Daily multidimensional racial discrimination among Black U.S. American adolescents

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Abstract

This study examined frequencies and psychological effects of daily racial discrimination experienced individually, vicariously, online, offline, and through teasing. Participants were 101 Black U.S. American adolescents for this ecological momentary assessment study that measured daily racial discrimination and 14-day depressive symptoms slopes. Confirmatory factor analyses specified subscales, *t*-test analyses compared subscale means, and hierarchical linear analyses tested associations between subscales and depressive symptoms slopes. Results showed that six subscales fit the data well: individual general, vicarious general, individual online, vicarious online, individual teasing, and vicarious teasing. Participants reported 5606 experiences of racial discrimination during the study and averaged 5.21 experiences per day across the six subscales. The two online subscales were more frequent than the offline subscales. Aside from online vicarious experiences, all subscales were positively associated with depressive symptoms slopes. Findings underscore the multidimensional, quotidian, and impactful nature of racial discrimination in the lives of Black adolescents in the U.S.

Keywords

Black youth; African American youth; Racism; Ecological momentary assessment; Daily diary; Racial joking; Race-based discrimination

Introduction

The rise in hate crimes against Black U.S. American[1] youth since the 2016 presidential election (Federal Bureau of Investigation, 2018) provides a stark indicator that anti-Blackness continues to be deeply woven into the U.S. societal fabric. Indeed, an accumulating body of research (see Benner et al., 2018) provides evidence that persistent

[1]Throughout this manuscript the descriptor "Black" refers to Black U.S. Americans.

racial discrimination targeting Black adolescents contributes to increased psychological symptoms (e.g., anxiety, depressive, trauma symptoms; Greene, Way, & Pahl, 2006; Priest et al., 2013), increased substance use (e.g., Gibbons, Gerrard, Cleveland, Wills, & Brody, 2004), decreased academic achievement (e.g., Chavous, Rivas-Drake, Smalls, Griffin, & Cogburn, 2008; English, Lambert, & Ialongo, 2016; Neblett Jr., Philip, Cogburn, & Sellers, 2006), and increased physiological problems among these youth (e.g., inflammation, high blood pressure; Brody, Yu, Miller, & Chen, 2015; Clark & Gochett, 2006). Despite this evidence, researchers have suggested that their studies may underestimate the association between racial discrimination and negative biopsychosocial outcomes among Black adolescents (e.g., Berkel et al., 2009; English, Lambert, & Ialongo, 2014; Pachter, Bernstein, Szalacha, & García Coll, 2010) because they assessed a limited set of a larger group of qualitatively-indicated (e.g., Rosenbloom & Way, 2004) and theoretically-relevant (e.g., Sue, Capodilupo, & Holder, 2008) contemporary experiences of racial discrimination. In the present study, we sought to address this by examining the frequency and psychological effects of a broad set of daily racial discrimination experiences among Black adolescents including those experienced individually, vicariously, online, offline and through teasing.

Theoretical models of racial discrimination effects

The present study draws upon the theoretical models put forth by García Coll et al. (1996), Quintana and McKown (2008), and Sue et al. (2007). We extend García Coll and colleagues' integrative model for the study of developmental competencies in minority children to incorporate both traditional, or offline, contexts as well as those online. This model centers the social position of adolescents of color, and for the present study, we are particularly concerned with race and its associated indicators of social position. These include skin color, hair texture, language and/or accent. García Coll and colleagues argue that aspects of social position alter developmental trajectories for adolescents of color through pervasive social stratification mechanisms such as discrimination and oppression. Further, they note that discrimination experiences may be subtle or overt.

Following this model, we account for the fact that racial discrimination is experienced regularly by Black adolescents in a myriad of forms, like peer harassment and teasing (Keltner, Capps, Kring, Young, & Heerey, 2001). In addition to these more overt forms, there are subtle, nuanced slights and insults based on phenotypic traits and/or racial group identification referred to as daily racial hassles (Pierce, 1970) or everyday racism (Essed, 1991). Evidence indicates these forms of racial discrimination can be experienced by Black adolescents as individual racial microaggressions—automatic, and potentially unintentional, expressions of subtle verbal, behavioral, and environmental exploitations of racial power against Black individuals in the U.S. (Sue et al., 2007; Sue et al., 2008). García Coll et al. (1996) framed these multiple forms of racial discrimination experiences as significant barriers to the healthy development of racial/ethnic minority youth. They suggested that these discrimination experiences can create inhibiting environments that influence child characteristics (e.g., health status, temperament) and ultimately affect cognitive, social, and emotional development for racial/ethnic minority youth.

Along with the García Coll and colleagues model, we draw upon Quintana and McKown's (2008) integrated model of the influences of race and racism on the developing child. This model stresses the importance of vicarious racial discrimination experiences in addition to those experienced individually through teasing, harassment, and other forms of discrimination. Much of the research on racial discrimination has focused on individual experiences, but the researchers note that adolescents do not necessarily need to be personally involved for the discriminatory experience to influence their psychological adjustment (Quintana & McKown, 2008). Although not experienced directly, Quintana and McKown note that vicarious exposure to racial discrimination may be traumatic and equally impactful on developmental outcomes. Additionally, Tynes, Giang, Williams, and Thompson (2008) applied Quintana and McKown's model to online experiences of racial discrimination, identifying that individual and vicarious racial discrimination can occur online in a myriad of expressions such as witnessing the use of racial epithets in social media.

To date, the literature on individual racial discrimination, and the comparatively limited literature on vicarious racial discrimination, have tended to focus on more overt forms of the stressor. Indeed, the literature on racial microaggressions is often published separately or, if included in racial discrimination studies, is measured separately (see Tynes, Markoe & Rose, 2013). The application of the microaggressions framework to online racial discrimination experiences is particularly complex, as early research suggests that once messages are written, voiced or shown graphically in digital formats, experiences may no longer be considered subtle (Tynes, Del Toro, & Lozada, 2013). For this reason, and following the above models, the present study assesses racial microaggessions in traditional or offline settings, but not in online settings.

We believe that examining microaggressions is critical because, despite evidence for key mechanisms, moderators, and outcomes associated with the racial discrimination for Black adolescents (see Benner et al., 2018; Priest et al., 2013), the microaggressions framework has recently come under criticism for lacking empirical support (e.g., Lilienfeld, 2017). In particular, critics have asserted that, contrary to theory, there is little evidence that subtypes of microaggressions actually occur on a regular basis for Black U.S. Americans. The present study aims to address this gap in the literature and examine the daily frequency of underlying subtypes of microaggressions identified in theoretical and qualitative research with Black U.S. Americans (Sue et al., 2008). Taken together, the aforementioned theoretical models frame our focus on vicarious and individual general discrimination offline (including microaggressions), individual and vicarious experiences online, and individual and vicarious teasing.

Developmentally-specific content of racial discrimination experiences

Recent reviews of racial discrimination assessment among adolescents of color have suggested that there is a need for more developmentally-appropriate (e.g., Benner et al., 2018) and contemporaneously-relevant (e.g., Seaton, Gee, Neblett, & Spanierman, 2018) approaches to racial discrimination measurement among Black youth. Indeed, recent research suggests that two types of racial discrimination experiences are particularly

relevant, yet understudied, for Black adolescents: racial teasing and vicarious experiences of racial discrimination.

Research indicates that teasing, or the intentional provocation of a target individual around a topic important to them with some level of playfulness, is particularly relevant during childhood given it encompasses several forms of developmentally-normative social interactions during this period (e.g., play fighting; Keltner et al., 2001). Additionally, developmental theory on ethnic/racial identity indicates that, because adolescence is a key period for the development of ethnic/racial identity and bias perception, racial teasing may be particularly impactful for Black individuals during adolescence (Umaña-Taylor et al., 2014). This is critical as evidence indicates teasing is an exceedingly common way in which adolescents address race/ethnicity with their peers (Douglass, 2013) and that teasing experiences earlier in life predict negative psychosocial outcomes later in life (e.g., Ledley et al., 2006; McCabe, Miller, Laugesen, Antony, & Young, 2010). In fact, although adolescents often characterize racial/ethnic teasing as innocuous, daily teasing experiences are both frequent and lead to short-term increases in anxiety symptoms among adolescents of color (Douglass, Mirpuri, English, & Yip, 2016). This evidence notwithstanding, few studies have specifically focused on teasing as a form of discrimination outside of integrating one or two teasing items (e.g., Harrell, 1997; Tynes et al., 2008). Furthermore, no studies, to our knowledge, have focused on multiple forms of daily teasing experiences that target Black adolescents specifically associated with their race (e.g., targeting skin-tone, hair texture).

Vicarious racial discrimination, or "the secondhand exposure to the racial discrimination and/or prejudice directed at another individual" (p.235; Heard-Garris, Cale, Camaj, Hamati, & Dominguez, 2018) is the least-studied form of racial discrimination among youth (Priest et al., 2013). This is an important consideration because researchers posit that vicarious discrimination directed at peers, family members, and other racial group members may be the most frequent type of discrimination for children and adolescents because, as a function of their social and cognitive development, they have more difficulty recognizing individual discrimination (e.g., Brown & Bigler, 2005; Taylor, Wright, Moghaddam, & Lalonde, 1990). This is relevant to online settings as messages in social media settings are often directed at general groups or other individuals (Tynes et al., 2008). Moreover, a growing body of literature indicates that vicarious racial discrimination contributes to negative psychosocial outcomes among Black adolescents (Heard-Garris et al., 2018; Medina, Lewis, & Pati, 2010). However, there is currently little evidence documenting the daily frequency and impact of several different teasing and vicarious forms of racial discrimination among Black adolescents.

Online forms of racial discrimination

An emerging literature indicates that the Internet is a critical context for racial experiences among Black adolescents (Keum & Miller, 2018; Tynes et al., 2015). Studies have found that the vast majority of Black adolescents use the Internet daily and spend more time online and on social media than their peers from different races/ethnicities (Rideout, Lauricella, & Wartella, 2011). In particular, a Pew Research Center study found that 34% of Black youth report going online "almost constantly," a substantially higher rate than their White peers

(Lenhart & Page, 2015). Critically, evidence indicates that racial discrimination is common in online contexts since they are settings for quasi-anonymous self-expression where discrimination can occur with relative social impunity (Tynes, Reynolds, & Greenfield, 2004). Studies using the Online Victimization Scale (OVS; Tynes, Rose, & Williams, 2010) show associations between online racial discrimination and negative psychosocial outcomes for Black adolescents (e.g., Tynes et al., 2008; Tynes et al., 2010). However, to our understanding, no studies have examined the frequency and impact of *daily* online racial discrimination using intensive daily longitudinal survey methods. Given the amount of time Black adolescents spend online daily, quotidian measurement of online racial discrimination is necessary to accurately assess its frequency and impact for these youth.

Addressing retrospective and acquiescence biases

Two primary sources of bias potentially affect the validity of current racial discrimination self-report measurement with Black adolescents: retrospective bias and acquiescence bias. Regarding retrospective bias, although the majority of racial discrimination studies have focused on long-term (e.g., one year) and non-specific (e.g., how often in 'daily life') timeframes of racial discrimination experiences, more recent evidence suggests that daily racial discrimination assessment may provide more valid frequency estimates (Seaton & Iida, 2019). Indeed, studies that utilize large timeframes for measurement (e.g., one year and a lifetime; e.g., English et al., 2014; Seaton, Caldwell, Sellers, & Jackson, 2008) reduce the chance of accurate and representative recall, which causes retrospective bias (Stone & Shiffman, 2002), especially when assessing highly nuanced stressors like microaggressions (Sue et al., 2008; Wong, Eccles, & Sameroff, 2003). This is particularly relevant given adolescents, as a function of pubertal onset, are in the process of major cognitive developments such as memory refinement, an essential mechanism for measurement through self-report (Bradburn, Rips, & Shevell, 1987).

Studies that use ecological momentary assessment (EMA), the repeated sampling of participants' experiences over short time periods, help to eliminate many of the retrospective biases inherent in self-report questionnaires, yielding data that are more reliable and accurate (Ong & Burrow, 2017; Stone & Shiffman, 2002). EMA racial discrimination research may, therefore, provide a clearer picture of the frequency of racial discrimination. For example, a study using daily measurement found that Black adolescents experienced racial discrimination an average of 2.44 days over a two-week period (Seaton & Iida, 2019)—a substantially higher estimate than past studies with larger measurement frames (e.g., English et al., 2014). Additionally, a recent meta-analysis found that measures with shorter time frames showed larger effects across psychosocial outcomes, suggesting that EMA studies could be essential to assessing short-term changes in psychosocial outcomes (Benner et al., 2018). In addition to the timeframe, survey methodologists find that multiple specific questions about several social settings within an EMA paradigm aids in participant recall, comprehension, and classification (Schaeffer & Presser, 2003; Tourangeau, 2000). As such, utilizing EMA to assess the impact of a comprehensive set of discrimination experiences (i.e., online, offline, vicarious, and teasing experiences) may be beneficial to examining both frequency and impact of racial discrimination experiences. Moreover, since EMA surveys are administered every day, and the theoretical literature indicates that racial discrimination

occurs daily (e.g., Sue et al., 2008), EMA provides a strong opportunity to test the assumptions of those models (Lilienfeld, 2017; Ong & Burrow, 2017).

In addition to retrospective bias, current self-report measures of racial discrimination risk acquiescence bias, or the tendency for respondents to consistently endorse in a single direction on survey scales (Schaeffer & Presser, 2003). Because, to our knowledge, all items in the extant measures of racial discrimination for Black adolescents ask only about negative experiences without counterbalancing with items that vary in their wording, they may encourage automatic and consistent response patterns across items. As a result, these instruments may lead to either the over- or under-estimation of racial discrimination frequency.

Racial discrimination and depressive symptoms

Over 25 years of racial discrimination research with Black adolescents provides robust evidence for a strong link between racial discrimination experiences and depressive symptoms among these youth (see Benner et al., 2018). However, relatively few of these studies have assessed this link longitudinally (see for exceptions: Brody et al., 2006; English et al., 2014) and even fewer have examined associations between racial discrimination and short-term changes in depressive symptoms (Lilienfeld, 2017). This is critical given that understanding the immediate impact of racial discrimination among Black adolescents provides guidance for clinicians, school staff, policy makers, and researchers on how to intervene in the most effective and time-sensitive way (Ong & Burrow, 2017). Thus, it is important to know the types of discrimination that are both the most frequent and most impactful for short-term psychological symptoms among Black adolescents.

The present research

With the present study we sought to examine racial discrimination in multiple forms and contexts to gain an understanding of the multidimensional presentation and impact of daily racial discrimination among Black adolescents in the U.S. In particular, we focused on assessing racial teasing and more general racial discrimination messages (i.e., with a serious tone), racial discrimination in online and offline settings, and through individual and vicarious experiences. Thus, we specified subscales that included individual general experiences, vicarious general experiences, individual teasing, vicarious teasing, individual online experiences, and vicarious online experiences. We then examined their frequencies and tested their associations with changes in depressive symptoms across a two-week period. Additionally, specifically with individual general experiences, we tested tenets of microaggressions theory by examining whether groups of items were interrelated around types of racial microaggressions among Black U.S. Americans highlighted in past studies (Sue et al., 2007; Sue et al., 2008).

In light of past research that suggests the internet is a common social context in which overt racial discrimination is frequently expressed (Keum & Miller, 2018; Tynes et al., 2015), we expected online racial discrimination to be more common among participants than offline discrimination. In addition, given research suggests that young people are more likely to

perceive vicarious than individual discrimination because of developmental considerations (e.g., Brown & Bigler, 2005; Taylor et al., 1990), we expected vicarious forms of racial discrimination would be the most frequent. Additionally, we anticipated that all forms of racial discrimination would be positively associated with short-term increases in depressive symptoms. Finally, we engaged in exploratory analyses to examine associations between subscales and key demographic variables (e.g., age) and tested whether racial discrimination subscales were differentially associated with changes in depressive symptoms by comparing the magnitudes of their effect sizes.

Method

Procedure

Participants were 101 students between the ages of 13 and 17 years old. Eighty-eight percent of participants identified as African American or Black, 1% identified as African, 1% identified as Afro-Latino, 2% identified as biracial/multiracial, and 8% identified as "other" and reported or wrote in an answer (e.g., "mixed with black, white, and indian"). To incorporate the diversity of ways in which participants identified, we use the term 'Black' to refer to their race throughout the manuscript. Table 1 presents additional demographic information on the sample.

We collaborated with three different educational programs located in predominantly Black U.S. American neighborhoods in southeast and northeast Washington D.C. to recruit a non-random sample of participants. The racial composition of these schools and neighborhoods reflect those of the majority of Black adolescents in the U.S. who attend predominantly Black schools and live in predominantly Black neighborhoods as a function of high and growing racial segregation in the U.S. (Reardon & Owens, 2014). In total, we had four cohorts of participants from these three educational programs. The first cohort was from a middle school during December 2014 ($n = 20$); two cohorts came from the same high school: one in May 2015 ($n = 54$) and another in July 2015 ($n = 17$); and the final cohort consisted of high school students from a variety of Washington D.C. public schools enrolled in a pre-college academic enrichment summer program during July 2015 ($n = 10$). Across the four cohorts, we invited six classrooms of students to participate in the study. Of the approximately 120–140 students in these classrooms, 101 students assented and their legal guardians consented for them to be in the study. Summer participants indicated their grade based on the previous school year. For the high school with two cohorts, we cross-checked names and consent forms to ensure that there were no duplicate participants.

The primary purpose of the overall study was to examine a wide array of racial discrimination items for Black youth to establish the most frequent and salient experiences of racial discrimination to inform measure development for EMA studies. As such, our priorities were to collect data on as many racial discrimination items as possible within the restrictions of a daily administration paradigm. This informed our decisions described below to use a random administration design and to measure racial discrimination daily, while measuring depressive symptoms at baseline and follow-up. In particular, given the restrictions of an EMA design, including limits on the number of daily items that can be administered, we decided to utilize the EMA just for the racial discrimination items,

administering a random sample of these items to each participant for each administration (Silvia, Kwapil, Walsh, & Myin-Germeys, 2014).

We administered the quantitative research protocols on an Internet-based Qualtrics platform across 15 days for each cohort. The baseline questionnaire occurred on the first day of the study period and included self-report measures of psychosocial outcomes including depressive symptoms. The EMA assessment portion started the day after and occurred for 14 days. Across days, participants received email and text-message reminders to log on to the study server and complete the daily survey. Each day, for each study participant, Qualtrics randomly administered 15 items. We decided on 15 daily items since past EMA research showed that a comparable number of items lead to an acceptable amount of daily participant burden (Douglass et al., 2016). Of these 15 items, 12 were discrimination items and 3 were positively-valenced items meant to counterbalance the item phrasing and protect against acquiescence bias. We designed the positively-valenced items using a comprehensive mixed-methods item development process described in English (2017) to be the opposite of racial discrimination. Thus, we asked about experiencing, witnessing, and interpreting interracial interactions in which racial power was neither exerted nor exploited. In line with a simple matrix design within an EMA framework (Silvia et al., 2014), we used simple randomization for a block of 88 discrimination items and a block of 13 positive items, separately. Thus, on a given day for a given participant, each discrimination item had a 3/22 (12 daily items/88 total items) chance of being administered.

The research team provided a cash incentive for participation based on the number of surveys completed: $30 for 16 surveys (1 baseline, 14 daily surveys, 1 follow-up), $25 for 10–15 surveys, and $15 for less than 10 surveys. Every participant had the opportunity to engage in a debriefing discussion with one of the research team members, each of whom is trained in clinical assessment, racial stress, and treatment of emotional distress. The George Washington University Institutional Review Board (*protocol number*: 051445, *title*: Youth Development Study) approved this study protocol.

Measures

Racial discrimination—To assess across individual general, vicarious general, individual online, vicarious online, individual teasing, and vicarious teasing experiences we utilized items from extant measures and also developed original items. We drew the online items from the individual and vicarious subscales of the Online Victimization Scale (Tynes et al., 2010). We drew items for the other subscales from the Perceptions of Racism in Children and Youth (Pachter et al., 2010), Adolescent Discrimination Index (Fisher, Wallace, & Fenton, 2000), Racism and Life Experiences Scale (Harrell, 1997), Schedule of Racist Events (Landrine & Klonoff, 1996), Everyday Discrimination Scale (Clark, Coleman, & Novak, 2004), and Perceived Racism Scale-Child Version (Nyborg & Curry, 2003). The supplemental appendix specifies the items we used from each subscale. These scales predominantly provided items that fit with subtypes of individual general microaggressions. Since teasing and vicarious racial discrimination experiences were the least commonly assessed experiences in the aforementioned measures, we engaged in a comprehensive mixed-methods item development process described in (English, 2017). We also developed

positively-valenced items during the mixed-methods item development process that described experiencing or witnessing positive racial encounters between two people of different races/ethnicities in which racial power was not exerted (e.g., "…did you have a positive discussion about race/ethnicity with a peer of a different racial/ethnic background?"; "…did you see a positive discussion about race/ethnicity on social media [e.g., *Facebook, Twitter, Instagram, comments section*]?"). The response scale for all items ranged from 0 (*Did not happen*) to 1 (*Happened Once*) up to 4 (*Happened Four or More Times*). We conducted confirmatory factor analysis and alpha statistics to examine reliability among the subscales. This process is described in the Data Analysis section. Although researchers have called into question whether racial discrimination experiences should be tested as effect-indicator models (i.e., with latent variables within CFAs; Lilienfeld, 2017), we deem it appropriate since we expect that each item is an indicator of a broader set of discrimination experiences that are driven by factors such as the social environment, which are acknowledged, but unmeasured here. Items for each subscale, factor loadings, and alphas for scales are presented in Tables 2–4.

Depressive symptoms—The Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) consists of 20 items measuring four factors of depressive symptomatology: depressive affect, interpersonal problems, somatic complaints, and positive affect. Items include: "I was bothered by things that usually don't bother me;" "I had trouble keeping my mind on what I was doing;" and "My sleep was restless." Participants indicated the degree to which they have experienced a given symptom during the previous week on a 4-point Likert-type scale ranging from 0 (*Rarely*) to 3 (*Most or all of the time*). We reverse coded scores in the positive affect section. The CES-D has shown good psychometrics with samples of Black U.S. American youth ($\alpha = 0.80$ in Pittman & Chase-Lansdale, 2001; $\alpha = 0.89$ in Sellers, Copeland-Linder, Martin, & Lewis, 2006). The alpha statistic on standardized items in the present sample was 0.83 at baseline and 0.79 at follow-up.

Demographic variables—Participants provided demographic information including their race/ethnicity, age, gender, grade, and perceived neighborhood racial composition.

Data analysis

Prior to conducting the core analyses for this project we reviewed two forms of validity checks for the racial discrimination random item administration method. We first examined the item administration frequencies to ensure an acceptable level of random missingness and general parity in the number of times participants saw each item. We also examined the mean difference in responses to two virtually equivalent items using a *t*-test to assess if ratings were similar in frequency even though different participants received them on different days.

Once we ensured the validity of the random itemization method, we conducted between-participant confirmatory factor analyses (CFA) within M*plus* 8.2 (Muthén & Muthén, 1998–2017) using within-participant, per-day means across the 14-day EMA period. We calculated these means for each participant by using their observed data for each item across the 14-day period, and dividing the sum of their discrimination reports by the number of times each

item was administered. For example, if a participant received a given item on four different days, and they experienced that item on one occasion, their mean score for the item would be 0.25 (1 experience / 4 administrations). We aggregated means to this level to avoid imputing a large amount of data since each item had a 86.4% chance of being missing (12 items per administration / 88 total items) and this level of missingness has been understudied in best-practice examinations of missing data analysis (e.g., Schlomer, Bauman, & Card, 2010).

We conducted CFAs based on items that conceptually fit into the hypothesized subscales: individual general, vicarious general, individual online, vicarious online, individual teasing, and vicarious teasing. In addition, given the majority of items drawn from past measures were individual general experiences, we had the opportunity to group these into subscales based on the types of microaggressions identified in past research among Black U.S. Americans (Sue et al., 2007; Sue et al., 2008). The subscales within the individual general scale included assumptions of criminality (i.e., a participant being judged as dangerous, criminal, or deviant based on their race/ethnicity), assumptions of intellectual inferiority (i.e., presumption of unintelligence), assumed universality of the Black American experience (i.e., being stereotyped or expected to understand and/or communicate for all Black people), second-class citizenship (i.e., receiving poor treatment, especially in public accommodations, while others of different races/ethnicities receive preferential treatment), assumption of inferior status (i.e., a participant being treated as inferior in terms of their abilities, status, etc.), micro-assaults (i.e., explicit and racially motivated attacks that include verbal [e.g., name-calling] and nonverbal [e.g., physical violence] actions aimed at denigrating or excluding someone), and environmental microaggressions (e.g., macro-level microaggressions that are evinced in an individual's social and structural environments; see Sue et al., 2007; Sue et al., 2008). Thus, for the individual general experiences subscale we estimated seven separate CFAs to ensure a good fit for each subscale and then used the mean scores for each subscale as indicators of an individual general discrimination latent variable in a separate CFA. In the specification of each CFA, if needed, we eliminated items from measures that had factor loadings below 0.50 and/or did not fit the conceptualization of the subscale, which is the best practice in identifying indicators for latent variables (Schmitt, 2011). As a result, for some subscales, we ran several CFA models to ensure high factor loadings and acceptable model fit based on accepted indices (Hu & Bentler, 1999).

Once we established the items in each scale, we examined correlations between subscales and covariates, including age, grade, and gender identity. In addition, we tested cohort differences using a Kruskal-Wallis test and examined whether racial discrimination reports changed across the study period using a one-way ANOVA. The latter provided a test of potential administration effects on racial discrimination frequency. We then used paired *t*-test analyses to examine scale differences between the means for each subscale. We aggregated the subscales for the individual general subscale into one mean for that analysis.

We then ran six individual hierarchical linear models in which separate racial discrimination subscales predicted within-person slopes in depressive symptoms from baseline (Day 1) to follow-up (Day 15). We ran the models in M*plus* 8.2 using two-level random effects models (i.e., TYPE = TWOLEVEL) with Bayesian estimation (i.e., ESTIMATOR = BAYES) in

which observations were clustered by participant ID (CLUSTER = ID). We estimated a random slope with the depressive symptoms regressed on administration day (centered at the middle day) in the within-subjects level of the model. In the between-subjects level of the model, we regressed this slope on the latent discrimination variables established in the CFAs for each racial discrimination subscale. The use of Bayesian estimation allowed for the inclusion of all participants' item means, even if one of their subscales had missing data for one or more items (i.e., because they were not administered a given item in a scale due to the random administration design). We adjusted for the effects of age, educational program, gender, and grade on the between-subjects level.

To compare effect sizes across the discrimination scales, we ran a series of random effects models with different pairs of scales that significantly predicted changes in depressive symptoms during the prior round of analyses. In these models, if one scale remained significant and one did not, we concluded that the scale with a significant association accounted for additional unique variance in the depressive symptoms slope that the other did not and, as such, had a stronger association with the outcome (Clogg, Petkova, & Haritou, 1995). For the models in which both scales significantly predicted changes in depressive symptoms, we planned to run a second model in which both pathways from the discrimination subscales to the slope in depressive symptoms were constrained to be equal. We then planned to compare the models with and without the constrained pathways using a robust log-likelihood ratio test (Satorra, 2001). However, as described below, we did not have any need to use this approach.

Missing data represents a concern across all longitudinal studies and was particularly relevant for this study in which we planned missingness for each daily discrimination item administration. For each of the variables, the following were the rates of complete data: Baseline depressive symptoms (98%), follow-up depressive symptoms (71%), and racial discrimination items (ranged from 66 to 83% across items). In addition to the planned missingness for the discrimination items, participants missed 19% of their daily surveys. Based on Pearson correlation analyses between non-missing data and study variables, there was no evidence that the number of surveys completed was related to gender, cohort, age, grade, baseline depressive symptoms, baseline racial discrimination, or any other study measures in this study. As such, we decided to use the Bayesian approach to missing data within M*plus* 8.2 software which uses Markov Chain Monte Carlo (MCMC) estimation based on the Gibbs sampler (Asparouhov & Muthén, 2010) under the assumption that the data are missing at random (MAR). This is a widely accepted way of handling missing data, and an appropriate method for studies with planned missingness and with otherwise random missingness (Schafer & Graham, 2002).

Results

Out of a possible 1414 daily surveys (101 participants × 14 days), participants completed 1139 daily surveys (81% response rate), a per-participant average of 11.28 of 14 daily surveys ($SD = 4.16$, range = 0 to 14). At the item level, of a total of 13,668 administered discrimination items (12 daily discrimination items x 1139 surveys) participants completed 13,463 items (99% completion rate). Per day, response rates ranged from 45% to 100% over

the course of the study. Of the 101 participants, 71 completed the follow-up measure of depressive symptoms. This rate of participant drop-out likely occurred because two cohorts (high school cohorts during May–July 2015) participated during the final weeks of the school term which, according to school officials, is the lowest-attended period of the school year. Even with this participant dropout, the frequency of survey completion was comparable to other EMA studies including a study of racial discrimination with Black adolescents in which participants completed an average of 8.22 out of 14 daily surveys (59% response rate; Seaton & Iida, 2019).

To check that our randomized administration method was effective, we investigated the range in administration frequencies and assessed the grand means for two virtually equivalent items. The item administration frequencies ranged from 125 to 176 administrations across the study with a mean of 153.00 ($SD = 11.00$). When aggregated to the participant-level, participant n's ranged from 66 to 83 (out of a possible 101) per item with a mean of 74.39 ($SD = 3.57$) meaning that rates of missingness ranged from 18% to 35%. Past research indicates that this level of planned missingness in a sample of 60 participants provides sufficient power for multilevel models that are comparable to those in the present study (Wood, Matthews, Pellowski, & Harel, 2018). As such, we determined all items were administered with sufficient frequency to examine descriptives and associations with within-participant slopes of depressive symptoms. Additionally, the means for two virtually equivalent items (Questions 15 and 20 in the supplemental appendix) suggested that the randomization method was valid given that the grand means were not significantly different: 0.41 (question 15) versus 0.47 (question 20), $t(60) = 0.49$, $p = .63$.

Overall, participants reported 5606 experiences of racial discrimination across 88 items during the 14-day EMA period. These 5606 experiences on a total of 13,463 completed items translates to 0.4164 experiences per item administration (5606 experiences / 13,463 item administrations). Since participants received 12 items per day, this translates to an average of 5.00 experiences per day (0.4164 experiences per item administration x 12 daily administrations) and 70 bi-weekly experiences (5 daily experiences x 14 days) across all 88 items. Of the 58 items included in the final scales identified below, participants reported an average of 5.21 experiences per day across 12 daily items.

CFA results indicated that six scales using 58 of the 88 items fit the data well. Means standard deviations and factor loadings for each scale are included in Tables 2 and 3.

Table 4 displays correlations between the subscales and covariates. All correlations between racial discrimination subscales were significant and positive and ranged from moderate ($r = 0.50$; individual general and vicarious online) to high ($r = 0.80$; individual general with vicarious general and individual teasing; vicarious general with individual teasing). Regarding covariates, age was negatively associated with vicarious teasing, such that younger participants reported more vicarious teasing experiences. Grade and gender identity were not significantly associated with any subscales.

Independent samples Kruskal-Wallis analyses did not show any significant differences across cohort in the means of any of the six subscales, including individual general

experiences, $H(3) = 1.86$, $p = .60$, vicarious general experiences, $H(3) = 0.17$, $p = .98$, individual online experiences, $H(3) = 0.18$, $p = .98$, vicarious online experiences, $H(3) = 2.82$, $p = .42$, individual teasing experiences, $H(3) = 5.06$, $p = .17$, and vicarious teasing experiences, $H(3) = 3.29$, $p = .35$. An ANOVA did not show any significant differences in racial discrimination by day across the study period $F(1, 94) = 0.25$, $p = .62$, suggesting the study protocol did not influence the frequency of racial discrimination reports.

Regarding differences in frequency, individual online experiences were significantly more frequent than vicarious teasing experiences, $t(89) = 1.92$, p .05, vicarious general experiences, $t(89) = 2.34$, p .05, and individual general experiences, $t(90) = 2.70$, p .01, but did not significantly differ from individual teasing experiences, $t(90) = 1.51$, $p = .14$. Vicarious online experiences were significantly more frequent than individual teasing experiences, $t(90) = 2.23$, p .05, vicarious teasing experiences, $t(90) = 2.70$, p .01, vicarious general experiences, $t(90) = 2.71$, p .05, and individual general experiences, $t(92) = 2.62$, p .01. There was no evidence for a significant difference between vicarious online and individual online experiences, $t(88) = 1.35$, $p = .18$. There was no evidence for a significant difference between any of the other discrimination scales.

The results of two-level random effects models predicting the within-person slope in depressive symptoms from baseline to follow-up showed that the majority of discrimination subscales predicted change in depressive symptoms (Table 5). The individual general ($\beta = 0.30$, 95% CI [0.06, 0.50], $p < .05$), vicarious general ($\beta = 0.29$, 95% CI [0.04, 0.51], $p < .05$), individual online ($\beta = 0.29$, 95% CI [0.01, 0.54], $p < .05$), individual teasing ($\beta = 0.30$, 95% CI [0.04, 0.54], $p < .05$), and vicarious teasing ($\beta = 0.27$, 95% CI [0.04, 0.47], $p < .05$) latent variables were positively associated with slopes in depressive symptoms from baseline to follow-up such that, as experiences of discrimination increased, so did positive change in depressive symptoms. The vicarious online scale was not significantly associated with the depressive symptoms slope ($\beta = -0.05$, 95% CI [-0.34, 0.25], $p = .74$).

Exploratory analyses suggested that vicarious general experiences ($\beta = 0.19$, 95% CI [0.01, 0.37], $p < .05$) were more impactful than vicarious teasing experiences ($\beta = 0.05$, 95% CI [-0.14, 0.27], $p = .62$); individual general experiences ($\beta = 0.31$, 95% CI [0.00, 0.53], $p = .05$) were more impactful than individual online experiences ($\beta = -0.09$, 95% CI [-0.31, 0.22], $p = .52$); and individual general experiences ($\beta = 0.24$, 95% CI [-0.02, 0.48], $p = .055$) were more impactful than vicarious teasing experiences ($\beta = 0.001$, 95% CI [-0.24, 0.22], $p = .98$). There were no other significant differences between subscales.

Discussion

Expressions of racial hate are ubiquitous in the lives of contemporary Black U.S. American youth for whom the Internet, schools, and neighborhoods serve as contexts in which they are exposed to daily subtle and overt anti-Blackness. The present study assessed a broad array of contexts and expressions of racial discrimination including individual and vicarious, online and offline, and teasing and general discrimination experiences. Results showed that, on average, participants reported over five experiences of racial discrimination per day, that the Internet was the most frequent context for racial discrimination experiences, and that these

quotidian experiences led to short-term increases in depressive symptoms. These results provide empirical support for the frequency of daily microaggressions and underscore the importance of assessing online, vicarious, and teasing experiences along with the more commonly measured individual and general forms of racial discrimination.

Our finding that Black adolescents reported over 5600 racial discrimination experiences across two weeks, and an average of over five racial discrimination experiences per day, is substantially higher than past long-term studies that have estimated that racial discrimination occurs less than once a year (e.g., English et al., 2014). The per-participant average of 70 experiences across 14 days, is also more frequent than past EMA studies with Black adolescents that have found that racial discrimination occurs, on average, 2.44 out of 14 days (Seaton & Iida, 2019). Our frequencies may be higher than past studies because we administered items that assessed daily online discrimination, which we found to be the most frequent type of discrimination experience. In addition, in line with best-practices recommendations, we used intensive daily measurement to assess over 60 different experiences of racial discrimination across a diverse set of contexts and expressions that included vicarious and teasing experiences (Benner et al., 2018; Ong & Burrow, 2017). Finally, our frequencies also may have been higher because our daily racial discrimination scale allowed participants to report up to four or more experiences per day, in comparison to two or more (e.g., Seaton & Iida, 2019) or one (e.g., Yip et al., 2019) in past EMA studies.

These results provides support for qualitative research that suggests racial discrimination happens many times per day for Black adolescents (e.g., Berkel et al., 2009), and validates the daily hassles (e.g., Pierce, 1970) and aversive racism (Dovidio & Gaertner, 1998) theoretical literatures that assert racial discrimination occurs frequently through a myriad of expressions for Black U.S. Americans. Additionally, although the scientific microaggressions literature has received recent criticism regarding a lack of empirical support for its hypothesized event base rates (Lilienfeld, 2017), our findings suggest that individual general experiences of different types of microaggressions occur an average of several times per week for Black adolescents. Specifically, our findings support that more serious microassaults as well as assumptions of criminality, intellectual inferiority, the universality of the Black experience, inferior status, and second-class citizenship occur on a daily basis. That these microaggressions lead to short term changes in depressive symptoms among participants provides evidence that microaggressions are, in fact, associated with changes in affective states across time. As such, the present study supports an empirical impetus for institutions such as schools to develop programs to prevent microaggressions and their negative effects.

Our results are consistent with past research showing that individual and offline interpersonal experiences of discrimination based on historically-entrenched negative stereotypes are both frequent and impactful for Black adolescents (e.g., Brody et al., 2006; Clark et al., 2004; Fisher et al., 2000). In addition to this established finding, the present study highlights the relative frequency of online, teasing, and vicarious racial discrimination experiences. For instance, our results showed that online racial discrimination experiences, and particularly vicarious online experiences, occur more frequently than offline experiences. This result is consistent with research that suggests a substantial portion of

adolescent socialization, including experiences with race and racial discrimination, occur in Internet-based contexts (Bolton et al., 2013; Tynes et al., 2008). As such, our findings indicate that it is essential for researchers, administrators and policy makers interested in preventing and intervening upon common experiences of racial discrimination to account for those in online settings.

The present results also underscore the importance of assessing racial teasing, such as jokes about skin tone, hair texture, and U.S. societal abuses of Black people (e.g., police brutality), since these expressions appear to be occurring at a similar frequency and with similar effects as other more general forms of racial discrimination. This is consistent with past theoretical and empirical work that suggests that adolescents are likely to report and be affected by teasing, whether it is occurring individually or vicariously (e.g., Brown & Bigler, 2005; Douglass et al., 2016). These results are particularly meaningful since, although youth and adults (e.g., teachers) often identify teasing as harmless (Douglass et al., 2016), these experiences may have insidious psychological effects for Black adolescents.

In addition to teasing, although vicarious racial discrimination has been the least-studied form of racial discrimination among adolescents (Heard-Garris et al., 2018; Priest et al., 2013), our results suggest that it is a primary way in which Black adolescents face racial discrimination, particularly in online settings. Importantly, we also found that age was significantly negatively correlated with vicarious teasing. Although past studies suggest that racial discrimination atypically decreases across development for Black adolescents (e.g.,Smith-Bynum, Lambert, English, & Ialongo, 2014), it may be that some types of discrimination, such as vicarious experiences, become less salient over time while direct individual forms of racial discrimination become more salient. This interpretation is consistent with a developmental perspective on the person/group discrimination discrepancy (Brown & Bigler, 2005; Taylor et al., 1990), which suggests that individuals, and particularly young people, are more prone to perceive group-based discrimination rather than individual discrimination as a result of social processing development and the psychological protectiveness of labeling group-based, rather than individual, discrimination.

Contrary to past studies that have found that racial discrimination is more common among boys than girls (e.g., Smith-Bynum et al., 2014; Matthews, Salomon, Kenyon, & Zhou, 2005; Seaton et al., 2008), the present study did not show any significant differences in overall frequency between boys and girls (see Cooper, Brown, Metzger, Clinton, & Guthrie, 2013 for another exception). These results likely differed from past research because we assessed experiences that are often considered gendered and expected to be more common among youth perceived as girls (e.g., experiences with their hair) and boys (e.g., experiences with police harassment). As such, rather than comparing the frequency or impact of discrimination across gender identities, future research could strive to examine unique forms of discrimination targeting the intersection of racial and gender identities among Black adolescents, including transgender and gender non-conforming identities.

It is important to note that, while five of the subscales of racial discrimination measured in this study had effects on short-term changes in depressive symptoms, vicarious online discrimination experiences did not. It is possible that because these experiences are

happening so frequently that changes in psychological and physiological symptoms occur over a period of several hours, but do not persist beyond several days. This would be relevant for the present study since we examined changes in depressive symptoms across a two-week period. Thus, participants' short-term stress reactions to racial discrimination might show initial spikes and then decreases (Laurent, Gilliam, Wright, & Fisher, 2015) that did not register across the present two-week measurement period. In that instance, the effects of these experiences would be most effectively measured on a daily and/or hourly basis, as assessed by Seaton and Iida (2019), among others. Such research may be particularly impactful since stress reactions from repeated experiences of discrimination have been shown to contribute to long-term allostatic load and negative health outcomes across the lifespan (Brody et al., 2014).

Although the majority of our models comparing the strength of the association between types of discrimination and the change in depressive symptoms did not reach significance, the significant associations suggested that offline, general, and individual experiences may have a greater effect on bi-weekly changes in depressive symptoms. As such, our results appear to suggest that more personalized forms of racial discrimination may be more impactful than vicarious forms even if they are not more frequent. That noted, these findings should not be considered definitive given several null results between comparable experiences (e.g., vicarious general vs. individual general experiences). As such, our results would be best used to guide hypotheses in future research examining the differential impact of varying forms and contexts of racial discrimination. Thus, future larger-scale EMA research with additional participants and daily outcomes assessments could examine whether the different types of discrimination assessed in the present manuscript are differently contributing to both short-term and long-term changes in psychosocial outcomes. Such research may be critical to tailoring and optimizing individual and structural racial discrimination interventions aimed at preventing the stressor and its negative effects.

Regarding implications for policy and intervention, it is first essential to identify that an unmeasured socio-structural causal force that drives the discrimination we measured in this study is historically rooted and contemporaneously perpetuated structural racism that targets Black U.S. Americans and systematically privileges White U.S. Americans (Kimmel & Ferber, 2016). Thus, interventions that seek to take a critical equity stance and address structural racial discrimination linked to inequities in economic opportunity, housing, incarceration, etc., will be some of the most important approaches to addressing the racial discrimination we assessed here. Examples may include the alteration, elimination, or differential application of laws and policies that discriminately target Black communities and drive racial inequities in police discriminaton and incarceration (National Urban League, 2018). Similarly, from a research funding standpoint, those entities tasked with investigating and addressing racial inequities in health, such as the National Institutes of Health and National Science Foundation, can fund implementation projects that seek to intervene upon and/or prevent the ongoing contribution of racial discrimination to the scaffolding that supports persistent racial health inequities.

In addition to these macro-level interventions, the present results suggest that clinicians and administrators interested in improving the lives of Black adolescents must consider racial

discrimination a critical aspect of their constellation of daily life stress. To do so, mental health professionals can screen for their clients' experiences with individual and vicarious, online and offline, and teasing and general racial discrimination to identify whether these stressors are substantially contributing to their expression of psychological symptoms. In addition, school-based anti-racial discrimination intervention may be important since we measured common experiences of racial discrimination in schools as well as in online platforms before, during, and after school hours. Critically, evidence indicates that public school counselors and teachers in the U.S., the majority of whom are White (e.g., Snyder & Dillow, 2015) and have not experienced racial discrimination themselves (see Rothenberg, 2004), often take a colorblind approach to issues of race and, as such, may fail to validate the racial experiences of Black students and cause discrimination to be more harmful (e.g., Emdin, 2016). Thus, education research and policy that examines current practices among teachers and tests the efficacy of mandatory training in culturally-empathic approaches to racial discrimination (see Sue, Sue, Neville, & Smith, 2019) may be helpful in preventing and addressing the negative effects of racial discrimination in schools.

Strengths and limitations

The strengths of the present study include that we utilized intensive daily measurement of a broad set of racial discrimination experiences and pursued an empirical test of microagressions theory, among other theories. Also, to our knowledge, this is the first study to include positive racial experiences alongside racial discrimination experiences as a way of counterbalancing the valence of racial discrimination items and protecting against acquiescence bias.

These strengths, however, must be considered in light of the study limitations. First, the sample for this research was geographically-bound to predominantly Black and lower-resourced neighborhoods in Washington D.C. and, thus, may reflect geographically-specific racial discrimination experiences. For example, our results likely reflect the types of racial discrimination that are most frequent in these contexts, like discrimination from adults like police officers and teachers (e.g., Rosenbloom & Way, 2004). Indeed, the present results showed that these types of discrimination were relatively frequent within our racial discrimination subscales. In addition, although we used a valid randomization administration method in the present study, the estimated daily frequency of racial discrimination may not be representative of daily experiences since we administered only 12 of 88 total racial discrimination items on any given day. Future research should look to replicate our findings on a larger sample and with repeated measurements of the individual subscales identified in this study. In addition, the participant sample decreased 30% from the beginning of the study to the end of the study largely due to participant drop-out associated with participants not attending the final week of school. Although our analyses showed no differences between the adolescents retained in the sample and those who stopped participating, there may have been other unmeasured factors affecting this trend. Also, we only measured depressive symptoms at two time points over a period of two weeks, which may have masked short-term variations in affective outcomes associated with racial discrimination. Future research will benefit from including daily affective outcome measurement along with daily racial

discrimination measurement to assess short-term variations in these constructs (see Seaton & Iida, 2019).

Although the frequencies in this study were high relative to other racial discrimination studies with Black adolescents, it is possible that our scale showed a ceiling effect given 8% of responses indicated "four or more" experiences. Therefore, we are unable to know how many more experiences participants had than four for that item that day. Regarding the scale content, given the length limitations within the planned missingness EMA design, and our focus on assessing daily individual microaggressions, many of the discrimination items focused on individual general microaggressions, while comparatively less assessed vicarious, teasing, and online experiences. As a result, the scales were not parallel and are difficult to compare. It is possible, for instance, that if we had more vicarious items that paralleled the individual items, that the results might have shown that the former are actually more impactful. This limitation notwithstanding, the present study represents, to our knowledge, the most extensive EMA assessment of vicarious, teasing, and online racial discrimination experiences among Black youth to date (Benner et al., 2018). Future research could consider expanding the content of our subscales and applying the microaggressions framework to online, vicarious, and teasing subscales as we did with individual general discrimination in this study.

Considering reflexivity and researcher effects, one important consideration in the present study was that the first author, as a White man and one of the two primary administrators of the study, spent time with student participants before and during data collection which may have influenced participant responses to racial discrimination items. The interactions between participants and him were varied, with some students appearing to have positive interactions (e.g., students asking him for advice about their career or social life) and others appearing to have negative interactions (e.g., students asking him why he was gentrifying their neighborhood). For those participants who had positive interactions with the author, it is possible that reports of racial discrimination items may show social desirability bias (i.e., downplaying discriminatory experiences), as found in past studies with White researchers (Krysan & Couper, 2003). Alternatively, it is possible that the students who had negative interactions may have experienced more racial discrimination. Future studies should assess researcher effects such as how White researchers who do not experience racial discrimination in the U.S. (Rothenberg, 2004) affect the racial discrimination research process (e.g., research questions, effects on participants).

Future directions

In addition to those future directions already noted, the present study must be administered to and validated with a larger, diverse, and geographically representative sample of Black adolescents. This area of research may also benefit from additional examination of racial teasing since, although it is largely conceptualized as a negative experience in this study, it likely has both positive and negative manifestations and effects (Kuiper & McHale, 2009). Additionally, although we did not find many associations between racial discrimination and age, additional participants in future studies will allow for more nuanced multi-group analyses to examine how developmental processes may affect racial discrimination

exposure. Moreover, although we used the Online Victimization Scale (OVS; Tynes et al., 2010) to measure individual and vicarious online racial discrimination, future research could expand the content of online measures to assess across teasing and general experiences as we did with the offline scales in the present study. Future studies assessing vicarious online racial discrimination must also incorporate items assessing the effects of viewing videos and/or reading about Black individuals being harmed and/or killed by police officers given the high frequency with which these videos are now posted online (Heard-Garris et al., 2018; McLaughlin, 2015). Finally, future research can also expand upon the subscales in the present study to incorporate intersectional forms of discrimination that target and affect adolescents differently across gender and sexual identities, socioeconomic status, language, and immigration, among other social positionalities (e.g., Bowleg et al., 2016; Bradford, Reisner, Honnold, & Xavier, 2013).

Conclusion

Contemporary Black adolescents live in an unequivocally racialized world characterized by racial inequities in income (Chetty, Hendren, Jones, & Porter, 2018), videos depicting police-perpetrated racial abuse toward Black people (e.g., McLaughlin, 2015), and treatment based on generationally-intractable stereotypes associated with Black skin (Feagin, 2014). The present study highlights the urgent, continual, and multidimensional nature of racial discrimination for contemporary Black adolescents and highlights its ostensible role in persistent racial health inequities. We believe the high frequency and impact of racial discrimination shown in our results necessitates concomitant policy and practice that fights to institutionally prevent and treat the negative effects of racial discrimination for Black youth.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgement

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Table 1

Demographic and psychological variables for participants ($N = 101$).

Variable	n(%)
Age (years)	
13	13 (13%)
14	23 (23%)
15	29 (29%)
16	22 (22%)
17	11 (11%)
Grade	
8th	18 (18%)
9th	53 (53%)
10th	4 (4%)
11th	9 (9%)
12th	15 (15%)
Gender	
Male	41 (41%)
Female	57 (57%)
Race/Ethnicity	
African American or black	89 (88%)
African	1 (1%)
Latino or hispanic (Afro-Latino)	1 (1%)
Biracial/Multiracial	2 (2%)
Other	8 (8%)
Neighborhood Racial Composition	
Black or African American	96 (96%)
White or caucasian	3 (3%)
Latino or hispanic	1 (1%)
Variable	M(SD)
Depressive symptoms (Baseline)	1.82 (0.48)
Depressive symptoms (Follow-Up)	1.75 (0.37)

Note. There is a small amount of missing data for each variable as a result of participant omission.

Table 2

Confirmatory factor analyses factor loadings for racial discrimination subscales.

Scale	Racial discrimination item	Mean (SD)	β (SE)
Individual Online	… did people exclude you from a website	0.42 (0.91)	0.80 (0.10)
	…did people show you a racist image online	0.69 (0.96)	0.68 (0.20)
	… did people threaten you online	0.42 (0.82)	0.66 (0.26)
	… did people say mean or rude things about you online [a]	0.46 (0.99)	0.57 (0.18)
Vicarious Online	…did people crack jokes about people of your race/ethnic group online	0.54 (0.93)	0.80 (0.15)
	…did you witness people saying mean or rude things about another Black person's race/ethnicity online	0.68 (1.06)	0.71 (0.11)
	…did people say things that were untrue about people in your race/ethnic group	0.67 (1.07)	0.63 (0.12)
Vicarious Teasing	…did you witness a peer being made fun of because their race/ethnicity	0.47 (0.86)	0.76 (0.10)
	…did you see a peer of your same race/ethnicity teased because of their race/ethnicity	0.27 (0.67)	0.73 (0.20)
	…did you overhear or were told an offensive joke or comment [a]	0.35 (0.72)	0.67 (0.23)
	…did you overhear a peer telling jokes about Black people	0.46 (0.80)	0.61 (0.15)
Individual Teasing	…did a peer tease you [a]	0.37 (0.88)	0.89 (0.05)
	… did a peer joke about the negative treatment of Black people in the United States (e.g., slavery, police brutality)	0.59 (1.01)	0.87 (0.05)
	…did a peer tease you because you wear your hair natural	0.28 (0.65)	0.86 (0.05)
	…did a peer joke about the texture of your hair [a]	0.40 (0.81)	0.79 (0.07)
	…did a peer tease you because of your skin tone	0.45 (0.96)	0.79 (0.10)
	… did a peer joke about your race/ethnic background	0.53 (0.99)	0.66 (0.12)
Vicarious General	… did you hear about a family member experiencing something they described as racial discrimination	0.45 (0.77)	0.91 (0.07)
	…did you hear about a friend experiencing something they described as racial discrimination	0.61 (1.09)	0.85 (0.05)
	…did you hear about a family member being treated poorly because of their race/ethnicity	0.23 (0.53)	0.84 (0.08)
	…did you hear about a friend being treated poorly because of their race/ethnicity	0.28 (0.69)	0.58 (0.14)
	…were your parents or other family members treated unfairly or badly because of the color of their skin, language, accent, or because they came from a different country or culture	0.36 (0.69)	0.55 (0.15)

Note. All factor loadings were significant at the 0.05 level. We randomly administered 12 of these items each day.

Means in this table represent per-day mean frequency of each item.

[a] Indicates an item that ends in "because of your race/ethnicity"

Table 3

Confirmatory factor analyses factor loadings for individual general racial discrimination subscale.

Subscale	Racial discrimination item	M(SD)	β (SE)
Assumption of criminality (AC)	…did you see someone lock the doors of their car [a]	0.26 (0.75)	0.91 (0.09)
	…did the police accuse you of having or selling drugs [a]	0.20 (0.66)	0.89 (0.05)
	…did someone misunderstand your intentions and motives [a]	0.46 (0.97)	0.76 (0.14)
	…did you see someone cross the street [a]	0.36 (0.79)	0.66 (0.15)
	…did people look at you like you are a criminal [a]	0.41 (0.86)	0.64 (0.10)
	…were you watched closely or followed around by security guards or store clerks at a store or mall [a]	0.51 (1.00)	0.64 (0.14)
	…were the police verbally abusive to you [a]	0.23 (0.59)	0.53 (0.18)
Assumption of intellectual inferiority (AII)	…did a teacher have low expectations [a]	0.40 (0.94)	0.92 (0.07)
	…did teachers treat you like you were not as smart [a]	0.41 (0.81)	0.89 (0.05)
	…were you treated as if you were "stupid" or "talked down to" [a]	0.38 (0.94)	0.88 (0.06)
	…did people assume you're not smart or intelligent [a]	0.43 (0.86)	0.70 (0.13)
	…did people act as if you were not as smart [a]	0.52 (0.89)	0.58 (0.11)
Assumed universality of the black american experience (AUBAE)	…were you asked to be a representative of your race/ethnicity during a discussion at school	0.51 (1.01)	0.83 (0.07)
	…were you asked to speak for all members of your race/ethnicity during a class	0.48 (1.00)	0.73 (0.11)
	…did a teacher assume that you were an expert on people of your same race/ethnic background	0.54 (1.07)	0.69 (0.10)
	…did a peer point out that you fit a stereotype of your race/ethnicity	0.46 (0.87)	0.69 (0.12)
	…were you mistaken for someone else of your same race/ethnicity	0.47 (0.90)	0.65 (0.10)
	…did an adult refer to people of 'your culture' or 'background' in a negative way	0.34 (0.69)	0.62 (0.13)
	…did a peer assume that you were an expert on people of your same race/ethnic background	0.39 (0.90)	0.61 (0.11)
	…did a coach use a stereotype about your race/ethnicity during a sports game or practice	0.28 (0.66)	0.59 (0.13)
Second-class citizenship (SCC)	…were you treated unfairly by people in service jobs (store clerks, waiters, bartenders, bank tellers and others) [a]	0.43 (0.80)	0.82 (0.10)
	… were you hassled by a store clerk or store guard [a]	0.32 (0.68)	0.74 (0.12)
	…did you receive poor service at a restaurant [a]	0.29 (0.65)	0.70 (0.11)
Assumption of inferior status (AIS)	…did someone discourage you from trying to achieve an important goal [a]	0.44 (0.84)	0.85 (0.09)

Subscale	Racial discrimination item	M(SD)	β (SE)
	...did people act as if you were dishonest[a]	0.42 (0.88)	0.81 (0.10)
	...did people act as if they were better[a]	0.53 (1.00)	0.78 (0.09)
	...did you encounter people who did not expect you to do well[a]	0.44 (0.90)	0.77 (0.10)
	...did you encounter people who were surprised that you, given your race or ethnic background, did something really well	0.60 (0.97)	0.76 (0.07)
	...were you wrongly disciplined at school[a]	0.45 (1.03)	0.71 (0.14)
	...did people talk down to you[a]	0.40 (0.87)	0.63 (0.10)
Micro-assaults (MA)	...were you excluded from a clique[a]	0.34 (0.77)	0.93 (0.05)
	...did someone ignore you or exclude you from activities[a]	0.40 (0.81)	0.79 (0.14)
	...were you made fun of, picked on, pushed, shoved, hit, or threatened with harm[a]	0.32 (0.83)	0.71 (0.18)
	...were you called bad names[a]	0.39 (0.86)	0.66 (0.16)
Environ micro-aggressions (EM)	...were you uncomfortable in your community[a]	0.46 (0.94)	0.67 (0.06)
	...were you out of place in a social situation[a]	0.28 (0.74)	0.62 (0.18)

Fit indices	AC	AII	AUBAE	SCC	AIS	MA	EM
χ²(df)	105.73 (21)	5.08 (5)	22.26 (20)	76.12 (10)	128.47 (21)	32.15 (6)	–
CFI	0.97	1.00	0.97	1.00	0.99	1.00	–
TLI	0.95	1.00	0.96	1.00	0.98	1.00	–
RMSEA	0.01	0.01	0.01	0.01	0.01	0.01	–

Note. All factor loadings were significant at the 0.05 level. We randomly administered 12 of these items each day.

'–'indicates an under-identified model for which fit statistics are not produced.

[a]Indicates an item that ends in "because of your race/ethnicity."

Table 4

Mean differences and descriptives for racial discrimination subscales.

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Individual general	1								
2. Vicarious general	0.80 ***	1							
3. Individual online	0.76 ***	0.80 ***	1						
4. Vicarious online	0.50 ***	0.55 ***	0.61 ***	1					
5. Individual teasing	0.80 ***	0.80 ***	0.76 ***	0.57 ***	1				
6. Vicarious teasing	0.71 ***	0.67 ***	0.69 ***	0.53 ***	0.79 ***	1			
7. Age	−0.16	−0.12	−0.16	0.01	−0.14	−0.23 **	1		
8. Grade	−0.14	−0.05	−0.08	0.06	−0.11	−0.13	0.79 ***	1	
9. Gender Identity	−0.14	−0.14	−0.16	−0.03	−0.16	−0.04	−0.02	0.05	1
Mean	0.40	0.39	0.55	0.59	0.44	0.39	14.94	9.49	0.58
SD	0.62	0.65	0.81	0.85	0.74	0.61	1.22	1.29	0.49
Alpha	0.96	0.86	0.78	0.79	0.88	0.78	–	–	–
χ^2(df)	13.31 (14)	3.75 (4)	1.59 (2)	0 (0)	12.83 (9)	3.36 (2)	–	–	–
CFI	1.00	1.00	1.00	1.00	0.97	0.98	–	–	–
TLI	1.00	1.00	1.00	1.00	0.96	0.93	–	–	–
RMSEA	0.00	0.00	0.00	0.00	0.02	0.02	–	–	–

Note.

***
p .001

**
p .01

*
p .05.

BL = Baseline, FU = Follow-up. The means in this table represent per-item, per-day mean frequency.

Correlations run in a single model with the discrimination subscale latent variables.

Table 5

Parameter estimates for two-level hierarchical models examining associations between depressive symptoms slope and racial discrimination subscales.

	B	95% CI
Level 1		
Depressive symptoms slope[a]	−0.09 ***	[−0.18, −0.03]
Level 2	0.30 *	[0.06, 0.50]
Individual general		
Vicarious general	0.29 *	[0.04, 0.51]
Individual online	0.29 *	[0.01, 0.54]
Vicarious online	−0.05	[−0.34, 0.25]
Individual teasing	0.30 *	[0.04, 0.54]
Vicarious teasing	0.27 *	[0.04, 0.47]

Note.

***
p .001

**
p .01

*
p .05.

These are the results from six different models in which we estimated the effects of racial discrimination subscales separately. We ran separate models primarily to reduce convergence issues associated with sample size.

[a]The estimate for this parameter varied slightly (± 0.01) across models as a result of small variations in missing data across subscales.