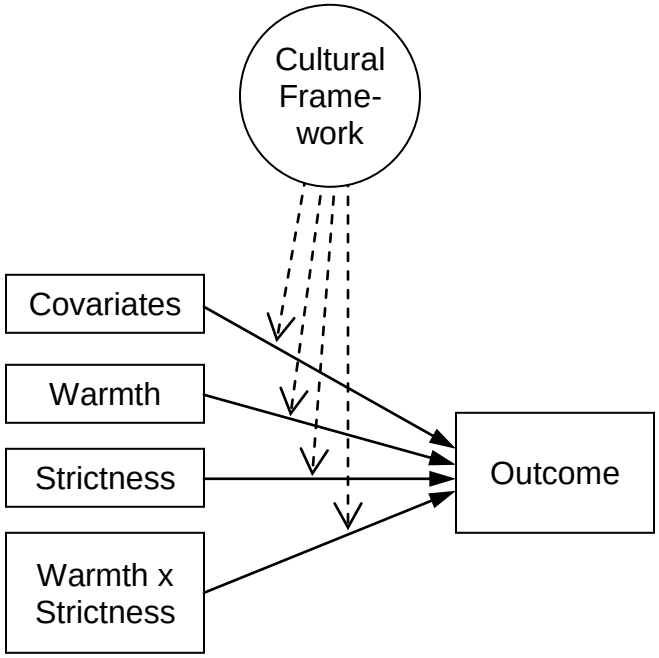
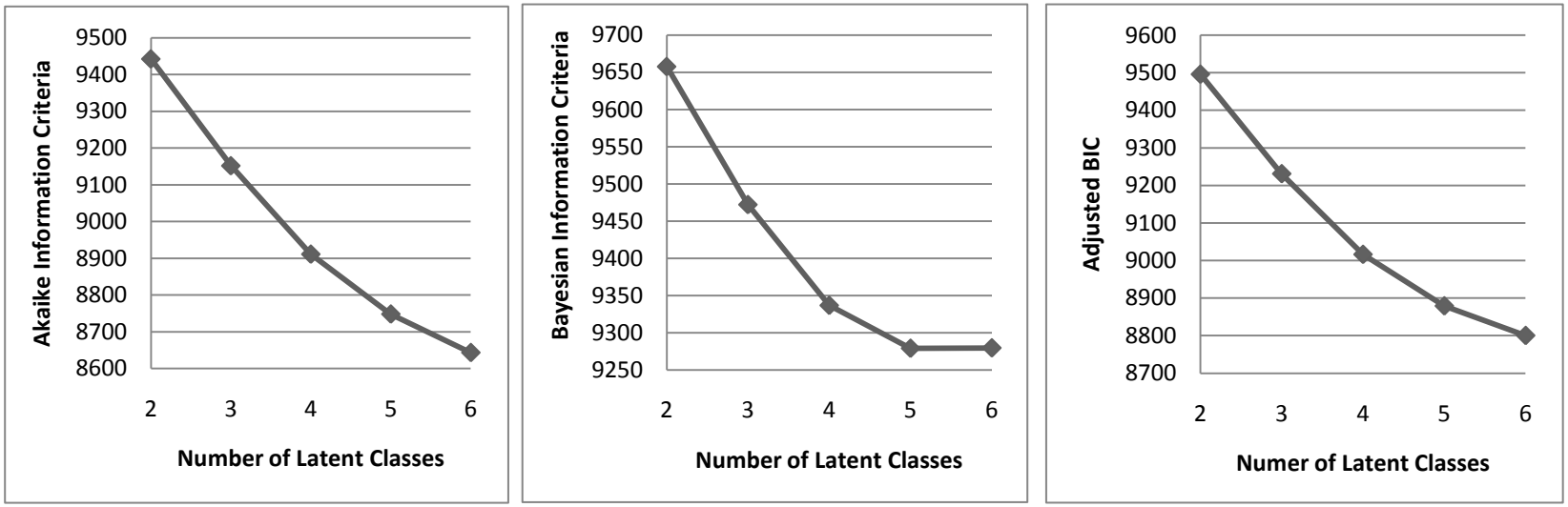


Figure 3. Conceptual representation of regression effects moderated by LCA



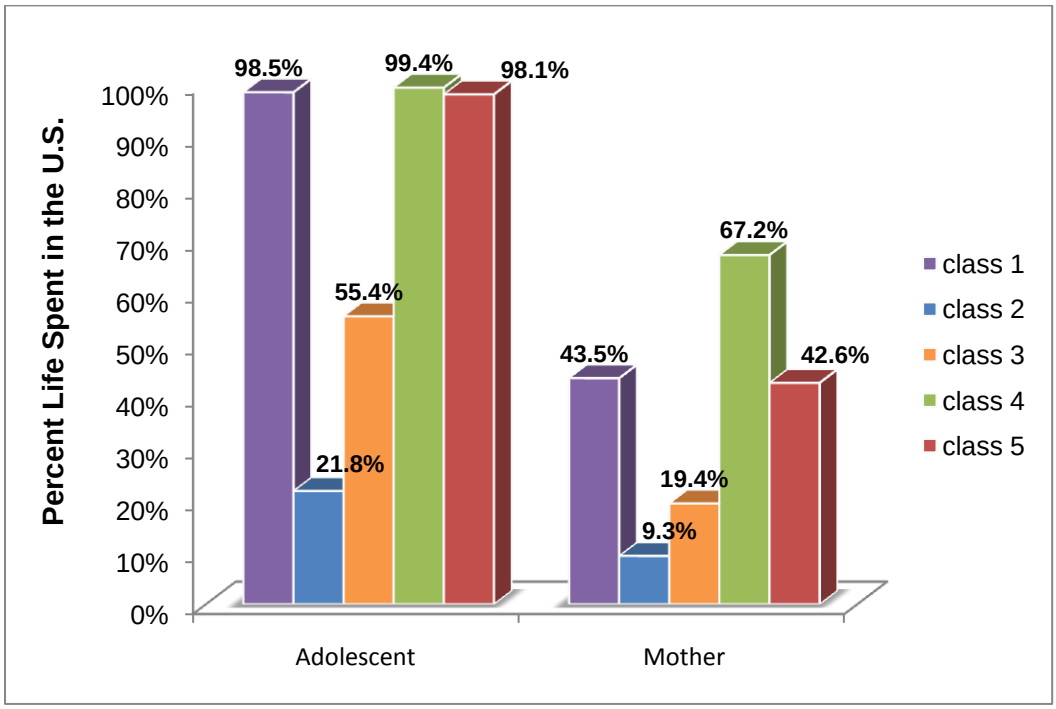
Note: nested models tested the cumulative moderation effects represented by the dotted lines.

F*igure 4.* Comparing Information Criteria of Latent Class Solutions for Increasing Number of Classes.



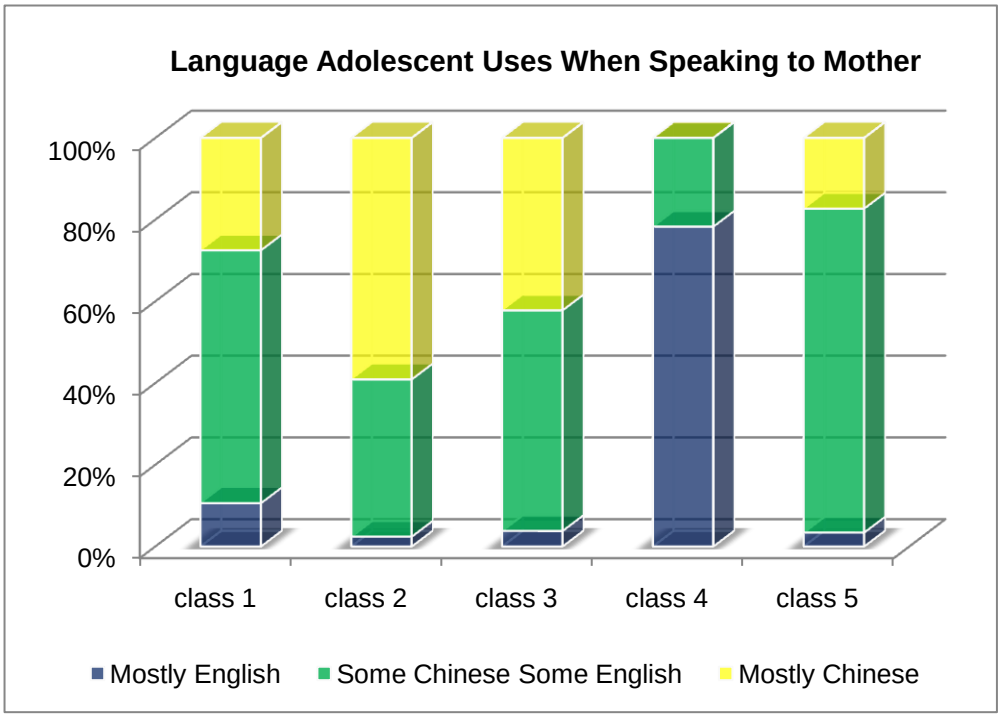
Note: Adjusted BIC = sample adjusted Bayesian Information Criteria

Figure 5. Estimated Percent of Adolescent's and Mother's Life Spent in the U.S. by Latent Class



Note: Individuals born in the U.S. would have spent 100% of his/her life in the U.S. A 14 year old adolescent who immigrated to the U.S. at the age of 7, would have spent 50% of his/her life in the U.S.

Figure 6. Proportions of each Latent Class Endorsing each of the 3 Language Use Categories



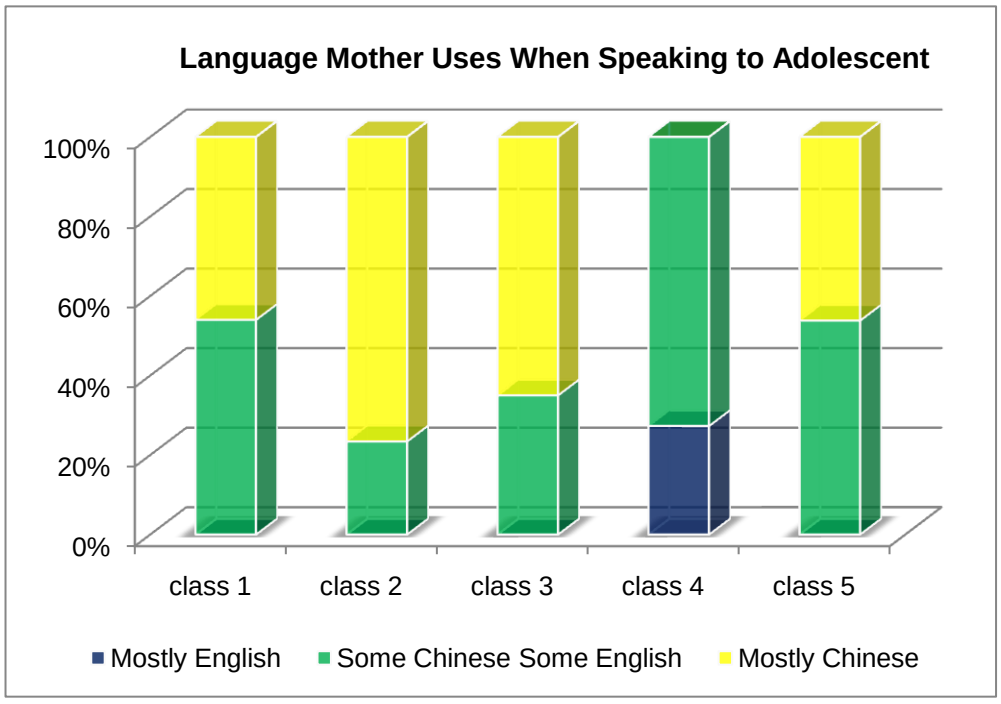
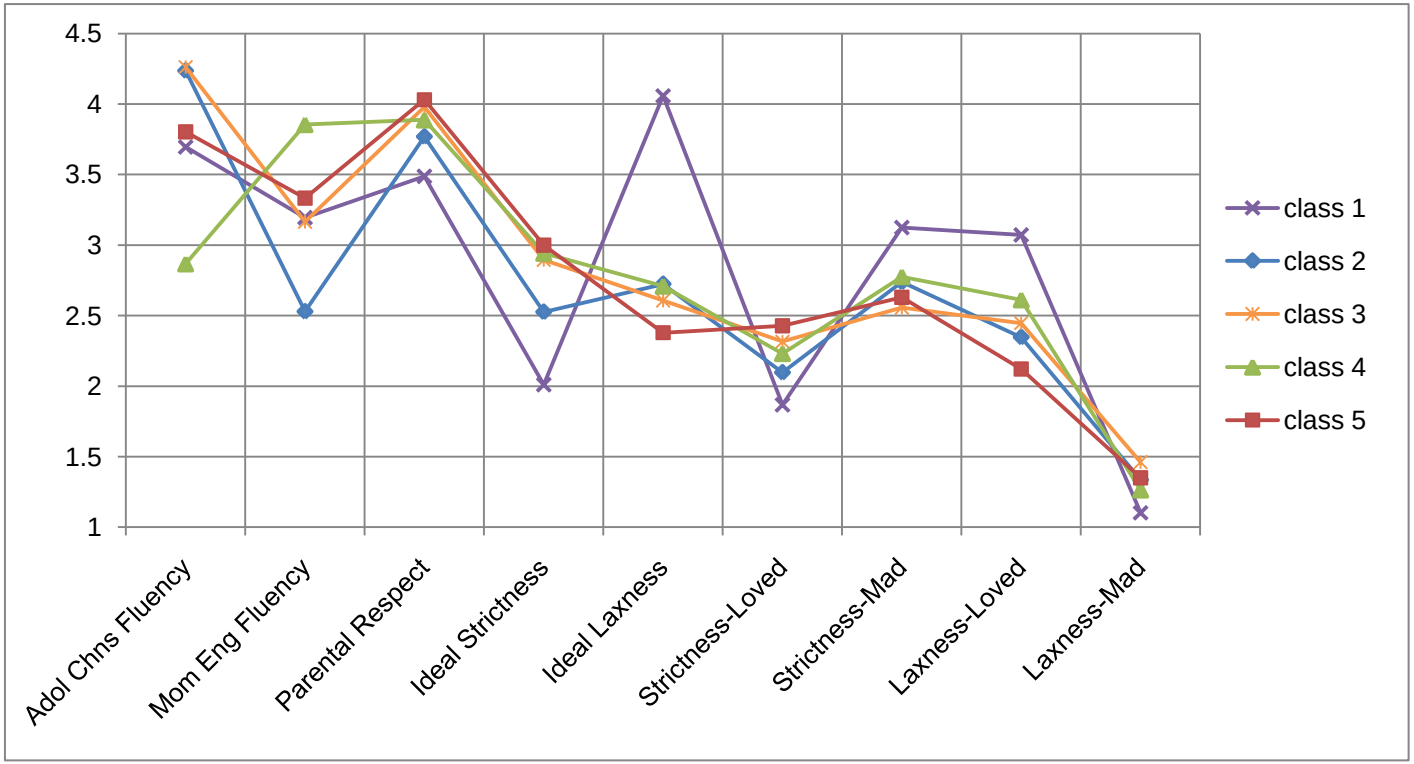


Figure 7. Estimated Means for Language Fluency and Parenting Values Scales Plotted by Latent Class



Note: All variables are by adolescent report. Adol Chns Fluency = how well the adolescent speaks and understands Chinese, Mom Eng Fluency = how well their mother speaks and understands English, Strictness/laxness-loved/mad = how loved or mad adolescent feels in response to strictness or laxness.

Figure 8. Effects of Strictness on Internalizing at Levels of Warmth for Latent Class-4.

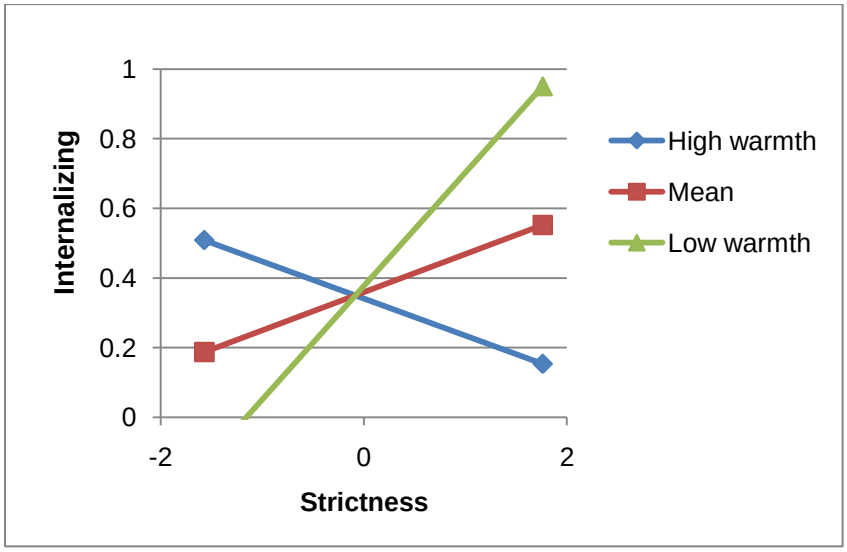


Figure 9. Effects of Strictness on Externalizing at Levels of Warmth for Latent Class-1.

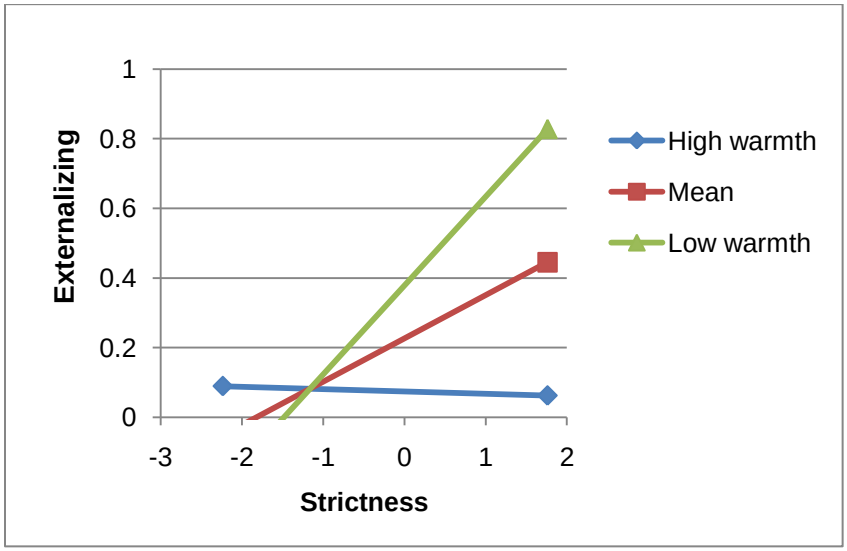
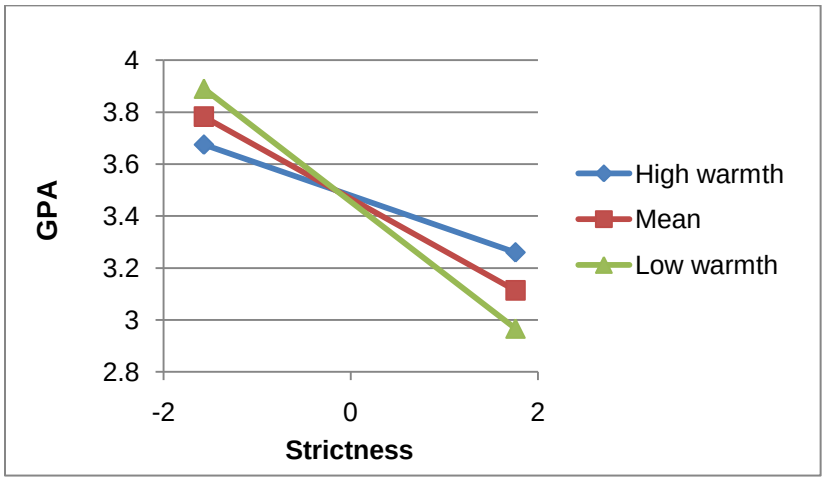
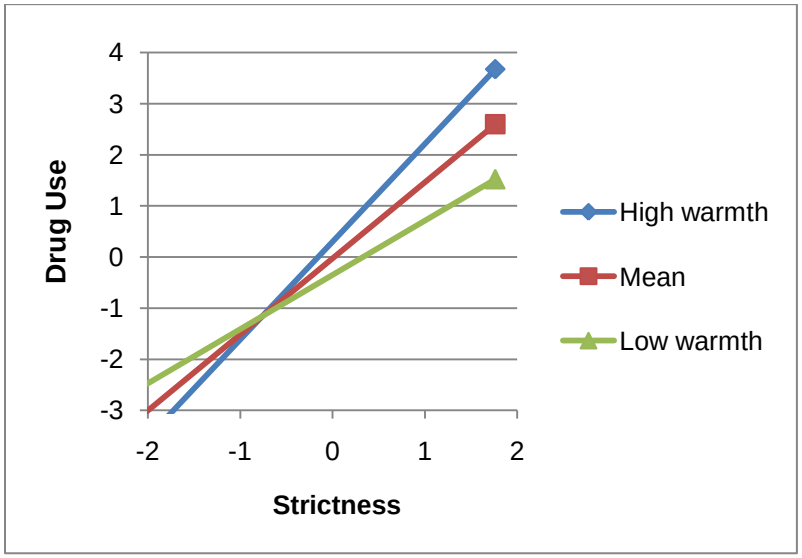


Figure 10. Effects of Strictness on GPA at Levels of Warmth for Latent Class-4.



Note: Strictness x warmth interaction was only marginally significant. The effect was plotted only for its contribution to understand general trends.

Figure 11. Strictness Predicting Frequency of Substance use at Levels of Warmth for Latent Class-1.



Note: this graph represents the continuous portion (frequency of use given some use) of the semicontinuous regression with the outlier include.