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# A LONGITUDINAL EXAMINATION OF DISCRIMINATION AMONG CHINESE AMERICAN YOUTH: PREDICTORS, CONSEQUENCES, AND PROTECTIVE FACTORS

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## ABSTRACT

Despite being portrayed as model minorities, Asian American adolescents face the challenges of discrimination. Using longitudinal data from 444 Chinese American adolescents (Mage = 13.04 at wave 1, 54% female), the current study examined if there were variations in discrimination experiences from 7th or 8th grade to college. We also explored if neighborhood ethnic concentration and adolescents' acculturation predicted discrimination trajectories, whether discrimination trajectories related to depressive symptoms and achievement, and whether parents' preparation for bias messages moderated the associations between discrimination trajectories and adolescent outcomes. Three distinct discrimination trajectories were identified: (1) Low-increasing trajectory, (2) Moderate-stable trajectory, (3) High-decreasing trajectory. The results revealed that neighborhood ethnic concentration predicted discrimination trajectories with adolescents living in more ethnically concentrated neighborhoods were more likely to be in the Moderate-stable trajectory than in the Low-increasing trajectory. Adolescents' acculturation also predicted discrimination trajectories with more acculturated adolescents were more likely to be in the Low-increasing trajectory than in the Moderate-stable trajectory. Chinese American adolescents in the High-decreasing trajectory had significantly higher levels of depressive symptoms than adolescents in the other two trajectories. The findings of the study highlight the heterogeneity in Chinese American adolescents' discrimination experiences and offer us some insights into the adolescents who might be at higher risk for encountering discrimination and in greater need of intervention.

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# Chapter 1

## Introduction

Consisting of more than 20 groups with different languages, cultures, and immigration histories, Asian Americans make up a heterogeneous population in the United States (U.S.) (López et al., 2017). In 2017, Asian Americans comprised 5.4 percent of the U.S. population and are projected to surpass Latinxs and become the largest foreign-born immigrant group by 2050 (López et al., 2017). Similarly, the number of Asian American students has been increasing rapidly. Children and adolescents under 18 comprise 21% of Asian American immigrants, reflecting the rapid increase of Asian immigrant youth in the school system (U.S. Census Bureau, 2017). In addition, about 88% of Asian American children and adolescents are either first-generation themselves or have at least one foreign-born parent (U.S. Census Bureau, 2017).

The changing pattern of U.S. demographics has attracted the attention of researchers to study the development of Asian American adolescents (Benner & S. Y. Kim, 2009; Kiang, Cheah, Huynh, Wang, & Yoshikawa, 2016). However, most of the previous research has focused on Asian American adolescents' academic achievement and has neglected the challenges and obstacles these adolescents have to deal with as ethnic minorities (Cooc & Gee, 2014; Juang & Alvarez, 2011). One of the challenges that Asian American adolescents face is discrimination (Juang & Alvarez, 2011; Kiang et al., 2016a; Kiang, Tseng, & Yip, 2016). Discrimination is defined as prejudicial behavior and

unfair treatment based on social group membership (Stroebe & Insko, 1989). Like adolescents of other ethnic minority groups, discrimination is a common part of the life of Asian American adolescents (Benner et al., 2018; Kiang, Witkow, & Thompson, 2016). Though some Asian Americans have made considerable achievements in the U.S. society, many Asian Americans are still victimized by discrimination and unfair treatment (Kiang & Bhattacharjee, 2016). On the one hand, Asian Americans face the distinctive experience of being held up as the "model minority". On the other hand, they are constantly stereotyped as foreigners who never quite fit into the conceptions of "American," regardless of whether they were born in the U.S. or how American they feel (Cheryan & Monin, 2005; Kiang et al., 2016c; S. Y. Kim, Wang, Deng, Alvarez, & Li, 2011; Ng, Lee, & Pak, 2007). Such contradictory stereotypes have not only complicated Asian Americans' daily lives but also have contributed to skewed research focusing heavily on academic achievement (Kiang et al., 2016c) and neglecting the fact that many of them are being treated unfairly.

Incidents of discrimination against Asian Americans have increased exponentially amid the COVID-19 pandemic (Jeung et al., 2021; Ruiz et al., 2020), escalating from verbal and physical attacks toward younger children and elders to tragic mass shootings in Atlanta resulting in 8 deaths, including 6 Asian women (The New York Times, 2021). The increases in discrimination against Asian Americans sparked the nationwide #STOPASIANHATE movement and brought to the surface the long history of racism against Asians that is so often invisible and neglected in the U.S. These longstanding

issues point to the need for a better understanding of discrimination experiences among this population to promote their positive development.

The literature on discrimination against Asian Americans is relatively small compared to other racial and ethnic groups. In a systematic review on the relationships between discrimination and health outcomes of children and adolescents (Priest et al., 2013), relatively fewer of the identified articles were about Asian Americans whereas more identified studies were conducted among African American and Latinx samples. There may be several reasons for this discrepancy in coverage of discrimination experiences among other ethnic minority groups and Asian Americans. The model minority stereotype about Asian Americans portrays them as a group with the ability to succeed by overcoming difficulties and hardship (Benner & S. Y. Kim, 2009). Nevertheless, studies have demonstrated that Asian American adolescents are under the negative influence of discrimination, just like adolescents of other minority groups (Benner & S. Y. Kim, 2009; Grossman & Liang, 2007). Moreover, a recent meta-analysis (Benner et al., 2018) illustrates that the relationships between discrimination and socioemotional distress were even stronger for Asian American adolescents than for African American and Latinx students. These findings suggest that Asian American adolescents may be more susceptible to the negative consequences of discrimination. Furthermore, despite the public view that Asian American adolescents are rarely the victim of discrimination, considerable evidence suggests that Asian American adolescents suffer more from peer discrimination than adolescents of other ethnic minority groups (Rivas-Drake, Hughes, & Way, 2007; Rosenbloom & Way, 2016).

Studies have started to document the detrimental effects of discrimination on developmental outcomes (e.g., mental health, peer relationships, and achievement) among Asian American adolescents (e.g., Benner & S. Y. Kim, 2009; Huynh & Fuligni, 2010; Juang & Cookson, 2009). However, few studies have taken a longitudinal approach to study how perceived discrimination changes over time from adolescence to young adulthood and how such changes impact Asian American adolescents' development longitudinally. Adolescence is an important period in which their cognitive abilities and social contexts change. Such changes are often related to adolescents' discrimination experiences (Brown & Bigler, 2005). At the cognitive level, adolescents' ability to take other people's perspectives and understanding how others view their group becomes more sophisticated than children, which makes them more sensitive in detecting discrimination (Brown & Bigler, 2005). At the social level, adolescents spend more time socializing with friends and classmates outside of their homes and are increasingly more exposed to discrimination (Brown & Bigler, 2005; Kiang et al., 2016c). Due to these reasons, discrimination is more frequent during adolescence than in childhood (Brown & Bigler, 2005). Transitions from adolescence to emerging adulthood are also marked by changes in social contexts. Compared to adolescents, early adults experience more residential instability and start to explore different social roles outside of their home (Arnett, 2004; Lee, Heinze, Neblett, Caldwell, & Zimmerman, 2018), which influences their exposure to discrimination. As racial and ethnic minority status becomes more salient for minority adolescents during adolescence and continuing into emerging adulthood, experiencing discrimination can have profound implications for how minority

adolescents view themselves and their ethnic-racial group. Studying how perceived discrimination changes over time can provide valuable information on how minority adolescents experience discrimination as a function of age and development while navigating through changing environments.

Furthermore, Brown and Bigler (2005) asserted that the pattern of changes in discrimination may vary with contextual and individual characteristics. Existing studies suggest that there is heterogeneity in how discrimination changes over time with some studies finding an increasing trajectory (e.g., Greene et al, 2006; Juang & Cookston, 2009), others a decreasing trajectory (e.g., Kiang et al., 2016c), and still others a more stable trajectory (e.g., Greene et al., 2006). These findings suggest that there may be different patterns of changes in discrimination and one trajectory (e.g., increasing) does not apply to all adolescents. More importantly, the pattern of changes in discrimination may vary with contextual and individual characteristics (Brown & Bigler, 2005). At the contextual level, the neighborhoods adolescents live in, more specifically neighborhood ethnic-racial composition, affect adolescents' discrimination experiences. For instance, those who grow up in ethnic enclaves with residents from the same ethnic background may experience stable and lower levels of discrimination due to limited contact with people from other groups in their neighborhood (Unger, Soto, & Baezconde-Garbanati, 2016). Alternatively, youth who live in more diverse neighborhoods may experience an escalating trajectory of discrimination given that they have more interactions with neighbors from other cultural backgrounds (Smith-Bynum, Lambert, English, & Ialongo, 2014).

Brown and Bigler (2005) also suggested that individual cultural characteristics affect adolescents' perceptions of discrimination. Acculturation, the process in which individuals from one culture adapt to a different culture (Berry, 2003), is a crucial cultural factor that is associated with adolescents' discrimination experiences. Familiarity with the mainstream culture eases the interaction with other ethnic groups and therefore more acculturated adolescents may experience less discrimination (Juang & Cookston, 2009). Unfamiliarity with the mainstream culture, on the other hand, may be associated with an increase in perceived discrimination as adolescents are perceived as more foreign and become an easy target of discrimination (Juang & Cookston, 2009).

Research has increasingly documented the negative influence discrimination has on adolescents' achievement and psychological adjustment (Benner et al., 2018). Achievement and psychological adjustment (e.g., depressive symptoms) are two important developmental domains of adolescence (Roeser & Eccles, 1998; Wigfield, Eccles, Fredricks, Simpkins, Roeser, & Schiefele, 2015). Succeeding academically and maintaining mental health continue to be important tasks for adolescents, given that academic achievement is a crucial indicator for future career success (Johnson, Brett, & Deary, 2010) and depressive symptoms in adolescence may lead to risky behavior and suicide later in life (Lehrer, Shrier, Gortmaker, & Buka, 2006; Kerr, Reinke, & Eddy, 2013). Most studies on perceived discrimination and adolescents' achievement or depressive symptoms have been cross-sectional or used discrimination at one point to predict achievement or depressive symptoms at a later timepoint. Although these studies help establish the relations between discrimination and adolescents' developmental

outcomes, they ignore that adolescents' discrimination experiences change over time and such changes can also impact adolescent development (Unger et al., 2016). In this study, we explored how different patterns of changes in discrimination were associated with achievement and depressive symptoms among Asian American adolescents.

Discrimination is a common part of minority adolescents' lives and has negative effects on their well-being (Benner et al., 2018). As the U.S. society becomes increasingly diverse, researchers are inspired to identify the factors that can buffer the negative influence of discrimination to promote resilience in minority children and youth (Wang, Henry, Smith, Huguley, & Guo, 2020). Because parents of color play an important role in helping and socializing children of color while they navigate the environment, researchers are increasingly interested in studying how their messages to adolescents about race and ethnicity can help adolescents cope with the negative influence of discrimination (Hughes et al., 2006). The current literature on ethnic-racial socialization has been primarily with African American and Latinx families with very limited studies among Asian American families (Atkin et al., 2018). In this study, we explored if parental ethnic-racial socialization moderated the associations between Asian American adolescents' discrimination trajectories and their achievement and depressive symptoms. More specifically, we wondered if preparation for bias may play a protective role in helping Asian American adolescents to deal with the detrimental effects of discrimination.

In sum, in the current study, we aimed to get a better understanding of Asian American adolescents' discrimination experiences, including how it changes and whether

it changes differently for different adolescents, the predictors and consequences of such changes, as well as the buffering role of parental ethnic-racial socialization. To do so, we used an economically diverse California sample of Chinese American adolescents who lived in a wide range of neighborhoods. Chinese Americans are the ideal group for the first step of studying the different patterns of discrimination trajectories for several reasons. First, among all Asian American groups, Chinese Americans are the largest subgroup. As of 2017, a majority of Asian Americans are from China, totaling 3.8 million and comprising 1.5% of the whole population in America (U.S. Census Bureau, 2017). Second, they are the first and only group in the U.S. history that have experienced explicit and institutional discrimination which excluded them from immigrating to the U.S. (Chinese Exclusion Act, 1882). Although this kind of explicit and overt discrimination is less frequent in the current society, research shows that many Chinese Americans and more specifically Chinese American adolescents still experience discrimination in their daily lives (Rosenbloom & Way, 2004; Qin, Way, & Mukherjee, 2008; Juang & Cookston, 2012). Third, there are large variations within Chinese immigrants in terms of their family backgrounds (e.g., language spoken, parental educational levels, and family income). These differences indicate a non-uniform experience within Chinese American families which makes them suitable for exploring different patterns of youth changing discrimination experiences.

In the following sections, the theoretical frameworks that guide the proposed study will first be provided. After that, a review of the substantive literature will be presented.

## Theoretical Frameworks

The integrative model (Garcia Coll et al., 1996) serves as an overarching theoretical framework for this study. Garcia Coll and her colleagues (1996) argued that it is impossible to fully understand the development of youth of color if one does not recognize the impact of social positions (e.g., race, ethnicity, gender, and socioeconomic status) on development. Social positions indirectly affect adolescent development by exposing minority adolescents to "unique ecological circumstances" (p.1893), such as racism and discrimination, which may be even more distinctive across ethnic-racial minority adolescents. Further, the experiences of being victims of racism and discrimination could have a profound impact on youth's development, which may be particularly true for Asian American adolescents who balance model minority and perpetual foreigner stereotypes. Ignoring the discrimination experiences of Asian American adolescents limits our knowledge about them and undermines our ability to help them.

To fully understand the discrimination experiences of Asian American adolescents in the U.S., the racial position model (Zou & Cheryan, 2017) is used as a guide to understanding Asian Americans' social positions and the seeming contradiction in the model minority and perpetual foreigner stereotypes. The racial position model (Zou & Cheryan, 2017), built upon racial triangulation theory (C. J. Kim, 1999), suggests that the social position of ethnic minorities in the U.S. should be expressed with two continuous axes, known as foreigner-insider/American and inferior-superior (Figure 1, Zou & Cheryan, 2017), rather than a unidimensional hierarchy. Based on this model,

Whites occupy the highest social position, whereas Asian Americans occupy a relatively higher position than African Americans and Latinxs on the superior-inferior axis due to their perceived higher social status (intellectual and economic status) (Zou & Cheryan, 2017). Yet, as Asian Americans may be less likely to assimilate to U.S. culture due to their distinct phenotype, languages, and cultural customs that are very different from the mainstream culture (Benner & S. Y. Kim, 2009), they are often seen as "outsiders" and may be isolated or excluded. Furthermore, their relatively higher position than other ethnic-racial minority groups may engender hostility from other minority groups (Benner & S. Y. Kim, 2009; C. J. Kim, 1999) and create a backdrop for discrimination (C. J. Kim, 1999; Rosenbloom & Way, 2004), rooted in the model minority and perpetual foreigner stereotypes which exacerbate Asian American youth's discrimination experiences (Fisher, Wallace, & Fenton, 2000; Rosenbloom & Way, 2004) and profoundly impact their academic achievement and mental well-being (Benner et al., 2018). Moreover, the negative effects between discrimination and adolescents' well-being are found to be stronger among Asian American adolescents than other ethnic minority groups. This highlights the need to better understand Asian American adolescents' discrimination experiences.

So far, there is limited knowledge of how Asian American adolescents' discrimination experiences may change over time. Adolescents' discrimination experiences are not static, instead, it changes over time with shifts in adolescents' cognitive ability and social contexts and the changes may vary with individual cultural and contextual characteristics (Brown & Bigler, 2005). Minority adolescents'

development is influenced by both contextual and individual cultural characteristics (Garcia-Coll et al., 1995). For example, social stratification may yield ethnically and racially segregated neighborhoods for minority adolescents (García Coll et al., 1996). In these segregated environments, a greater proportion of co-ethnic neighbors can increase mutual trust in the neighborhood (Shaw & McKay, 1942) and limit intergroup contact, and thus reduce the encounters of discrimination over time. At the individual level, youth's acculturation level can affect discrimination experiences with more acculturated Chinese American youth reporting less discrimination whereas less acculturated youth are more likely to be the target of discrimination (Juang & Alvarez, 2011). More importantly, discrimination can have a profound impact on Asian American adolescents' developmental outcomes, including their achievement and mental well-being. However, there is limited knowledge of how different patterns of discrimination trajectories may be related to outcomes differently. In sum, theory and the current literature call for a more comprehensive and nuanced understanding of Asian American adolescents' discrimination experiences, including how it may change over time, what factors predict the changes, and how changes in discrimination are related to outcomes.

In the current study, we aimed to advance our understanding of Asian American adolescents' discrimination experiences by using a longitudinal approach to study how reports of perceived discrimination change over time and whether different patterns of change exist. We also explored the contextual (i.e., neighborhood ethnic concentration) and individual cultural characteristics (i.e., acculturation) that may relate to the different patterns of change and the effect of such changes on adolescents' achievement and

depressive symptoms as well as whether parental ethnic-racial socialization buffered the negative effects of discrimination.

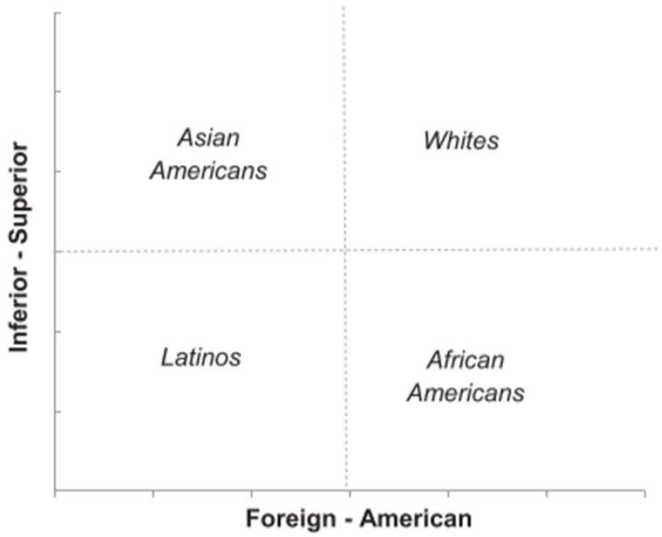


Figure **1-1**: The Racial Position Model.

## Literature Review

### Discrimination

Discrimination is defined as prejudicial behavior and unfair treatment based on social group membership (Stroebe & Insko, 1989). Discrimination may occur in a variety of social groups (e.g., gender, income, and immigrant status). Discriminatory experiences

are often associated with stereotypes which are generalizations of a social group (Brown & Bigler, 2005).

Discrimination can come in different forms and from different sources. Forms of discrimination can be characterized by overt (e.g., racial slurs and bullying; Hughes et al., 2016) and covert discrimination (subtle stereotyping and microaggressions; Hughes et al., 2016). Research shows that ethnic minority adolescents experience both overt and covert discrimination (Huynh, 2012). Furthermore, studies show that Chinese American adolescents reported similar levels of overt discrimination, but more covert discrimination compared to Latinx and white peers (Hughes et al., 2016), which suggested that the form of discrimination Chinese adolescents receive may be more subtle than other ethnic groups.

Discrimination also comes from different sources (e.g., peers and adults in schools, or adults outside of school). Research demonstrated that a considerable number of ethnic minority adolescents, particularly African American and Latinx, reported experiencing discrimination by adults in schools or in other social institutions (Fisher et al., 2000; Greene, Way, & Pahl, 2006; Rosenbloom & Way, 2004). Whereas fewer Asian American adolescents reported being discriminated by adults, they are not immune to adult discrimination (Fisher et al., 2000) and experience more peer discrimination than their peers (Fisher et al., 2000; Rosenbloom & Way, 2004).

We acknowledge that the nuanced examination of discrimination in different forms and from different sources is valuable. In the current study, we focused on general discrimination (e.g., discrimination that can come from different sources and can be

attributed to different reasons) as the first step to advance our understanding of how Asian American adolescents' overall discrimination experiences change over time.

In the following literature review section, we first reviewed studies on the trajectories of discrimination, followed by a review of studies on the predictors of discrimination trajectories. Subsequently, studies on the associations between discrimination and achievement and depressive symptoms are reviewed, highlighting studies that involve discrimination trajectories. Finally, a literature review on studies on the moderating role of parental ethnic-racial socialization is presented.

## Trajectories of Discrimination

During the period of adolescence, the cognitive abilities and social contexts of adolescents change. These changes are often related to adolescents' perceived discrimination experiences (Brown & Bigler, 2005). Brown and Bigler (2005) proposed that the perceptions of discrimination generally increase due to the sophistication of several social-cognitive abilities, including formal operational abstract thinking (Piaget, 1959), a better understanding of other people's perspectives, social comparisons as well as group classifications and stereotypes others hold towards their group. The improvement in these social-cognitive abilities enables adolescents to better understand discrimination as a part of social inequality (Brown & Bigler, 2005; Greene et al., 2006) and become more sensitive in detecting discrimination when it occurs (Brown & Bigler, 2005). Although children as young as five can detect discrimination, this ability generally

increases and improves as a function of age with improvement in cognitive abilities (Brown & Bigler, 2005). At the social level, adolescents begin to spend more time socializing with friends and classmates outside of their homes. Therefore, they are increasingly exposed to discrimination (Greene et al., 2006). Further, adolescence is an important period for identity development (Eriksson, 1968), especially ethnic identity for ethnic minority adolescents (Phinney, 2003). During adolescence, minority adolescents increase their awareness of how their group is viewed and treated in the eyes of society and other people. As a result, they are more likely to detect discrimination that is based on their racial and ethnic groups. Consequently, it is suggested that perceived discrimination generally increases over time as a function of age (Brown & Bigler, 2005).

On this basis, researchers have started to explore the trajectory of discrimination among ethnic minority adolescents using growth curve modeling with the assumption that perceptions of discrimination generally increase over time for all adolescents. However, the results have been mixed with some studies finding an increasing trajectory (e.g., Greene et al, 2006; Juang & Cookston, 2009), and others finding a decreasing (e.g., Kiang et al., 2016c) or stable trajectory (e.g., Greene et al., 2006). The reasons for the mixed results are not directly clear but may be attributed to multiple aspects, including sources of discrimination, pan-ethnic or specific sub-ethnic groups, the context where adolescents live, and different developmental periods (early adolescence vs. late adolescence). For example, distinguishing the sources of discrimination, Greene et al. (2006) found that the trajectories of perceived peer and adult discrimination were different among a multi-ethnic sample of African American, Latinx, and Asian American

high school students in New York City. The results revealed that adolescents' perceptions of adult discrimination continued to increase over time whereas peer discrimination remained stable. Similar to Greene et al.'s (2006) findings, Juang and Cookston (2009) found that general racial discrimination increased over time in a sample of Chinese American high schoolers in traditional immigrant communities in California. Kiang et al. (2016) identified a decreasing trajectory of general discrimination among a sample of Asian American high schoolers in emerging immigrant communities in North Carolina. Hughes et al. (2016) studied the trajectories of different sources (peer vs. adult) as well as different forms of racial-ethnic discrimination (overt vs. covert) in a multi-ethnic sample of Latinx, Chinese American, African American, and European Americans from middle to high school in New York City. Their findings indicated that peer and adult discrimination increased during middle school but decreased during high school.

These mixed findings suggest that the increasing trajectory may not describe the longitudinal discrimination experiences of all ethnic minority adolescents and that there is heterogeneity in adolescents' experience. This perspective is supported by theoretical approaches and empirical studies. In addition to the claim that adolescents' perceived discrimination increases over time, Brown and Bigler (2005) proposed that the frequency of perceived discrimination and the pattern of changes vary with individual and contextual variables. This points to the importance of studying how discrimination changes over time and suggests that there are variations in discrimination trajectories and that an increasing trajectory does not fit all adolescents (Brown & Bigler, 2005).

Guided by the perspective that there are variations in adolescents' discrimination trajectories, researchers have started to explore different patterns of discrimination trajectories among adolescents. Utilizing growth mixture modeling, Niwa, Way, and Hughes (2014) explored if there were distinct patterns of change in peer and adult discrimination over time in a multi-ethnic middle school sample (Grades 6–8) including African American, Latinx, and Chinese American adolescents. Two profiles (low-stable and moderate stable) were identified for adult discrimination, which suggested that adolescents in their sample, overall, experienced low or moderate levels of adult discrimination, and the levels of perceived discrimination from adults tended to stay the same over time. Three distinct trajectories were identified for peer discrimination with all three groups experiencing a decrease in discrimination, but the initial levels of peer discrimination and the slopes of the decrease differed across groups. Niwa et al. (2014) also found that racial-ethnic group membership was related to different patterns of discrimination trajectories with Chinese American and Latinx adolescents were more likely to be represented in the high-decreasing profile for peer discrimination than their African American counterparts.

Another study by Smith-Bynum, Lambert, English, and Ialongo (2014) explored the within-group variations of change in discrimination in a sample of African American adolescents from 7$^{th}$ to 10$^{th}$ grade. The results also supported the heterogeneity in discrimination trajectories with three distinct patterns being identified: increasing, decreasing, and low-stable trajectories. In the decreasing group, adolescents experienced high initial levels of racial discrimination but reported a decrease in racial discrimination

over time. Adolescents in this group may minimize or dismiss discrimination in order to protect themselves from the psychological distress that may be triggered by discrimination (Smith-Bynum et al., 2014). In the increasing group, African American adolescents reported a moderate initial level of discrimination and the level of discrimination increased over time. Adolescents in the low-stable group experience low levels of discrimination and the levels of discrimination stay the same across years.

Similarly, a study with Latinx sample from adolescence to emerging adulthood (ages from 14-23) (Unger, Soto, & Baezconde-Garbanati, 2016) identified these trajectories (increasing, low-stable, high-decreasing group) (Smith-Bynum et al., 2014). In addition, Unger and colleagues (2016) found that a group of adolescents with a high-stable discrimination trajectory. Moreover, among Latinx adolescents, the two groups with higher overall levels of discrimination (high-decreasing and high-stable groups) exhibited a higher risk for substance use.

The above studies support the argument that there may be different patterns of discrimination trajectories among adolescents. So far, there is no study exploring the different patterns of discrimination trajectories among Asian American adolescents. Although some social experiences (e.g., discrimination) might be shared among ethnic minority adolescents, each group has its unique history, culture, traditions, and stereotypes. Asian Americans have their unique phenotype, languages, and cultural customs, which make their presence and interactions with the society distinctive from other ethnic groups. For example, instead of being viewed as threatening, Asian Americans have the unique experience of the model minority myth and being regarded as

perpetual foreigners (Tseng et al., 2016) which make their social position in the U.S. different than other ethnic minority groups. As such their discrimination experiences may be different from other ethnic minority groups given their discrimination is rooted in different stereotypes. Therefore, in this study, we explored if there were different patterns of discrimination trajectories among Chinese American adolescents and whether the patterns were similar to what was found among African American (Smith-Bynum et al., 2014) and Latinx adolescents (Unger et al., 2016).

## Predictors of Discrimination Trajectories

### *Social position variables*

The integrative model (Garcia-Coll et al., 1996) suggests that social position variables, such as gender, immigrant status, and family SES have implications for ethnic minority adoelscents' discrminaiton experiences. In this section, I review how ethnic minority adolescents' discrimination experiences may vary by social position variables (i.e., gender, immigrant status, and family SES), highlighting studies that explored discrimination trajectories if there are any.

There is some evidence showing that gender is related to adolescents' discrimination experiences as stereotypes regarding gender may affect how boys and girls are viewed and treated by others (Niwa et al., 2014). Ethnic minority boys, compared to ethnic minority girls, may encounter more discrimination as they are often stereotyped as violent and aggressive (S.Y. Kim et al., 2011). Consistent with this gendered stereotype,

studies among African American and Latinx adolescents, in general, show that African American and Latinx boys reported more discrimination than girls (e.g., Seaton et al., 2008). There is also evidence that there are gender differences in how discrimination may change longitudinaly among ethnic minority boys and girls. As ethnic minority boys mature, growth in their physical sizes may make them be viewed as more threatening. Therefore, they may be more likely than girls to experience an increase in discrimination as they age. A study (Smith-Bynum et al., 2014) with African American adolescents supports this speculation as the researchers found that, compared to African American girls, African American boys were more likely than girls to be in the increasing trajectory. This finding suggests that boys were more likely to report encountering an increase in discrimination than girls. As for Asian American adolescents, studies have been limited and findings are mixed. Some studies did not find a significant gender difference in the frequency of discrimination among Asian American adolescents (e.g., Juang & Alvarez, 2011; Juang & Cookston, 2009) whereas some studies found a significant gender difference in a more violent form of discrimination (e.g., physical victimization) (S.Y. Kim, Wang, Deng, Alvarez, & Li, 2011). The reason for the mixed findings may be that, different from boys of other ethnic minority groups, Asian American boys are not seen as delinquent and aggressive or physically threatening. Qualitative studies support this assumption as Asian American boys are often seen as non-aggressive and less masculine (Rosenbloom & Way, 2004) and thus are picked on and physically harassed. Therefore, it may that this different gender stereotype may protect Asian American boys from some types of discrimination that are usually

experienced by their African American and Latinx counterparts (e.g., people are suspicious or afraid around you). However, they may be an easy target for physical harassment from peers. The mixed findings and the lack of studies exploring how gender may be associated with discrimination trajectories warrant further studies to elucidate this association.

Immigrant status or the nativity of adolescents (i.e., born in the U.S. versus born outside of the U.S.) is also an important factor that may impact adolescents' discrimination experiences. Immigrant adolescents born outside of the U.S. may be less proficient in English, have a strong accent, and be more likely to feel that they are stereotyped as foreigners, and thus they may report more discrimination (S.Y. Kim, Wang, Deng, Alvarez, & Li, 2011). Studies showed that Asian Americans who were not born in the U.S., in general, reported more discrimination than those who were born in the U.S. (e.g., Juang & Cookston, 2009; S.Y. Kim et al., 2011; Ying et al., 2000). There is also evidence show that generational status is associated with discrimination trajectory. For instance, Juang and Cookston (2009) found that first-generation Chinese American adolescents reported overall higher levels of discrimination than later generation adolescents. However, later generation Chinese American adolescents experienced a steeper increase in their discrimination experiences. It may be that, for later generation Chinese American adolescents, although they are less likely to be discriminated against as they may be more customed to American cultures, they become increasingly more aware of the fact that they are still being considered as foreigners by others even though

they were born in the U.S. So far, there is no study exploring if generation status may be associated with different patterns of changes in discrimination.

Family socioeconomic status, such as family income and educational level, can also influence adolescents' discrimination experiences (Garcia-Coll et al., 1996). Studies have shown that family SES was negatively correlated with children's reports of discrimination (Assari et al., 2021). Parents with lower socioeconomic status are more likely to experience discrimination in their daily lives such as when seeking employment and access to the health care system (C. Lee, Ayers, & Kronenfeld, 2009). Parents' experiences of discrimination may spark more conversations about unfair treatment with their children, which may make youth more vigilant and sensitive to discriminatory treatment. Studies (e.g., Benner & S.Y. Kim, 2009) found that Chinese American parents' experiences of discrimination were positively associated with their adolescent children's perception of discrimination.

In sum, there is evidence that social position variables including gender, immigration status, and family SES are associated with ethnic minority youth's discrimination experiences. However, there are very limited studies on how these social position variables may be associated with longitudinal changes in discrimination. In this study, I explored if gender, immigration status, and family SES predicted Chinese American adolescents' discrimination trajectories.

### *Neighborhood ethnic concentration and discrimination trajectories*

Bioecological system theory (Bronfenbrenner, 1977) suggests that it is crucial to consider contextual factors and individual characteristics when studying adolescent development. At the contextual level, prior research shows that neighborhood ethnic concentration plays an important role in influencing adolescents' discrimination experiences (Juang & Alvarez, 2011; White et al., 2014).

Perceptions of discrimination are impacted by the environment adolescents live in. Social disorganization theory (Shaw & McKay, 1942) emphasizes how neighborhood structural characteristics, such as ethnic heterogeneity, impede the process by which communities get together to achieve shared goals and norms, which have implications for residents' well-being. Social disorganization theory maintains that ethnic heterogeneity in the neighborhood decreases the likelihood that neighbors from different ethnic backgrounds form strong community ties and develop shared norms towards acceptable behaviors. On the contrary, if the majority of people living in the neighborhood are from the same ethnic background and speak the same language, they are more likely to trust each other and have similar expectations regarding acceptable behavior (Shaw & McKay, 1942). Similarly, Garcia Coll et al. (1996) maintained that a racially and ethnically homogenous neighborhood can act as a promoting environment for ethnic minority adolescents by promoting positive attitudes towards own ethnic group, forming a positive ethnic identity, and decrease adolescents' interactions with other ethnic groups and limit the opportunity of encountering discrimination (White, Zeiders, Knight, Roosa, & Tein, 2014).

Although theories (Garcia Coll et al., 1996; Shaw & McKay, 1942) suggest that ethnic concentration is a beneficial factor and provides important cultural support to co-ethnic adolescents, the studies on the association between neighborhood ethnic concentration and discrimination are limited and yielded mixed findings. In a study by Steward, Baumer, Brunson, and Simons (2009), the higher percentage of non-Hispanic White residents in the neighborhood (an indicator of racial heterogeneity for African American youth) was found to be related to more police-based discrimination among African American youth. Another study by Seaton and Yip (2009) found that neighborhood diversity was related to more perceived discrimination among African American youth. Martin and colleagues (2011) also found that a higher percentage of African American residents in the neighborhood predicted fewer reports of discrimination. Similar findings were found among Latinx youth such that higher levels of Latinx concentration were related to lower levels of discrimination (White et al., 2018). These studies provide evidence to the assertion that neighborhood concentration is associated with minority youth reduced discrimination experience.

To date, only one study (Juang & Alvarez, 2011) examined the association between ethnic concentration and perceived discrimination among Chinese American adolescents. Their results showed that the objective percentage of Chinese American residents in the neighborhood was not associated with adolescents' perceptions of discrimination whereas the perceptions of a more ethnically homogenous neighborhood were related to more discrimination.. However, their usage of zip code to determine neighborhood and the restricted range of ethnic concentration (15-63%) in the sample

may limit the generalizability of the results. Given that the mixed findings in the literature, it is clear that more studies among Asian American adolescents are needed to see if the same pattern can be replicated.

Whereas researchers have found associations between neighborhood ethnic concentration and perceptions of discrimination, there is only one study (White et al., 2014) that has explored how ethnic concentration is associated with the trajectories of discrimination. Studying how ethnic concentration is associated with discrimination trajectories can provide us valuable information on how discrimination experiences change with contexts. White and colleagues (2014) found that Mexican-origin adolescents who lived in low or high ethnic concentrated neighborhoods had similar initial levels of discrimination but the directions of change in discrimination were different. Mexican-origin adolescents who lived in more diverse neighborhoods experienced an increasing discrimination trajectory whereas adolescents who lived in the neighborhoods with more co-ethnic neighbors experienced a decreasing trajectory. This study suggested that ethnic concentration in the neighborhood was associated with changes in adolescents' perceived discrimination. So far, there is no study exploring if neighborhood ethnic concentration is related to the discrimination trajectories among Asian or Chinese American sample. Also,t the one study with the Chinese American sample (Juang & Alvarez, 2011) found that objective ethnic concentration was not associated with discrimination whereas perceptions of a more homogeneous neighborhood were related to more discrimination, which is inconsistent with the social disorganization theory and what has been found in other racial/ethnic minority groups. In

this study, we explored if the same results would be found in another Asian American adolescent sample.

Given that social disorganization theory posited that neighborhood ethnic concentration provides important social and cultural support for ethnic minority adolescents and a high racially or ethnically concentrated neighborhood limits minority adolescents' interactions with other ethnic-racial groups, we expected that adolescents who live in more concentrated neighborhoods would experience low and stable discrimination whereas adolescents who lived in more diverse neighborhoods would be more likely to experience overall higher levels of discrimination and an escalating discrimination trajectory.

### *Acculturation and discrimination trajectories*

Brown and Bigler (2005) suggested that individual cultural characteristics also influence adolescents' perceptions of discrimination. At the individual level, one's acculturation level may affect their discrimination experience. The acculturative stress theory (Berry, 2003) suggests that when individuals navigate two cultures at the same time, they must coordinate and adapt to the differences between different cultures, including language, values, customs, and beliefs (Juang & Cookston, 2009). In the process of adapting to differences, pressures will follow, such as being a minority in the U.S. culture and being the victim of discrimination (Berry, 2003). When ethnic minority individuals navigate the U.S. culture, they are likely to be discriminated against and

unfairly treated due to their minority status and unfamiliarity with the U.S. culture (Berry, 2003). Such experiences can be challenging and affect minority youth's well-being. Berry (2003) suggests that acculturation is not unidirectional and orientation to the heritage and the mainstream culture should be considered separately as most immigrants consider themselves to be bicultural. On the one hand, it is suggested that familiarity with the U.S. culture can ease the interaction with other ethnic groups and thus relate to less discrimination (Juang & Cookston, 2009). On the other hand, if one is more enculturated to the heritage culture, they may be more likely to experience discrimination as they are potentially viewed as more foreign as they speak a different language and celebrate different holidays and thus become an easy target of discrimination (Juang & Cookston, 2009). Studies among other immigrant groups (e.g., Kulis, Marsiglia, & Nieri, 2009; Motti-Stefanidia, Pavlopoulos & Asendorpf, 2018) and with Asian adult samples (e.g., Ying, Lee, & Tsai, 2000; Yoon, Hacker, Hewitt, Abrams, & Cleary, 2012) provide evidence for the claim that higher levels of acculturation relate to less discrimination whereas higher levels of enculturation are associated with more discrimination. For instance, Motti-Stefanidia, Pavlopoulos, and Asendorpf (2018) studied immigrant youth in Greece and found that higher levels of acculturation predicted decreases in discrimination. Similar findings are also found among Chinese American adolescents (Benner & S.Y. Kim, 2009; Juang & Cookston, 2009) such that higher levels of orientation to the U.S. culture were associated with less discrimination. Although studies have documented that levels of acculturation and enculturation are associated with frequency of discrimination at the same time point or later in time, there has not been a

study exploring if acculturation and enculturation predict different patterns of change in discrimination. In this study, we explored if orientation to the U.S. and the Chinese culture predicted Chinese American adolescents' distinct discrimination trajectories.

## Discrimination and Outcomes

### *Discrimination and depressive symptoms*

Discrimination is an important source of chronic stress for minorities. Chronic stressful and discriminatory events can accumulate over time, resulting in compromised mental health (Benner et al., 2018; Priest et al., 2013). In the discrimination literature on other ethnic groups and Asian American adults, a consistent association has been established between discrimination and depressive symptoms (Lee & Ahn, 2011). Research on Asian American youth also documents the positive relationships between discrimination and depressive symptoms in cross-sectional (e.g., Huynh & Fuligni, 2010; Rivas-Drake et al., 2007) and longitudinal studies (e.g., Benner & S. Y. Kim, 2009; Greene et al., 2006; Kiang et al., 2016c; Rivas-Drake et al. 2014; Wang & Atwal, 2015). The effects of discrimination on depressive symptoms are also demonstrated in different sub-ethnic groups of Asian American adolescents, such as Korean American (Shin, D'Antonio, Son, Kim, & Park, 2011) and Chinese American (Benner & S.Y. Kim, 2009; Huynh et al., 2010; Rivas-Drake et al., 2008) or diverse Asian American samples (Kiang, et al., 2016c; Wang & Atwal, 2014).

More importantly, studies have moved beyond from simply exploring the association between discrimination and depressive symptoms to further investigating the nature of this relationship. For example, studies (e.g., Juang & Cookson, 2009) have used latent growth modeling to study whether the trajectories of discrimination are related to the changes in depressive symptoms. Their findings showed that the increase in perceived discrimination was associated with an increase in depressive symptoms, suggesting a dynamic link between discrimination and depressive symptoms (Juang & Cookson, 2009). In this study, we advance our knowledge of the associations between discrimination and depressive symptoms by considering the heterogeneity in adolescents' discrimination trajectories and explore whether different patterns of changes in discrimination are associated with depressive symptoms differently.

### *Discrimination and academic outcomes*

Compared to studies on the discrimination-depressive symptom's link, there are fewer studies focused on the impact of discrimination on academic achievement (Benner et al., 2018; Benner & S. Y. Kim., 2009). Nevertheless, a recent meta-analysis (Benner et al., 2018) found a negative association between discrimination and broad academic outcomes. Small to moderate effect sizes were found for specific academic outcomes, including GPA, school engagement, and motivation (Benner et al., 2018).

When it comes to Asian American adolescents, considering the high educational expectations rooted in the model minority stereotype towards this group, it would be

interesting to see if discrimination affects the academic performance of Asian Americans in the same way as other ethnic minority groups. Studies with the Asian American sample found that discrimination exerted adverse effects on several aspects of academic outcomes, such as school values (Kiang et al., 2016c), school engagement (Benner & S.Y. Kim, 2009), educational aspirations (Kiang, Supple, Stein, & Gonzalez, 2012) and expectations (Kiang et al., 2012; Kiang, Witkow, Gonzalez, Stein, & Andrews, 2015). In this study, we explored whether different patterns of discrimination trajectories predict changes in achievement.

**Moderating Effects of Parental Ethnic-Racial Socialization**

Discrimination is a normative part of the life of Asian American adolescents, and it is found to pose a negative impact on a wide range of development outcomes (Benner et al., 2018). Therefore, it is of great necessity to identify the factors that can protect Asian American adolescents from discrimination. Parental ethnic-racial socialization, defined as parental messages to children about race and ethnicity (Hughes et al., 2006), plays an important role in helping minority children counteract the negative effects of discrimination (Hughes et al., 2006). The messages parents transmit to adolescents about race and ethnicity can vary in their contents, including teaching children about cultural traditions and values to instill racial and ethnic pride (cultural socialization), raising children's awareness of unfair treatment, and teaching effective coping strategies (preparation for bias), and warning children to be vigilant when interacting with other

ethnic groups (promotion of mistrust) (Hughes et al., 2006). Overall, parental ethnic-racial socialization is theorized to be a resiliency factor that can buffer discrimination's deleterious effects on adolescent development (Hughes et al., 2006).

The existing studies on the moderating effects of parental ethnic-racial socialization are primarily in African American families (Hughes et al., 2006) and some in Latinx sample (Priest et al, 2014; Hughes et al., 2006). It can be concluded from the existing studies that, in general, preparation for bias and cultural socialization effectively buffered the adverse effects of discrimination on African American and Latinx adolescents' development (Harris-Britt, Valrie, Kurtz-Costes, & Rowley, 2007; Neblett et al., 2008). Promotion of mistrust, on the other hand, seems not to buffer but exacerbate the negative impact of discrimination on outcomes (Huynh & Fuligni, 2010), possibly due to the fact that promotion of mistrust is considered to contain negative information but lack the coping components (Hughes et al., 2006; Huynh & Fuligni, 2010).

The literature on the moderating effects of parental ethnic-racial socialization among Asian American adolescents is sparse. To our knowledge, so far, there are only two studies exploring the moderating role of parental ethnic-racial socialization on the associations between discrimination and adolescent development in Asian American adolescents samples (Atkin et al., 2018; Seol et al., 2016). Atkin et al. (2018) studied the moderating role of cultural socialization, preparation for bias, and promotion of mistrust in the associations between discrimination and psychological distress, whereas Seol et al. (2016) focused on the moderating role of cultural socialization and preparation for bias. Atkin and colleagues (2018) found that cultural socialization weakened the negative

influence of discrimination on psychological distress whereas promotion for mistrust exacerbated the negative influence, and preparation for bias has no effect. Seol et al. (2016) conducted a study with Korean adopted adolescents from white adoptive families and non-adopted Korean adolescents from Korean immigrant families. They found that the nature of the moderating effects of cultural socialization depended on whether adolescents were adopted. Further, preparation for bias did not moderate the associations. These two studies show that cultural socialization has a buffering effect against discrimination, but interestingly, preparation for bias does not have such buffering effect (Atkin et al., 2018; Seol et al., 2016). However, the results may not be generalizable as the sample used in Atkin et al. (2018) has considerably lower income ($10000-$20000) and educational level (70% did not attend college) than the median income ($73000; Pew Research Center, 2015) and education level (50% had a college degree or above; Pew Research Center, 2015) of Asian Americans in the U.S. With such a dearth of literature, it is clear that more studies are needed to explore whether different types of parental ethnic-racial socialization work as moderators in the association between discrimination and adolescent development. In this study, we are filling this research gap by focusing on the moderating role of a less-studied type of message—preparation for bias.

Studies suggested that immigrant parents use preparation for bias less often than cultural socialization (Hughes et al., 2006). Since about 80% of Asian American adolescents are immigrants themselves or have at least one immigrant parent, it is challenging for them to teach children to deal with discrimination as they themselves are still learning to cope with discrimination (Juang, Ittel, Hoferichter, & Gallarin, 2016).

However, it does not mean that there is no variation in the levels of parental preparation for bias across families (Benner & Kim, 2009; Juang, Yoo, & Atkin, 2017) or this type of message is less important. Studies among Asian American adolescents have shown that preparation for bias has a positive effect on Asian American adolescents' development (Rivas-Drake et al., 2009; Hughes et al., 2009). In the proposed study, we are focusing on preparation for bias as a strategy that provides ethnic minority adolescents a tool to cope with discrimination and explored if it works as a protective factor against discrimination among Chinese American adolescents.

## Current Study

Four research questions guided the study: (1) Are there different profiles in discrimination trajectories among Chinese American adolescents? (2) Do contextual factors (i.e., neighborhood ethnic concentration) and individual cultural factors (i.e., acculturation) predict discrimination trajectories among Chinese American adolescents? (3) How do discrimination trajectories relate to changes in achievement and depressive symptoms? (4) Does parental ethnic-racial socialization, specifically preparation for bias, moderate the relationships between discrimination trajectory profiles and adolescents' depressive symptoms and achievement? Below are the hypotheses we have for each research question.

Hypothesis 1: Based on Brown and Bigler's assertion that there is heterogeneity in children's perceptions of discrimination and previous studies among multi-ethnic

adolescents (e.g., Greene et al., 2005; Niwa et al., 2014), African American adolescents (Smith-Bynum et al., 2014), and Latinx adolescents (Unger et al., 2016), we expected that there are variations in discrimination trajectories among Chinese American adolescents. As there is no study exploring the different patterns of discrimination trajectories among Asian American samples and theory does not offer specific hypotheses on the types of trajectories, this study is considered to be exploratory. We explored if the trajectories would be similar to those found with other minority groups (Smith-Bynum et al., 2014; Unger et al., 2016). The reason for the hypothesis is that although the frequency and types of discrimination minority adolescents experience may differ depending on ethnic-racial groups, the cognitive ability and enlarged social networks that warrant changes in discrimination experiences are universal across ethnic minority groups (Brown & Bigler, 2005). Based on the available research in discrimination trajectories (Niwa et al., 2014; Smith-Bynum et al., 2014; Unger et al., 2016) and the general trajectory discrimination in the Chinese/Asian American sample (Greene et al, 2006; Juang & Cookston, 2009; Kiang et al., 2016), we hypothesized that four distinct trajectories: low-stable, moderate-increasing, high-decreasing, and high-stable. We hypothesized that the low-stable trajectory would show low levels of discrimination stably across time. The moderate-increasing profile would show moderate levels of discrimination at the beginning and their levels of perceived discrimination would increase over time because of adolescents' sophisticated ability to detect discrimination and opportunities to encounter more discrimination due to their expanded social worlds. The high-decreasing profile would show high initial discrimination, but

their levels of discrimination would decrease over time possibly due to coping with discrimination by desensitization in order to protect themselves from the psychological cost of discrimination, and therefore, report a decrease in perceived discrimination. The high-stable profile would experience overall high levels of discrimination across time.

Hypothesis 2a: Based on social disorganization theory (Shaw & Mckay, 1942) and the available research (e.g., White et al., 2016), we expected that neighborhood Chinese concentration would predict memberships in the discrimination trajectory profiles. The specific hypothesis of how neighborhood Chinese concentration predicts discrimination trajectories depends on the profiles we identify. Based on our hypotheses expecting four discrimination trajectories; therefore we expected that if adolescents lived in a neighborhood with more co-ethnic neighbors, they would more likely be in the low-stable profile in which they experienced low levels of discrimination over time. However, if adolescents lived in a neighborhood with fewer co-ethnic neighbors, then they would more likely be in the increasing group in which they experience an increase in perceived discrimination due to more interactions with neighbors from other ethnic groups. Adolescents who lived in the less concentrated neighborhood would also more likely be in the high-decreasing or high-stable group in which they experienced high levels of discrimination initially due to interactions with neighbors from different ethnic or racial backgrounds.

Hypothesis 2b: Based on the acculturative stress theory (Berry, 2003) and available research (e.g., Juang & Avlavez, 2011), we expected that adolescents with higher levels of orientation to the U.S. culture were more likely to be in the low-stable

profile. We also expect that adolescents with higher levels of orientation to the Chinese culture are more likely to be in the trajectory with overall higher levels of discrimination, such as the moderate-increasing, high-decreasing, and high-stable profile.

Hypothesis 3: Based on available research which demonstrated the detrimental effects discrimination has on adolescents' well-being, including achievement and mental health (Benner et al., 2018), we expected that the trajectories of discrimination would be associated with achievement and depressive symptoms. We expected that, compared with adolescents in the low-stable trajectory, adolescents in the increasing, high-decreasing, and high-stable trajectories would show lower achievement and higher depressive symptoms.

Hypothesis 4: Although the two existing studies that examined the moderating effect of preparation for bias on the discrimination-adjustment link among Asian American adolescents did not find significant results, given the uniqueness of those samples and their lack of investigation of discrimination trajectories, we based our hypotheses on available research which found that preparation for bias moderated the associations between discrimination and adolescents' developmental outcomes in other ethnic minority samples (Fischer & Shaw, 1999; Harris-Britt, Valrie, Kurtz-Costes, & Rowley, 2007; Neblett et al., 2008). As such, we expected that preparation for bias would work as a buffering factor in the associations between discrimination trajectories and Chinese American adolescents' achievement and depressive symptoms.

# Chapter 2

# Methods

## Participants

Data for this study were drawn from a three-wave longitudinal study. Participants were 444 Chinese American adolescents (54% female, $M_{age}$ = 13.04, $SD$ = .73, range = 12-15) in California. When data were first collected in 2002, adolescents were in either in 7th or 8th grade and were followed for eight years with data collected every four years (wave 2: $N$ = 345; adolescents were at 11th or 12th grade; wave 3: $N$ = 323; 93% of the adolescents were in a 2- or 4-year college).

Demographic information is presented in Table 1. The median level of family income was between $30,001 and $45,000. The median parental education level was some high school education for both fathers and mothers (36% of fathers and 31% of mothers did not finish high school). The majority of parents (90% of mothers and 87% of fathers) were born outside the U.S., whereas most (76%) of the adolescents were born in the U.S. When data were collected at wave 1, families lived in 109 neighborhoods.

Table **2-1**: Demographic Information of The Study Participants at Wave 1.

| Demographic Characteristic | *n* (%) |
|---|---|
| Father education | |
| Less than high school | 134 (36.4%) |
| High school degree | 91 (24.7%) |
| Some postsecondary education | 64 (17.4%) |
| Four-year college degree or higher | 79 (21.5%) |
| Mother education | |
| Less than high school | 124 (31.2%) |
| High school degree | 141 (35.5%) |
| Some postsecondary education | 65 (16.4%) |
| Four-year college degree or higher | 77 (16.8%) |
| Family income | |
| $15,000 and under | 62 (14.5%) |
| $15,001-$30,000 | 98 (22.9%) |
| $30,001-$45,000 | 79 (18.5%) |
| $45,001-$60,000 | 79 (18.5%) |
| $60,001 and above | 109 (25.5%) |
| Parents married or lived together | |
| Yes | 388 (89.2%) |
| No | 47 (10.8%) |
| Father nativity | |

| | |
|---|---|
| Born outside U.S. | 317 (87.1%) |
| Born in the U.S. | 47 (12.9%) |
| Mother nativity | |
| Born outside U.S. | 358 (89.7%) |
| Born in the U.S. | 41 (10.3%) |
| Adolescent nativity | |
| Born outside U.S. | 109 (24.6%) |
| Born in the U.S. | 334 (75.4%) |
| Adolescent gender | |
| Girl | 238 (54.0%) |
| Boy | 203 (46.0%) |
| Demographic Characteristic | *M* (*SD*) |
| Father age | 47.92 (6.15) |
| Mother age | 44.00 (4.79) |
| Adolescent age | 13.04 (0.73) |

## Measures

### Chinese American concentration

Neighborhood Chinese American concentration was derived from the 2000 U.S. census data, which is the available census data that is closest to the data collection year (2002); scores indicate the percentage of Chinese American residents living within a

census tract and was calculated by dividing the number of Chinese American residents within the tract by the total population of the tract and then multiplying by 100. Chinese American neighborhood concentration ranged from 1.27% to 92.09%. On average, adolescents in this study lived in neighborhoods where one-third of the residents identified as Chinese ($M$ = 33.29%, $SD$ = 17.88).

**Acculturation**

Acculturation was assessed with the Vancouver Index of Acculturation (Ryder, Alden, & Paulhus, 2000). Ten items in the scale measured adolescents' orientation toward U.S. culture (e.g., "*I often follow mainstream American cultural traditions (e.g., celebrate holidays*)"), whereas another ten items measured adolescents' orientations towards Chinese culture (e.g., "*I often follow Chinese cultural traditions*"). Adolescents' reports of their orientation towards U.S. culture and Chinese culture were used in this study. Items were rated on a 5-point scale (1=Strongly Disagree to 5 = Strongly Agree). Adolescents' orientation towards U.S. culture ($M$ = 3.72, $SD$ = 0.48) and Chinese culture ($M$ = 3.80, $SD$ = 0.55) demonstrated good reliability ($\alpha$ = .81 and $\alpha$ = .84, respectively). Higher scores indicate higher levels of orientation to either U.S. or Chinese culture.

**Discrimination**

The Chronic Daily Discrimination Scale was used to assess adolescents' perceptions of discrimination experiences at all three waves (Kessler, Mickelson, & Williams, 1999). Nine items (e.g., *"I am treated with less courtesy than other people.")* in the scale and an additional item relevant to Chinese American experience (e.g., "People assume my English is poor") (Benner & S.Y. Kim, 2009) were included in the study, and items were rated on a 4-point frequency scale (1 = Never, 4 = Often). The scale demonstrated good reliability at all waves ($\alpha_{wave\ 1}$ =.85; $\alpha_{wave\ 2}$ =.86; $\alpha_{wave\ 3}$ =.85). Higher scores represent more frequent discrimination experiences *(*$M_{wave\ 1}$ = 1.72, *SD* = .50; $M_{wave\ 2}$ = 1.77, *SD* = .49; $M_{wave\ 3}$ = 1.78, *SD* = .47).

**Academic Achievement**

Academic achievement was assessed with adolescents' self-reported average grades got at school (i.e., "*Currently, which of the following is closest to your average grades at school?*"). The scale was from 1 ($A^+$) to 13 (equals F). Academic achievement at wave 1 and wave 3 was used in the study. Adolescents' reports of average grades were reverse coded to create a score for academic achievement ($M_{\text{wave1}}$ = 9.52, $SD_{wave1}$ = 1.78; $M_{wave\ 3}$ = 8.00, *SD* = 1.88). Higher scores indicate higher academic achievement.

**Depressive Symptoms**

The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was utilized to assess adolescents' depressive symptoms. Adolescents were asked to respond to 20 statements (e.g., "I was bothered by things that usually don't bother me) on a 4-point scale (from 0 = rarely or none of the time (less than 1 day) to 3 = mostly or almost all the time (5-7 days). Positively worded items were reverse coded, and all items were averaged into a total score to represent participants' overall depressive symptoms. Higher values indicate higher levels of depressive symptoms. Depressive symptoms at wave 1 and wave 3 were used in the study. The scale demonstrated good reliability at both waves ($\alpha_{wave\ 1}$ = .86; $M_{wave1}$ = .67, *SD* = .42; $\alpha_{wave\ 3}$ =.90; $M_{wave\ 3}$ = .66, *SD* = .45).

**Parental Ethnic-Racial Socialization**

Adolescents reported parental ethnic-racial socialization at wave 2 with 4 items assessing how frequently parents prepare children for unfair treatment due to race or ethnicity (e.g., *"talks to me about what to do if someone insults or harasses me"*). The items were adapted from the preparation for bias subscale from Hughes and John's (2001) measure of parental ethnic-racial socialization. Items were rated on a 3-point scale (from 1=seldom to 3=often). Adolescents rated father and mother separately, and ratings for mother and father were averaged to create the parental ethnic-racial socialization score (*M*= 1.46, *SD* = .47). The scale demonstrated good reliability ($\alpha_{father}$ = .84; $\alpha_{mother}$ = .83). Higher values indicate a greater frequency of parental preparation for bias.

### Demographic Correlates

According to the integrative model by Garcia-Coll and Colleagues (1996), discrimination experiences may be influenced by key social position variables, such as gender, immigration status, and socioeconomic status in addition to race and ethnicity. Therefore, in this study, we included youth gender (1=male, 0=female), parents' average educational level reported by father and mother (from 1=no formal schooling to 9=finished graduate degree), and parent-reported average family income from 1= "$15,000 or under" to 12 = "$165,001 or more") as demographic correlates to see if they were associated with youth discrimination trajectories as well as controlling them as covariates when exploring the associations between discrimination trajectories and outcomes.

## Analytic Plan

### Preliminary Analysis

First, attrition and missing data analyses were performed to determine the degree of missingness in all study variables. Second, a series of independent sample t-tests were performed to investigate if there are any demographic, achievement, or depressive symptom differences in participants who participated in all waves versus participants who did not. Full Information Maximum Likelihood (FIML) was used to handle missing data. Mplus provides means and standard deviations for all study variables with EM parameters. Correlation analyses between all variables were conducted.

## Substantive Analysis

All analyses were conducted in Mplus 8.3 (Muthén & Muthén, 2017).

### *Research question 1*

Perceived discrimination was measured at three time points with 4 years as the spacing between each assessment point. Growth curve modeling (GCM) and growth mixture modeling (GMM) were performed to explore if there were distinct patterns of trajectories from wave 1 to wave 3 in discrimination. Similar to GCM, GMM estimates growth parameters (intercept and slope) associated with the repeated measures of an examined variable, in this case—perceived discrimination, over time. However, different from GCM, which assumes that changes in the sample are uniform and has one averaged intercept and slope for all participants in the sample, GMM assumes that there is heterogeneity in the sample characterized by two or more distinct developmental trajectories.

Following Andruff, Carraro, Thompson, and Gaudreau's approach (2009), two GCM models, one with a quadratic term and one without the quadratic term, were first conducted to explore if there was a non-linear change in the sample. The significance of the quadratic term, combined with the Bayesian information criterion (BIC; Schwartz, 1978), the Akaike information criterion (AIC; Akaike, 1987), and the Sample-Size Adjusted BIC (a-BIC; Sclove, 1987) were used to compare the two GCM models and determined whether there was non-linear change over time. Lower scores in BIC, AIC,

and a-BIC represent better fitting models (Akaike, 1987; Schwartz, 1978). The best-fitting model was used as the base model for GMM.

To determine whether there were different discrimination trajectories in the sample, a series of GMM models with different numbers of latent profiles were tested. Fit indices including BIC (Schwartz, 1978), AIC (Akaike, 1987), a-BIC (Sclove, 1987), the adjusted Lo-Mendell-Ruben likelihood ratio test (LMR; Lo et al. 2001), and entropy (Celeux & Soromenho 1996), as well as stability, interpretability, and parsimony, were used to determine on the best-fitted GMM model. Lower scores in AIC, BIC, and a-BIC values indicate better model fit. The adjusted LMR test compares models with k and k-1 profiles and provides a p-value to assess whether there is a significant improvement in model fit (Berlin et al., 2014). A *p*-value lower than .05 indicates that the k-profile model has a statistically better fit than the k–1 profile model and the k-profile should be chosen. Higher entropy values indicate higher classification utility. The number of profiles in the model with the best model fit was determined to be the number of discrimination trajectories. The profiles were named based on the shape of the trajectory in each group. The meaning of the trajectories was interpreted based on the initial levels and the slopes of the trajectories.

### *Research question 2*

Research question 2 explored if neighborhood Chinese concentration and acculturation predicted discrimination trajectories among Chinese American adolescents. The manual BCH approach proposed by Bolck, Croon, and Hagenaars (2004) was used

to explore this question. This approach conducts overall $\chi^2$ tests for demographic covariates and predictors as well as allows for conducting multinomial regression analysis for the associations between predictors and profiles controlling for demographic correlates. In the manual BCH approach, the profiles are first estimated, and the BCH weights of profile membership are saved. The BCH weights contain information about the weighted probability of each participant being assigned to each profile based on modal posterior probabilities accounting for the classification errors (McLarnon & O'Neill, 2018; Witherspoon, May, McDonald, Boggs, & Bámaca-Colbert. 2019). The overall profile-specific mean differences in demographic correlates including parents' educational level, family income, youth's generational status, and youth's gender were tested using chi-square statistics and pairwise differences with Wald tests (Asparouhov & Muthen, 2014; Witherspoon et al., 2019). Multinomial logistic regression was conducted by regressing demographic correlates, neighborhood Chinese concentration, and acculturation on the discrimination trajectory profiles. Continuous variables were standardized to account for differences in scaling (Hastie, Tibshirani, & Friedman, 2009). Regression coefficients and odds ratios of the associations between neighborhood Chinese concentration, acculturation, and profile membership were reported.

***Research question 3***

Research question 3 explored if discrimination trajectories predicted changes in depressive symptoms and achievement accounting for the effects of predictors and covariates in research question 2. The manual BCH approach in Mplus was used to

explore this question. First, the BCH weights of profile membership from the manual BCH approach in research question 2 were saved. Subsequently, the saved BCH weights were used to estimate the associations between discrimination trajectories and depressive symptoms or achievement accounting for achievement and depressive symptoms at wave 1 as well as the demographic covariates and predictors in research 2. The overall profile-specific mean differences in achievement and depressive symptoms were tested using chi-square statistics and pairwise differences with Wald tests (Asparouhov & Muthen, 2014) to determine if the residualized depressive symptoms and achievement scores differed across discrimination trajectories.

***Research question 4***

Research question 4 explored if parental ethnic-racial socialization, more specifically, preparation for bias, moderated the associations between discrimination trajectory profiles and depressive symptoms and achievement. Following the recommended approach proposed by McLarnon and O'Neill (2018), the associations between parental ethnic-racial socialization and achievement or depressive symptoms were added in the model in research question 3. These associations were tested in different profiles by allowing them to vary across profiles to examine moderation. Wald tests were used to test if the associations between parental ethnic-racial socialization and adolescent outcomes (i.e., achievement and depressive symptoms) were different across profiles.

# Chapter 3

# Results

## Preliminary Analysis

### Attrition and Missing Data Analysis

First, attrition analyses were performed to determine the attrition rate at wave 2 and wave 3 as well as the differences in demographic and study variables between those participants who were present at all waves and those who were not. Four hundred and forty-four participants participated at wave 1. Among those participants, 345 (79%) participated at wave 2 and 323 (73%) participated at wave 3. Considering all waves, the number of adolescents who had discrimination data for all 3 waves was 285 and the number of participants who missed 1 or 2 waves of data was 159. A series of independent sample t-tests were performed to investigate if there were any differences in demographic and study variables between participants who participated at all waves and those who did not. Results indicated that there were no significant differences in demographic variables (family income, family education level, and generational status) and discrimination at time 1 between participants who participated at all waves and those who did not (*ts* <1.79, *ps* >.09). However, there was a significant difference in depressive symptoms at wave 1 between those who participated at all waves ($M = 0.64$, $SD = 0.40$) and those who did not ($M = 0.73$, $SD$

= 0.46) ($t$ = -2.15, $p$ = .03). There was also a significant difference in achievement at wave 1 between those who participated at all waves ($M$ = 9.79, $SD$ = 1.62) and those who did not ($M$ = 9.02, $SD$ = 1.95) ($t$ = 4.24, $p$ < .001). These analyses suggest that adolescents who were not present at some waves had higher depressive symptoms and lower achievement than adolescents who were presented at all waves.

Missing data were examined in all study variables, and the results indicated that the missingness in all study variables ranged from 0.2% to 27 %. Little's MCAR test showed that the data were missing completely at random ($\chi^2$ = 112.171, $df$ = 115, $p$ = .56). In substantive analyses, missing data were handled with Full Information Maximum Likelihood (FIML) and the whole sample was used for analysis. FIML represents an appropriate and unbiased procedure for handling missing longitudinal data (Allison, 2001) and is robust for different patterns of missingness (Graham, 2009).

Descriptive and correlations of all study variables are presented in Table 2. The correlational analyses showed that discrimination at all waves was negatively associated with grades and positively associated with depressive symptoms at wave 1 and 3 (r ranges from -.12 to .49, $ps$ < .05). Chinese concentration was not associated with discrimination. US orientation was negatively associated with discrimination at wave 1 and 2 whereas, Chinese Orientation was not associated with discrimination at any wave.

Table **3-1**: Descriptive and Correlations of All Study Variables.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Parent education | -- | | | | | | | | | | | | | | |
| 2. Family income | .55** | -- | | | | | | | | | | | | | |
| 3. Generational Status | .10* | .23** | -- | | | | | | | | | | | | |
| 4. Youth gender | .00 | .05 | .01 | -- | | | | | | | | | | | |
| 5. Discrimination wave 1 | -.12* | -.07 | .03 | .06 | -- | | | | | | | | | | |
| 6. Discrimination wave 2 | -.11* | -.08 | .01 | .04 | .35** | -- | | | | | | | | | |
| 7. Discrimination wave 3 | -.14* | -.13* | .03 | -.07 | .23** | .33** | -- | | | | | | | | |
| 8. Chinese Concentration | -.14** | -.16** | -.13** | -.01 | .09 | .07 | -.04 | -- | | | | | | | |
| 9. U.S. orientation | .12* | .12* | .07 | -.05 | -.17** | -.14** | -.06 | -.05 | -- | | | | | | |
| 10. Chinese orientation | -.01 | -.05 | -.07 | .01 | -.05 | -.03 | .05 | .06 | .41** | -- | | | | | |
| 11. Depression wave 1 | -.09 | -.06 | -.04 | -.07 | .49** | .23** | .20** | -.02 | -.08 | .02 | -- | | | | |
| 12. Depression wave 3 | -.03 | -.05 | -.08 | -.19** | .18** | .30** | .39** | -.02 | -.10 | -.01 | .27** | -- | | | |
| 13. Grades wave 1 | .17** | .12* | .09 | -.28** | -.20** | -.13* | -.10 | -.01 | .03 | .04 | -.18** | -.10 | -- | | |
| 14. Grades wave 3 | .15* | .13* | -.04 | -.12* | -.13* | -.12* | -.18* | .02 | .13* | .00 | -.12* | -.24** | .25** | -- | |
| 15.Ethnic-racial socialization | -.05 | -.07 | .02 | .04 | .11* | .17** | .21** | .03 | -.06 | .03 | .18** | .21** | -.06 | -.42* | -- |
| *Mean* | 5.88 | 3.82 | .75 | .46 | 1.72 | 1.77 | 1.78 | 33.28 | 3.73 | 3.80 | .67 | .66 | 9.52 | 8.00 | 1.42 |
| *SD* | 1.63 | 2.47 | .43 | .50 | .50 | .49 | .47 | 17.8 | .49 | .56 | .42 | .45 | 1.78 | 1.88 | .46 |
| *Range* | 1-9 | 1-12 | 0-1 | 0-1 | 1.0-3.4 | 1.0-3.2 | 1.0-3.2 | 1.3-92.1 | 1.5-5.0 | 1.7-5.0 | 0-2.7 | 0-2.3 | 3-12 | 1-12 | 1-3 |

*Note.* * $p < 0.05$; ** $p < 0.01$.

## Substantive Analysis

### Research Question 1

Two growth curve models were first fit to the data. Specifically, the first model included only the linear term, and a quadratic term was added to the second model to examine whether the linear or the non-linear model fit the underlying growth process better. The difference in the fit indices and whether the quadratic term was significant was used to determine which model was used as the base model for growth mixture modeling. The results suggested that the model with only the linear term (AIC=1550.09, BIC=1582.86, a-BIC=1557.47) fit the data better than the model with the quadratic term (AIC=1551.19, BIC=1588.05, a-BIC=1559.49) as it had overall better fit indices (lower scores in AIC, BIC, and a-BIC). Moreover, the quadratic term was not significant ($M$ = -0.03, $p$ = .34). Therefore, the linear model was used as the base model for GMM.

A series of GMM models with one latent profile added at a time were conducted. A summary of the model fit information and model selection criteria are presented in Table 3. Because of a convergence issue, the intercept variance within each profile was constrained to zero starting from the 3-profile solution. GMM is a complicated model and oftentimes researchers run into issues with convergence (Ram & Grimm, 2009). Fixing the random intercept to be zero within each profile reduces the computational burden and helps with convergence (Ram & Grimm, 2009). Fixing

the random intercept to be zero means that the mean of discrimination within each profile is considered to be homogenous. For this study, I did not expect that there was significant within-profile variation in the intercept. To test this, I explored the variances of the intercept in each profile in the series of GMM models conducted, and they were not significant which suggests that there was no significant within-profile variance in the mean level of discrimination. This approach is commonly used and accepted in the current literature to promote model convergence and parsimony to help with model identification (Ram & Grimm, 2009; Tynes, English, Toro, Smith, Lozada, & Williams, 2020; Van de Schoot et al., 2016).

According to the model fit indices shown in Table 3, BIC, A-BIC, and AIC were minimized at the 3-profile solution. Additionally, the adjusted LMR test showed that the 3-profile model was significantly better than the 2-profile model ($p$ = .01). Moreover, the trajectory profiles in the 3-profile model were stable as they were replicated in the 4- and 5-profile models. The 4- and 5-profile models only divided existing profiles[1] into smaller groups but did not provide additional interpretable information beyond what was already provided by the 3-profile model. Considering the overall patterns of the fit indices, model stability, parsimony, and interpretability of the profiles, the 3-profile model was selected as the final model for interpretation and further analyses.

[1] In the 4-profile, there was an additional trajectory in which adolescents had an initial level of discrimination between the initial levels of the moderate-stable and low-increasing trajectory in the 3-profile model. The levels of discrimination in this additional trajectory stayed stable. In the 5-profile model, the high-decreasing profile was divided further into a high-decreasing trajectory with an initial level slightly lower than the level in the high-decreasing trajectory in the 3-profile model.

Table **3-2**: Model Fit Information and Selection Criteria for Growth Mixture Modeling Analyses.

| Number of Profiles | BIC | a-BIC | AIC | LMR | Entropy | Group Size |
|---|---|---|---|---|---|---|
| 1 | 1582.86 | 1557.47 | 1550.09 | -- | -- | |
| 2 | 1588.12 | 1553.22 | 1543.07 | $p$ =.16 | 0.729 | 418, 26 |
| **3** | **1573.47** | **1535.39** | **1524.32** | ***p* = .01** | **0.738** | **209, 210, 25** |
| 4 | 1584.39 | 1536.78 | 1525.95 | $p$ = .39 | 0.742 | 166,165,94,19 |
| 5 | 1597.48 | 1540.36 | 1526.76 | $p$ = .63 | 0.761 | 94, 160, 20, 8, 162 |

A graphical depiction of the 3-profile solution is presented in Figure 2. Based on the pattern and starting value of the trajectories, the three trajectories were labeled as *High-decreasing, Moderate-stable, and Low-increasing*. The *High-decreasing* trajectory (5.6% of the sample) consisted of adolescents whose perceptions of discrimination began at a relatively high level ($M$ = 3.28, $SE$ = 0.21) and decreased from wave 1 to wave 3. The slope of the *High-decreasing* trajectory was significant ($B$ = -0.46, $SE$ = 0.12, $p$ < .001). The *Moderate-stable* trajectory (47.1% of the sample) consisted of adolescents whose perception of discrimination started at a moderate level ($M$= 2.08, $SE$ = 0.06) and slightly decreased but in general, these perceptions were stable from wave 1 to wave 3. The slope of the *Moderate-stable* trajectory was significant ($B$ = -0.09, $SE$ = 0.03, $p$ = .001). The *Low-increasing* trajectory (47.3% of the sample) included adolescents whose initial levels of discrimination were relatively low ($M$ = 1.11, $SE$ = 0.06) but their discrimination

experiences increased from wave 1 to wave 3. The slope of the *Low-increasing* trajectory was significant ($B = 0.23$, $SE = 0.03$, $p < .001$).

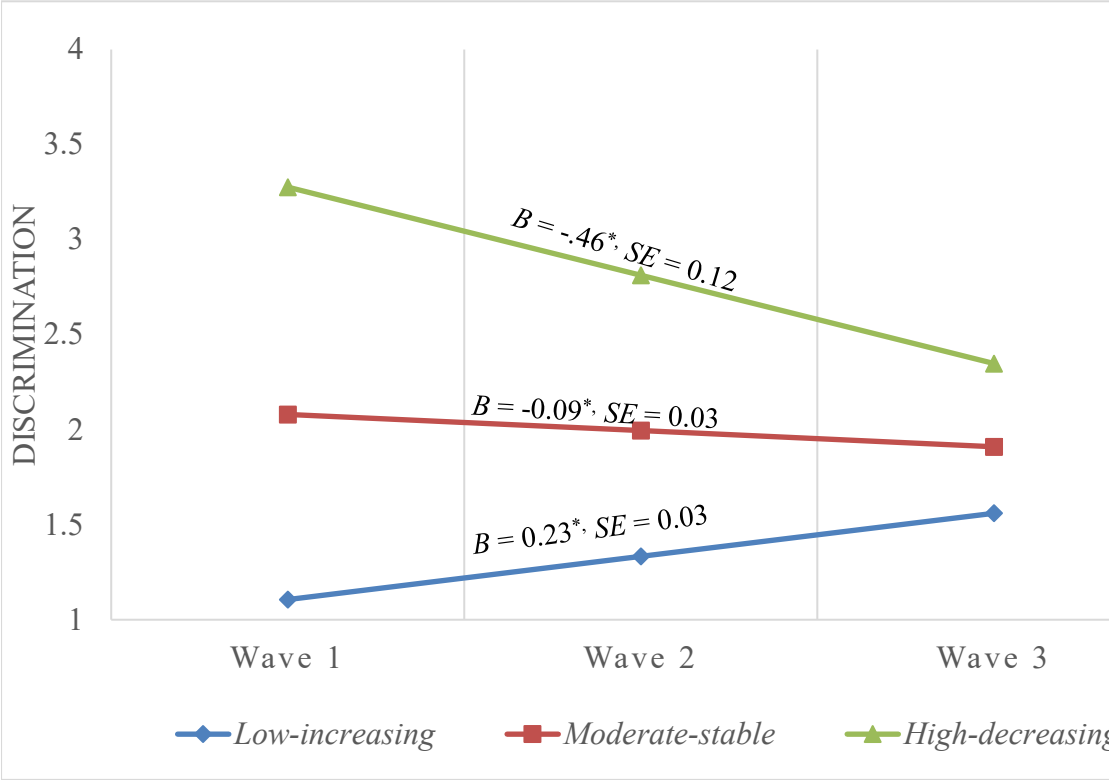


Figure **3-1**: The Trajectories of Discrimination from Wave 1 to Wave 3.

The Wald $\chi^2$ tests revealed that the intercepts (i.e., discrimination experiences at wave 1) of the three trajectories were significantly different between: *Low-increasing* trajectory ($M = 1.11$, $SE = 0.06$) and *Moderate-stable* trajectory ($M = 2.08$, $SE = 0.06$), $\chi^2 = 305.98$, $df = 1$, $p < .001$; *Low-increasing* trajectory ($M = 1.11$, $SE = 0.06$) and *High-decreasing* trajectory ($M = 3.28$, $SE = 0.21$), $\chi^2 = 40.94$, $df = 1$, $p < .001$; *Moderate-stable* trajectory ($M = 2.08$, $SE = 0.06$) and *High-decreasing* trajectory ($M = 3.28$, $SE = 0.21$), $\chi^2 = 118.98$, $df = 1$, $p < .001$. These results suggested

that the initial discrimination experiences of the three trajectories were significantly different from each other with the Chinese American youth in the *High-decreasing* trajectory perceived significantly higher initial levels of discrimination than youth in the *Low-increasing* trajectory and *Moderate-stable* trajectory. Chinese American youth in the *Moderate-stable* trajectory also had higher initial levels of discrimination than youth in the *Low-increasing* trajectory.

By changing the centering point to wave 3, I tested if the discrimination experiences at wave 3 was different between three trajectories. The Wald $\chi^2$ tests showed that the discrimination experiences at wave 3 of the three trajectories were significantly different from each other: *Low-increasing* trajectory ($M$ = 1.56, $SE$ = 0.04) and *Moderate-stable* trajectory ($M$ = 1.91, $SE$ = 0.06), $\chi^2$ = 138.90, $df$ = 1, $p$ < .001; *Low-increasing* trajectory ($M$ = 1.56, $SE$ = 0.04) and *High-decreasing* trajectory ($M$ = 2.34, $SE$ = 0.21), $\chi^2$ = 31.59, $df$ = 1, $p$ < .001; *Moderate-stable* trajectory ($M$ = 1.91, $SE$ = 0.06) and *High-decreasing* trajectory ($M$ = 2.34, $SE$ = 0.21), $\chi^2$ = 13.1, $df$ = 1, $p$ < .001. The results suggested that youth in the *High-decreasing* trajectory still had higher levels of discrimination experiences at wave 3 than youth in the *Low-increasing* trajectory and *Moderate-stable* trajectory. Youth in the *Moderate-stable* trajectory also reported higher levels of discrimination than their counterparts in the *Low-increasing* trajectory.

**Research Question 2**

The manual BCH approach was employed to examine if discrimination trajectories differed in demographic variables (i.e., adolescent gender, family education and income, and adolescent generational status) and if acculturation and neighborhood Chinese concentration predicted adolescents' discrimination trajectories after controlling for demographic variables. Profile-specific means of demographic variables were compared to see if they varied across different profiles. The results (Table 4) indicated that parents' education level significantly predicted discrimination trajectories ($\chi^2 = 6.43$, $df = 2$, $p = .04$). Parents of adolescents in the *Low-increasing* trajectory ($M = 6.12$, $SE$=0.13) had a significantly higher educational level than those in the *High-decreasing* trajectory ($M = 5.37$, $SE = 0.39$) and in the *Moderate-stable* trajectory ($M = 5.70$, $SE = 0.13$). No differences were found for gender, generational status, and family income.

Next, multinomial logistic regression was conducted with Chinese concentration, the U.S., and Chinese orientation as the predictors to predict the discrimination trajectories, controlling for each other and the demographic variables mentioned above. As is shown in Table 3-4, results indicated that neighborhood Chinese concentration and adolescents' orientation to the U.S. culture predicted discrimination trajectories. More specifically, adolescents living in neighborhoods with greater Chinese concentration were 36% less likely to be in the *Low-increasing* trajectory than in the *Moderate-stable* trajectory (OR = 0.64, 95% CI [0.47-0.89]). Chi-square test (Table 3-3) examining the mean differences in Chinese concentration

in the *Low-increasing* trajectory and the *Moderate-stable* trajectory showed that adolescents in the *Low-increasing* trajectory on average lived in neighborhoods with 29.56% co-ethnics and adolescents in the *Moderate-stable* trajectory on average lived in neighborhoods with 37.36% co-ethnics ($\chi^2 = 12.01$, $df = 1$, $p = .001$).

Table **3-3**: Means of Demographic Characteristics, Predictors by Profile.

| Variable | Low-Increasing Trajectory *M (SE)* | High-Decreasing Trajectory *M (SE)* | Moderate-Stable Trajectory *M (SE)* | Overall Test $\chi 2$ | *p* |
|---|---|---|---|---|---|
| ***Demographics*** | | | | | |
| Adolescent Gender (% Male) | $0.39^{a}$ (0.04) | $0.50^{a}$ (0.12) | $0.52^{a}$ (0.04) | 4.28 | .12 |
| Family Income | $4.13^{a}$ (0.20) | $3.88^{a}$ (0.61) | $3.52^{a}$ (0.20) | 3.63 | .16 |
| Family Education | $6.12^{a}$ (0.13) | $5.37^{b}$ (0.39) | $5.71^{b}$ (0.13) | $6.43^{*}$ | .04 |
| Generational status (% Second generation and above) | $0.74^{a}$ (0.04) | $0.67^{a}$ (0.11) | $0.78^{a}$ (0.03) | 0.85 | .65 |
| ***Predictors*** | | | | | |
| Chinese Concentration | $29.56^{a}$ (1.39) | $29.00^{a}$ (3.72) | $37.36^{b}$ (1.47) | $12.62^{*}$ | .002 |
| U.S. Orientation | $3.81^{a}$ (0.04) | $3.59^{b}$ (0.09) | $3.66^{b}$ (0.04) | $9.34^{*}$ | .009 |
| Chinese Orientation | $3.81^{a}$ (0.05) | $3.51^{a}$(0.14) | $3.83^{a}$ (0.04) | 4.32 | .12 |

*Note*. Overall global $\chi^2$ test with $df = 2$ for the equality of means across the three profiles. Pairwise mean difference tests are reported when the overall chi-square test statistic is significant at $p < .05$. Pairwise mean difference tests are reported with chi-square test statistics resulting from pairwise Wald tests. Means that do not share a superscript within a row are significantly different from one another at $^{*}p < .05$.

Results of the multinomial logistic regression also showed that adolescents with higher U.S. orientation were 1.39 times more likely to be in the *Low-increasing* trajectory than the *Moderate-stable* trajectory (OR =1.39, 95% CI [1.18-1.95]). Orientation to the Chinese culture marginally predicted discrimination trajectories. More specifically, adolescents with higher Chinese orientation were 45% less likely to

be in the *High-Decreasing* trajectory compared to the *Moderate-Stable* trajectory (OR = 0.55, 95% CI [0.27-1.12]).

Table **3-4**: Logistic Regression Analyses Predicting Discrimination Profiles.

| Profile Membership | Predictors | High-Decreasing Trajectory | | Moderate-Stable Trajectory | |
|---|---|---|---|---|---|
| | | *B* (SE) | Odds Ratio [95% CI] | *B* (SE) | Odds Ratio [95% CI] |
| Low-Increasing Trajectory | Chinese Concentration | 0.01 (0.30) | 1.04 [0.58-1.86] | -0.44** (0.16) | 0.64 [0.47-0.89] |
| | U.S. Orientation | 0.07 (0.42) | 1.17 [0.59-2.34] | 0.33* (0.18) | 1.39 [1.18-1.95] |
| | Chinese Orientation | 0.47 (0.42) | 1.54 [0.78-3.04] | -0.16 (0.17) | 0.85 [0.61-1.19] |
| High-Decreasing Trajectory | Chinese Concentration | -- | -- | -0.48 (0.31) | 0.62 [0.34-1.12] |
| | U.S. Orientation | -- | -- | 0.17 (0.35) | 1.18 [0.59-2.36] |
| | Chinese Orientation | -- | -- | -0.59† (0.36) | 0.55 [0.27-1.12] |
| Moderate-Stable Trajectory | Chinese Concentration | 0.45 (0.31) | 1.62 [0.89-2.95] | -- | -- |
| | U.S. Orientation | -0.28 (0.43) | 0.85 [0.42-1.68] | -- | -- |
| | Chinese Orientation | 0.65 (0.45) | 1.81 [0.89-2.48] | -- | -- |

*Note*. †.05 < $p$ <.10; *$p$ < 0.05; **$p$ < 0.01.

**Research Question 3**

Research question 3 explored if discrimination trajectories predicted depressive symptoms and achievement at wave 3 accounting for depressive symptoms and achievement at wave 1 and covariates in research question 2. The results (Table 3-5) indicated that profile membership predicted adolescents' depressive symptoms at wave 3 ($\chi^2 = 6.96$, $df = 2$. $p = .03$). Specifically, adolescents in the *High-decreasing* trajectory ($M = 0.96$, $SE = .26$) had significantly higher levels of depressive symptoms than adolescents in the *Low-increasing* trajectory ($M = 0.66$, $SE = .13$) and *Moderate-stable* trajectory ($M = 0.73$, $SE = .16$). Profile membership did not predict adolescents' achievement at wave 3 ($\chi^2 = 0.72$, $df = 2$, $p = .70$).

Table **3-5**: Equality of Depressive Symptoms and Grades by Profile.

| Variable | Low-Increasing Trajectory *M (SE)* | High-Decreasing Trajectory *M (SE)* | Moderate-Stable Trajectory *M (SE)* | Overall Test $\chi 2$ | ***p*** |
|---|---|---|---|---|---|
| ***Outcomes*** | | | | | |
| Depressive Symptoms at Wave 3 | $0.66^{a}$ (0.13) | $0.96^{b}$ (0.26) | $0.73^{a}$ (0.16) | 6.97* | .03 |
| Grades at Wave 3 | $7.53^{a}$ (0.57) | $6.99^{a}$ (0.92) | $7.36^{a}$ (0.50) | 0.72 | .70 |

*Note*. Overall global $\chi^2$ test with $df = 2$ for the equality of means across the three trajectories. Pairwise mean difference tests are reported when the overall chi-square test statistic is significant at $p < .05$. Pairwise mean difference tests are reported with chi-square test statistics resulting from pairwise Wald tests. Means that do not share a superscript within a row are significantly different from one another at $p < .05$. Tests control for gender, family income, family education, generational status, and the same outcome at wave 1.

*$p < .05$

**Research Question 4**

Research question 4 explored if preparation for bias, an ethnic-racial socialization strategy, moderated the associations between discrimination trajectory classes and depressive symptoms or achievement. The associations between ethnic-racial socialization and depressive symptoms and achievement were added to the model and were allowed to vary across profiles. The results (Table 3-6) showed that preparation for bias did not moderate the associations between discrimination profiles and depressive symptoms or achievement. No significant differences were found in the associations between ethnic-racial socialization and depressive symptoms ($\chi^2$=2.37, df=2, $p$=.31) and achievement ($\chi^2$ = 0.31, $df$ = 2, $p$ = .85) across profiles.

Table **3-6**: Equality of Associations between Ethnic-Racial Socialization and Depressive Symptoms and Achievement by Profile.

| Associations between Ethnic-Racial Socialization and Outcomes | Low-Increasing Trajectory *B (SE)* | High-Decreasing Trajectory *B (SE)* | Moderate-Stable Trajectory *B (SE)* | Overall Test $\chi^2$ | *p* |
|---|---|---|---|---|---|
| Ethnic-Racial Socialization and Depressive Symptoms | 0.13[a] (0.12) | 0.59[a] (0.55) | 0.26[a] (0.10) | 2.37 | .31 |
| Ethnic-Racial Socialization and Grades | -0.33[a] (0.45) | -1.96[a] (2.95) | -0.42[a] (0.39) | 0.32 | .85 |

*Note*. Overall global $\chi^2$ test with $df = 2$ for the equality of coefficients of the associations between ethnic-racial socialization and outcomes across three trajectories. Pairwise difference tests are reported when the overall chi-square test statistic is significant at $p < .05$. Pairwise difference tests are reported with chi-square test statistics resulting from pairwise Wald tests. Coefficients that do not share a superscript within a row are significantly different from one another at $p < .05$. Tests control for gender, family income, family education, generational status, and the same outcome at wave 1.

# Chapter 4

## Discussion

Given the increasing number of Asian Americans in the U.S. (U.S. Census Bureau, 2017), it is important to understand the challenges that are encountered by Asian American adolescents to improve their positive development. Guided by the integrative model (García-Coll et al., 1996), the current study focused on Asian American adolescent's discrimination experiences with a sample of 444 Chinese American adolescents, which are the largest subgroup of Asian Americans. The current study examined whether there were variations in longitudinal trajectories of perceived discrimination among Chinese American adolescents. In addition, the study explored whether neighborhood Chinese concentration and adolescents' U.S. and Chinese acculturation levels predicted discrimination trajectories and whether trajectories were associated with changes in depressive symptoms and achievement. Moreover, I explored preparation for bias, an important ethnic-racial socialization strategy, as a moderator in the associations between discrimination trajectories and adolescent outcomes. Consistent with hypotheses, I found evidence for variations in Chinese American adolescents' discrimination trajectories across three time points spanning from early adolescence to young adulthood. Three distinct trajectories were identified: A *High-decreasing* trajectory*,* a *Moderate-stable* trajectory*,* and a *Low-increasing* trajectory. Moreover, the results suggested that Chinese neighborhood concentration and adolescents' orientation

to the U.S. culture predicted adolescents' discrimination trajectories. The results also revealed that Chinese American adolescents' discrimination trajectories were associated with mental health but not with academic achievement (i.e., self-reported grades). Specifically, adolescents in the *High-decreasing* trajectory had significantly higher levels of depressive symptoms at wave 3 than adolescents in the other two trajectories. Surprisingly, preparation for bias, an ethnic-racial socialization practice rooted in helping youth become more aware of discrimination and how to cope with it, did not moderate the association between discrimination trajectory profiles and Chinese American youth's mental health and achievement outcomes.

The following sections first discuss the findings of the present study and then discuss the strengths and limitations of the study as well as directions for future studies.

## Trajectories of Discrimination Among Chinese American Youth

Extant theory and studies assume that children's and youth's perceptions of discrimination increase over time due to changes in their cognitive abilities and social contexts (Brown & Bigler, 2005). However, consistent with a line of small, but increasing number of studies (e.g., Niwa et al., 2014; Smith-Bynum et al., 2014; Unger et al., 2016), the current study challenged this assumption and showed that there was heterogeneity in Chinese American youth's discrimination trajectories. The current study revealed three distinct discrimination trajectories (i.e., *Low-increasing, Moderate-stable*, and *High-decreasing*) among Chinese American adolescents.

Specifically, 47% of the Chinese American adolescents were in the *Low-increasing* trajectory. This group of adolescents experienced nearly no discrimination (*"Never"*) at wave 1 and their discrimination gradually increased over time to near *"Rarely"* at wave 3, which suggests that adolescents in this profile experienced an increasing trajectory, but their overall discrimination levels were relatively low. The *Low-increasing* profile's gradual increase in discrimination supported the pattern predicted by Brown and Bigler (2005). It is also consistent with our hypothesis of an increasing trajectory and some past research which found that adolescents' discrimination experiences increased over time (e.g., Greene et al., 2006; Hughes et al., 2016). For this group of adolescents, their increase in reported discrimination over time is likely due to the unfolding of more sophisticated cognitive abilities which facilitate the understanding of more abstract concepts related to ethnicity, race, and stereotyping towards their group and differential opportunities and treatment due to group memberships (Brown & Bigler, 2005). In addition, as adolescents age, they have more chances to interact with people of other ethnicities and races in school, their neighborhood, and places outside of their neighborhoods, thus their chances of encountering discrimination also increase given the expanded social contexts (Greene et al., 2006).

Another trajectory profile, the *Moderate-stable* profile, comprised 47% of the sample. The *Moderate-stable* profile supported our hypothesis of a stable trajectory. However, instead of finding a low-stable trajectory, this group of adolescents experienced a moderate level of discrimination (*"Rarely"*) at wave 1 and their discrimination experiences stayed stable over time. It is also important to note that although the level of discrimination may seem relatively low at the *"Rarely"* level, it is significantly higher

than the level of discrimination in the *Low-increasing* profile. Moreover, some past research also found a comparable level of discrimination, and it was negatively associated with Asian American adolescents' well-being (e.g., Atkin et al., 2018). The *Moderate-stable* profile is consistent with some previous work which identified a moderate-stable trajectory of discrimination with a similar average discrimination prevalence with a multi-ethnic adolescent sample that included Chinese American adolescents (Niwa et al., 2014). The large portion of adolescents (47%) in our *Moderate-stable* profile suggests that many Chinese American adolescents experience persistent, but rather infrequent, discrimination across time.

The last trajectory is the *High-decreasing* profile which consisted of adolescents who reported experiencing discrimination decreased from a level slightly higher than *"Sometimes"* at wave 1 to a level slightly higher than *"Rarely"* at wave 3. This profile, making up 6% of the sample, is much smaller than the other two profiles. Although the levels of perceived discrimination declined in this profile, it did not decline to a level that was lower than the highest levels of the other two profiles. Therefore, adolescents in the *High-decreasing* trajectory experienced discrimination overall more frequently than the other two profiles. This *High-decreasing* profile is consistent with previous work which found a *High-decreasing* discrimination trajectory among a multi-ethnic sample, African American youth, and Latinx youth (Niwa et al., 2014; Smith-Bynum et al. 2014; Unger et al., 2016). There might be multiple reasons for the decline in discrimination. It is likely that adolescents who experienced high initial levels of discrimination may avoid or limit their time in settings where they are likely to encounter discrimination (Smith-Bynum et al., 2014). This may involve only going to places that are ethnically concentrated or

choosing to interact with friends of the same race. In the qualitative study by Niwa and her colleagues (2011), Asian American adolescents reported that they only made friends with Asian peers and sat only with other Asian students in the back during lunch time in order to avoid additional harassment and discrimination. The decrease in discrimination may also suggest that, over time, adolescents may avoid labeling an event as discrimination directed to themselves to avoid the psychological distress that may come with labeling an event as discrimination (Smith-Bynum et al., 2014). As adolescents in the *High-decreasing* profile had significantly higher initial levels of discrimination in the early years in middle school than the other two profiles, it may be important to consider why they had such high levels of discrimination. One potential reason may be that these adolescents had already experienced frequent discrimination before the first assessment point in the current study. Studies suggest that children as young as 5 years old are able to detect discrimination (Brown & Bigler, 2005) and the primary context for young children to encounter discrimination is in school from their peers and teachers (Brown, 2015). It may be that these adolescents were in a more diverse elementary school, a school with a poorer diversity climate, or had teachers who did not value diversity, which increased their early exposure to discrimination (Brown & Chu, 2011).

Early experiences with discrimination in elementary school may make these adolescents more aware of and more sensitive to detecting discrimination and thus they reported higher levels of discrimination at wave 1 in the current study. This finding also highlights the need for future studies to consider expanding the developmental periods included in longitudinal studies. For example, the inclusion of childhood data collection

points may help to identify the longitudinal changes in and timing of early-onset discrimination experiences.

It is important to note that the levels of discrimination in the *Low-increasing* and *Moderate-stable* group may seem relatively low, however, past research has identified comparable levels of discrimination among Asian American adolescents (e.g., Benner & S.Y. Kim, 2009; Juang & Cookston, 2009; Seol et al., 2016). More importantly, such levels of discrimination, even seemingly low, still exerted long-lasting detrimental effects on Asian American adolescents' well-being (Benner & S.Y. Kim, 2009; Juang & Cookston, 2009; Seol et al., 2016). Further, the low levels of reported discrimination may be an artifact of under-reporting due to limitations in the measure which may not capture specific discrimination experiences unique to Asian Americans that were often reported in qualitative studies (Rosenbloom & Way, 2004; Yoon, Adams, Clawson, Chang, Surya, & Jérémie-Brink, 2017). Qualitative studies revealed that many Asian American adolescents reported encountering discrimination related to the pervasive model minority stereotype and the perpetual foreigner stereotype (Rosenbloom & Way, 2004; Yoon et al., 2017). In the qualitative study by Rosenbloom and Way (2004), a substantial number of Chinese American adolescents reported being teased because they spoke a foreign language, or they spoke English with an accent, which is related to the perpetual foreigner stereotype. Also, qualitative work with Asian American youth showed that youth reported being treated differently by teachers and being resented and discriminated against by non-Asian peers because of teachers' differential treatment, which is related to the model minority stereotype (Rosembloom & Way, 2004). Many discrimination measures in the current literature, including the one that is used in the current study

(Kessler et al., 1999), were developed with African Americans. Although an item that is more relevant to Asian Americans was added (i.e., "People assumed my English is poor"), the scale may include discrimination incidents that are more common in other ethnic-racial groups but are rarely experienced by Asian American adolescents or may not include the discrimination experiences that are specific to Asian American adolescents. For instance, because of the model minority stereotype, Asian Americans seldomly experience discrimination that treats them as not smart (Rosembloom & Way, 2004; Yoon et al, 2017). Instead, they experience more covert discrimination or microaggressions that assume that they will excel academically, or they are good at math or science (Rosembloom & Way, 2004). Although this seemingly positive stereotype has been found to have some beneficial impacts on Asian American adolescents, especially on achievement (Kiang et al., 2016c), it has far-reaching negative consequences on Asian Americans, including instilling an inaccurate stereotype towards the entire group without acknowledging the group's heterogeneity, fueling intergroup conflict, and creating indifference to Asian American's struggles (Wong et al., 2010). Past studies also showed that many Asian American adolescents reported feeling negative about the model minority stereotype and regarded it as inaccurate, restrictive, and damaging to their peer relationships (Rosembloom & Way, 2004; Thompson et al., 2014). These more covert types of discrimination that are more specific to Asian Americans have been found to be associated with worsened psychological well-being among Asian Americans (Cheryan & Monin, 2005; Sue et al., 2007).

Another example of discrimination that may be more prevalent in other minority groups but not among Asian Americans is the stereotypes that they are aggressive or

angry and people may be afraid around them. Instead, Asian Americans may be overlooked or picked on as they are often seen as silent and not willing or unable to defend themselves (Rosembloom & Way, 2004), which are characteristics somewhat implied in the model minority stereotype (Kiang et al., 2016c). Researchers have developed discrimination measures (e.g., Subtle and Blatant Discrimination Racism Scale for Asian Americans, Yoo, Steger, & Lee, 2010; The Asian American Racism-Related Stress Inventory, Liang, Li, & Kim, 2004) that incorporate items related to being seen as the model minority (e.g., expectations of academic excellence; expected more of you than others) and as a foreigner (e.g., comments related to English ability and where are you from) that can better capture Asian Americans' unique racialized experience. None of these measures were available when the data were collected in the current study. Studies that have used discrimination measures that were developed for Asian Americans seem to find relatively higher discrimination prevalence (average score between "Rarely" and "Sometimes"; Burrola, 2012; Yoo, Steger, & Lee, 2010) compared to the prevalence from studies that used measures that were developed based on other ethnic-minority groups' experiences (average scores between "Never" to "Rarely"; e.g., Stein et al., 2014). However, as there are many other factors (e.g., socioeconomic status and geographic locations of the samples) that may contribute to the different reporting of discrimination experiences (Kiang et al., 2016a), it cannot be concluded that the differences in the prevalence are solely due to the use of different measures. Nevertheless, future research should consider using measures that can better capture Asian Americans' experiences to determine whether the low levels of discrimination

found in this study truly reflect Asian American adolescents' experiences in the U.S. or just reflective of methodological and measurement limitations.

In sum, these findings reveal that there is important heterogeneity in Chinese American adolescents' experiences of discrimination. The variations in Chinese American adolescents' experiences challenge the racial position model (Zou & Cheryan, 2017) which asserts that all Asian Americans have a high social position. The findings show that there are subgroups of Asian American adolescents who may not occupy the high social position as the social position model would predict; instead, there are Asian American adolescents who experience discrimination chronically and need intervention and prevention.

Also, the findings partially support Brown and Bigler's developmental model of discrimination (2005) which claims that adolescents' perceptions of discrimination generally increase over time given the subgroup of adolescents who belong to the *Low-increasing* trajectory. According to Brown and Bigler (2005), such an increase in discrimination is likely due to maturation in cognitive ability and changes in social contexts. However, as only nearly half the adolescents were in the *Low-increasing* trajectory coupled with the fact that theory would suggest that most, if not almost all, adolescents have the more sophisticated cognitive ability over time, it may be that changing social contexts may be more of a determining factor for discrimination trajectories. However, as we did not include measures on cognitive ability in the current study, we cannot be certain about whether it is the changes in cognitive ability and/or changes in social contexts that were driving the changes in discrimination experiences. To better answer this question, future studies could include measures on cognitive ability

as well as measures that tap on changes in different contexts to disentangle these two arguments.

## Predictors of Discrimination Trajectories

### Social position variables

Our findings show that gender and nativity status were not associated with Chinese American adolescents' discrimination trajectories. The null finding with gender is consistent with previous studies which found no gender differences in discrimination among Chinese American adolescents (Juang & Alvarez, 2011; Juang & Cookston, 2009) and Asian American adults (e.g., Barry & Grilo, 2003). These findings, however, were different from the findings among African American and Latinx adolescents, in which male adolescents often reported higher levels of discrimination than their female counterparts, and male adolescents were more likely to be in an increasing discrimination trajectory than female adolescents (Smith-Bynum et al., 2014). The different findings among Asian American adolescents may be due to the different gender stereotypes towards Asian American males and the discrimination measures that were used. African American and Latinx males are often seen as physically threatening and aggressive than their female counterparts and thus they may be more likely to be discriminated against than their female counterparts (e.g., people being afraid of them or people being suspicious around them and follow them around in stores). Therefore, with discrimination measures that were developed based on African Americans' experience, gender

differences are observed. Asian American adolescents, however, are not viewed as threatening and violent. Instead, qualitative studies suggest that Asian American male adolescents are often seen as less masculine and nerd (Rosenbloom & Way, 2004) which are characteristics implied in the model minority stereotype. Thus, a gender difference that is rooted in the stereotype that males are more violent than females may not be observed among Asian American adolescents. Future studies should include discrimination measures that can better capture Asian American adolescents' unique experiences to see if a gender difference rooted in the model minority stereotype may be found.

We did not find that generational status or nativity was associated with Chinese American adolescents' discrimination experience. A previous study with Chinese American adolescents found that first-generation adolescents reported more discrimination than their later-generation counterparts possibly due to a foreign accent and unfamiliarity with the U.S. customs (Juang & Cookston, 2009). As the majority (nearly 80%) of our sample is second or later generation, the null finding may be due to the unequal sample size which limits the ability to detect a significant finding (Rusticus & Lovato, 2014).

Our results showed that family education level was significantly associated with adolescents' discrimination trajectories with parents of adolescents in the *Low-increasing* trajectory had significantly higher educational levels than the other two trajectories. As the overall discrimination levels in the *Low-increasing* trajectory were significantly lower than those in the other trajectories. Our findings supported the integrative model (Garcia-Coll et al., 1996) and previous findings which showed that high levels of family SES

were related to lower levels of discrimination (e.g., Assari et al., 2020). The association between parents' education level and child discrimination may be indirect via parents' own experience of discrimination. Studies found that adults with higher educational levels, in general, reported lower levels of discrimination than their low education counterparts (e.g., Ro & Choi, 2009). Educated parents may be less likely to experience discrimination than parents with low educational levels in their daily life, especially when seeking employment (Assari et al., 2020). Parents' experience of discrimination, in turn, can make children more vigilant in detecting discrimination, and thus was associated with children's more reports of discrimination (Benner & S.Y. Kim, 2009).

**Acculturation**

We examined if acculturation (orientation to the U.S. culture) and enculturation (orientation to the Chinese culture) predicted Chinese American adolescents' discrimination trajectories. Our results showed that adolescents with higher U.S. orientation were more likely to be in the *Low-Increasing* trajectory than the *Moderate-Stable* trajectory. This result somewhat supported our hypothesis in which we expected that adolescents with higher levels of orientation to the U.S. culture would more likely be in the trajectory with low levels of discrimination across time. Although the levels of discrimination in the *Low-Increasing* trajectory increase gradually over time, the *Low-increasing* trajectory exhibited the lowest levels of discrimination overall given that its discrimination level at wave 3 was still lower than in the *Moderate-Stable trajectory.* Therefore, our study suggested that more acculturated adolescents reported fewer

incidents of discrimination, and their reported discrimination increased over time possibly due to changes in cognitive ability and social context. This result is consistent with extant literature that shows more acculturated adolescents report lower levels of discrimination (e.g., Benner & S. Y. Kim, 2009; Juang & Cookston, 2009; Kulis, Marsiglia, & Nieri, 2009; Motti-Stefanidia, Pavlopoulos & Asendorpf, 2018; Yoon et al., 2012). More acculturated adolescents who are more assimilated to U.S. practices and values may be more comfortable and confident in their interactions with other ethnic-racial groups (Juang & Cookston, 2009) and therefore less likely to be the target of discrimination, or they, in general, expect less rejection and discrimination from other groups. Less acculturated adolescents, on the other hand, may be less familiar with the U.S. culture and values and have lower confidence interacting with out-group members (Kulis et al., 2009). Past research shows that Asian American young adults with lower acculturation levels are more socially anxious when interacting with out-group members (Wang, Bordon, Wang, & Yeung, 2019). Such uneasiness in social interactions elevates Asian Americans' expectations of discrimination and rejection, and therefore, they are more aware of discrimination.

Contradictory to our hypothesis, we did not find that Chinese orientation significantly predicted discrimination trajectories. This is, however, consistent with work from Juang and Cookston (2009) which showed that orientation to the Chinese culture was not associated with Chinese American adolescents' reports of discrimination. The samples of the current study and the study by Juang and Cookston (2009) were both drawn from California, the state which has the largest Chinese population. It may be that, in a place where there is a significant number of co-ethnics and a rich tradition to

celebrate Chinese culture, adolescents who are oriented to Chinese culture may not be seen as foreign or strange (Juang & Cookston, 2009), therefore their enculturation levels are unrelated to discrimination. Also, it is important to note that acculturation (U.S. orientation) and enculturation (Chinese orientation) were significantly associated with each other at the bivariate level. Such a significant correlation suggested that many of the Chinese American adolescents were bicultural with assimilation to the U.S. culture as well as retention of the Chinese culture. This was not surprising as most of the adolescents were born in the U.S. whereas their parents were born outside of the U.S. and the families lived in traditional settling places. This set of findings also supports Berry's model of acculturation (2003) which suggests that orientation to the mainstream culture and the heritage culture should be considered separately as many immigrant youth are bicultural. The significant findings between U.S. orientation and discrimination but not with Chinese orientation once they were both included in the model may suggest that what is more important when it comes to discrimination is whether the immigrant youth are assimilated to the U.S. culture as higher levels of U.S. orientation are related to their confidence in intergroup interactions and expectations for discrimination (Wang et al., 2019). Whereas, retention of Chinese culture, especially when they are in an environment where their heritage culture is generally celebrated, may be less predictive of their discrimination experiences.

Future studies should continue to examine orientation to the U.S. and heritage culture separately if they are interested in Asian American youth's unique acculturation experiences given that immigrant youth are likely to bicultural. Also, future research

should consider exploring these associations among Chinese or Asian American youth in different geographic locations to extend the generalizability of these findings.

**Neighborhood ethnic concentration and discrimination trajectories**

Theories and past studies suggest that ethnic minority adolescents' discrimination experiences are influenced by the ethnic-racial makeup of their neighborhood (Martin et al., 2011; Shaw & McKay, 1942; Witherspoon et al., 2016). Social disorganization theory asserts that a more homogenous neighborhood promotes the ability for residents to come together and form strong social ties, limits adolescents' interactions with out-group members, and thereby decreases adolescents' potential encounters of discrimination (Shaw & McKay, 1942). However, past research has yielded mixed results with some multi-ethnic or non-Asian samples finding ethnic concentration was associated with less discrimination (e.g., Martin et al., 2011; Witherspoon et al., 2016), whereas, a within-group study of Chinese American adolescents found that perceptions of a more homogenous neighborhood were associated with more discrimination (Juang & Alvarez, 2011).

Our study showed that neighborhood Chinese concentration predicted Chinese American adolescents' discrimination trajectories. More specifically, we found that adolescents who lived in more ethnically concentrated neighborhoods were more likely to be in the *Moderate-stable* profile in which they experienced stable but somewhat infrequent discrimination than in the *Low-Increasing* profile (i.e., discrimination started from never and gradually increased to an infrequent level). This finding supported our

hypotheses that adolescents in a more concentrated neighborhood were more likely to be in the stable profile, whereas adolescents in neighborhoods with fewer co-ethnic neighbors were more likely to be in the increasing group due to increased interactions with neighbors from other ethnic groups as they age. However, it is important to note that the overall levels of discrimination were lower in the *Low-increasing* trajectory (from *"Never"* to *"Rarely"*) than in the *Moderate-Stable* trajectory (stayed at *"Rarely"*). Thus, to some degree, our results showed that adolescents living in neighborhoods with more co-ethnics reported more discrimination than adolescents in less concentrated neighborhoods. The finding is somewhat consistent with Juang and Alvarez's (2011) finding among Chinese American adolescents that although objective ethnic concentration was not associated with discrimination, perceptions of a more homogenous neighborhood were associated with more discrimination. Yet, this interpretation is contrary to SDT's assertion that adolescents are less likely to encounter discrimination in ethnically segregated neighborhoods due to limited interactions with out-group members in their neighborhood. However, in our study, the average Chinese concentration in the *Moderate-stable* profile and the *Low-increasing* profile is 37% and 29%, respectively. These would indicate that youth in the two profiles were not living in neighborhoods with primarily same-ethnic neighbors but rather in diverse neighborhoods with either one or multiple racial-ethnic outgroups making up the majority of the neighborhood. Therefore, Chinese American adolescents in both profiles were still likely to interact with out-group members regularly in their neighborhood as well as outside of their neighborhood. Considering that the less acculturated Chinese American adolescents were also more likely in the *Moderate-stable* profile, it may be that immigrant adolescents living in a

relatively more homogenous neighborhood are also likely to be less acculturated to the U.S. culture (Birman, Trickett, & Buchanan, 2005), which are related to their limited ability and confidence in interacting with out-group members and thus increase adolescents' chances of being discriminated against (Wang et al., 2019). Therefore, there may be an indirect link between ethnic concentration and perceptions of discrimination via orientation to the U.S. culture.

Another plausible explanation may be that the associations between ethnic concentration and discrimination may depend on individual characteristics, such as gender or nativity. A recent study with Asian American females in the U.S. (Morey et al., 2020) found the relationship between ethnic concentration and reports of discrimination vary by nativity and time in the U.S. Specifically, living in highly concentrated neighborhoods (i.e., with more than 80% of neighbors being co-ethnics) was related to fewer reports of discrimination only for recent immigrant but was associated with more discrimination for established immigrants and the U.S.- born Asian Americans women. It may be that the beneficial effects of living in more concentrated neighborhoods are more salient for recent immigrants who have difficulty speaking English and navigating life in a new country. However, for established immigrants and U.S.-born Asian Americans who are fluent in English and more accustomed to life in the U.S., living in an ethnically concentrated neighborhood heightened their sense of "outsiders", therefore, they are likely to expect more rejection and discrimination.

The finding may also reflect a limitation of the ethnic concentration measure used in the current study such that it did not capture the level of social cohesion and support within the neighborhood. The integrative model (Garcia Coll et al., 1996) suggests that

ethnically and racially segregated neighborhoods can be both inhibiting and promoting. The neighborhoods ethnic minority youth live in are often high in neighborhood disadvantage (i.e., lower SES) and replete with frequent psychosocial stressors and thus may constrain or inhibit ethnic minority youth's development (Wandersman & Nation, 1998). However, if a neighborhood is characterized by high social cohesion and mutual trust, it can promote well-being and developmental competencies among ethnic minority youth (Jenks & Mayer, 1990). Although ethnic concentration may serve as a proxy for social cohesion and support in the neighborhood, there is heterogeneity in neighborhood experiences (Aber & Nieto, 2000). Therefore, some co-ethnics may not necessarily perceive cohesion or feel that it translates into actual interactions rooted in mutual trust among neighbors. Past research and theory suggest that perceptions of neighborhood social processes (e.g., social cohesion, neighborhood connection, and social support) play an important role in affecting adolescent development (Dupéré, Leventhal, & Vitaro, 2012; Jencks & Mayer, 1990). Moreover, some studies showed that when both objective and subjective measures of neighborhoods were both included, the subjective measure of neighborhood social processes had a more predictive value of outcomes (Jones & Shen, 2014). This suggests that the actual social relationships built within the neighborhood may matter more than the mere ethnic concentration for adolescents' development (Zhou & Kim, 2006). Future studies can go beyond the mere number of ethnic concentrations and focus more on the social cohesion in the neighborhood. In sum, the results support the integrative model (Garcia Coll et al., 1996) by finding that social position variables (i.e., family income), contextual variables (i.e., neighborhood ethnic concentration), and

individual cultural characteristics (i.e., acculturation) all play an important role in shaping ethnic minority adolescents' experience.

## Discrimination trajectory and outcomes

### Discrimination trajectories and depressive symptoms

Depression is one of the most important mental health concerns for Asian American youth as studies have found that Asian American youth experience more depressive symptoms than other ethnic-racial groups (Choi, & Meininger, & Roberts, 2006; Huntsinger & Jose, 2006). Experiencing discrimination may add to this distress and worsen adolescents' depressive symptoms.

In studying the associations between discrimination trajectories and depressive symptoms, we found that Chinese American youth in the *High-decreasing* trajectory had significantly higher levels of depressive symptoms than their counterparts in the *Low-increasing* trajectory and the *Moderate-stable* trajectory. The results supported our hypothesis that the *High-decreasing* trajectory would have higher depressive symptoms. Considering that overall discrimination experiences were higher in the *High-decreasing* trajectory than in the other two groups, our result replicates cross-sectional and longitudinal findings of the positive association between discrimination and depressive symptoms. More importantly, our results extend previous literature by showing that different patterns of longitudinal changes in discrimination were associated with changes in depressive symptoms among Chinese American youth. Specifically, adolescents in the

*High-decreasing* trajectory were more susceptible to depressive symptoms. These findings were consistent with the previous literature which showed that a high-decreasing discrimination trajectory was particularly detrimental for a variety of adolescent outcomes, including lower levels of self-esteem, school-belonging, and teacher-student relationship quality in a multi-ethnic adolescent sample (Niwa et al, 2014). Taken together, these findings suggest that adolescents who experience high levels of discrimination in early adolescence are at a higher risk of developing maladjustment even though their discrimination decreases over time. According to Erikson's psychosocial stages theory (1968), adolescence is an important transitional period between childhood and adulthood where adolescents start to explore their self-identity (i.e., who they are). For ethnic minority adolescents, they are also developing and exploring ethnic-racial identity and becoming more aware of how their group is viewed and treated in the eyes of society and other people (Phinney, 2003). Encountering discrimination in early adolescence can be particularly harmful to minority adolescents as they are just forming their ethnic-racial identity and discrimination may negatively impact their self-image and how they view their group and thus have long-last impacts on their development and well-being. Moreover, for early adolescents whose cognitive ability and coping are gradually developing, encountering high levels of discrimination may make them especially vulnerable given that they may lack the more effective coping skills (e.g., seeking social support, and problem-focused coping; Montoro, Kilday, Rivas-Drake, Ryan, & Uman-Taylor, 2020; Skinner & Zimmer-Gembeck, 2007) to counter the negative effects of discrimination (Benner et al, 2018; Edwards & Romero, 2008; Seaton, 2010). A recent meta-analysis by Benner and colleagues (2018) also provides credence to

this speculation as they found that the associations between discrimination and socioemotional distress were stronger in early adolescence compared to late adolescence which suggests that discrimination during early adolescence is particularly detrimental to adolescent well-being.

In sum, our findings and past research suggested that discrimination in early adolescence has long-lasting effects on adolescent mental well-being. Future studies should also consider the trajectory of adolescent developmental outcomes to further explore how the timing of discrimination may contribute to the etiology of maladjustment (Lee et al., 2018; Smith-Bynum et al., 2014).

**Discrimination trajectories and achievement**

Regarding achievement, we found that discrimination trajectories were not associated with achievement, which is contradictory to our hypothesis. There are several plausible reasons for the null finding. First, it may be due to moderating factors that are not included in the current study, such as stereotypes, namely the model minority stereotype, and parents' high educational expectations. The uniqueness of Asian Americans is that they experience negative discrimination as well as the model minority stereotype which portrays Asian Americans as a group who succeed academically. It may be that the model minority stereotype instills a belief of academic success into some Asian American's self-image (Kiang et al., 2016c). Therefore, when encountering discrimination, Asian American adolescents who have internalized the favorable attitudes can draw from the positive self-evaluation to offset the negative impact of discrimination

on achievement. Past research has provided some evidence for this speculation. For instance, Kiang and colleagues (2016c) found that the model minority stereotype buffered the negative impact of discrimination on academic outcomes. For adolescents who reported encountering more model minority stereotyping events, their academic outcomes were not affected by discrimination. This finding suggests that the model minority stereotype and discrimination may jointly influence Asian American adolescents' academic outcomes. However, we need to be cautious about this interpretation as the model minority stereotype can be a double-edged sword as it can be the backdrop to induce more peer discrimination against Asian Americans (Rosembloom & Way, 2004) and put excessive pressure on Asian American adolescents, which may push them to strive for potentially inaccurate and unrealistic images and expectations and therefore increase psychological distress (Kiang et al., 2016c) in the long-term. Moreover, it is important to note that adolescents who dropped out of the study had significantly lower achievements than those who remained in the study. Thus the null finding with regards to achievement may be a reflection of such selective attrition that often happens in longitudinal studies (Leeuw & Lugtig, 2015).

Another possible moderating factor is Chinese American parents' high educational expectations. As many parents in the current study are immigrants, influenced by Confucianism's emphasis on education (Jiménez & Horowitz, 2013; Stevenson & Stigler, 1992), these parents may have high expectations for their children's education and consider academic achievement as the primary and most effective way for their children to enter into the upper level of the society (Lee & Zhou, 2014; Sue & Okazaki, 1990; Tan & Yates, 2011). Studies suggest that Asian American parents have a

higher educational expectation for their children than parents in other ethnic-racial groups (Goyette & Xie, 1999). Influenced by parents' higher expectations, Chinese American adolescents may internalize the importance of success in school and work hard to earn good grades to meet their parents' educational expectations out of respect for their parents' efforts despite personal encounters of discrimination and any distress it may ensue.

The null discrimination-achievement finding may also be due to the general discrimination measure used in the study. Past research has found that the sources of discrimination have differential impacts on different domains of developmental outcomes. Discrimination against Asian American adolescents can come from different sources, including from adults and peers. Benner and Graham (2013) showed that peer discrimination was associated with psychological adjustment, whereas discrimination from adults at school was associated with achievement. Discrimination by adults in the school context is likely to have a more significant impact on academic achievement than peer discrimination, given teachers' higher position and greater authority to shape students' academic achievement. Therefore, using only general discrimination without distinguishing the sources of discrimination limits understanding of how discrimination experiences in different contexts from different sources may differentially impact adolescent outcomes. If sources are not specified, adolescents may mainly report the discrimination from the source that is most salient to them and under report discrimination from other sources. For Asian American youth, discrimination from peers may be more salient as extant literature repeatedly demonstrates that Asian American adolescents report more peer discrimination than other ethnic groups (e.g., Greene et al.,

2006; Huynh & Fuligni, 2010; Rivas-Drake et al., 2007). Therefore, what we observed in the current study may be more of an effect of peer discrimination and thus we only found that it impacted adolescents' psychosocial outcomes but not academic outcomes. Future studies should consider including measures that specify the sources of discrimination to gain a more nuanced understanding of the differential effects of discrimination by sources on different domains of adolescents' outcomes.

## The Moderating Role of Ethnic-Racial Socialization

Given that discrimination can negatively impact minority adolescent development, it is important to identify the factors that can moderate the negative impacts of discrimination on outcomes. Ethnic-racial socialization is a potential protective factor (Hughes et al., 2006; Hughes et al., 2009). Also, given that ethnic-racial socialization is malleable through interventions and preventions (Wang et al., 2020), it has received increased attention from researchers to study its moderating effects on the discrimination-outcome associations among African American and Latinx youth. To date, there are only two studies (Atkin et al., 2018; Seol et al., 2016) on the moderating role of ethnic-racial socialization among Asian American youth. However, given the unique samples used in the two studies (e.g., transracially adopted Korean American adolescents) and the lack of investigation of discrimination trajectories or change over time, more studies are needed to explore the moderating role of ethnic-racial socialization in Asian American families.

Given the limited studies in Asian American youth and their limitations, we based our hypothesis with findings among other ethnic minority groups (e.g., Harris-Britt et al.,

2007; Neblett et al., 2008) and hypothesized that preparation for bias moderated the association between discrimination and adolescents' outcomes. However, contrary to our hypothesis, we did not find that preparation for bias moderated the associations between discrimination trajectories and Chinese American adolescents' achievement or depressive symptoms. This finding, however, is consistent with the only two studies that have examined the moderating role of ethnic-racial socialization among Asian American youth (Atikin et al., 2018; Seol et al., 2016). Both studies found cultural socialization moderated the discrimination-adjustment associations but did not find that preparation for bias moderated such associations. The reason for the null finding may be due to the type of ethnic-racial socialization messages that were studied in the current study. In this study, we focused on preparation for bias messages from parents to their youth about how to cope with discrimination as this is the only available ethnic-racial socialization strategy in the current data. Past research with Asian American families found that only cultural socialization can buffer the negative effects discrimination exert on adolescent development but not preparation for bias (Atkin et al, 2018; Seol et al., 2016). It may be that, for Asian American families, the type of socialization messages that matters most are those instilling cultural pride in adolescents. Past research showed that most Chinese American parents believed that it is important to teach their children about the Chinese culture so their children can be connected to their heritage culture (Hugh et al., 2009). On the contrary, Chinese American parents placed less importance on preparation for bias and their scores were lower than African American and Latinx parents (Hugh et al., 2009). With more frequent cultural socialization messages, adolescents are likely to view themselves and their group more positively, therefore they may be more resistant to

discriminatory treatments. It may also be that the emphasis on Asian traditions and values is more relevant than preparation for bias for Asian American adolescents when dealing with discrimination (Seol et al., 2016).

Another reason for the null finding may be due to measurement limitations. In this study, we found low scores of preparations for bias; the majority of the adolescents reported that their parents infrequently (i.e., "Seldom" or "Sometimes") used preparation for bias messages and the mean score of the scale is close to "Seldom". The low preparation for bias levels may be due to different reasons. First, most of the parents are immigrants, and research generally shows that immigrant parents use fewer preparation bias messages. Immigrant parents did not grow up in the U.S, and it may be a challenge for them to identify discrimination and teach their children how to cope with it as they may be still learning to identify and cope with discrimination (Hughes et al., 2006; Juang et al., 2017). Second, Chinese values that emphasize emotion suppression, maintaining harmony, and parental authority may make Chinese American parents reluctant to talk to their youth about their discrimination experiences as discussing a stressful event may make parents seem vulnerable. Lastly, it may be that the preparation for bias scale items in the study were too general and were not able to capture the unique preparation for bias messages rooted in the model minority and perpetual foreigner stereotypes of Asian Americans. Without learning specific ways to deal with the pervasive stereotypes of Asian Americans, these adolescents may not be able to develop effective coping methods to mitigate the negative effects of discrimination that is rooted in these stereotypes (Atkin et al., 2018; Seol et al., 2016).

As the literature so far and our study all found that preparation for bias did not moderate the associations between discrimination and adolescent outcomes among Asian American adolescents, future studies should consider using preparation for bias measures that are more specific to Asian American experience to see if the findings can be replicated. More importantly, it is imperative for future studies to include other dimensions of ethnic-racial socialization, such as cultural socialization, to see if it is a more effective strategy to protect Asian American adolescents from the negative effects of discrimination.

## Strengths, Limitations, and Future Directions

This study is one of the first few studies exploring heterogeneity in the longitudinal changes of discrimination among ethnic-minority adolescents. This paper contributes to the literature by focusing on Asian American adolescents' discrimination experiences as Asian American youth are often overlooked and understudied. A significant strength of the study is its longitudinal nature. By using a longitudinal design with repeated measures of discrimination, we were able to study how Chinese American adolescents' discrimination experiences changed over time from early adolescence to young adulthood. More importantly, we identified distinct discrimination trajectories among these adolescents further supporting heterogeneity of experience within ethnic-racial groups. Moreover, we incorporated the neighborhood context, an important developmental setting for adolescents, in this study and found that neighborhood Chinese concentration and adolescent orientation to the U.S. culture predicted discrimination

trajectories. In addition, we found that adolescents with the *High-decreasing* trajectory had higher depressive symptoms. This study demonstrates that the timing and the nature of change of discrimination experiences vary across Chinese American adolescents and these different patterns of discrimination experiences were informed by adolescents' contextual and individual cultural characteristics as well as have significant meanings for Chinese American adolescents' mental health.

The contributions of this paper should be considered within the scope of its limitations. First, we used a general discrimination measure that does not distinguish the sources of discrimination (e.g., peer vs. adult). However, studies have shown that, compared to other ethnic-racial groups, Asian American adolescents are more likely to receive peer discrimination (e.g., Greene et al., 2006). Moreover, studies have shown that the different sources of discrimination impacted different domains of adolescent adjustment with discrimination by school personnel associated with academic outcomes, whereas peer discrimination is associated more with socioemotional outcomes (Benner & Graham, 2013). Further, studies have also identified different patterns of changes in peer discrimination and adult discrimination (Niwa et al., 2014). Therefore, it is important for future studies to distinguish discrimination by different sources to obtain a more nuanced understanding of changes in discrimination and how patterns of change in different sources of discrimination affect different domains of adolescent development. It is also important to note that the measure in our study did not specify whether the discrimination is due to adolescent ethnicity or race. Therefore, the discrimination experiences reported in the study may be attributed to reasons (e.g., immigrant status, gender, and English

ability) other than ethnic or racial background, or it may be attributed to the combinations of different reasons. Coupled with the fact that some items may not capture discrimination experiences unique to Asian Americans, future studies should use discrimination measures developed specifically to measure Asian Americans' ethnic-racial discrimination experiences to reflect their unique racialized experience in the U.S.

Another potential limitation related to the discrimination measure is that it is a subjective self-reported measure that assesses participants' perception of discrimination. Similar to other self-report measures, self-reports of discrimination may involve reporting bias and social desirability (Lewis, Cogburn, & Williams, 2017). Individuals may under-report their experiences of discrimination because of denial of it happening, unwillingness to report it, or simply not paying attention to the event. Conversely, some individuals may perceive or report more discrimination than actually exists as they are more vigilant about discrimination (Lewis et al., 2017). Although new approaches to measure discrimination have been developed (e.g., implicit measures to assess implicit views of being a target of discrimination; Krieger et al., 2011), researchers have argued that self-reported discrimination, by far, is still the most appropriate measure to assess discrimination as new approaches have shown weak correlations with self-report measures and what matters most to individual's well-being is what they perceive (Krieger et al., 2011). However, researchers have suggested that future studies could include a social desirability measure to control for these biases (Krieger et al., 2011). The second limitation is that we only focused on Chinese American adolescents in this study. Asian American is a quite broad term that includes immigrants from more than 20 countries. Immigrants from different countries come to America for different reasons (e.g., study or

occupational opportunities, reunion with family members, or fleeing their own country as refugees) with different backgrounds. Therefore, different Asian groups may experience different attitudes and their discrimination experiences may not be uniform. Therefore, our findings may not capture the experience of other Asian American groups. Future studies should consider conducting studies among different Asian American ethnic groups to determine whether our findings are generalizable to gain a better understanding of the experience of different Asian American subgroups.

Third, the current study focused on Chinese American adolescents living in California, the state which has the largest Asian and Chinese populations. Therefore, the findings may not be generalizable to Chinese American adolescents living in other geographic locations in the U.S. California has been a traditional settling place for Asian American immigrants. Yet, more and more Asians choose to settle in the Midwest or the South region of America (Kiang et al., 2012). These relatively new resettlement places are often referred to as emerging immigrant communities, non-traditional resettlement sites, or new destination areas (Kiang et al., 2012). The typical characteristics of these sites are usually small-sized rural towns with a low density of co-ethnic groups and little cultural and social resources for minority families, which are very different than the traditional settling places (Kiang et al., 2012). Relatedly, Asian American adolescents living in these non-traditional locations may have a very different schooling experience compared with their peers in a traditional settling place. Hence, future research should study Asian American adolescents living in other areas of the U.S. to determine whether findings related to discrimination can be generalized to Asian American adolescents in different areas.

Fourth, in the current study, we focused on Chinese American adolescents' depressive symptoms and academic performance. Still, there are other outcomes that are important to consider and are influenced by discrimination. Studies have documented that discrimination negatively affects Asian American adolescents' self-esteem (Benner & S.Y. Kim, 2009; Fisher et al., 2000; Rivas-Drake et al., 2007; Stein, Kiang, Supple, & Gonzalez, 2014), social competence (Grossman & Liang, 2007), and social relationships (Benner & S. Y. Kim, 2009; Kiang et al., 2016). These socio-emotional domains are also of great importance to adolescents; therefore, further studies should be performed to explore the influences of discrimination on other socioemotional outcomes and to identify the factors which may help adolescent overcome the adverse effects.

Fifth, the overall levels of discrimination in the three identified trajectories were significantly different from each other (e.g., the *High-decreasing* trajectory had the highest discrimination level and its lowest point at wave 3 was still significantly higher than those in the two other trajectories). Therefore, we cannot determine whether the associations between the trajectory profiles and adolescent outcomes are influenced by the frequency of discrimination rather than the direction of the change in discrimination. This may be due to the restricted range of discrimination in our study. Nevertheless, the current study adds to our understandings of the heterogeneity in discrimination experiences among Asian American adolescents. It reveals a group of adolescents who chronically experienced high levels of discrimination and even though their reported frequency of discrimination declined over time, they were still mentally affected by it and showed higher levels of depressive symptoms. Future studies should explore the discrimination trajectories of other Asian American samples to see if similar or different

trajectories are identified. If future studies identify trajectory profiles with the same direction of change but different intercepts (e.g., high-increasing and low-increasing) or trajectory profiles with a similar intercept but different directions of change, it will offer us a way to differentiate the effects of the frequency of discrimination and the direction of change in discrimination.

Last but not least, the data used in the current study were collected about 20 years ago. As the prevalence of discrimination, especially blatant discrimination (e.g., verbal and physical attacks) against Asian Americans had increased significantly due to the COVID-19 pandemic (Jeung et al., 2020), future studies focusing on the contemporary U.S. should be conducted to see if the findings of the current study can be replicated. As the COVID-19 pandemic fuels a noticeable increase in anti-Asian sentiment and discrimination against Asian Americans (S. Lee & Waters, 2021), it is expected that the intercepts (i.e., the prevalence of discrimination at baseline) of different trajectory profiles will be higher than what is found in the current study. If the trend of the increase in the prevalence of discrimination against Asian Americans continues, then we may see more adolescents belonging to the increasing trajectory. Yet, we may still observe the other two trajectories and see similar associations among contextual variables and the trajectories. The study by S. Lee and Waters (2021) found that there is a large variation in individual's reports of discrimination. Whereas some Asian Americans reported experiencing more discrimination during this time (i.e., COVID-19), some reported not experiencing discrimination as the community they are in is predominantly Asian (S. Lee & Waters, 2021). Also, with the current societal and public health issues, it is expected

that discrimination trajectories will be associated with mental health outcomes as shown in previous studies.

## Conclusion

Despite being model minorities, Chinese American adolescents face many psychological challenges and cultural stressors like interpersonal discrimination. The current study extends the current literature by finding different patterns of discrimination trajectories among Chinese American adolescents. Identifying variations in discrimination trajectories among Chinese American adolescents offers us some insights into Chinese American adolescents who might be particularly at a higher risk for encountering discrimination and in need of intervention. Further, we identified contextual and individual cultural characteristics that are associated with different trajectories. These findings disputed the pervasive but inaccurate view towards Asian Americans picturing all of them as model minorities and not a potential target of discrimination despite the large heterogeneity among this population. Some school personnel may also hold the view that Asian American students receive little discrimination and because of that, teachers may react to Asian American adolescents' reports of discrimination less urgently. However, our findings show that Asian American adolescents experienced discrimination, and there was a group of them who experienced discrimination frequently starting from early adolescence. The findings highlight the need for educator intervention and prevention programs that focus on educating school personnel about the heterogeneity of Asian American adolescents and the struggles they face. School

personnel must be aware of the inaccurate stereotypes and myths about Asian American adolescents and reflect on their own biases and stereotypes to understand how these things may affect their interactions with Asian American students or their reaction to their reports of discrimination.

The study also demonstrated that discrimination trajectories were related to Chinese American adolescents' mental well-being and adolescents who experienced the initially high but decreasing trajectory were affected most by discrimination. This study helps to inform the timing and targets of interventions that seek to reduce Asian American adolescents' exposure to discrimination and the detrimental effects of such exposure. It suggests that interventions and preventions may need to be put into place early as some Asian American adolescents have already encountered discrimination frequently at the beginning of middle school or even before middle school. Moreover, the stigma related to mental health problems in Asian culture together with the model minority myth makes Asian American students reluctant to seek mental health care (S. Lee et al., 2012). Therefore, more education awareness programs and culturally competent interventions and preventions (e.g., bilingual counseling providers and providers who are aware of Asian Americans' cultural beliefs) are needed to better serve this population.

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# Appendix

## Measures

### Discrimination

*On a day-to-day basis, how often do you experience each of the following types of discrimination? 1=Never, 2=Rarely, 3=Sometimes, 4=Often.*

1. I am treated with less courtesy than other people are.
2. I am treated with less respect than other people.
3. I receive poorer service than other people at restaurants or stores.
4. People act as if they think I am not smart.
5. People act as if they are afraid of me.
6. People act as if they think I am dishonest.
7. People act as if they're better than I am.
8. I am called names or insulted.
9. I am e threatened or harassed.
10. People assumed my English is poor.

### Acculturation

*For the following questions please think about Chinses and American cultures.*

*1= Strongly Disagree, 2=Disagree, 3=Neutral/Depends, 4=Agree, 5=Strongly Agree*

1. I often follow Chinese cultural traditions

2. I often follow mainstream American cultural traditions (e.g., celebrate holidays)
3. I am willing to marry a Chinese person
4. I am willing to marry an American person
5. I enjoy social activities with Chinese people
6. I enjoy social activities with Americans
7. I am comfortable working with Chinese people
8. I am comfortable working with Americans
9. I enjoy Chinese entertainment (e.g., movies, music)
10. I enjoy American entertainment (e.g., movies, music)
11. I often behave in ways that are typical of the Chinese culture
12. I often behave in ways that are typical of the American culture
13. It is important for me to maintain or develop Chinese cultural practices
14. It is important for me to maintain or develop mainstream American cultural practices
15. I believe in Chinese cultural values
16. I believe in mainstream American values
17. I enjoy typical Chinese jokes and humor
18. I enjoy typical American jokes and humor
19. I am interested in having Chinese friends
20. I am interested in having American friends

**Depressive symptoms**

*Please circle the number for each sentence that best describes how often you felt or behaved this way during the past week.*

*0=Rarely or none of the time (Less than 1 Day), 1=Some or a little of the time (1-2 Days), 2=A lot of the time (3-4 Days), 3=Most or all of the time (5-7 Days).*

1. I was bothered by things that usually does not bother me
2. I did not feel like eating my appetite was poor
3. I felt that I could not shake off the blues (feeling down or bad) even with help from my family or friends
4. I felt that I was just as good as other people
5. I had trouble keeping my mind focused on what I was doing
6. I felt depressed
7. I felt that everything I did was an effort (hard to do)
8. I felt hopeful about the future
9. I thought my life had been a failure
10. I felt fearful
11. My sleep was restless ( could not sleep well)
12. I was happy
13. I talked less than usual
14. I felt lonely
15. People were unfriendly
16. I enjoyed life
17. I had crying spells; I cried
18. I felt sad
19. I felt that people disliked me
20. I could not get "going" (get myself to do things)

**Parent Ethnic-Racial Socialization (Preparation for Bias)**

*How often do your mother and father do these things?*

*1=Seldom, 2=Sometimes, 3=Often*

1. Talks to me about what to do if someone insults or harasses me
2. Talks to me about the possibility that some people might treat me badly or unfairly because I am Chinese
3. Talks to me about the possibility of others trying to limit me because I am Chinese
4. Talks to me about how being Chinese means I have to do better in school than other people in order to get the same kind of success in the future

**WEI, WEI**

Curriculum Vitae

## EDUCATION

| | |
|---|---|
| | **The Pennsylvania State University** |
| 2017.9 – 2021.8 | Doctor of Philosophy in Developmental Psychology |
| 2015.8 – 2017.8 | Master of Science in Developmental Psychology |
| | **Beijing Normal University, China** |
| 2012.6 – 2015.6 | Master of Education in Developmental and Educational Psychology |
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## PUBLICATIONS

White, M. B., Witherspoon, D. P., **Wei, W.,** Zhao, C., Pasco, M. C., Maereg, T. M. (in press). Adolescent development in context: A decade review of neighborhood and activity space research. *Journal of Research on Adolescence.*

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Mena, J. A., Soto, J. A., **Wei, W.,** Kaplan, S. E., & Salazar, S. (2020). Does centrality moderate the relation between skin tone satisfaction and psychological adjustment for Latinx Blacks and non-Latinx blacks? *Race and Social Problems, 12,* 219–232. https://doi.org/10.1007/s12552-020-09284-2

**Wei, W.,** Wu, Y., Lv, B., Zhou, H., Han, X., Liu, Z., & Luo, L. (2016). The relationship between parental involvement and elementary students' academic achievement in China: One-only children vs. children with siblings. *Journal of Comparative Family Studies*, *47*(4), 483-500. https://doi.org/10.3138/jcfs.47.4.483

**Wei, W.**, Wu, Y., & Luo, L. (2015). Predictors of parental involvement: Family social-economic status and parents' psychological factors. *Journal of Beijing Normal University (Social Sciences)*.

Luo, L., Wu, Y., & **Wei, W.** (2014). High-quality parental involvement in education. *Journal of Beijing Normal University (Social Sciences), 2014, 1*(241), 53-60.

Wu, Y., Han, X., **Wei, W.,** & Luo, L. (2013). Theoretical model construction and testing of parental involvement in primary school children's education. *Journal of Beijing Normal University (Social Sciences), 2013, 1*(235), 61-69.

## AWARDS AND HONORS

| | |
|---|---|
| 2021.4 | Graduate Alliance for Diversity and Inclusion (GADI) Research Award |
| 2014.9 | First Prize Graduate Scholarship from Beijing Normal University |
| 2013.9 | Second Prize Graduate Scholarship from Beijing Normal University |
| 2013.4 | First Prize in Field Research Competition from Beijing Normal University |