

Asian American Journal of Psychology

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Online First Publication, April 28, 2022. <http://dx.doi.org/10.1037/aap0000267>

CITATION

Oh, S., & Litam, S. D. A. (2022, April 28). COVID-19 Racial Discrimination on Mental Health and Life Satisfaction Among Asian Americans: Examining a Moderated Mediation Model. *Asian American Journal of Psychology*. Advance online publication. <http://dx.doi.org/10.1037/aap0000267>

COVID-19 Racial Discrimination on Mental Health and Life Satisfaction Among Asian Americans: Examining a Moderated Mediation Model

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The coronavirus disease (COVID-19) pandemic has contributed to higher rates of racial discrimination and xenophobia toward Asian Americans and Pacific Islanders (AAPIs). The present study examined a moderated mediation model with a national sample of AAPI individuals ($N = 725$) to determine how experiences of COVID-19 related racial discrimination impacted scores of depression, anxiety, and life satisfaction. Results indicated that experiences of COVID-19 related racial discrimination significantly and negatively impacted life satisfaction among AAPI participants via increased levels of depression and anxiety. Findings also indicated that coping strategies attenuated the link between discrimination and anxiety and discrimination and depression. High levels of ethnic identity exploration exacerbated the association between anxiety and life satisfaction but attenuated the relationship between depression and life satisfaction. Implications for mental health clinicians, educators, and researchers are provided.

What is the public significance of this article?

This study suggests that greater use of coping may be helpful for reducing the harmful effect of racial discrimination on mental health of AAPIs. Additionally, it highlights that a strong sense of ethnic identity may reduce the impact of depression on life satisfaction but worsen the impact of anxiety on life satisfaction.

Keywords: Asian Americans, COVID-19, mental health, ethnic identity, coping strategies

Supplemental materials: <https://doi.org/10.1037/aap0000267.supp>

On March 11, 2020 the World Health Organization (WHO) declared the coronavirus disease (COVID-19) outbreak a global pandemic (2020). Shortly after the announcement, sinophobic statements espoused from political leaders, news outlets, and social media sources using controversial terms like “Kung-flu,” “Wuhan flu,” and “China virus” significantly increased (Litam & Oh, 2020). These racially disparaging messages reignited a long-standing and well-documented history of anti-Asian discrimination in the United States and reflect perspectives of Asian Americans and Pacific Islanders (AAPIs) as dirty, disease-ridden perpetual foreigners that threaten the physical and cultural health of White, Anglo-dominant Americans (Gee et al., 2009; Litam, 2020). Understanding the impact of racial discrimination experiences during COVID-19 among AAPI communities represents an important focus for ongoing research (Chan & Litam, 2021; Cheah et al., 2020; Lee & Waters, 2020; Litam, 2020; Litam & Oh, 2020, 2021; Litam et al., 2021).

Experiencing and witnessing racial discrimination negatively impacts mental health, which may contribute to poorer overall well-being (Gee et al., 2009; Lee & Waters, 2020). Research has examined the associations between racial discrimination, psychological distress, and well-being. Racial discrimination studies have reported significant relationships between racial discrimination and mental health (Litam & Oh, 2020, 2021; Litam et al., 2021; Liu & Suyemoto, 2016; Nadimpalli et al., 2016; Pascoe & Smart Richman, 2009), and between mental health and overall well-being (Litam et al., 2021; Litam & Oh, 2021; Lombardo et al., 2018; Yoo & Lee, 2005). Other studies have similarly established a negative association between racial discrimination and well-being via poor mental health (Liu & Suyemoto, 2016; Mereish et al., 2012; Torres-Harding et al., 2020).

To mitigate the deleterious effects of racial discrimination, researchers have begun examining the moderating variables on the relation between mental health and overall well-being. Ethnic identity and coping strategies may be important psychological resources for AAPIs that moderate the negative effect of racial discrimination (Litam & Oh, 2021; Yip et al., 2019). The moderating roles of ethnic identity and coping are complex and nuanced, as evidenced by empirical studies that reported mixed results in their link between racial discrimination, mental health, and overall well-being (Do et al., 2019; Giamo et al., 2012; Litam & Oh, 2020, 2021; Nadimpalli et al., 2016; Pascoe & Smart Richman, 2009; Yoo & Lee, 2005; Yip et al., 2019). Whereas ethnic identity and overall

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We have no known conflicts of interest to disclose.

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coping may protect AAPIs from the adverse effects of racial discrimination (Giamo et al., 2012; Litam & Oh, 2020; Nadimpalli et al., 2016; Yip et al., 2019), other studies indicated that ethnic identity and different forms of coping can exacerbate the harmful effects of racial discrimination on mental health and well-being (Do et al., 2019; Greene et al., 2006; Litam et al., 2021; Litam & Oh, 2020; Pascoe & Smart Richman, 2009; Yoo & Lee, 2005). Indeed, additional studies are warranted to supplement the body of research on the moderating roles of ethnic identity and coping on the relation between racial discrimination experiences and overall mental health (Litam et al., 2021; Litam & Oh, 2020, 2021; Nadimpalli et al., 2016; Yip et al., 2019).

Despite the growing number of studies, much of the extant research has primarily examined the role of these constructs in the direct links between racial discrimination and mental health, mental health and well-being, or investigated the constructs independently (Pascoe & Smart Richman, 2009; Yoo & Lee, 2005). A dearth of studies has examined a moderated mediating mechanism in which ethnic identity and coping conditionally and collectively alter the effect of racial discrimination on well-being via mental health distress among AAPIs. To fill this gap in the literature, the purpose of our study investigates the moderating role of coping in the mediated link between racial discrimination and well-being via mental health distress among AAPIs during COVID-19. The researchers' inclusion of ethnic identity as a moderator in the study was exploratory. The following sections outline the theoretical and conceptual frameworks that support our moderated mediation analysis.

Asian Americans and Pacific Islanders

AAPI populations are currently the fastest growing ethnic group in the U.S. and boasted a 72% population increase from 11.9 to 20.4 million between the years of 2010 and 2015, respectively (Lopez et al., 2017). Furthermore, Asian Americans are projected to comprise approximately 38% of all immigrants in the U.S. by 2055, representing the largest immigrant group in the country (Lopez et al., 2017). Despite growing rates, the impact of racial discrimination experiences on well-being among AAPI populations remain understudied within the fields of mental health and psychology. For example, a cross sectional study of 529 clinical research projects funded by the National Institutes of Health (NIH) between 1992 and 2018 indicated research that focused on Asian American, Native Hawaiian, and Pacific Islanders only comprised 0.17% of the total NIH budget (Doán et al., 2018). This research paucity becomes even more concerning given the increasing prevalence of racial discrimination during COVID-19 which echoes a long history of institutionalized and systemic discrimination toward AAPI communities (Litam & Oh, 2020).

Mediation Model: Racial Discrimination, Mental Health, and Life Satisfaction

Researchers have identified a pathway whereby racial discrimination impacts overall well-being through higher levels of mental health distress. Specifically, empirical investigations have reported that racial discrimination experiences were positively correlated with greater severity of anxiety and depression symptoms among AAPIs (Lee & Ahn, 2011; Litam et al., 2021; Litam & Oh, 2020;

Liu & Suyemoto, 2016; Nadimpalli et al., 2016; Sanchez et al., 2018; Stein et al., 2014). In a meta-analysis of 23 independent studies, Lee and Waters (2020) reported a stronger association existed between racial discrimination and levels of anxiety and depression compared to other types of psychological distress. Recent studies during COVID-19 outlined the relation between higher incidents of racial discrimination during the pandemic and poorer mental health outcomes (Cheah et al., 2020; Lee & Waters, 2020). In a study of Chinese American adults ($N = 543$) and their children ($N = 230$), Cheah et al. (2020) reported a strong positive relationship between symptoms of anxiety and depression and various types of COVID-19 related racial discrimination. Similarly, in a large national study of Asians and Asian Americans ($N = 410$), approximately 40% of participants reported higher rates of anxiety and depression following increased instances of anti-Asian discrimination during COVID-19 (Lee & Waters, 2020).

Mental health is recognized as an essential component of overall health and well-being (World Health Organization [WHO], 2013). Indeed, poor mental health is a determining predictor for low levels of subjective well-being (Lombardo et al., 2018). Given the prevalence of mental health distress (depression and anxiety) following racial discrimination experiences (Cheah et al., 2020; Lee & Waters, 2020; Lee & Waters, 2020), examining how anxiety and depression may mediate the relation between discrimination and life satisfaction, a key indicator of overall subjective well-being (Lombardo et al., 2018; WHO, 2013) is warranted. Notions that depression and anxiety may separately mediate life satisfaction among AAPIs have been evidenced in the empirical literature (Lee & Waters, 2020; Litam & Oh, 2020; Lombardo et al., 2018; Yoo & Lee, 2005). For example, researchers have illuminated the roles of depression (Mereish et al., 2012; Torres-Harding et al., 2020) and anxiety (Gibbons et al., 2014) as separate mediators in the relation between racial discrimination experiences and overall well-being. In one study of Chinese Americans and immigrants, depression independently mediated the link between anti-Asian discrimination experiences and life satisfaction (Litam & Oh, 2021).

The call to obtain a deeper understanding of the separate mediating roles of depression and anxiety on the link between racial discrimination and life satisfaction has been established (Lee & Waters, 2020; Litam & Oh, 2020; Litam & Oh, 2021; Lombardo et al., 2018; Yoo & Lee, 2005). Additionally, a moderated mediating mechanism in which coping and ethnic identity may alter this mediating effect is not well understood (Giamo et al., 2012; Greene et al., 2006; Litam & Oh, 2020; Nadimpalli et al., 2016; Pascoe & Smart Richman, 2009; Yip et al., 2019; Yoo & Lee, 2005). Based on this gap in the extant literature, examining the mediating role of depression and anxiety in the link between discrimination and life satisfaction while clarifying the moderating roles of coping and ethnic identity is warranted.

Coping Strategy as a Moderator

Coping refers to how individuals leverage personal, cultural, or social resources to alleviate and/or manage life stressors and challenges (Lazarus & Folkman, 1984) and are broadly categorized into engagement and disengagement responses (Tobin et al., 1989). Whereas engagement coping responses represent first-tier strategies that actively seek to negotiate stressful situations, disengagement

coping responses employ behaviors, thoughts, and feelings to avoid stressful situations (Tobin et al., 1989).

According to the Stress Appraisal theory (SA; Lazarus & Folkman, 1984), one's initial evaluation of incidents (i.e., instant cognitive or emotional reactions) work in concert with secondary evaluation (i.e., coping efforts) to influence mental health outcomes. Research suggests that racial discrimination is immediately perceived as negative and harmful among Asian Americans as evidenced by poorer mental health outcomes following discrimination experiences (Lee & Ahn, 2011; Litam & Oh, 2020, 2021; Nadimpalli et al., 2016). Therefore, the extent to which AAPIs use coping efforts (secondary evaluation) may influence their mental health outcomes in the face of discrimination (Lazarus & Folkman, 1984).

The Conservation of Resources (COR; Hobfoll, 2001) theory outlines a framework for how overall coping strategy, regardless of coping form, functions as a moderator in the discrimination-mental health pathway. According to the COR theory, discrimination experiences may be less detrimental to the mental health of individuals who have strong psychological and sociocultural resources (e.g., coping) that facilitates efforts to mitigate race-related stress (Hobfoll, 2001). Thus, AAPIs with strong coping strategies may leverage these resources when responding to race-related stress, thereby buffering the adverse effects of racial discrimination on their mental health. Conversely, AAPIs with fewer coping strategies may lack the psychological, affective, and cognitive resources needed to mitigate the sequelae of discrimination. The protective role of overall coping in mitigating the harmful effects of racial discrimination via depression on life satisfaction has been reported (Litam & Oh, 2021).

Although an extensive overview of the coping literature is beyond the purview of this article, a brief overview of the complex and nuanced role of coping as a moderator in the link between racial discrimination and mental health is provided. The protective role of overall coping usage is supported by the theoretical literature and preliminary studies (Litam et al., 2021; Litam & Oh, 2020), but cultural belief systems further shape the interpretation of events in ways that influence coping responses (Tweed & Conway, 2006). It is reported that AAPIs who endorsed collectivistic notions, accepted rather than confronted problems, avoided problem disclosure, and perceived they could successfully manage others' emotions were more likely to use disengagement coping responses when facing depression (Wong et al., 2010) and emotional concerns (Lei & Pellitteri, 2017). Compared with their White counterparts, AAPIs may also use problem avoidance and social withdrawal to manage stress (Chang, 2001) despite findings that disengagement coping may exacerbate the link between race-related stress and anxiety symptoms (Do et al., 2019). Though AAPIs who adhered to cultural values preferred disengagement coping responses to moderate the discrimination-mental health link (Chang, 2001; Lei & Pellitteri, 2017; Wong et al., 2010) the moderating role of engagement coping in the discrimination-mental health link has also yielded mixed findings. Whereas some studies reported engagement coping was associated with lower rates of mental health distress (Sanchez et al., 2018), engagement coping among AAPIs who endorsed higher levels of ethnic identity and used problem-focused engagement responses reported worse mental health outcomes following racial discrimination experiences (Yoo & Lee, 2005). Finally, a study of AAPIs who experienced

COVID-19 related racial discrimination reported participants who used behavioral disengagement strategies significantly moderated the relationship between racism experiences and stress-related growth (Litam et al., 2021). These studies may suggest that greater use of disengagement coping responses among AAPIs could be shaped by traditional Asian cultural worldviews that highlight adapting their emotions to the environment for social harmony, accepting problems rather than confronting them, and saving face by concealing problems from others (Tweed & Conway, 2006). The complex role of coping as a moderator in the discrimination-mental health link therefore warrants further empirical investigation.

Ethnic Identity as a Moderator

Ethnic identity is a multidimensional construct that reflects attitudes toward one's ethnic group as well as one's sense of belonging to an ethnic group over time (Phinney, 1992; Umaña-Taylor et al., 2014). Though researchers have explored various dimensions of ethnic identity (i.e., affirmation, public and private regard, centrality, etc.; Rivas-Drake et al., 2014; Umaña-Taylor et al., 2014), increasing attention has been made to examine how Phinney's (1992) dimensions of exploration and commitment may impact psychosocial outcomes. According to Phinney (1992), ethnic identity development emerges through the distinct and interrelated processes of exploration and commitment. Whereas identity exploration refers to the extent to which one has actively pursued information and cultivated meaning about their ethnic group, identity commitment is the degree to which ethnic group membership reflects an important component of one's identity (Phinney & Ong, 2007). The relationship between the two dimensions and mental health or subjective well-being has been investigated in the few studies (Mills & Murray, 2017; Torres et al., 2012), but the findings have been mixed. Furthermore, none of these studies have examined the moderating roles associated with each dimension for AAPIs. Given the critical role of each dimension in mental health and subjective well-being (Yoo & Lee, 2005), an exploratory analysis of the potential moderating roles of identity exploration and commitment in the link between mental health distress and subjective well-being for AAPIs, especially in response to discrimination, is therefore warranted.

Acculturation

When racial discrimination experiences occur, cultural influences such as acculturation may affect how one evaluates stressors and determines available coping responses (Lazarus & Folkman, 1984; Wong et al., 2010). Acculturation refers to the extent to which ethnic minority individuals adapt to the majority culture and embrace the behaviors, values, and norms of the majority culture (Kim, 2009). Acculturation is an important psychological construct among AAPIs and may be related to ethnic identity (Chae & Foley, 2010; Lieber et al., 2001), life satisfaction (Lieber et al., 2001), and psychological well-being (Chae & Foley, 2010; Kim, 2009). Based on the existing research, acculturation was included as a control in the present study.

Present Study

The current body of research was used to develop our conceptual model (Figure 1). We predict that (a) mental health problems (anxiety and depression) will mediate the racial discrimination-life satisfaction link; and that (b) coping strategy and ethnic identity will moderate the racial discrimination-mental health distress link and the mental health distress-life satisfaction link, respectively. The following hypotheses were formed within the conceptual model:

Hypothesis 1: The link between COVID-19 racial discrimination and life satisfaction will be mediated by mental health distress: anxiety and depression. Higher level of racial discrimination will be associated with greater severity of anxiety and depression, which in turn will be associated with poorer life satisfaction.

Hypothesis 2: Consistent with the SA and the COR theories, overall coping will moderate the relation between racial discrimination and the two mediators (anxiety and depression). The relation between overall coping usage and the mediators (anxiety and depression) will become stronger when coping usage is low and will become weaker as overall coping increases. In addition, overall coping will moderate the mediated link of racial discrimination via the two mediators with life-satisfaction. More specifically, the links between racial discrimination and the mediators, along with their first-stage conditional indirect effect on life satisfaction (pathway f), will be stronger when the use of overall coping is lower and weaker when the use of overall coping is higher.

Hypothesis 3: Consistent with the existing literature, we expect that the two subscales of the Coping Strategies Inventory Short-Form (CSI-SF; Van Dam & Earleywine, 2011) will moderate

the links between racial discrimination and the two mediators (anxiety and depression). Additionally, each coping strategy will also moderate the mediated link of racial discrimination via the two mediators with life-satisfaction, along with their first-stage conditional indirect effect on life satisfaction. More specifically, the relation will become stronger when the use of disengagement-type coping is lower, and the relation will become weaker when the use of disengagement-type copings is higher. Similarly, the relation will become stronger when the use of engagement-type coping is higher, and the relation will become weaker when the use of engagement-type coping is lower.

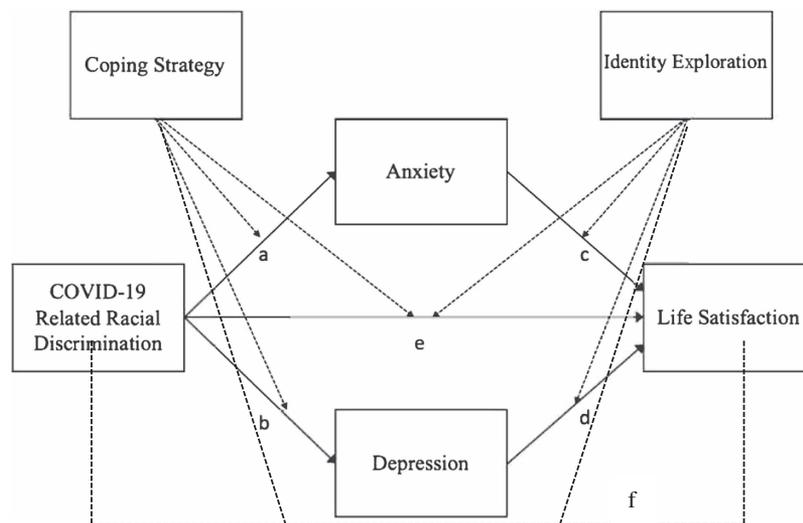
Hypothesis 4: We explore the moderating role of ethnic identity (i.e., exploration, commitment, and the composite ethnic identity) in the links between the mediators (anxiety and depression) and life satisfaction. In addition, we also explore the moderating role of ethnic identity in the mediated link of racial discrimination via the two mediators with life-satisfaction, along with their second-stage conditional indirect effect on life satisfaction. However, given the exploratory nature of the investigation with this construct, a specific directionality for the moderating effect of ethnic identity in the links and the mediated link were not made.

Method

Participants

Prospective participants were required to (a) self-identify as AAPI, (b) reside in the United States, and (c) have either experienced and/or witnessed racial discrimination since the COVID-19 outbreak. Although a total of 861 AAPI participants were initially recruited through AAPI communities ($n = 536$) and Amazon

Figure 1
Moderated Mediation Model Depicting Relations Among COVID-19 Related Racial Discrimination, Anxiety, Depression, Life Satisfaction, Coping Strategy, and Identity Exploration



Note. The Pathway f Indicates Conditional Indirect Effect.

MTurk ($n = 325$), a total of 97 cases were removed from the data set because prospective participants did not meet the inclusion criteria, prospective participants completed less than 70% of the survey items, a recognizable pattern of responses were detected in survey responses, or prospective participants selected incorrect responses to three screening questions that required a specific response (i.e., “almost always”). Following the initial screening, data were examined for extreme cases that may cause a consequential bias to the results. Thirty-nine outliers were detected at the multivariate level and were removed (i.e., Mahalanobis distance value > 27.88 at $\alpha = .001$; Tabachnick & Fidell, 2019), resulting in a final sample of 725 AAPI participants (84.2% useable response rate). A power analysis indicated that a sample of 725 exceeded the minimum sample size for a path analysis ($N > 141$; O’Rourke & Hatcher, 2013) to detect medium effect size with the power set at .8 and the α set at $= .01$. Our final sample had a 99% likelihood of identifying a medium effect size (.15; Cohen, 1998).

The mean age of participants was 32.43 years ($SD = 9.44$), ranging from 18 to 69 years. Participants identified as male ($n = 362$, 49.9%), female ($n = 358$, 49.4%), and transgender, genderqueer, or nonbinary ($n = 5$, .7%). The ethnicity of participants included Chinese ($n = 175$, 24.1%), Filipino ($n = 170$, 23.4%), Korean ($n = 125$, 17.2%), Vietnamese ($n = 57$, 7.9%), Japanese ($n = 51$, 7.0%), Thai ($n = 14$, 1.9%), and other Asian ethnicities or multiethnicities ($n = 133$, 18.3%). Approximately half the participants reported experiencing and witnessing racial discrimination following COVID-19 ($n = 382$, 52.7%), followed by those who only witnessed ($n = 280$, 38.6%), and only experienced ($n = 63$, 8.7%) racial discrimination since the pandemic.

Procedure

University Institutional Review Board (IRB) approval was obtained prior to data collection. Two modes of data collection procedures were conducted to recruit prospective participants involved with AAPI communities in the Midwest, East Coast, and West Coast and through Amazon MTurk. Participants from AAPI communities were invited through an electronic study announcement sent to AAPI community listservs, cultural groups, social media sites (i.e., LinkedIn), churches, and AAPI cultural centers. Interested participants were instructed to click a link or use a QR code that redirected them to Qualtrics, where they reviewed the informed consent and completed an electronic version of the assessment packet. Participants were informed that participation in the study was voluntary, the results would not directly benefit them, and they could end the survey at any time. The Amazon MTurk platform was used to invite geodemographically diverse AAPI participants. MTurk participants obtained a monetary compensation of \$0.50 for completion of the packet. To improve the quality of data, three screening questions were added to the MTurk assessment packet which required participants to choose a certain response option (e.g., “Please select ‘Strongly Agree’ for this item”).

Measures

Demographics Questionnaire

A questionnaire was developed to obtain demographic characteristics about participants (i.e., race/ethnicity, gender, age, and level

of education) as well as relevant background information regarding whether participants experienced, witnessed, or both experienced and witnessed COVID-19 related racial discrimination.

Beck Anxiety Inventory

The Beck Anxiety Inventory (BAI; Beck et al., 1988) is a 21-item self-report instrument that measures the frequency of anxiety symptoms over the past month on a 4-point Likert-type scale from 0 (*not at all*) to 3 (*severely—it bothered me a lot*). Higher scores indicate greater severity of anxiety symptoms. The overall internal reliability for the 21-item score was $\alpha = .92$, with test–retest reliability of $\alpha = .75$ over a week (Beck et al., 1988). The BAI demonstrated high convergent validity with other anxiety and depression scales ($r_s = .51$ and $.25$, Beck et al., 1988) and the overall reliability for the BAI was $\alpha = .96$ in the present study.

Coping Strategies Inventory Short Form

The Coping Strategies Inventory Short Form (CSI-SF; Addison et al., 2007) is a 15-item instrument used to assess coping strategy. The CSI-SF consists of two first-tier subscales (i.e., Engagement and Disengagement) which are further grouped into four second-tier subscales; (a) problem-focused engagement; (b) problem-focused disengagement; (c) emotion-focused engagement; and (d) emotion-focused disengagement (Addison et al., 2007). Respondents rate the general frequency that they use coping strategies on a 5-point Likert-type scale from 1 (*never*) to 5 (*almost always*) and receive scores on the first-tier subscale and for each of the four second-tier subscales. The overall reliability for each of the four subscales ranged from $\alpha = .58$ to $\alpha = .72$ (Addison et al., 2007). In the present study, the 15-item total scale, two first-tier, and four second-tier subscales were used. Internal reliability was $\alpha = .74$ for the total score, ranged from $\alpha = .61$ to $.70$ across the two first-tier subscales and ranged from $\alpha = .64$ to $.81$ across the four second-tier subscales. For this study, the total scale and the two first-tier subscales were used.

Center for Epidemiologic Studies Depression Scale Revised

The Center for Epidemiologic Studies Depression Scale Revised (CESD-R; Van Dam & Earleywine, 2011) is a two dimensional, 20-item scale that measures depressive symptoms. The CESD-R includes two subscales that represent important factors of depressive symptoms: (a) functional impairment and (b) negative mood. Although it was designed as a two-dimensional scale, using the CESD-R as a unidimensional scale is recommended due to high factor redundancy (i.e., interfactor correlation = $.94-.98$; Van Dam & Earleywine, 2011). Therefore, the CESD-R was utilized as a unidimensional scale in the present study. Respondents rate the frequency of depressive symptoms on a 5-point Likert-type scale from 1 (*not at all or less than one day*) to 5 (*nearly every day for 2 weeks*). Higher scores indicate greater severity of depressive symptoms. The overall internal reliability of the 20-item score was $\alpha = .92$ (Van Dam & Earleywine, 2011). In the present study, the internal reliability of the 20-item score was $\alpha = .97$.

Everyday Discrimination Scale

The Everyday Discrimination Scale (EDS; Williams et al., 2003) is a unidimensional instrument that measures experiences of

everyday discrimination. In this study, specific prompts were added to each item (i.e., “Many Asian American and Pacific Islanders have experienced increased rates of racial discrimination since the COVID-19 outbreak. How often have you personally experienced the following COVID-19 related forms of racial discrimination?”) to measure everyday experiences of racial discrimination within the context of the COVID-19 pandemic. The EDS includes nine items that are rated on a 5-point Likert-type scale ranging from 1 (*never*, 0%) to 5 (*always*, 100%), with higher scores indicating greater frequency of racial discrimination experiences. An example item stated, “Since the COVID-19 outbreak, I have been treated with less respect than other people.” The internal reliability for the 9-item scale ranged from $\alpha = .90$ to $.97$ (Litam & Oh, 2021). In the present study, the internal reliability for the EDS was $.96$.

Multigroup Ethnic Identity Measure-Revised

The Multigroup Ethnic Identity Measure-Revised (MEIM-R; Phinney & Ong, 2007) is a two-dimensional, 6-item scale that measures affiliation with one’s ethnic group. The MEIM-R was developed within two dimensions that represent important aspects of ethnic identity development: (a) exploration and (b) commitment (Phinney & Ong, 2007). Items are rated on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating greater affiliation with one’s ethnic group. The internal reliability of the MEIM-R was $\alpha = .70$ for the 6-item total score and $\alpha = .82$ and $.90$ for the exploration and commitment subscale scores, respectively (Brown et al., 2014). In the present study, the overall reliability was $\alpha = .61$ for the 6-item score and $\alpha = .54$ and $.35$ for the exploration and commitment subscale scores, respectively. Given the concerning reliability for the commitment subscale, only the exploration subscale was used in the study. The 6-item total scale was also used in this study as a supplementary analysis, and related findings can be found in the supplementary material.

Suinn-Lew Asian Self-Identity Acculturation Scale

The Suinn-Lew Asian Self-Identity Acculturation Scale (SL-ASIA; Suinn et al., 1987) uses 21 items on a 5-point Likert-type scale to assess levels of high acculturation, low acculturation, or a bicultural identity. The SL-ASIA includes items that assess language, identity, friendship choice, generation or geographic history, and attitudes (Suinn et al., 1987). Higher scores indicate higher levels of acculturation, lower scores indicate lower levels of acculturation, and mid-range scores indicate a bicultural identity. In the present study, internal reliability for the SL-Asia was $.83$.

Satisfaction With Life Scale

The Satisfaction With Life Scale (SWLS; Diener et al., 1985) is a single dimension scale that measures life satisfaction. The scale consists of five items that are rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores are associated with greater life satisfaction. The internal reliability for the 5-item total score was $.87$, with test–retest reliability of $.82$ (Diener et al., 1985). In the present study, the internal reliability for the SWLS was $.86$.

Data Diagnostics

Data were examined for proportion of missing values and statistical assumptions required for data analysis. An analysis of missing values indicated that none of the items had 1% or more of missing values and only 1.8% of the participants had missing values on any item. Examining the patterns of missingness supported randomness of the missingness in data (missing at random, MAR) as evidenced by nondetectable patterns of missing values from a matrix of the estimated mean. Considering the minimal proportion and randomness of missingness, imputation of missing values was conducted through multiple imputation (MI) to address missing values without causing consequential biased results (Tabachnick & Fidell, 2019).

Data were examined for each statistical assumption for path analysis, including normality, linearity, homoscedasticity, and multicollinearity. Skewness values ranged from $-.67$ to 1.56 , and Kurtosis values ranged from -1.07 to 1.37 , suggesting that data may be slightly skewed but fell within an acceptable range (Tabachnick & Fidell, 2019). The histograms for some items were also positively skewed and indicated slightly skewed distribution of the data, which was further evidenced by the significant value of a Shapiro–Wilk test ($p < .001$) for each item. The distribution of the data was slightly nonnormal at the univariate level, which also indicated nonnormality at multivariate level. However, a path analysis is considered robust to slight or moderate nonnormality of data that does not produce consequential inflated results with any estimation methods (Hayes, 2018). Assumptions of linearity, homoscedasticity, and absence of multicollinearity were all supported by examining the observed residuals and Variance Inflation Factor; VIF and tolerance values (Tabachnick & Fidell, 2019). Thus, the data set was suitable for path analysis.

Analytic Strategy

Multiple mediation and moderated mediation models were analyzed using Hayes’ (2018) PROCESS macro (Model 4 and Model 29, respectively). Specifically, we employed 10,000 bootstrapping resampling to produce 95% confidence intervals (CIs) for detecting the indirect and moderate effects. Significance of the indirect and moderate effect were identified if the CIs did not include zero (Hayes, 2018). Additionally, three conditional values of moderators were utilized to better understand moderation of three conditional indirect effects. The three conditional values were calculated as recommended by Hayes (2018): (a) the mean of the moderator -1 *SD* (i.e., low value of the moderator), (b) the mean of moderator (i.e., middle value of the moderator), and the mean of the moderator $+1$ *SD* (i.e., high value of the moderator). The effect size for the conditional moderating effects was examined using Bodner’s (2017) formula. To generate meaningful implications, all predictors and moderators were included as mean-centered (Hayes, 2018).

Results

Preliminary Analyses

Table 1 presents the descriptive characteristics and correlations among the primary study variables. Based on our results, experiences of racial discrimination during the COVID-19 pandemic were positively correlated with anxiety and depression symptoms and were negatively associated with life satisfaction and coping

Table 1
Intercorrelations Among Major Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Discrimination	1	—										
2. Anxiety	.677**	1	—									
3. Depression	.611**	.710**	1	—								
4. Life Satisfaction	-.191**	-.293**	-.278**	1	—							
5. Coping	-.293**	-.339**	-.405**	.166**	1	—						
6. Ethnic Identity	.069	.014	.039	.201**	-.016	1	—					
7. Age	-.088*	-.111**	-.161**	.088*	-.061	-.013	1	—				
8. Gender	-.275**	-.131**	-.072	-.049	.044	-.042	-.007	1	—			
9. Acculturation	-.041	-.067	-.116**	.007	.179**	-.005	-.116**	.001	1	—		
10. CS_EC	-.161**	-.206**	-.284**	.161**	.869**	.015	-.095*	.018	.151**	1	—	
11. CS_DC	-.345**	-.380**	-.403**	.105**	.785**	-.044	.009	.063	.136**	.386**	1	—
12. Exploration	-.022	-.065	-.032	.227**	.014	.855**	.030	-.029	-.025	.043	-.023	1
Mean	21.54	40.70	45.47	23.80	48.50	21.38	32.43	0.50	2.96	25.12	23.37	10.75
SD	9.85	14.32	17.94	5.79	6.95	3.19	9.44	0.50	0.57	4.65	3.71	1.98

Note. CS_EC = engagement coping, CS_DC = disengagement coping, SD = standard deviation.
* $p < .05$. ** $p < .01$.

strategies. Higher levels of anxiety and depression were also correlated with lower levels of life satisfaction and coping strategies. Ethnic identity (composite score and exploration score) and coping strategies were positively associated with greater levels of life satisfaction. Preliminary analyses of the controlled variables indicated that age was significantly related to experiences of racial discrimination, anxiety, and depression ($r_s = -.09$ to $-.16$, $p < .01$). In our study, older AAPI individuals reported lower level of racial discrimination, anxiety, and depression compared to their younger counterparts. Gender differences were also identified in experiences of racial discrimination ($r = -.28$, $p < .01$) and anxiety ($r = -.13$, $p < .01$), with male participants reporting higher levels of racial discrimination and anxiety compared to their female counterparts. Based on these preliminary analyses, and consistent with existing research (Chae & Foley, 2010; Lieber et al., 2001; Xu & Chi, 2013), age and gender were controlled for in all subsequent multiple mediation and moderated mediation analyses where mental health variables were included. Lastly, acculturation was significantly related to coping strategy ($r = .179$, $p < .01$). AAPIs who endorsed high levels of acculturation indicated greater use of coping strategies. Therefore, acculturation was controlled for in moderated mediation analyses involving coping strategy as a moderator.

Multiple Mediation Model

Results indicated that the path between experiences of racial discrimination and life satisfaction were mediated by anxiety, $b = -.086$, $SE b = .022$, $t = -3.843$, 95% CI $[-.131, -.042]$ and depression, $b = -.044$, $SE B = .017$, $t = -2.590$, 95% CI $[-.077, -.011]$, after controlling for age and gender. AAPIs who reported more frequent experiences of racial discrimination following COVID-19 were more likely to have higher levels of anxiety and depression, which in turn were associated with poorer life satisfaction. Specifically, the indirect effects of anxiety and depression for life satisfaction were $-.086$, 95% CI $[-.134, -.034]$ and $-.051$, 95% CI $[-.097, -.007]$ respectively, yielding a total indirect effect of $-.137$. Racial discrimination experiences had no significantly direct effect on life satisfaction, $b = .009$, $SE b = .030$, $t = .297$,

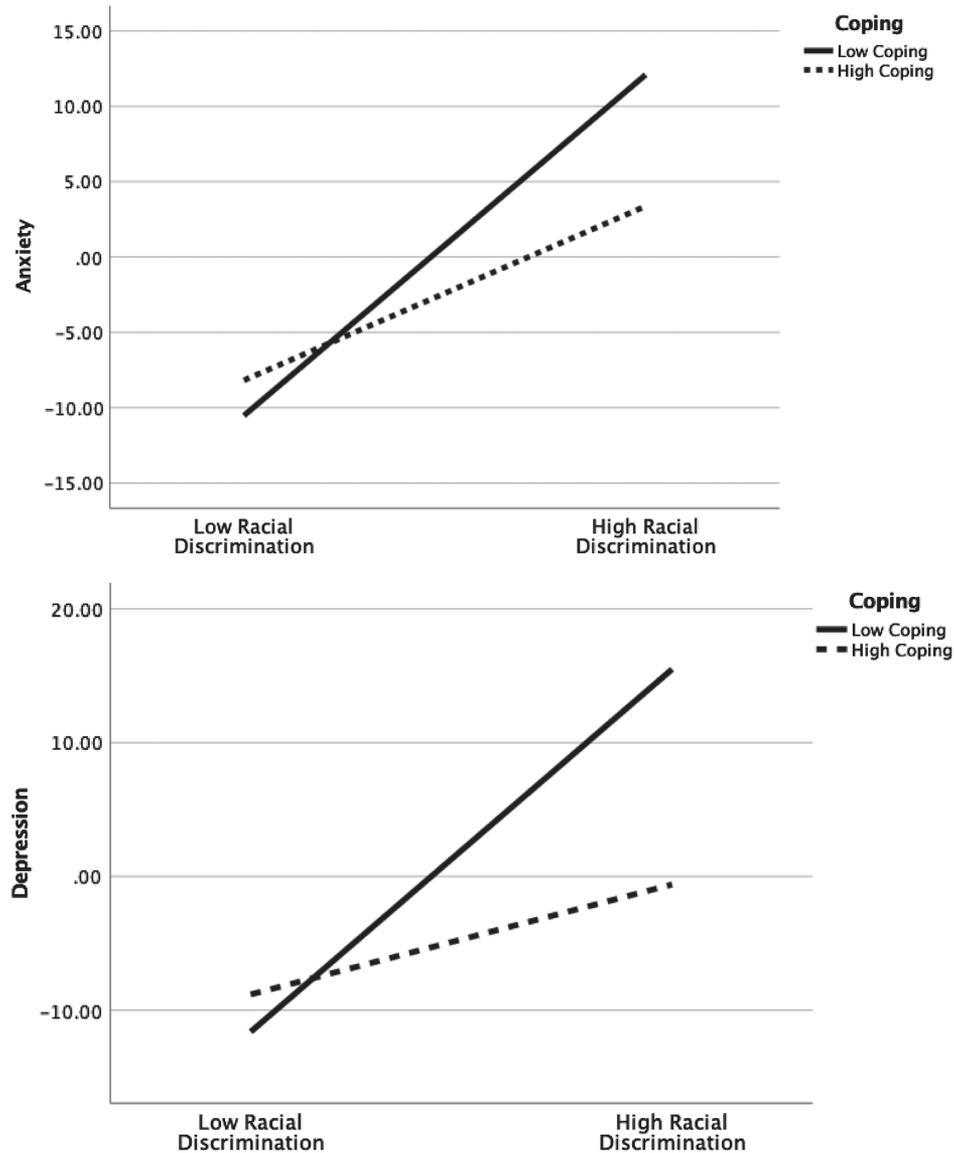
95% CI $[-.050, .068]$ when the two mediators were included in the model. Thus, Hypothesis 1 was supported.

Moderated Mediation Model

Overall coping (CSI-SF total score) significantly moderated the relationship between racial discrimination during COVID-19 and anxiety, $b = -.04$, $SE b = .005$, 95% CI $[-.049, -.031]$ and depression, $b = -.069$, $SE b = .006$, 95% CI $[-.080, -.058]$, supporting Hypothesis 2. As overall coping usage increases by one unit, the strength of racial discrimination-anxiety and racial discrimination-depression pathways decreases by $-.04$ units and $-.069$ units, respectively. Follow-up analysis of the conditional moderating effects revealed that racial discrimination had significant and positive relationships with higher levels of anxiety and depression among AAPIs who used overall coping responses less frequently, $b = .1148$, 95% CI $[1.055, 1.241]$ for anxiety; $b = 1.376$, 95% CI $[1.261, 1.491]$ for depression, reported average use of overall coping responses, $b = .867$, 95% CI $[.787, .948]$; $b = .896$, 95% CI $[.797, .996]$, and used overall coping responses more frequently, $b = .589$, 95% CI $[.476, .697]$; $b = .417$, 95% CI $[.281, .553]$. This relationship became weaker as the frequency of overall coping responses increased (Figure 2). Based on our analysis, the mediated effect of anxiety and depression differed as a function of overall coping. Depression mediated the racial discrimination-life satisfaction link when overall coping usage was low, $b = -.09$, 95% CI $[-.149, -.033]$, at the mean, $b = -.059$, 95% CI $[-.096, -.021]$, and high, $b = -.027$, 95% CI $[-.047, -.009]$, but this link became weaker for AAPIs who used overall coping skills more frequently. The mediating effect of anxiety became nonsignificant across all levels of overall coping usage. Similarly, the racial discrimination-life satisfaction link also became weaker among AAPIs who used overall coping skills more frequently. Differences in the conditional moderating effects between fewer and greater use of overall coping responses indicated a $-.06$ and $-.08$ change in the negative effect of racial discrimination on anxiety and depression, respectively, which were small effect sizes for a two SD difference (Bodner, 2017).

Figure 2

Coping Strategy as a Moderator of the Association Between Racial Discrimination and Anxiety and Depression



Hypothesis 3 was partially supported. The two first-tier coping responses significantly moderated the links between racial discrimination and anxiety and depression. However, the relationships between racial discrimination and mental health distress became weaker as coping response usage increased, regardless of whether engagement-type or disengagement-type responses were employed (Table 2). Follow-up analysis of the conditional effects further revealed the positive associations between racial discrimination and mental health distress for AAPIs who used any form of coping less frequently, $bs = 1.045$ to 1.447 , 95% CI [$.944 \sim 1.246$] for anxiety; $bs = 1.208$ to 1.510 , 95% CI [$1.080 \sim 1.639$] for depression, at the average frequency, $bs = .838$ to $.977$, 95% CI [$.750 \sim 1.057$; $bs = .834$ to 1.097 , 95% CI [$.723 \sim 1.199$], and at higher frequencies, $bs = .788$ to $.630$, 95% CI [$.509 \sim .900$];

$bs = .753$ to $.459$, 95% CI [$.307 \sim .859$]. The mediated effect of anxiety and depression may have varied as a function of different coping responses. Anxiety and depression mediated the discrimination-life satisfaction link regardless of form of coping, but this link became weaker for those with higher levels of coping. The mediated effect of anxiety and depression became nonsignificant regardless of the frequency of using any form of coping.

Identity exploration significantly moderated the path between anxiety and life satisfaction, $b = -.028$, $SE b = .011$, $t = -2.508$, 95% CI [$-.050, -.006$], as well as the path between depression and life satisfaction, $b = .024$, $SE b = .008$, $t = 2.925$, 95% CI [$.008, .040$], supporting Hypothesis 4. Further analysis (Figure 3) revealed that anxiety exerted a significantly deleterious effect, $b = -.118$, $SE b = .028$, $t = -4.166$, 95% CI [$-.174, -.062$] on life satisfaction

Table 2
Moderated Mediation Model Analyzing Coping Strategies and Ethnic Identity as Moderators of Pathways Between Discrimination, Anxiety, Depression, and Life Satisfaction

Criterion and predictor variable	<i>b</i>	<i>b SE</i>	<i>t</i>	LLCI	ULCI
Anxiety					
RD	.867**	.041	21.142	.787	.948
CS_T	-.229**	.057	-4.048	-.340	-.118
CS_EC	-.293**	.081	-3.602	-.452	-.133
CS_DC	-.511**	.109	-4.683	-.725	-.297
RD × CS_T	-.040**	.005	-8.785	-.049	-.031
RD × CS_EC	-.063**	.007	-.8835	-.076	-.049
RD × CS_DC	-.060**	.009	-6.475	-.078	-.042
Gender	1.160	.738	1.572	-.288	2.608
Age	-.099*	.039	-2.534	-.176	-.022
Acculturation	-.057	.657	-.086	-1.347	1.234
Depression					
RD	.896**	.051	17.697	.797	.996
CS_T	-.478**	.070	-6.837	-.615	-.341
CS_EC	-.710**	.101	-7.001	-.909	-.511
CS_DC	-.788**	.138	-5.699	-1.059	-.517
RD × CS_T	-.069**	.006	-12.138	-.080	-.058
RD × CS_EC	-.104**	.009	-11.773	-.121	-.087
RD × CS_DC	-.112**	.012	-9.541	-.135	-.089
Gender	2.657**	.911	2.918	.869	4.445
Age	-.252**	.048	-5.229	-.347	-.157
Acculturation	-1.264	.812	-1.557	-2.857	.329
Life satisfaction					
RD	.008	.030	.252	-.051	.066
Anxiety	-.063*	.023	-2.742	-.107	-.018
Depression	-.058**	.018	-3.194	-.094	-.022
Exploration	.578**	.102	5.644	.377	.779
Anxiety × Exploration	-.028*	.011	-2.508	-.050	-.006
Depression × Exploration	.024**	.008	2.925	.008	.040
RD × CS_T	-.003	.003	-1.203	-.009	.002
RD × Exploration	.010	.016	.612	-.021	.040
Gender	-.810*	.405	-2.002	-1.605	-.016
Age	.026	.022	1.215	-.016	.069
Acculturation	-.112	.360	-.312	-.819	.594

Note. RD = racial discrimination; CS_T = total scale of coping strategy; CS_EC = engagement coping; CS_DC = disengagement coping; SE = standard error
 * $p < .05$. ** $p < .001$.

among AAPIs with higher levels of identity exploration, but the effect was nonsignificant, $b = -.007$, $SE b = .035$, $t = -.209$, 95% CI [-.076, .061] among AAPIs who reported lower levels of identity exploration. In addition, the mediated effect of anxiety was significant for those who reported high levels and at the mean of identity exploration but became nonsignificant among AAPIs with low levels of identity exploration, $b = -.006$, 95% CI [-.076, .064].

AAPIs who endorsed higher levels of identity exploration were more resilient to the negative effects of depression, which in turn was associated with less deterioration of life satisfaction. Further analysis (Figure 3) indicated that although depression had a significant negative impact on life satisfaction among AAPIs with lower levels of identity exploration, $b = -.106$, $SE b = .027$, $t = -3.994$, 95% CI [-.158, -.054], the negative effect became nonsignificant for AAPIs with higher levels of identity exploration, $b = -.011$, $SE b = .022$, $t = -.479$, 95% CI [-.054, .033]. The mediated effect

of depression was significant for those with low levels of identity exploration but became nonsignificant for those with strong identity exploration, $b = -.010$, 95% CI [-.059, .031]. Results from the combined analysis (i.e., ethnic identity total score) can be found in the Supplemental Material.

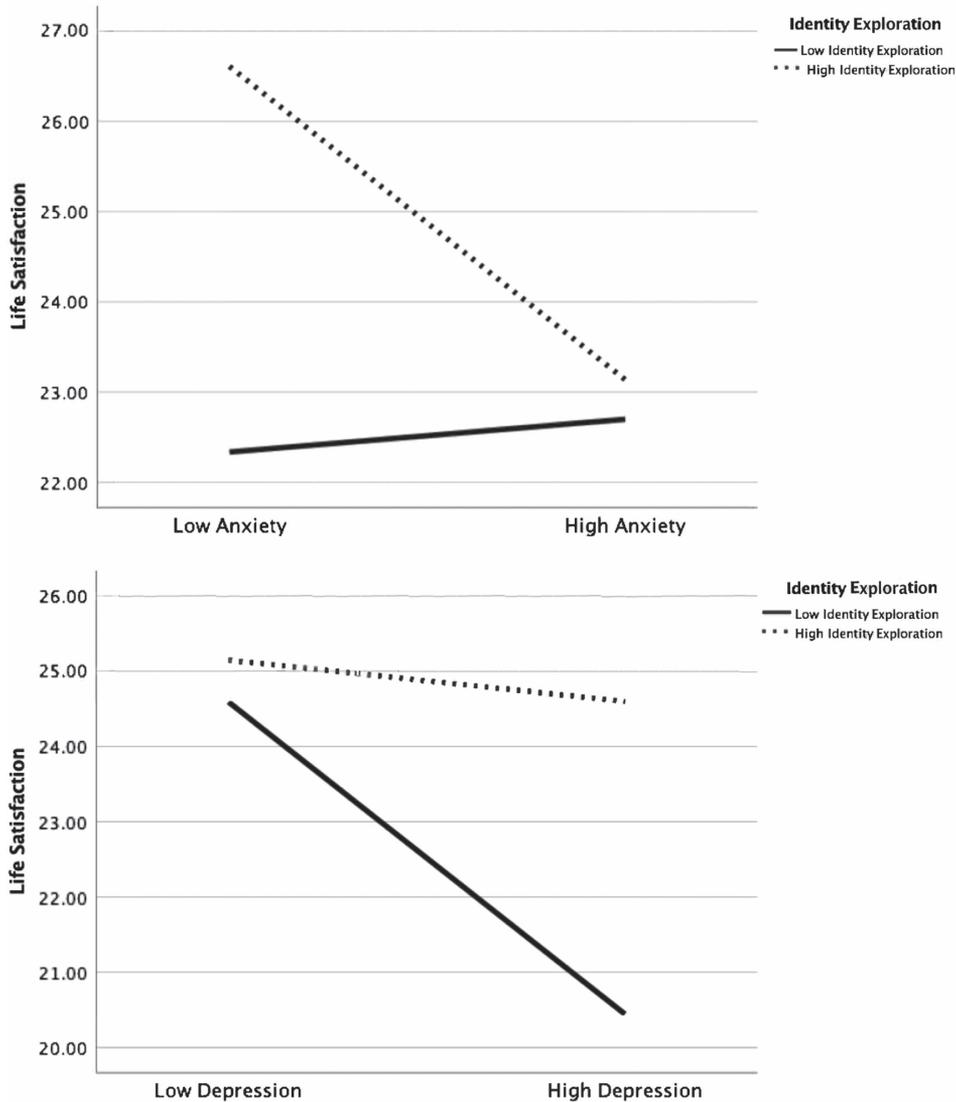
Discussion

Our study explored the mechanism through which racial discrimination experiences during COVID-19 exerted deleterious effects on life satisfaction among AAPIs via increased depression and anxiety as well as examined the possible moderating effects of coping strategy and ethnic identity in the mechanism. Experiences of racial discrimination during COVID-19 were significantly correlated with greater severity of anxiety and depression and were negatively correlated with life satisfaction. These findings are consistent with previous studies that reported a positive relationship between racial discrimination and anxiety and depression among diverse AAPI communities (Litam & Oh, 2021; Litam et al., 2021; Liu & Suyemoto, 2016; Nadimpalli et al., 2016; Sanchez et al., 2018; Stein et al., 2014). Our results are additionally consistent with empirical investigations that reported a negative relationship between racial discrimination and life satisfaction among Asian American college students (Yoo & Lee, 2005) and Chinese Americans (Litam & Oh, 2021). Life satisfaction was negatively related to high levels of anxiety and depression in our study, which is consistent with the existing body of research (Litam & Oh, 2021). Our preliminary analyses provide empirical evidence that confirms the association between racial discrimination experiences, aspects of psychological health, and life satisfaction among AAPIs, with new findings about the harmful effects of racial discrimination following COVID-19.

Anxiety and depression mediated the link between racial discrimination and life satisfaction among AAPIs. These findings expand upon earlier studies that reported racial discrimination was directly associated with poorer mental health consequences (anxiety and depression; Lee & Ahn, 2011; Litam & Oh, 2020; Liu & Suyemoto, 2016; Nadimpalli et al., 2016) and identified anxiety and depression as key predictors for life satisfaction among AAPIs (Lee & Waters, 2020; Litam & Oh, 2020; Lombardo et al., 2018; Yoo & Lee, 2005; WHO, 2013). Our findings support additional research indicating that the relation between racial discrimination and overall well-being was mediated by depression (Mereish et al., 2012; Torres-Harding et al., 2020) and anxiety (Gibbons et al., 2014). These findings uniquely illuminate how racial discrimination experiences among AAPIs during COVID-19 impact lower levels of life satisfaction via increased rates of mental health distress.

Overall coping moderated the links between racial discrimination and the two mediators (anxiety and depression) and provided support for the moderated mediation via conditional moderating effect analysis. Specifically, overall coping served as a protective factor that weakened the association between discrimination and mental health distress for AAPIs with low, moderate, and high usage of overall coping. The association was weakest among AAPIs with high levels of overall coping. Our results contribute to existing literature that suggests overall coping strategies (regardless of its forms) may represent an important psychological resource that facilitates cognitive and emotional efforts to protect one’s mental

Figure 3
Identity Exploration as a Moderator of the Association Between Anxiety and Life Satisfaction as Well as Depression and Life Satisfaction



health from the negative effects of stressful situation (Hobfoll, 2001; Lazarus & Folkman, 1984). Our study additionally supplements findings from (Litam & Oh, 2021) that reported the protective role of overall coping in the mediated link between racial discrimination and life satisfaction via depression.

The coping subscales moderated the links between racial discrimination and anxiety and depression. These findings suggest the mediating effects of anxiety and depression may differ as functions for each of the coping responses. Our results are inconsistent with theoretical literature which posits that AAPIs may prefer disengagement coping responses (Chun et al., 2006; Inman & Yeh, 2007; Tweed & Conway, 2006) and earlier studies that reported engagement coping responses worsened AAPI mental health following racial discrimination (Chang, 2001; Lei & Pellitteri, 2017; Wong et al., 2010; Yoo & Lee, 2005). This discrepancy illuminates the

complex and nuanced relationship between AAPI cultural values and coping responses. Researchers have argued that AAPIs may hold paradoxical and intersecting forms of cultural beliefs that shape their coping (Wong et al., 2010), which may be lost in studies that aggregate AAPI experiences into one monolithic entity (Kim, 2009; Wong et al., 2010). Because our study used a pan-ethnic sample of AAPIs, the heterogeneity and distinct cultural values that exist across specific AAPI subgroups and influence coping strategies may have been lost.

Ethnic identity exploration moderated the links between anxiety and depression on life satisfaction. The mediated effect of anxiety and depression also varied as functions of ethnic identity exploration. Specifically, the anxiety-life satisfaction link became weaker for those with low level of ethnic identity exploration, whereas the depression-life satisfaction link became weaker for those with high

level of ethnic identity exploration. Our findings supplement existing research that examined how dimensions of ethnic identity may exacerbate or buffer the negative effects of mental health distress on overall well-being (Pascoe & Smart Richman, 2009; Yip et al., 2019) and offers unique insight into how specific aspects of ethnic identity (i.e., ethnic identity exploration) may vary based on the type of mental health distress faced by AAPIs. The exacerbating role of ethnic identity exploration on anxiety may be explained by higher rates of anti-Asian discrimination following COVID-19, which may increase anxiety about future discrimination experiences among AAPIs (Cheah et al., 2020; Lee & Waters, 2020). On the other hand, higher levels of ethnic identity exploration may develop in response to stressful situations (i.e., following racial discrimination experiences). Indeed, people who explore their identity in a discriminatory environment may experience greater levels of distress and anxiety (Mills & Murray, 2017). Conversely, the protective role of identity exploration on depression may be explained by the moratorium identity status (Marcia, 1994). In this study, AAPIs with higher levels of identity exploration may have achieved a moratorium identity, characterized by actively exploring their ethnic identities without endorsing strong commitment (Marica, 1994). According to social identity theory (Tajfel & Turner, 1979), dimensions of ethnic identity can be important sociocultural resources that may protect one's well-being from discrimination by increasing a sense of belongingness to their ethnic groups. Thus, when facing racial discrimination, AAPIs who endorse higher levels of identity exploration may be more likely to focus on the positive aspects of their communities and develop a stronger sense of belonging in ways that protect their well-being and self-concept. Indeed, individuals who lacked a sense of belonging were at greater risk for depression (Fisher et al., 2015), but not anxiety. This result is also consistent with a systemic review that indicated higher levels of ethnic identity exploration were correlated with fewer depression symptoms (Rivas-Drake et al., 2014)

Implications, Limitations, and Future Research

Mental health professionals must be prepared to help AAPI clients mitigate the harmful effects of COVID-19 related racial discrimination (Chan & Litam, 2021; Litam et al., 2021; Litam & Oh, 2020, 2021). Given that all forms of coping responses were effective in attenuating the relationship between racial discrimination and anxiety and depression, therapists are called to identify and challenge notions that specific forms of coping responses may be more helpful than others. Mental health professionals may support AAPI clients by using culturally sensitive and strength-based approaches that assess the frequency and effectiveness of client coping responses.

A cross-sectional and retrospective research design was used and may limit the directionality and causality in our model. Future studies would benefit from longitudinal designs that can assess the directionality among study variables at different time points. For example, higher levels of ethnic identity may weaken the negative effect of anxiety and increase life satisfaction as AAPIs learn to process their discrimination experiences and cultivate a greater sense of ethnic pride. Cross-sectional research designs may additionally result in common methods variance (i.e., correlational bias or inflation). The low reliability of the MEIM-R and the CSI-SF represents additional limitations and may undermine the validity and

generalizability of the findings. Readers must therefore interpret the role of ethnic identity in our study with caution. Given the poor reliability of the MEIM-R subscales, the different dimensions of ethnic identity could not be analyzed to determine how these dimensions impacted various forms of coping. Future studies may additionally explore different aspects of ethnic identity dimensions or use various ethnic identity measures to further investigate the nuanced role of ethnic identity. Lastly, the present study did not consider aspects of specific ethnic subgroups that undoubtedly play a role in relationships between the study variables. Future research is needed to explore the roles of these potential cultural variables.

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Received December 31, 2020

Revision received September 16, 2021

Accepted October 7, 2021 ■