Chinese American Adolescents’ Experiences of COVID-19-Related Racial Discrimination and Anxiety: Person-Centered and Intersectional Approaches

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The present study examined the impact of COVID-19-related racial discrimination on Chinese American adolescents (N = 213; M_age = 13.95 years, SD = 2.35; 49% girls) at the intersection of race and gender. We explored (1) subgroups of adolescents based on ethnic identity, bicultural identity integration, and behavioral acculturation; (2) their demographic correlates; and (3) whether the association between racial discrimination and anxiety varied across subgroups and gender. Latent profile analysis identified three profiles: bicultural, marginalized, and separated. Bicultural and marginalized adolescents were vulnerable to direct and vicarious racial discrimination, respectively. Moreover, bicultural and marginalized boys and separated girls were more negatively affected by COVID-19-related racial discrimination. The findings highlight the utility of person-centered and intersectional approaches in understanding Chinese American adolescents’ experiences of racial discrimination.

Racism is an organized system that causes unequal distributions of power, resources, and opportunities based on designations of race/ethnicity groups, and is manifested in multiple forms (e.g., individual, institutional, and cultural) across multiple contexts (e.g., personal, collective, cultural-symbolic, and sociopolitical; Harrell, 2000). Experiences of racism adversely impact the well-being of ethnic and racial minoritized adolescents (Benner et al., 2018). Racism also interacts with other systems to create unique experiences of oppression (Crenshaw, 1991) for Black, Indigenous, and People of Color during adolescence based on their multiple social categories such as race/ethnicity and gender.

The racialized COVID-19 pandemic has revealed and heightened historically rooted anti-Asian racism and xenophobia in the United States. The STOP AAPI HATE reporting center received over 6603 incidents of hate targeting Asian Americans from March 19, 2020 to March 31, 2021, with 11% directed at youth (0–17 years old). Chinese Americans (44%) make up the largest share of victims (Jeung, Yellow Horse, Popovic, & Lim, 2021) as the virus was first identified in Wuhan, China. In one study, almost half of Chinese American adolescents reported being the direct target of COVID-19 racial discrimination at least once, and such experiences were associated with poorer mental health (Cheah et al., 2020). Furthermore, Chinese American adolescent boys and girls may vary in how they experience racial discrimination as a reflection of different gender and cultural stereotypes (Liang, Grossman, & Deguchi, 2007). Thus, there is a need to understand potential factors of risk and resilience that can modulate the impact of Chinese American adolescents’ gender-specific experiences of racial discrimination during the COVID-19 pandemic.

The current study is guided by two theoretical frameworks: García Coll et al.’s (1996) integrative model and the intersectionality perspective (Crenshaw, 1991). Both frameworks emphasize the role of social position variables such as race/ethnicity and gender in the development of ethnic minority adolescents. García Coll et al.’s (1996) integrative model highlights the segregated environments created by social stratification mechanisms, including racism and racial discrimination, that affect immigrant minoritized adolescents’ adjustment. This

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model also calls for the study of adaptive cultural factors that can be fostered within racial-ethnic minority families in response to oppressive environments and shape adolescents' developmental competencies. The intersectionality perspective (Crenshaw, 1991; Santos & Toomey, 2018) posits that ethnic minority individuals belong to multiple, intersecting social categories (e.g., race/ethnicity and gender) that jointly shape their unique experiences, which can only be fully understood in the context of interlocking systems of oppression.

We integrated the two frameworks by examining the intersection of ethnicity and gender among Chinese American adolescents to gain a more nuanced understanding of the impact of discriminatory experiences on these youth during the COVID-19 pandemic. We also explored adaptive cultural factors that may protect these adolescents against the negative impact of racial discrimination. Specifically, we focused on ethnic identity (i.e., the sense of belonging and attitudes towards one’s ethnic group membership; Umana-Taylor et al., 2014), bicultural identity integration (BII, i.e., the perception that Chinese and American identities are compatible; Benet-Martinez & Haritatos, 2005), and behavioral acculturation (i.e., behavioral participation in Chinese and American cultures; Berry, Phinney, Sam, & Vedder, 2006).

During adolescence, the exposure to racial discrimination tends to increase (Jiang & Kiang, 2019), and adolescents’ still-developing cognitive abilities and ongoing identity exploration facilitate their understanding of race-ethnicity and how their ethnic groups are viewed by others (Umana-Taylor et al., 2014). Thus, adolescence may be a vulnerable period for the negative impact of racial discrimination. Moreover, the social category of gender becomes increasingly salient in this period and influences how adolescents are perceived by others and themselves (Ghavami, Katsiaficas, & Rogers, 2016). Due to gender role expectations and cultural stereotypes, Chinese American adolescent boys and girls may experience racial discrimination and its impact in unique ways, and these experiences may be differentially related to their ethnic identities, bicultural identities, and acculturation. In this study, we used quantitative methods within an intersectionality framework to examine these experiences. Although limited in their capacity to reveal the complexities of intersectional experiences, quantitative methods still have utility when used in conjunction with intersectional interpretations and framing with attention to power relations (Else-Quest & Hyde, 2016).

Most research on Chinese American adolescents’ discriminatory experiences utilizes a variable-centered approach that assumes homogeneity in the population and may obscure important individual differences (Laursen & Hoff, 2006). For example, research on Asian Americans found that individuals characterized by a combination of bicultural behavioral acculturation and strong ethnic identities reported the most favorable adjustment, but the benefits varied by ethnicity, gender, and outcomes (Choi, Park, Lee, Yasui, & Kim, 2018; Jiang, Park, Chiriboga, & Kim, 2017). Chinese American adolescent girls and boys characterized by unique combinations of adaptive cultural factors may also be differentially affected by racial discrimination. The present study extends previous research by taking a person-centered approach to reveal potential heterogeneity in Chinese American adolescents in the context of heightened discrimination during the COVID-19 pandemic. We first aimed to identify subgroups of Chinese American adolescents who share similar characteristics of ethnic identity, BII, and behavioral acculturation. We then examined the demographic correlates of these subgroups, which create unique contexts for the development of adaptive cultural competencies for these adolescents. Finally, we explored whether the link between COVID-19-related racial discrimination and anxiety may vary across adolescent subgroups and gender.

The Racial Discrimination Experiences of Chinese Americans

Chinese Americans have been the targets of xenophobia since their arrival in the United States, such as being conceptualized as dangerous “Yellow Perils” and subjected to racist policies like the 1882 Chinese Exclusion Act (Kiang, Tseng, & Yip, 2016). Despite a long history in the United States, Chinese Americans continue to be viewed as perpetual foreigners and perceived as a threat to American values (Kiang et al., 2016). At the same time, the “model minority” stereotype depicts Asian Americans as having achieved economic and academic success through hard work, which masks the diversity among Asian Americans and ignores their racial and cultural barriers to success (Yip, Cheah, Kiang, & Hall, 2021). Importantly, Chinese American adolescent boys and girls may have distinct experiences of racial discrimination based on their position at the intersection of race and gender (Cole, 2009; Crenshaw, 1991). For example, focus group interviews on twenty 11- to 14-year-old Chinese American adolescents showed that Chinese American
boys are stereotyped as less masculine and experienced more blatant forms of discrimination, whereas Chinese American girls experienced more subtle forms of relational aggression (Liang et al., 2007). Moreover, 12- to 19-year-old Chinese boys’ socio-emotional adjustment was more negatively affected by racial discrimination than girls, possibly because boys experienced greater racial discrimination and were less likely to seek social support than girls (Juang, Shen, Costigan, & Hou, 2018).

The persistent anti-Asian sentiments have been reflected in the surge of hate crimes and racial discrimination against Asian Americans during the COVID-19 pandemic (Tessler, Choi, & Kao, 2020), which were associated with poorer mental health, including heightened anxiety (Cheah et al., 2020). Indeed, the racial discrimination-anxiety link was stronger among Chinese American college students during the pandemic compared to before the pandemic (Haft & Zhou, 2021), indicating that racial discrimination experienced in the COVID-19 context may be particularly harmful in terms of eliciting feelings of fears, worries, and uncertainty in Chinese American youth. Thus, we focused on the association between racial discrimination and Chinese American adolescents’ anxiety in this study.

Racial discrimination can be experienced directly as the victims or vicariously by witnessing incidents of discrimination directed at others of the same race (Harrell, 2000). Most previous research has focused on direct discrimination experiences (Paradies et al., 2015); however, vicarious racial discrimination targeting families, friends, and strangers can also lead to negative physical and mental health outcomes (Heard-Garris, Cale, Camaj, Hamati, & Dominguez, 2018). A meta-analysis shows that vicarious racial discrimination has smaller effects sizes on mental health outcomes than direct racial discrimination (Paradies et al., 2015), although this may be partly due to the under-developed measures and inconsistent operationalization (i.e., racism experienced by caregivers, family, peers, or strangers) of vicarious racial discrimination. In addition, due to the social distancing requirements during the COVID-19 pandemic, adolescents have increased their use of social media and online platforms (Tankovska, 2021). Given that the stigmatizing language reflecting anti-Chinese sentiments on social media has dramatically increased since the pandemic (Nguyen et al., 2020), Chinese American adolescents are likely to be exposed to racial discrimination while online. Thus, to more comprehensively capture their exposure to racial discrimination during the pandemic, we examined direct and vicarious racial discrimination experienced both in-person and online.

**Protective Factors Against Racial Discrimination**

According to the integrative model (García Coll et al., 1996), the adaptive cultures (i.e., goals, values, and behavior) developed within racial-ethnic minority families can buffer against racial discrimination. Moreover, these adaptive cultures may be experienced differently by adolescent girls and boys due to gendered socialization in immigrant families (Suárez-Orozco & Qin, 2006). In this study, we focused on three adaptive cultural factors: ethnic identity, BII, and behavioral acculturation. We will discuss the potentially protective roles of each factor in the following sections.

**Ethnic identity.** Ethnic identity is a multidimensional construct that refers to individuals’ beliefs and attitudes about their ethnic group membership (Umana-Taylor et al., 2014). We focused on two key aspects of ethnic identity: centrality (i.e., the extent to which race-ethnicity is important to one’s self-concept) and private regard (i.e., positive or negative feelings toward one’s ethnic group membership; Sellers, Rowley, Chavous, Shelton, & Smith, 1997). These two dimensions may differentially impact how ethnic minority adolescents experience and respond to racial discrimination, as they are derived from the construct of collective self-esteem, which affects individuals’ reactions when their social group is derogated by outgroup members (Crocker & Luhtanen, 1990).

Both centrality and private regard are related to positive psychosocial adjustment among ethnic minority youth (Rivas-Drake et al., 2014). However, there are contrasting perspectives on how these aspects of ethnic identity may modify the impact of racial discrimination (Yip, 2018). According to social identity theory (Tajfel & Turner, 1979), individuals strive for a positive self-concept, which is partly dependent on the social groups they belong to. When individuals belong to an ethnic group that receives messages of social rejection from outgroups, those with strong ethnic identity are motivated to reinforce the uniquely positive aspects of their ethnic group as a way to protect their self-esteem; stronger ethnic identity can buffer these individuals against the negative impact of racial discrimination. In contrast, the rejection sensitivity theory (Downey, Lebolt, Rincón, & Freitas, 1998)
Bicultural identity integration. The impact of racial discrimination on ethnic minority adolescents is not only affected by their identification with their minoritized ethnic group but also depends on how they negotiate their different, and sometimes conflicting, minority and majority cultural identities. The BII construct captures the extent to which bicultural individuals perceive their dual cultural identities as compatible versus oppositional, across two components (Benet-Martínez & Haritatos, 2005): Cultural blendedness versus distance pertains to the degree of overlap versus compartmentalization between the two identities; Cultural harmony versus conflict pertains to the degree of compatibility versus tension between the two identities. Having compatible and integrated bicultural identities is generally associated with better adjustment, including greater self-esteem, more optimism, more prosocial behavior, and better family relationships (Schwartz et al., 2015), although BII harmony is more consistently associated with positive socioemotional outcomes than BII blendedness (Huynh, Benet-Martínez, & Nguyen, 2018).

Bicultural identity integration may also serve as a protective resource against racial discrimination. High BII individuals can switch between cultural frameworks with greater cognitive flexibility (Benet-Martínez, Leu, Lee, & Morris, 2002), which may enable them to navigate diverse cultural contexts and have more resources to respond to racial discrimination. The limited existing research supports the protective effect of BII. For example, one study found that multiracial adults’ identity integration decreased the negative effects of racial discrimination on psychological adjustment (Jackson, Yoo, Guevarra, & Harrington, 2012). Another study showed that primarily Latino college students with lower BII harmony but not BII blendedness had stronger stress responses following a laboratory stressor (Yim, Garcia, Acevedo, & Campos, 2019).

Immigrant adolescent boys and girls may differ in how they negotiate their bicultural identities. Although girls receive more socialization to maintain their heritage culture than boys, girls in the United States often contend with the restrictions of their parents and embrace Western values that allow more egalitarian gender attitudes (Suárez-Orozco, Motti-Stefanidi, Marks, & Katsiaficas, 2018). Also, as immigrant boys experience more blatant forms of racial discrimination than girls (Liang et al., 2007), they may perceive more conflict between their cultural identities. As a result, girls tend to have more fluid bicultural identities and are more flexible in combining mainstream and heritage cultures than boys (Güngör & Bornstein, 2013).

Behavioral acculturation. In addition to ethnic and bicultural identities, which can be broadly viewed as part of the acculturation process focusing on a subjective sense of belonging (Phinney, Horenczyk, Liebkind, & Vedder, 2001), the behavioral aspects of acculturation also play a critical role in ethnic minority adolescents’ experiences of racial discrimination. Acculturation refers to the individual changes that take place as a result of intercultural contact (Ward & Szabo, 2019), which is a contextual, developmental, and multidimensional process (Juang & Syed, 2019) involving values, identities, and behaviors (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). During
adolescence, behavioral acculturation may be particularly salient, as the expansion of their social worlds and increased levels of independence and autonomy provide more opportunities for immigrant adolescents to explore and participate in the mainstream society (Titzmann & Lee, 2018).

The bidimensional model of acculturation posits that immigrants’ participation in the dominant culture and maintenance of the heritage culture are two orthogonal dimensions, resulting in four possible acculturation strategies (Berry et al., 2006): integration (engagement in both mainstream and heritage cultures), assimilation (engagement in the mainstream culture over the heritage culture), separation (engagement in the heritage culture over the mainstream culture), and marginalization (engagement in neither the mainstream nor the heritage culture). Among the four strategies, the integration acculturation strategy has been identified as the most favorable, as it allows individuals’ access to resources and support from both the mainstream and the heritage cultural contexts (e.g., Jang et al., 2017).

A small number of studies have examined the role of acculturation strategies in moderating the effect of racial discrimination. Berry and Hou (2017) found that the impact of racial discrimination was mitigated by the integration and assimilation profiles compared to the marginalization profile among adults, as greater involvement in the mainstream society may offer more resources to cope with racial discrimination. Another study on adolescents found that behavioral separation buffered the effect of group racial discrimination, as the entire group is perceived to share the experience, whereas behavioral separation exacerbated the effect of personal racial discrimination, perhaps because personal discrimination is more threatening to an individual’s self-esteem (Musso, Inguglia, & Coco, 2015).

Although less examined, immigrant boys and girls experience gendered acculturation due to parents’ different expectations of daughters and sons in maintaining their heritage culture (Güngör & Bornstein, 2013). In particular, girls are expected to carry on their traditional culture and are under stricter parental control over activities outside the home than boys (Qin, 2006). These restrictions may pose more barriers to Chinese American girls’ versus boys’ behavioral participation in the mainstream society. Indeed, a qualitative study on 12-year-old Chinese immigrant adolescents found that, when negotiating conflicting gendered expectations at home and at school, girls tend to internalize parental expectations and adopt a strong Chinese cultural orientation, whereas boys tend to conform to peer pressure and adopt an American cultural orientation (Qin, 2009).

The Present Study
The present study investigated Chinese American adolescents’ experiences of COVID-19-related direct (i.e., directed at the individual) and vicarious (i.e., directed at same-race others) racial discrimination in relation to psychological adjustment using a person-centered approach. Our first aim was to use latent profile analysis (LPA) to identify subgroups of Chinese American adolescents based on ethnic identity, integration of bicultural identities, and behavioral participation in American and Chinese cultures. Our second aim was to examine the demographic correlates of these profiles (gender, age, generation status, and family socioeconomic status [SES]). We expected that girls would fall into profiles with stronger ethnic identity, higher BII, and greater participation in Chinese culture than boys. Age was not expected to be associated with profiles, as previous research suggests that ethnic and bicultural identities and acculturation trajectories are largely stable, although both progressive and regressive changes may occur (Kiang, Witkow, & Champagne, 2013; Schwartz et al., 2015; Syed & Juang, 2018). First-generation adolescents were expected to fall into profiles with stronger ethnic identity, lower BII, and greater behavioral participation in Chinese culture than later generations, as they are more strongly connected to their heritage culture (Qin, Way, & Mukherjee, 2008). Finally, adolescents in lower SES families were expected in profiles with less mainstream behavioral participation, due to fewer opportunities to participate in the mainstream society (Qin, Chang, Xie, Liu, & Rana, 2017). Our third aim was to assess whether identity and acculturation profiles and gender moderated the association between racial discrimination and anxiety. Based on previous research, we expected that adolescents characterized by stronger ethnic identity, higher BII, and greater behavioral participation in both mainstream and heritage cultures would be less susceptible to the negative impact of racial discrimination on anxiety. We anticipated that Chinese American boys and girls with similar profiles would be differently affected by racial discrimination based on the gendered power differences; however, we had no specific hypothesis due to the exploratory nature of this research aim.
METHOD

Participants

The participants were 213 Chinese American adolescents of 10- to 18-years old ($M_{\text{age}} = 13.95$ years, $SD = 2.35$; 49% girls). Most (80%) adolescents were born in the United States, 16% in Mainland China, 1% in Hong Kong, less than 1% in Taiwan, and 3% in other places. Most (76%) adolescents were residing in the southern region of the United States (e.g., Maryland, Virginia), 9% in the northeastern region (e.g., New York, New Jersey), 6% in the midwestern region (e.g., Illinois), 6% in the western region (e.g., California), and 3% did not report their region of residence. Almost all parents (97%) of the adolescents were first-generation born outside the United States and lived in the United States for 19.33 years on average ($SD = 8.70$). Most adolescents were from two-parent (89%), middle-class families, with 85% of the mothers and 84% of the fathers having college or higher levels of education. Family SES was calculated using the Hollingshead Four factor index (Hollingshead, 1975), with possible scores ranging from 8 to 66. In this study, the mean SES score was 56.16 ($SD = 12.89$; range = 16–66).

Procedure

The participants were recruited through phone calls and flyers distributed via e-mail, Facebook, and WeChat. The parents of the adolescents provided consent for their children’s participation and adolescents provided their assent. The parents were sent the online survey links for their adolescents through email or text messages. The adolescents completed the online survey hosted on the Qualtrics between March 14 to May 31, 2020. The survey was available in English, simplified Chinese, or traditional Chinese using the back-translation method and took approximately 20–35 min to complete. All measures have been shown to be valid and reliable among Chinese American adolescents. Adolescents received a $10 e-gift card as compensation for their time. Ethical approval for this study was obtained from the University of Maryland, Baltimore County Institutional Review Board.

Measures

Demographics. Demographic characteristics were reported by adolescents’ parents, including adolescents’ age, gender, place of birth, parents’ generation status, years living in the United States, marital status, education, and occupation.

COVID-19-related direct and vicarious racial discrimination. Direct and vicarious racial discrimination were assessed using items adapted from previous measures. We adapted the items by specifying that the reasons of discrimination incidents were “because of the COVID-19 outbreak” or “because of my race or ethnic group/Chinese background” to capture adolescents’ experiences of racial discrimination during the COVID-19 pandemic. Direct discrimination was assessed by eight items. Four items measuring online direct discrimination were adapted from the Online Victimization Scale (OVS; Tynes, Rose, & Williams, 2010; e.g., “People have said mean or rude things about me because of my race or ethnic group online”); four items measuring in-person direct discrimination were adapted from the Racial and Ethnic Microaggressions Scale (Nadal, 2011; e.g., “Some people were unfriendly or unwelcoming toward me because of my Chinese background”). Vicarious discrimination was assessed by seven items. Three items measuring online vicarious discrimination were adapted from the OVS (Tynes et al., 2010; e.g., “People have said things that were untrue about people in my race or ethnic group online”); four items measuring in-person vicarious discrimination were adapted from the Asian American Racism-Related Stress Inventory (Miller, Kim, Chen, & Alvarez, 2012; e.g., “People have said things that were untrue about Chinese people because of the COVID-19 outbreak”). Adolescents rated how often they experienced each incident on a 5-point Likert scale (1 = This has never happened to me or someone I know to 5 = This event happened and I was extremely upset) for in-person direct discrimination and on a 6-point Likert scale (1 = never to 6 = every day) for other subscales. For both direct and vicarious racial discrimination, online and in-person discrimination items were first standardized and then averaged to create the final scores, with higher scores representing higher levels of racial discrimination. The Cronbach’s $\alpha$ were .87 and .89.

1Confirmatory factor analysis revealed that a two-factor model of direct and vicarious racial discrimination fits the data well, $\chi^2(N = 213, df = 48) = 92.04, CFI = 97, RMSEA = .07, SRMR = .06$. All items loaded significantly on the corresponding factors, with loadings ranging from .39 to .87.
for direct and vicarious racial discrimination, respectively.

**Ethnic identity.** Adolescents’ ethnic identity centrality and private regard were assessed using items adapted from the Multidimensional Inventory of Black Identity (Sellers et al., 1997). Centrality was assessed using five items measuring the extent to which race-ethnicity is central to adolescents’ self-concept (e.g., “In general, being Chinese is an important part of my self-image”; \( \alpha = .86 \)). Private regard was assessed using seven items measuring adolescents’ positive and negative feelings toward their ethnic group membership (e.g., “I am proud to be Chinese”; \( \alpha = .95 \)). All items were rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Mean scores were calculated for centrality and private regard, respectively.

**Bicultural identity integration.** The BII Scale-Version 2 (Huynh et al., 2018) was used to assess adolescents’ BII blendedness and harmony. The BII blendedness subscale comprises seven items assessing perceived dissociation versus overlap between bicultural identities (e.g., “I feel Chinese and American at the same time”; \( \alpha = .71 \)). The BII harmony subscale comprises 10 items assessing perceived tension versus compatibility between bicultural identities (e.g., “I find it easy to harmonize Chinese and American cultures”; \( \alpha = .87 \)). The items were rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), and mean scores were calculated for BII blendedness and harmony, respectively.

**Behavioral acculturation.** The Cultural and Social Acculturation Scale (Chen & Lee, 1996) was used to assess adolescents’ behavioral acculturation. Behavioral participation in American culture and Chinese culture were each assessed using 11 items tapping social activity (e.g., “How often do you spend time with your non-Chinese/Chinese friends”), language proficiency (e.g., “How well do you speak in English/Chinese”), and living styles (e.g., “How often do you listen to Western/Chinese music”). Items were rated on a 5-point Likert scale (1 = almost never to 5 = more than once a week or 1 = extremely poor to 5 = extremely well). Mean scores were calculated for American and Chinese behavioral participation, separately. The Cronbach’s zs were .75 and .79 for American and Chinese behavioral participation, respectively.

**Adolescent anxiety.** The Generalized Anxiety Disorder Screener (Spitzer et al., 2006) was used to assess adolescents’ anxiety symptoms experienced during the past 2 weeks when they completed the survey (7 items; e.g., “Feeling nervous, anxious, or on edge”; \( \alpha = .89 \)). Items were rated on a 4-point Likert scale (1 = not at all to 4 = nearly every day). The sum score of the items was calculated.

**Analytic Plan**

First, LPA was conducted to identify subgroups of adolescents based on their ethnic identity (centrality and private regard), BII (blendedness and harmony), and behavioral acculturation (American and Chinese participation). A series of models with one to six profiles were fitted to explore the optimal number of groups. Model selection was based on Akaike’s information criterion (AIC), Bayesian information criterion (BIC), sample-size adjusted Bayesian information criterion (SABIC), Lo-Mendell-Rubin test (LMRT), bootstrap likelihood ratio test (BLRT), and entropy. Better model fit was indicated by lower values of AIC, BIC, SABIC, higher values of entropy, and significant LMRT and BLRT tests (Nylund, Asparouhov, & Muthén, 2007). BIC and BLRT have been found to be more reliable indicators and sensitive to small sample sizes (Nylund et al., 2007) and were given more weight for model selection. Second, adolescents were assigned to the profile corresponding to their maximum posterior probability. We then compared the means of study variables and demographic characteristics across profiles to provide descriptions and interpretations of the profiles. Finally, regression analyses were conducted to examine the associations between COVID-19-related direct and vicarious racial discrimination and adolescents’ anxiety, and whether these associations were moderated by profile and gender. Less than 1% of the data were missing. Little’s Missing Completely at Random test indicated that the data were missing completely at random, \( \chi^2(14) = 8.56, p = .858 \). Full-information maximum likelihood estimation was used to handle the missing data. All data analyses were conducted using Mplus7.0 (Muthén & Muthén, Los Angeles, CA).

**RESULTS**

**Descriptive Statistics**

Bivariate correlations among study variables are presented in Table 1. Girls reported higher levels of behavioral participation in both American and Chinese cultures and experienced more vicarious
racial discrimination than boys. Older adolescents reported higher levels of behavioral participation in American culture and experienced more direct and vicarious racial discrimination than younger adolescents. First-generation adolescents reported higher levels of ethnic identity centrality and private regard, lower levels of BII harmony and blendedness, and less behavioral participation in American culture than second-generation adolescents. Adolescents from higher SES families reported lower levels of ethnic identity private regard, higher levels of BII harmony and blendedness, more behavioral participation in American culture, and less anxiety than those from lower SES families. As adolescents' age, generation status, and family SES were significantly correlated with study variables, these demographics were examined as potential covariates in subsequent analyses.

Ethnic identity centrality and private regard were negatively correlated with BII harmony and blendedness. Private regard and BII harmony were negatively correlated with behavioral participation in American culture. Direct discrimination was positively correlated with centrality and private regard and negatively correlated with BII harmony. Vicarious discrimination was negatively correlated with BII harmony and positively correlated with BII blendedness and behavioral participation in American culture. Finally, adolescent anxiety was positively correlated with centrality, private regard, direct and vicarious discrimination, and negatively correlated with BII harmony and behavioral participation in American culture.

Identification and Description of Latent Profiles

Latent profile analysis models of 1- to 6-profile solutions were compared to determine the optimal number of profiles. Model fit indices are presented in Table 2. The three-profile solution provided the best fit to the data, which demonstrated the lowest BIC and significant LMRT and BLRT statistics. Based on the scores on ethnic identity, BII, and behavioral acculturation, the three profiles were labeled *bicultural*, *marginalized*, and *separated* (see Figure 1).

As shown in Table 3, the *bicultural* profile was the largest group (*n* = 115; 54%) and was characterized by behavioral participation in both American and Chinese cultures (highest levels of American behavioral participation and moderate levels of Chinese behavioral participation), highly integrated bicultural identities (highest levels of BII), but
relatively weak identification with their ethnic group (lowest levels of ethnic identity). The marginalized profile \((n = 67; 31\%)\) was characterized by behavioral disengagement from both the American and Chinese cultures (relatively low levels of American behavioral participation and lowest levels of Chinese behavioral participation), distant and conflicted bicultural identities (low levels of BII), and moderate identification with their ethnic group (moderate levels of ethnic identity). Finally, the separated profile was the smallest group \((n = 31; 15\%)\) and was characterized by behavioral participation primarily in the Chinese culture (highest levels of Chinese behavioral participation and low levels of American behavioral participation), incompatible bicultural identities (low levels of BII), and strong identification with their ethnic group (highest levels of ethnic identity).

We further examined profile differences in demographic characteristics and study variables to obtain a better description of each profile. The pattern of findings regarding the demographic characteristics was consistent with our hypotheses. The marginalized profile had the smallest proportion of girls (36% vs. 56% and 52% in the bicultural and separated profiles, respectively), \(\chi^2 (N = 213, df = 2) = 6.78, p = .034\). The separated profile had the smallest proportion of U.S.-born adolescents (36% vs. 90% and 82% in the bicultural and marginalized profiles, respectively), \(\chi^2 (N = 213, df = 2) = 46.08, p < .001\). Separated adolescents also had lowest family SES \((M = 47.10, SD = 15.72)\) than bicultural \((M = 58.95, SD = 10.58)\) and marginalized \((M = 55.62, SD = 13.23)\) adolescents, \(F (2, 209) = 11.41, p < .001\). No significant age differences were found across profiles, \(F (2, 210) = 0.79\).

### TABLE 2
Model Fit Indices for Latent Profile Solutions

<table>
<thead>
<tr>
<th>Profile solution</th>
<th>AIC</th>
<th>BIC</th>
<th>SABIC</th>
<th>Entropy</th>
<th>LMRT p value</th>
<th>BLRT p value</th>
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<td>1</td>
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<td>2726.14</td>
<td>2790.01</td>
<td>2729.80</td>
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<td>2706.59</td>
<td>2624.21</td>
<td>.84</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
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<td>2723.28</td>
<td>2618.71</td>
<td>.77</td>
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<td>.103</td>
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<td>2598.93</td>
<td>.86</td>
<td>.801</td>
<td>.375</td>
</tr>
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</table>

**Note.** AIC = Akaike’s information criterion; BIC = Bayesian information criterion; SABIC = sample-size adjusted Bayesian information criterion; LMRT = Lo-Mendell-Rubin test; BLRT = bootstrap likelihood ratio test.
### TABLE 3
Means and Standard Deviations for Study Variables Across Profiles and Gender

<table>
<thead>
<tr>
<th>Profile</th>
<th>n</th>
<th>M</th>
<th>SD</th>
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<tr>
<td>Overall</td>
<td>115</td>
<td>2.37</td>
<td>0.70</td>
<td>1.56</td>
<td>0.39</td>
<td>3.93</td>
<td>0.61</td>
<td>3.80</td>
<td>0.57</td>
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<td>Girls</td>
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<td>2.34</td>
<td>0.65</td>
<td>1.55</td>
<td>0.40</td>
<td>3.92</td>
<td>0.64</td>
<td>3.86</td>
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<tr>
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<td>1.57</td>
<td>0.38</td>
<td>3.95</td>
<td>0.58</td>
<td>3.72</td>
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<tr>
<td>Overall</td>
<td>67</td>
<td>3.04</td>
<td>0.64</td>
<td>2.51</td>
<td>0.45</td>
<td>3.34</td>
<td>0.57</td>
<td>3.32</td>
<td>0.47</td>
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<td>24</td>
<td>3.10</td>
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<td>0.42</td>
<td>3.23</td>
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<td>3.29</td>
<td>0.47</td>
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<td>2.61</td>
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<tr>
<td>Boys</td>
<td>43</td>
<td>3.00</td>
<td>0.69</td>
<td>2.50</td>
<td>0.47</td>
<td>3.40</td>
<td>0.55</td>
<td>3.33</td>
<td>0.48</td>
<td>3.58</td>
<td>0.72</td>
<td>2.49</td>
<td>0.66</td>
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<tr>
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<tr>
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<td>4.27</td>
<td>0.44</td>
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<tr>
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<td>0.64</td>
<td>3.37</td>
<td>0.78</td>
<td>3.66</td>
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Note. a, b, c Means with different subscripts across profiles were significantly different from each other at \( p < .05 \). There was no significant interaction between profile and gender. BII = Bicultural identity integration.
p = .457. Regarding discrimination and anxiety, separated adolescents reported highest levels of direct racial discrimination, F (2, 209) = 4.86, p = .009. Marginalized adolescents reported highest levels of anxiety, F (2, 210) = 4.48. p = .012. The levels of vicarious racial discrimination did not differ across profiles, F (2, 210) = 1.90. p = .153.

Links Between Racial Discrimination and Anxiety Moderated by Profile and Gender

Hierarchical regression was conducted to examine the associations between direct and vicarious racial discrimination and adolescents’ anxiety and the moderating effects of profile and gender. Two dummy-coded variables were created to represent profile membership, with the bicultural profile being the reference group. Results are presented in Table 4.

After controlling for age, generation status, and family SES, both direct and vicarious racial discrimination were positively associated with adolescents’ anxiety. Significant two-way interactions suggest that the associations between racial discrimination and anxiety were different between bicultural and marginalized adolescents. Contrary to our expectation that adolescents who were more integrated in both cultures would be protected against racial discrimination, direct racial discrimination was more strongly associated with anxiety for bicultural adolescents (β = .42, p < .001) than marginalized adolescents (β = .11, p = .352), whereas vicarious racial discrimination was more strongly associated with anxiety for marginalized adolescents (β = .43, p = .006) than bicultural adolescents (β = -.01, p = .915).

As expected, significant three-way interactions indicate that profiles further interacted with adolescents’ gender in predicting anxiety in response to racial discrimination. Direct racial discrimination was more strongly associated with anxiety for bicultural boys (β = .59, p = .014; difference = 1.12, p = .013) and separated girls (β = .71, p = .058; difference = 1.24, p = .036) than separated boys (β = -.53, p = .305). Vicarious racial discrimination was more strongly associated with anxiety for marginalized

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Note. The bicultural profile was the reference group. Marginalized represents the comparison between bicultural and marginalized profiles. Separated represents the comparison between bicultural and separated profiles.

*p < .05, **p < .01, ***p < .001.

*a = Girls; 1 = Boys.
boys ($\beta = .47, p = .010$) than bicultural boys ($\beta = -.21, p = .066$; difference = 0.68, $p = .002$) and girls ($\beta = .15, p = .486$; difference = 0.32, $p = .039$). Finally, although the Vicarious Discrimination by Gender by separated interaction was significant, simple slope analysis revealed that the association between racial discrimination and anxiety was not significant in any of the subgroups. No other comparisons between boys and girls across the different profiles were significant.

**DISCUSSION**

The present study examined Chinese American adolescents’ experiences of racial discrimination in relation to psychological adjustment during the COVID-19 pandemic using a person-centered approach. First, we identified profiles of adolescents based on their ethnic identity, integrated bicultural identities, and behavioral acculturation. We then examined the demographic correlates of these profiles. Finally, we explored whether the associations between racial discrimination and adolescents’ anxiety symptoms were moderated by the profile membership, gender, and their interactions.

**Profiles, Gender, and Associations Between Racial Discrimination and Anxiety**

Chinese American adolescents demonstrated three profiles of ethnic identity, BII, and behavioral acculturation. Importantly, adolescents’ age did not differ across profiles, which is consistent with previous findings indicating diverse patterns of acculturation and identity change in adolescence (Kiang et al., 2013; Schwartz et al., 2015; Syed & Juang, 2018).

**Bicultural profile.** The largest group of adolescents were classified in the bicultural profile (54%) and characterized as having highly integrated bicultural identities and being behaviorally engaged in both American and Chinese cultures in terms of language proficiency, social networks, and cultural practices. These adolescents’ participation in multiple domains across the mainstream and heritage cultures likely facilitates their formation of compatible and harmonious bicultural identities (Huynh et al., 2018). At the same time, integrated bicultural identities may also make them more comfortable with getting involved in both cultures simultaneously (van der Werf, Verkuyten, Martinovic, & Ng Tseung-Wong, 2020). Adolescents in this profile reported the highest levels of behavioral participation in the American culture, suggesting that they were more behaviorally assimilated into the mainstream society than adolescents in other profiles.

The bicultural profile had the largest proportion (90%) of second-generation adolescents across profiles. The fact that most adolescents in our sample (80%) were second generation might partly account for why the majority of our sample fell into this profile. This result supports previous findings that second generation had more integrated bicultural identities (Ward, Ng Tseung-Wong, Szabo, Qumseya, & Bhowon, 2018) and higher levels of participation in the mainstream culture (Wang, Bordon, Wang, & Yeung, 2019) than first-generation immigrants. However, bicultural adolescents reported the lowest levels of ethnic identity across profiles, which is somewhat incongruent with their high levels of engagement in Chinese culture, suggesting that identity and behavioral acculturation are related but independent dimensions (Schwartz et al., 2010).

Compared to marginalized adolescents who were behaviorally marginalized from both cultures and had less integrated bicultural identities but a moderately strong ethnic identity, bicultural adolescents were more negatively affected by direct racial discrimination. For bicultural adolescents who were more integrated in both cultures psychologically and behaviorally, being directly targeted by COVID-19 racism may be particularly distressing, as messages of rejection from the mainstream society challenge their self-concept of being both American and Chinese (Yampolsky & Amiot, 2016). This rejection also contradicts their experiences of active participation in the American culture, which may create greater cognitive dissonance between their self-view and perceived views of others (Festinger, 1962) and exacerbate the negative effect of direct racial discrimination. A weak ethnic identity may pose additional risks to bicultural adolescents. Although these adolescents have relatively high levels of engagement in Chinese culture, they view their ethnic group membership as less important and hold less positive attitudes towards their ethnic group, which may not allow them to draw strengths from this part of their social identity and be protected from discriminatory messages that denigrate their ethnic group (Tajfel & Turner, 1979).

In general, although the bicultural adolescents in this study possess more adaptive characteristics (i.e., more integrated bicultural identities and greater participation in mainstream and
heritage cultures) than marginalized adolescents, bicultural adolescents remained vulnerable to the harmful effects of specific types of racial discrimination. These findings suggest that the adaptive cultural factors in García Coll et al.’s (1996) integrative model work in an interactive, rather than an additive manner. Strengths in some domains may not make up for the vulnerabilities in other domains.

**Marginalized profile.** Adolescents in the marginalized profile were the second largest group (31%), characterized by low levels of participation in both mainstream and heritage cultures, and were, thus, behaviorally marginalized (Berry et al., 2006). These adolescents only moderately identified with their Chinese ethnic group but struggled with blending and balancing their bicultural identities, which may lead them to refrain from behaviorally engaging in either cultural context (Benet-Martínez et al., 2002). The lack of behavioral exposure to both cultures may further intensify their feelings of conflict about two cultural identities, which may be perceived as incompatible (Huynh et al., 2018).

A larger proportion of marginalized adolescents were boys (64%) than other profiles, consistent with previous findings that immigrant boys are less likely than girls to have an integrated acculturation pattern (Berry et al., 2006), compatible bicultural identities (Güngör & Bornstein, 2013), and a strong identification with their ethnic group (Yip & Fuligni, 2002). Immigrant boys may experience greater internal conflicts between their bicultural identities as well as behaviorally participate in multiple cultures than girls due to more blatant experiences of racial discrimination from the mainstream society (Liang et al., 2007). Boys also receive less socialization to carry on their heritage culture than girls (Suárez-Orozco & Qin, 2006). Marginalized adolescents reported the highest levels of anxiety across three profiles. Their low levels of heritage culture and detachment from the mainstream culture may lead to more uncertainty and stressful experiences in their interaction with both cultures (Ward & Szabo, 2019), especially when they find their bicultural identities conflicting and difficult to integrate (Huynh et al., 2018; Schwartz et al., 2015).

Marginalized adolescents were more negatively affected by vicarious experiences of racial discrimination compared to bicultural adolescents. This difference was more prominent among marginalized boys than girls, perhaps because the smaller proportion of girls in this profile (n = 24; 36%) prevented us from detecting significant differences between marginalized girls and other subgroups. Compared to bicultural adolescents, marginalized adolescents had stronger identification with their ethnic group and may be more committed to maintaining a positive image of this group (Tajfel & Turner, 1979). Thus, witnessing members of their ethnic group being stigmatized by outgroup members may pose a greater threat to their mental health. Moreover, these adolescents’ compartmentalized bicultural identities indicate their struggles with switching between cultural frameworks and difficulty focusing on their dominant cultural identity to protect their self-concept (Jackson et al., 2012). Lower levels of behavioral participation in either the mainstream or heritage culture may have also limited their access to resources (e.g., social support networks) for coping with the discrimination that they witnessed (Berry & Hou, 2017). These processes may pose particular risks for marginalized adolescents during the COVID-19 pandemic, as the social distancing requirement led to an increased reliance on social media (Tankovska, 2021). Information about the surge in anti-Asian hate was highly salient in social media (Wong, 2021), making it more likely for these adolescents to be exposed to and impacted by vicarious racial discrimination.

**Separated profile.** The separated profile was the smallest group in our sample (15%). Adolescents in this profile demonstrated a highly separated pattern (Berry et al., 2006) characterized by the highest levels of participation in the Chinese culture and the lowest levels of participation in the American culture of all profiles. Consistent with their behavioral acculturation pattern, separated adolescents also reported the strongest ethnic identification and greatest challenges forming blended and harmonious bicultural identities. The separated profile had the largest proportion of first-generation adolescents (64%) across three profiles, which may explain their highly separated pattern, as first-generation immigrant youth have a stronger connection with their culture of origin and face more language and cultural barriers to participation in the dominant culture than later generations (Qin et al., 2008; Wang et al., 2019). Moreover, the lower family SES of this profile may have created further barriers for these adolescents’ engagement in the mainstream society (Qin et al., 2017). Their lack of experience navigating the mainstream society may also pose challenges for these adolescents’ attempts...
to reconcile their bicultural identities (Ward et al., 2018).

Separated adolescents reported the highest levels of direct racial discrimination across three profiles during the COVID-19 pandemic. Being exposed to acute racial discrimination triggered by the pandemic may lead these adolescents to increase identification with their ethnic group (Branscombe, Schmitt, & Harvey, 1999) and adopt a behaviorally separated acculturation strategy (Berry & Hou, 2017) as a way of protecting their mental health. The direct experience of social rejection from the majority group can also disrupt their integration of bicultural identities by intensifying the perception that to be “Chinese” and “American” are incompatible (Yampolsky & Amiot, 2016). The high levels of direct racial discrimination among separated adolescents may also reflect their first-generation status, where relatively lower levels of English proficiency and less familiarity with behavioral norms in the dominant culture can make them more visible targets for racial discrimination (Juang et al., 2020). The finding that bicultural boys and separated girls were more negatively affected by direct racial discrimination than separated boys highlights the importance of examining the intersecting roles of ethnicity and gender. Compared to bicultural adolescents, even though separated adolescents reported the highest levels of direct racial discrimination, a strong commitment in their ethnic minority group both behaviorally and psychologically appears to provide an important buffer against racial discrimination (Choi et al., 2018) for boys, but not girls, in this profile. Based on the social identity theory (Tajfel & Turner, 1979), when one’s group is perceived as negative by others, individuals with strong group identities are likely to focus on the positive aspect of that rejected group to maintain a positive self-concept, which may be particularly protective in the context of the COVID-19 pandemic when many in the mainstream American society blamed China for the pandemic (Silver, Devlin, & Huang, 2020).

Separated girls, however, were more vulnerable to the impact of direct racial discrimination than separated boys. Although the association between direct racial discrimination and anxiety was only marginally significant \((p = .058)\) for separated girls, this association was significantly stronger among separated girls than separated boys. Mostly comprised of first-generation immigrants, separated adolescents were highly involved in their heritage culture in general, and girls in this profile may face particularly strong socialization pressures to carry on their traditional culture (Nguyen et al., 2015), including patriarchal gender norms that emphasize male superiority, authority, and power over females (Pyke & Johnson, 2003). The relatively lower SES background of these adolescents may also contribute to lower levels of egalitarian gender attitudes within their families, because parents with lower levels of education tend to hold more traditional patriarchal beliefs (Du, Xiao, & Zhao, 2021). Moreover, separated girls’ more conflicted and compartmentalized bicultural identities may pose challenges for them to access their American identity (Benet-Martinez et al., 2002) that allows relatively more power and independence for females (Pyke & Johnson, 2003), especially when these girls are the target of direct rejection from the majority group during the pandemic (Yampolsky & Amiot, 2016). Thus, unlike boys in this profile, separated girls experience the dual oppressions of race and gender. In addition, the sole reliance on resources from their co-ethnic community may be insufficient to support separated girls in coping with racial discrimination (Choi et al., 2018), and their limited access to resources from the mainstream society due to low levels of engagement in that context may be further restricted by lower family SES (Qin et al., 2017). Overall, our findings demonstrate that Chinese American girls were more vulnerable to certain types of racial discrimination than boys with similar identity and acculturation patterns due to their dual subordinate social identities (i.e., female and ethnic minority), which highlights the utility of applying an intersectional lens in the study of ethnic minority adolescents to gain a more nuanced understanding of their discriminatory experiences.

Strengths, Limitations, and Future Research

Several strengths of the present study should be noted. First, this examination was a timely focus on Chinese American adolescents’ experiences during the heightened period of anti-Asian hate due to the racialization of the COVID-19 pandemic. Second, the utilization of both García Coll et al.’s (1996) integrative model and intersectional frameworks (Crenshaw, 1991) leads to a more nuanced understanding of Chinese American adolescents’ discriminatory experiences at the intersection of ethnicity and gender and potential protective
factors. Third, the person-centered methodological approach revealed heterogeneity in the patterns of protective cultural factors, including identification with one’s ethnic group and behavioral participation in both mainstream and heritage cultures. We also included the integration of these adolescents’ bicultural identities, a relatively less studied construct that has important implications for ethnic minority adolescents’ adjustment under conditions of social rejection. These heterogeneous patterns highlighted the joint impact of protective cultural factors in buffering against the impact of racial discrimination.

The present study also has several limitations. First, the cross-sectional design prevented us from making causal inferences. Although the detrimental effect of racial discrimination on mental health has been well documented (Benner et al., 2018), some studies also demonstrated a bidirectional relation between racial discrimination and ethnic identity (Seaton, Yip, & Sellers, 2009) and poor adjustment (Gordon et al., 2020). Adolescents who experience higher levels of anxiety and who have stronger ethnic identity may be more likely to perceive unfair treatment based on their race-ethnicity. Future research using longitudinal designs is needed to directly test the directionality of these associations.

Second, our findings are based on adolescents’ self-reported data and may be influenced by common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Although adolescents’ own insights in their experiences of racism, identity, and acculturation are most relevant in the current study, perspectives from multiple reporters (e.g., parents and teachers) can further support our findings. The present study also used quantitative methods in our initial investigation of Chinese American adolescents’ intersectional experiences of racial discrimination. However, quantitative methods alone are not sufficient to capture the complex dynamic of multiple systems of oppression. Although we interpreted our findings within the context of multiple systems of inequality (Else-Quest & Hyde, 2016), qualitative methods (e.g., interviews or focus groups) should be utilized in future research to obtain a deeper understanding of the unique social context experienced by Chinese American adolescent boys and girls and its consequences for their mental health.

Finally, the sample size of the present study is relatively small and may reduce the reliability of our findings. Further, most participants were second-generation adolescents from middle-class, intact families. Our findings may not be generalized to Chinese American adolescents from other demographic backgrounds (e.g., SES and generation status), who may have distinct experiences of racial discrimination due to the COVID-19 pandemic.

Implications and Conclusions

Our findings revealed unique risk and resilience factors for Chinese American adolescent boys and girls with distinct patterns of ethnic identity, BII, and behavioral acculturation when faced with specific types of racial discrimination in the context of the COVID-19 pandemic. These findings support the importance and interactive nature of adaptive cultural factors in Garcia Coll et al.’s (1996) integrative model, by showing that different combinations of cultural factors can lead to specific points of resilience and vulnerabilities among ethnic minority adolescents when coping with racial discrimination. Moreover, by examining Chinese American adolescents’ gender-specific experiences, our findings clearly demonstrate the intersecting roles of ethnicity and gender in shaping their unique experiences.

Racism interacts with other systems of oppression such as sexism to create segregated environments for ethnic minority adolescents and pose substantial barriers to their thriving and success. Although the present study was conducted in the specific context of the COVID-19 pandemic, the heightened racial discrimination against Asian Americans triggered by this pandemic is not a new or transient phenomenon but rather a reflection of the deeply rooted anti-Asian racism and xenophobia in the United States (Tessler et al., 2020). Indeed, according to the STOP AAPI HATE reporting center, the 6603 hate incidents between March 2020 and March 2021 dramatically increased to 9081 in June 2021 (Yellow Horse et al., 2021). We also anticipate that the effects of these experiences will continue to reveal themselves, and the findings regarding the protective roles of ethnic identity, BII, and behavioral acculturation can inform adolescents’ development of resilience in the face of racial discrimination.

Our findings also inform specific prevention and intervention programs targeting Chinese American adolescents. Parents, practitioners, and policymakers should help Chinese American adolescents foster a strong sense of identification with their ethnic group (Yip et al., 2019) while supporting their participation in both heritage Chinese cultural practices (Juang & Cookston, 2009) and the mainstream
society to access additional resources and support for coping with racial discrimination (Berry et al., 2006). Providing guidance in how to negotiate a harmonious and integrated identification to both mainstream and heritage cultural groups is also essential (Jackson et al., 2012).

Importantly, efforts to empower Chinese American adolescents in resisting the negative impacts of racial discrimination should utilize an intersectional lens to more fully understand these adolescents’ unique experiences shaped by intersecting identities. Berry (2017) argues that results in such discriminatory behavior and attitudes (Harrell, 2000). Thus, our findings also call for the need for systematic and institutional efforts in addressing racism and other systems of oppression that intersect to affect ethnic minority adolescents’ development.

ACKNOWLEDGEMENTS

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

INFORMED CONSENT

Informed consent was obtained from parents of all adolescents who participated in our study, and adolescents provided their assent.

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