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Impact of Online and Offline Racism on Cigarette Smoking, Marijuana Use, and Vaping via Depressive/Anxiety Symptoms Among Racially Minoritized Emerging Adults

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Studies have found that offline and online racism are linked to mental health issues including depressive and anxiety symptoms among racially minoritized emerging adults. To cope with these symptoms, racially minoritized emerging adults may resort to substance use. Thus, we examined the relationship between offline and online racism and recent smoking behaviors (past 30 days), and whether depressive and anxiety symptoms (DAS) mediate this relationship. We hypothesized that offline and online racism would be associated with a greater probability of recent smoking through depressive/anxiety symptoms. With data from 338 participants ($M_{\text{age}} = 23.28$, $SD = 2.38$), we conducted a path analysis of offline racism (Everyday Discrimination Scale) and online racism (Perceived Online Racism Scale) predicting recent smoking (recent cigarette smoking, recent marijuana use, recent vaping) via depressive (Patient Health Questionnaire-9)/anxiety (Generalized Anxiety Disorder-7) symptoms. Offline racism was directly associated with recent cigarette smoking while online racism was directly associated with recent vaping. No significant indirect associations were observed with cigarette smoking and vaping. Both online and offline racism were indirectly associated with recent marijuana use via depressive/anxiety symptoms. Our findings suggest that there are nuanced differences between the impact that online and offline racism experiences may have on the DAS, and smoking behaviors of racially minoritized emerging adults. Implications for research are discussed.

Public Policy Relevance Statement

We found that racially minoritized emerging adults may cope with online and offline racism through smoking tobacco, marijuana use, and vaping. They may engage in these smoking-related coping behaviors to alleviate the depressive and anxiety symptoms stemming from online and offline racism experiences. Our findings highlight the need to mitigate the impact of both online and offline racism on smoking outcomes.

Smoking is a major contributor to cardiovascular disease, leading to the deaths of more than 650,000 individuals annually in the United States (Javed et al., 2022). Smoking,

including the use of cigarettes, marijuana, and vaping products, increases the risk of heart attacks, coronary artery disease, and high blood pressure (Burke et al., 2017). Among youth and emerging

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Data used in this study may be available upon request.

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adults, products such as e-cigarettes (e.g., vaping) are very popular and their use has grown dramatically in the last 5 years (Cornelius et al., 2020). Emerging adulthood, spanning from ages 18 to 29, is a crucial period during which individuals seek independence, establish new social connections, and experiment with substance use (Daw et al., 2017; Tucker et al., 2005). Exposure to substances such as nicotine during this developmental stage can have significant consequences, including harm to the developing brain (Wang et al., 2021) and an increased likelihood of developing addiction, leading to long-term smoking behaviors and health disparities (Watkins et al., 2018). Therefore, identifying psychosocial determinants of smoking among emerging adults is crucial for effective prevention and intervention strategies.

Scholars have called for attention to racism as a determinant of smoking-related health disparities among racially minoritized emerging adults (Pearson et al., 2021). Racism refers to the acts, attitudes, and belief systems that dehumanize, disadvantage, and denigrate individuals of racially minoritized groups, both interpersonally and systemically, in a society that prioritizes White cultural dominance and privilege (Harrell, 2000). Physiological research has examined racism as a chronic psychosocial stressor that can induce a long-term stress response and contribute to unique risks for cardiovascular diseases, such as hypertension (Brondolo et al., 2003). Adding to this conundrum, racially minoritized individuals may engage in substance use (e.g., smoking) to cope with racism-related mental health symptoms such as depression and anxiety (Bennett et al., 2005; Pearson et al., 2021). Yet, limited research has been conducted on smoking outcomes associated with racism (Pearson et al., 2021) despite the persistent and traumatic nature of racism (Carter, 2007) and the harsh reality of racially minoritized emerging adults experiencing racism in both offline and online social domains in today's digitally driven society (Keum & Miller, 2017). Thus, the present study examined whether online and offline racism is associated with smoking outcomes (cigarette smoking, marijuana use, and vaping) through depressive and anxiety symptoms (DAS) among racially minoritized emerging adults.

While in-person racial discrimination such as racist verbal attacks and race-based exclusion and mistreatment (e.g., in restaurants, stores, etc.) persists, research on online racism suggests that racially minoritized emerging adults are more exposed to racism online than in offline settings given the ubiquity of online interactions in their daily lives (Keum & Miller, 2017). Online racism can manifest in various forms, including personal victimization (e.g., racist comments, memes, harassment), vicarious exposure (e.g., witnessing racist online interactions), exposure to content on systemic racism (e.g., disparities in education, incarceration), and exposure to race-related hate crimes (e.g., hate crime videos). Racially minoritized emerging adults are particularly vulnerable to the polarization of content related to race-based hate crimes and violence, which can trigger traumatic stress symptoms (Maxie-Moreman & Tynes, 2022).

Racial trauma theory (Carter, 2007) contextualizes both online and offline racial discrimination as a persistent and traumatic reality that can deleteriously alter the racially minoritized individuals' approach to life. According to the racial trauma theory (Carter, 2007), experiencing racism can be understood as sustaining an emotional/psychological injury, which prompts a cognitive appraisal of the event (i.e., was this negative and stressful) to determine its negative and stressful impact. This prompts them to take action to

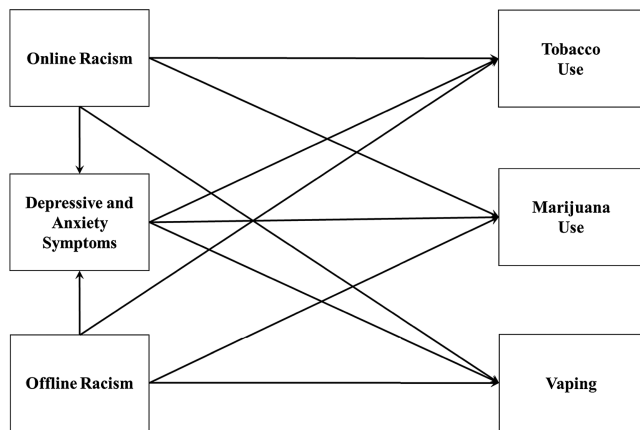
cope or adapt, but when these efforts fail, mental health symptoms such as anxiety and depression can emerge, particularly with long-term traumatic stress reactions (Carter, 2007). Racial discrimination can be a dehumanizing and violent experience that forces victims to develop stress reactions such as social withdrawal and hypervigilance to avoid potential situations of discrimination (Carter, 2007). Paradoxically, these protective adaptations can induce psychopathology such as DAS due to sustaining anticipatory stress and surveillance based on past experiences of racism (Mekawi et al., 2022). Anxiety has been found to be a major outcome associated with racial discrimination as engagement in hypervigilance promotes constant worry and hypersensitivity among the victims in their social interactions (Sosoo et al., 2020). Depressive symptoms are comorbid with anxiety as racially minoritized individuals internalize self-negativity, low self-worth, and helplessness, as well as internalized views of themselves as ostracized and dehumanized by the dominant White culture (Walker et al., 2014). Relatedly, studies on racial discrimination in both online (Keum & Li, 2023; Lozada et al., 2021; Tynes et al., 2008) and offline (Mekawi et al., 2022; Pichardo et al., 2021) contexts have found that racism-related anticipatory stress often gives rise to DAS.

DAS, as well as other mental health issues associated with racism, may be more difficult to manage than general stressors in life as racism dehumanizes the core self-concepts of racially minoritized individuals (Forsyth & Carter, 2012). These symptoms may be indications of feeling excluded, marginalized, and socially threatened from ruminating about racist experiences and being vigilant about racism. In an effort to immediately alleviate their DAS, racially minoritized emerging adults may turn to substance use (Brondolo et al., 2009). Depressive (Vinci et al., 2012) and anxiety (Buckner et al., 2021) symptoms are concurrently associated with greater smoking motives to regulate negative and internalizing affect. Studies suggest that individuals may increase their motives to smoke to fill a social void and escape from distress as they perceive smoking as a dependent or helpful social stimulus (affiliative attachment; Buckner et al., 2021). Emotion regulation and coping-related motives for smoking have been observed in cigarette smoking (Schleicher et al., 2009), marijuana use (Buckner & Schmidt, 2009), and vaping (Romano et al., 2021) among emerging adults.

The Present Study

Based on our review, we examined a path model (Figure 1) to test whether online and offline racism is associated with recent smoking behaviors (past 30 days) through DAS. Smoking behaviors in the past 30 days have been widely used as a potent indicator of current/recent use in the literature on cigarette (Watkins et al., 2018), vaping (Spindle et al., 2017), and marijuana use (Brooks-Russell et al., 2019). We drew on racial trauma theory to guide our hypotheses, positing that racism (whether experienced online or offline) would be a distal source of racially stressful events that could lead to mental health symptoms and risky coping behaviors (i.e., smoking) aimed at alleviating such symptoms. We controlled for COVID-19-related stress, average hours online per day, and the racial background of the participants. We included hours spent online and race as covariates as they have been shown to differentiate exposure to online racism, while COVID-19-related stress could potentially confound the

Figure 1
Hypothesized Path Model



source of stress among our participants. Our specific hypotheses were as follows:

Hypothesis 1: Online and offline racism will be significantly associated with recent cigarette smoking, recent marijuana use, and recent vaping.

Hypothesis 2: Online and offline racism will be significantly and indirectly associated with recent cigarette smoking, recent marijuana use, and recent vaping through depressive and anxiety symptoms (i.e., greater online and offline racism → greater depressive and anxiety symptoms → greater probability of recent cigarette smoking, recent marijuana use, and recent vaping).

Method

Participants

A nonprobability sample of 338 racially minoritized emerging adults ($M_{age} = 23.28, SD = 2.38$) provided data. About 32% identified as Black, 35% as Latinx, 28% as Asian, 4% as multiracial, and 1% as Native American. About 57% were female and 44% were male. The mean average hours online per day was 3.43 ($SD = 5.05$).

Procedure

The institutional review board at the University of California, Los Angeles granted approval for this study. Participants were recruited between June and July 2021 via Qualtrics panel service, which uses targeted sampling to reach respondents across the United States via various channels (e.g., website intercept recruitment, member referrals, targeted email lists, gaming sites, customer loyalty web portals, permission-based networks, and social media). To be eligible, participants had to (a) be 18 years of age or older, (b) self-identify as a racial minority, and (c) reside in the United States. Those who provided informed consent were directed to a Qualtrics online survey that included measures of study variables, demographic items, and two attention check items (e.g., “Please choose sometimes”). The survey took approximately 15–20 min to complete. All participants were compensated up to \$10 in a format of their choice (e.g., cash, gift cards, rewards points, mileage points)

depending on the platform they were recruited from. At the end of the survey, we provided all participants with comprehensive mental health resources, and those who reported any suicidal ideation received a specialized message with contact information for mental health professionals and a suicide hotline.

Measures

Perceived Online Racism. The present study employed the 15-item Perceived Online Racism Scale-Short Form (PORS-SF; Keum, 2021) to measure participants’ perceptions of racist online interactions and exposure to racist online content. The PORS-SF is a validated shortened version of the original 30-item PORS and has demonstrated good psychometric properties (Keum, 2021). Specifically, the PORS-SF comprises three subscales that assess different aspects of online racism: the Personal Experience of Racial Cyber-Aggression (PERCA) subscale, which measures personal experiences of online racial harassment (e.g., “I have received posts with racist comments”); the Vicarious Exposure to Racial Cyber-Aggression (VERCA) subscale, which assesses witnessing others’ experiences of online racial harassment (e.g., “I have seen other racial/minority users being treated like a second-class citizen”); and the Online-Mediated Exposure to Racist Reality (OMERR) subscale, which measures exposure to racist events that are reported online (e.g., “I have been informed about a viral/trending racist event happening elsewhere [e.g., in a different location]”). Participants rated each item on a 5-point Likert scale, ranging from 1 = *never* to 5 = *all the time*. In the present study, we used the total scale score to capture the overall frequency of online racism experiences. Cronbach’s α for the present study was .95, .92, .94, .89, for the total score, PERCA, VERCA, and OMERR subscales, respectively.

Perceived Offline Racism. The Everyday Discrimination Scale (EDS) is a reliable and widely used nine-item scale that assesses individuals’ perception of unfair treatment in their everyday lives (Williams et al., 1997). The scale includes items such as “People act as if they’re better than you are” and “You are treated with less respect than other people are.” Participants were asked to rate each item based on their offline experiences using a 6-point Likert-type scale ranging from 1 = *never* to 6 = *almost every day*. A higher score on the scale indicates a higher degree of perceived discrimination. The EDS has demonstrated measurement invariance across various racially minoritized groups (Kim et al., 2014). Cronbach’s α for the present study was .95.

Depressive Symptoms. The study employed the Patient Health Questionnaire–9 (PHQ-9), a nine-item depression scale designed to establish provisional depressive disorder diagnoses and assess the severity of depressive symptoms (Kroenke & Spitzer, 2002). Participants rated their responses on a 4-point Likert-type scale, ranging from 0 = *not at all* to 3 = *nearly every day*. The total score on the PHQ-9 ranges from 0 to 27, with higher scores indicating more severe symptomatology. The PHQ-9 has been shown to possess validity and measurement invariance with racially minoritized emerging adults (Keum et al., 2018). In the present study, the PHQ-9 demonstrated good internal consistency, with a Cronbach’s α of .93.

Anxiety Symptoms. The present study used the Generalized Anxiety Disorder–7 (GAD-7; Spitzer et al., 2006), a self-report scale that assesses symptoms of GAD as defined by the *Diagnostic and Statistical Manual* criteria. The GAD-7 comprises seven items, and participants were asked to rate their recent anxiety symptoms on a 4-point Likert-type scale ranging from 0 = *not at all* to 3 = *nearly every day*. Total scores were computed by summing the item scores, with higher scores indicating greater anxiety symptoms. The validity and measurement invariance of the GAD-7 has been previously established with racially diverse college students (Sriken et al., 2022). The Cronbach's α for the present study was .93, indicating good internal consistency.

Cigarette Smoking. To assess recent cigarette smoking behavior, a single item was utilized: "When was the last time you smoked a tobacco cigarette, even one or two puffs?" Participants provided their responses on an 8-point Likert-type scale (1 = *never*, 2 = *5 or more years ago*, 3 = *1 to 4 years ago*, 4 = *not in the past 6 months but sometime in the past year*, 5 = *not in the past 30 days but sometime in the past 6 months*, 6 = *not in the past 7 days but sometime in the past 30 days*, 7 = *not today but sometime in the past 7 days*, 8 = *earlier today*). Scores were dichotomized such that scores 5–7 indicated recent cigarette smoking (within the past 30 days) and scores 1–4 indicated cigarette smoking prior to the past 30 days.

Vaping. A single item was used to assess recent vaping:

The following question is about electronic vaping products for nicotine use. Electronic vaping products are battery-powered and include, e-cigarettes, e-cigars, e-pipes, e-hookahs, Juul, vaporizers, vape pens, vape mods, and box mods. Some electronic vaping products are pictured below. The following question only concerns vaping of nicotine and DOES NOT apply to vaping of marijuana or other substances. When did you last use an electronic vaping product, even one or two puffs?

Participants provided their responses on an 8-point Likert-type scale (0 = *never*, 1 = *more than 1 year ago*, 2 = *sometime in the past year*, 3 = *sometime in the past 6 months*, 4 = *sometime in the past 3 months*, 5 = *sometime in the past month*, 6 = *sometime in the past 7 days*, 7 = *earlier today*). We dichotomized the variable such that scores 5–7 indicate recent vaping use (in the past 30 days) and scores 1–4 indicate vaping use before the past 30 days.

Marijuana Use. A single item was used to assess recent marijuana use:

The next question is about marijuana and hashish. Marijuana is usually smoked, but it can be used by eating, drinking, vaporizing, or dabbing. Hashish is a form of marijuana that is usually smoked in a pipe or used by dabbing hash oil. When did you last use marijuana or hashish recreationally? Recreationally means using marijuana or hashish just for the feeling or experience it causes, to get high, or using for a nonmedical purpose without a prescription.

Participants provided their responses on an 8-point Likert-type scale with the same rating as for vaping. We dichotomized the variable such that scores 5–7 indicate recent marijuana use (in the past 30 days) and scores 1–4 indicate marijuana use before the past 30 days.

COVID-19-Related Stress. A single-item question was also employed to assess COVID-19-related stress on a day-to-day basis using a 5-point Likert-type scale ranging from 0 = *not at all* to 4 = *very much*: "During the pandemic, how much has COVID-19 (coronavirus) had a stressful impact on your day-to-day life?"

Data Analysis

Data did not contain any missing data. Mardia's multivariate skewness and kurtosis test (skewness = 1,968.83, $z = 133,552.47$, $p < .001$; kurtosis = 5,878.51, $z = 131.71$, $p < .001$) suggested nonconformity to the multivariate normality assumption (Cain et al., 2017). Thus, we used maximum likelihood estimation with robust standard errors in our analyses.

We tested our hypothesized model (Figure 1) using the path analysis in Mplus 8.7 (Muthén & Muthén, 2017). We estimated a logit model given the non-normal distribution and since we are examining the probability of smoking as a function of online racism experience rather than a probit model, which assumes normal distribution and assesses the likelihood of an event falling into one of a range of categories. We specified perceived online racism (PORS) and offline racism (EDS) as predictors, DAS as the mediator, and recent cigarette smoking, marijuana use, and vaping as binary outcome variables. We elected to specify DAS as a factor comprised of depressive (PHQ-9) and anxiety (GAD-7) symptoms as the correlation between the two was very high (.85) and would cause multicollinearity issues. Hence, the total scores of the GAD-7 and PHQ-9 were specified to load onto the DAS factor. This specification also aligned with the literature suggesting that DAS are highly comorbid, which seems to be the case in our sample. We also ran an alternative model where smoking could mediate the link between racism and depressive/anxiety symptoms based on evidence in the literature (Giurgescu et al., 2020). Depending on the adequacy of the model fit, we compared the alternative model to the hypothesized model. We controlled for COVID-19-related stress, average hours online per day, and race.

We evaluated the model fit using the Yuan–Bentler (YB) scaled χ^2 test and several approximate fit indices (Hu & Bentler, 1999): (a) the root-mean-square error of approximation (RMSEA; close to $<.08$ for "acceptable" fit), (b) the comparative fit index and Tucker–Lewis fit index (CFI and TLI; close to .95 for "good" fit), and (c) the standardized root-mean-square residual (close to $<.08$ for "acceptable" fit), the weighted root-mean-square residual (WRMR < 1.0 for "acceptable" fit). We also examined Bayesian information criterion (BIC) values to compare the fit between the hypothesized and alternative models. Smaller BIC values suggest better fit, with higher values of more than 10 units suggesting a lack of empirical support for goodness of fit (Burnham & Anderson, 2004). To examine specific path coefficients and indirect (i.e., mediation) effects, we followed best practices (Hayes & Scharkow, 2013) and adopted the bias-corrected bootstrap method using 5,000 random samples. We used 95% confidence intervals (CIs) to assess the statistical significance of the mediation effects, where CIs excluding 0 were deemed equivalent to $p < .05$. As Rijnhart et al. (2019) found that standardization may not increase the performance of estimates of indirect effect based on logistic regression and hinder clinically meaningful interpretation of the indirect effect, we examined the unstandardized path estimates.

Results

Bivariate correlations, internal reliability estimates, and descriptive statistics are shown in Table 1. Cronbach’s α s for all measures were adequate. The mean COVID-19-related stress was 2.17 ($SD = 1.13$). In the past 30 days, about 23% ($n = 78$) reported vaping, 28% ($n = 96$) marijuana use, and 32% ($n = 108$) cigarette use which appeared to align with the average rates (20%–30%) of recent/current smoking behaviors among adults in the United States (Agaku et al., 2014). The correlations between PORS subscales were: PERCA with VERCA ($r = .57, p < .001$), PERCA with OMERR ($r = .60, p < .001$), and VERCA with OMERR ($r = .78, p < .001$).

Path Analysis

The hypothesized path model yielded a good fit, RMSEA = .055 [.014, .091]; CFI = .97; TLI = .91; WRMR = .63; BIC = 4726.61. Figure 2 lists the unstandardized and completely standardized path coefficients, and Table 2 lists the unstandardized total direct, total indirect, and specific indirect effects. The alternative model with the smoking outcomes as mediators was not pursued as it provided a poor fit to the data with more than 10 units higher in the BIC value: RMSEA = .209 [.189, .230]; CFI = .21; TLI = .99; WRMR = 2.73; BIC = 4829.05.

Cigarette Smoking. The direct effect of PORS on recent cigarette smoking was not significant ($B = -.002, 95\%$ bootstrapped CI $[-.020, .016]$) and the indirect effect through DAS was not significant ($B = .004, 95\%$ bootstrapped CI $[-.001, .011]$). The direct effect of EDS on cigarette smoking was significant ($B = .030, 95\%$ bootstrapped CI $[.012, .051]$) and the indirect effect through DAS was not significant ($B = .004, 95\%$ bootstrapped CI $[-.001, .012]$). Thus, between online and offline racism, only offline racism was significantly associated with a greater probability of recent cigarette smoking ($OR = 1.03; CI [1.01, 1.05]$).

Marijuana Use. The direct effect of PORS on recent marijuana use was not significant ($B = .013, 95\%$ bootstrapped CI $[-.003, .031]$) and the indirect effect through DAS was significant ($B = .007, 95\%$ bootstrapped CI $[.001, .014]$). The indirect effect accounted for 26% of the total effect. The direct effect of EDS on marijuana use was not significant ($B = -.015, 95\%$ bootstrapped CI $[-.035, .006]$) and the indirect effect through DAS was significant ($B = .015, 95\%$ bootstrapped CI $[.035, .006]$). The indirect effect accounted for 43% of the total effect. Thus, greater online and offline racism was associated with greater DAS, which in turn was

significantly associated with a greater probability of recent marijuana use ($OR = 1.01; CI [1.001, 1.041]$).

Vaping. The direct effect of PORS on recent vaping was significant ($B = .029, 95\%$ bootstrapped CI $[.011, .046]$) and the indirect effect through DAS was not significant ($B = .003, 95\%$ bootstrapped CI $[-.003, .010]$). The direct effect of EDS on recent vaping was not significant ($B = -.005, 95\%$ bootstrapped CI $[-.025, .013]$) and the indirect effect through DAS was also not significant ($B = .003, 95\%$ bootstrapped CI $[-.003, .011]$). Thus, between online and offline racism, only online racism was significantly associated with a greater probability of recent vaping ($OR = 1.03; CI [1.01, 1.05]$).

Discussion

The present study explored whether online and offline racism would be indirectly associated with smoking outcomes through DAS. As we conceptualized and hypothesized according to the racial trauma theory (Carter, 2007), we found some nuanced evidence that racially minoritized emerging adults in our sample may engage in smoking (recent cigarette smoking, recent marijuana use, and recent vaping) for coping or emotion regulation purposes to deal with the DAS associated with their racism experiences. For marijuana use, greater online and offline racism was significantly associated with greater DAS, which in turn was significantly associated with a greater probability of recent marijuana use. For cigarette smoking, we did not observe any significant indirect associations, but offline racism was directly associated with a greater probability of recent cigarette smoking. Last, in contrast to our hypotheses, we did not observe any significant indirect associations with vaping; however, online racism was directly associated with a greater probability of recent vaping.

In accordance with the racial trauma theory (Carter, 2007), the results of marijuana use outcome clearly aligned with the theory. Racially minoritized emerging adults in our study may be using marijuana as a coping mechanism for the DAS resulting from experiencing both online and offline racism, which can be viewed as an emotional or psychological injury event. This aligns with the finding by Bonn-Miller et al. (2007) that exposure to traumatic events can increase marijuana use through coping motives. Both online (e.g., hate crime videos) and offline racism (e.g., physical violence, altercation) may transmit traumatic exposure to racism (Carter, 2007; Maxie-Moreman & Tynes, 2022), which can increase coping-related marijuana use. In particular, there has been growing

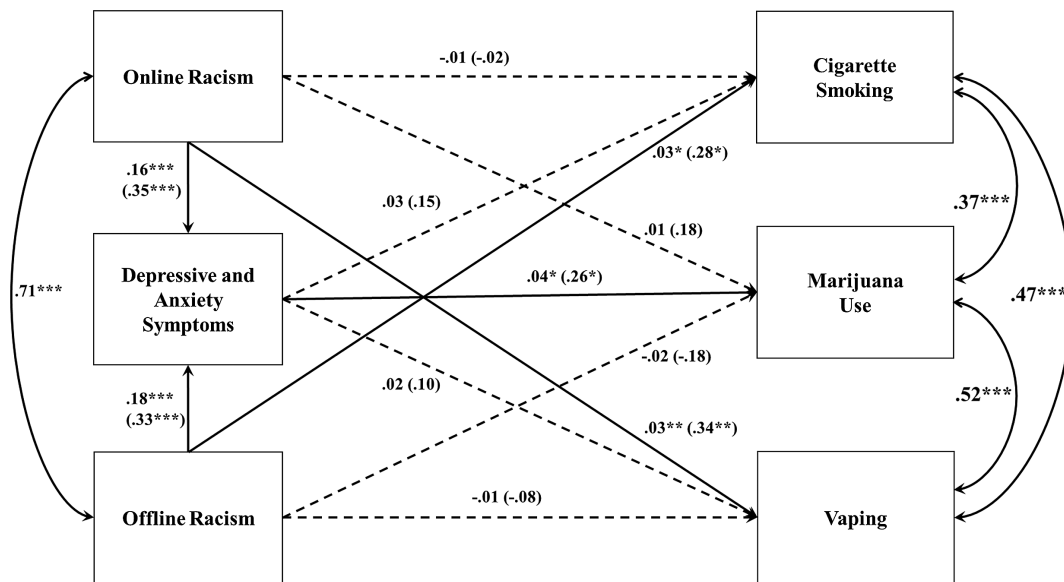
Table 1
Descriptive Statistics and Bivariate Correlations of Study Variables

Variable	Min	Max	Descriptives and correlations							
			<i>M</i>	<i>SD</i>	Skewness	Kurtosis	α	1	2	3
1. PORS	15.00	75.00	35.55	14.14	.19	-.87	.95	—		
2. EDS	9.00	54.00	24.13	11.95	.45	-.80	.95	.71**	—	
3. PHQ-9	0	27.00	9.58	7.31	.34	-.79	.93	.55**	.54**	—
4. GAD-7	0	21.00	8.06	6.16	.27	-1.00	.93	.51**	.53**	.85**

Note. PORS = Perceived Online Racism Scale; EDS = Every Discrimination Scale (offline racism); PHQ-9 = Patient Health Questionnaire-9; GAD-7 = General Anxiety Disorder-7.

** $p < .01$.

Figure 2
Path Estimates for the Hypothesized Path Model



Note. Dashed lines indicate nonsignificant paths. Double-headed arrows indicate correlations. Values outside of brackets indicate unstandardized path estimates. Values in brackets indicate standardized path estimates.
* $p < .05$. ** $p < .01$. *** $p < .001$.

empirical attention on the risk of being exposed to online racism among racially minoritized emerging adults. These individuals are the most frequent users of social media and spend more time online than their White counterparts and older adults (Auxier & Anderson, 2021). In response to both online and offline racism, marijuana use may provide quick access to pleasurable feelings that can offset the painful emotions and mental health symptoms from racial trauma. Coping-related marijuana use can be maladaptive, especially given that it has been significantly positively associated with problematic marijuana use (i.e., those related to psychological, social, occupational, and legal life domains) while adjusting for other motives (e.g., motives to enhance positive emotions, and social motives; Bresin & Mekawi, 2019).

Our study sheds light on the potential relationship between tobacco product use and coping with racism. The results might highlight the precursory scenarios related to the racial trauma theory, where an individual experiences racism and employs an available coping response. Interestingly, online racism was associated with recent vaping (i.e., e-cigarette), while offline racism was associated with recent cigarette smoking. Exposure to online racism has been found to be associated with greater unjust views of society and perceived stress in their future (Keum & Miller, 2017), suggesting that racially minoritized individuals may be socialized to experience heightened sensitivity to racial injustices in society and ruminate about potential racial discrimination in their future social interactions. For instance, Keum and Li (2023) found that online racism may carry feelings of social isolation and withdrawal as it may increase racially minoritized individuals' hypervigilance and give rise to loneliness and substance use. However, our findings suggest that offline racism may be a more potent stressor that can trigger cigarette smoking compared to online racism. For example, the

nature of in-person interpersonal racial discrimination experiences that are physically indicative of social exclusion may be more likely to create a social void and isolation among racially minoritized emerging adults (Forsyth & Carter, 2012). It is possible that experiencing racism in-person may induce more immediate and visceral feelings of dehumanization and distress compared to online racism that occurs through the screen which provides some aspect of emotional distance from the content or the interaction (Keum & Miller, 2018). As suggested by the literature on affiliative attachment smoking motives (Buckner et al., 2021), these individuals then may engage in cigarette smoking as a dependable social stimulus to help cope with the perceived marginalization from in-person racial discrimination experiences. Additionally, the significant association between online racism and recent vaping may be congruent with the experiences of racially minoritized emerging adults who are more immersed in the digital culture and technologically infused lifestyle in which they may be more prone to exposure to online racism and prefer e-cigarettes over traditional combustible cigarettes (Jones et al., 2016).

Our results have implications for clinical practice and future research. In terms of clinical practice and training, our findings draw attention to the need for clinicians to competently recognize and assess how both online and offline discrimination can impact substance use risk behaviors through anxiety and depression symptoms. Recent literature highlights that clinicians should consider the specific types of experiences faced by their clients rather than broadly discussing racism (Carter, 2007), as well as explore and acknowledge racist experiences to help individuals feel understood and heard (Malott & Schaeffle, 2015). There are opportunities for future research to utilize existing clinical models for addressing clients' experiences of racism, such as the one

Table 2
Estimate of Indirect Effects From Bootstrap Analysis

IV	Mediator(s)	DV	Unstandardized effect estimate	SE	95% bootstrap CI
Total effect					
Online racism		Cigarette smoking	.002	.008	[-.014, .018]
Direct effect					
Online racism		Cigarette smoking	-.002	.008	[-.020, .016]
Indirect effect					
Online racism → DAS →		Cigarette smoking	.004	.002	[-.001, .011]
Total effect					
Offline racism		Cigarette smoking	.030*	.009	[.012, .051]
Direct effect					
Offline racism		Cigarette smoking	.026*	.009	[.007, .047]
Indirect effect					
Offline racism → DAS →		Cigarette smoking	.004	.003	[-.001, .012]
Total effect					
Online racism		Marijuana use	.020*	.008	[.003, .036]
Direct effect					
Online racism		Marijuana use	.013	.008	[-.003, .031]
Indirect effect					
Online racism → DAS →		Marijuana use	.007*	.003	[.001, .014]
Total effect					
Offline racism		Marijuana use	-.008	.009	[-.027, .012]
Direct effect					
Offline racism		marijuana use	-.015	.010	[-.035, .006]
Indirect effect					
Offline racism → DAS →		Marijuana use	.007*	.003	[.002, .016]
Total effect					
Online racism		Vaping	.029*	.009	[.011, .046]
Direct effect					
Online racism		Vaping	.026*	.009	[.007, .045]
Indirect effect					
Online racism → DAS →		Vaping	.003	.003	[-.003, .010]
Total effect					
Offline racism		Vaping	-.005	.010	[-.025, .015]
Direct effect					
Offline racism		Vaping	-.008	.010	[-.025, .013]
Indirect effect					
Offline racism → DAS →		Vaping	.003	.003	[-.003, .011]

Note. IV = independent variable; DV = dependent variable; DAS = depressive and anxiety symptoms; SE = standard error; CI = confidence interval.

* $p < .05$.

proposed by Malott and Schaeffe (2015), to investigate individual-level coping strategies, such as strengthening identity self-concepts and emotion regulation skills, that could mitigate the impact of offline and online racism experiences on smoking-related health outcomes. Additionally, research is needed to explore how social media use, including the time spent and types of activities engaged in, may moderate the link between online racism and mental health issues and smoking outcomes. Given research on trajectories describing emerging adulthood experiences with racism (Lee et al., 2020) or substance use (Tucker et al., 2005), longitudinal studies that investigate the interactions between racism (including online racism), mental health symptoms, and substance use across the emerging adulthood period among racially minoritized emerging adults are particularly important. Such research could provide a more nuanced understanding of the complex relationships between these variables and inform the development of interventions that address the unique needs and experiences of racially minoritized emerging adults.

Despite the unique contribution of this study examining coping-related smoking outcomes with both online and offline racism, there are several limitations that inform future research. First, we used cross-sectional data, and thus the directions between the variables are speculative and do not provide any causal evidence. Second, given the study's initial focus on potential smoking outcomes related to racism, our data did not involve a comprehensive assessment of smoking outcomes in a multidimensional way (e.g., lifetime use, average use, dependence, etc.). Also, our smoking variables were all measured with single items. Although we employed recent use as a proxy to examine current smoking outcomes associated with appraisal of prior experiences of racism, future studies would need to expand on the validity of this linkage by employing a full assessment battery of tobacco product use such as the ones adapted by the Population Assessment of Tobacco and Health Study (National Addiction & HIV Data Archive Program, 2018). Third, although our convenience sample reflected the general trend of 20%–30% of U.S. adults who are current/recent users of

tobacco products (Agaku et al., 2014), it would be important for future studies to replicate our findings using more nationally representative data. Fourth, we examined racially minoritized emerging adults as a whole, but there may be racial and gender differences in the path model we tested. Future studies should collect longitudinal data with larger samples of racially minoritized groups to replicate the relationships among our variables and examine the longitudinal impact of online and offline racism on coping-related smoking across racial and gender groups. Fifth, we implied our path model to represent coping-related smoking but did not include any measures of smoking motives. For example, with marijuana use, current research has delineated the complexity of the different motives throughout the day (e.g., Shrier & Scherer, 2014). It would be important for future studies to examine whether coping (Keum & Li, 2022; Keum & Volpe, 2023) and other motives would mediate the link between online and offline racism and smoking. Last, the data for this study were collected during the COVID-19 pandemic. Although we included a single item designed to account for the stress related to the pandemic, it is limited in assessing the full breadth of the impact and context of the COVID-19 pandemic in understanding our findings. Hence, our findings should be interpreted with caution and future studies would need to further distinguish the unique role of racism from pandemic-related stress or treat test the syndemic nature of the two aspects.

Conclusion

The present study sheds light on the coping-related smoking behaviors of racially minoritized emerging adults linked with both online and offline racism. Our findings suggest that these individuals may turn to tobacco and marijuana use to regulate their emotions and cope with the anxiety and depression resulting from racism. Notably, we observed distinctions in the associations between online and offline racism with smoking outcomes, with online racism being linked to recent vaping and offline racism being associated with recent cigarette smoking. Both types of racism were also associated with recent marijuana use through DAS. These results underscore the importance of recognizing and addressing both online and offline racism as a potential contributor to smoking-related health disparities and of implementing targeted interventions and assessments accordingly.

Keywords: racism, depressive and anxiety symptoms, tobacco use, marijuana use, vaping

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