

The Lagged Effects of Racial Discrimination on Depressive Symptomology and Interactions With Racial Identity

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Scholars agree on the negative impacts of racial discrimination on the mental health of African Americans (Brondolo et al., 2008). Yet research is needed to explore the impacts of everyday discrimination over time, especially compared to nonracial daily hassles, in an ecologically valid manner. It is also widely accepted that racial identity can moderate the impact of racial hassles (Sellers, Copeland-Linder, Martin, & Lewis 2006), but few studies have examined this moderating effect over time. The current study addresses gaps in the current literature by analyzing the relationship between reported racial and nonracial stressors over the course of four days. Participants were 225 college students at three institutions who participated in a 20-day daily diary study. Each day, participants reported whether they had experienced a stressful event and their depressive symptoms. We compared reports of depressive symptoms the day an event occurred and two days after for racial and nonracial stressors and examined whether racial identity served as a moderator. The results showed that individuals experienced similar increases for racial and nonracial stressors when events occur and similar decreases in the following two days. Additionally, symptom trajectories varied by racial identity. Implications for the understanding of racial discrimination's role in the well-being of African Americans are discussed.

Keywords: racial discrimination, daily diary, depressive symptoms, racial identity, African Americans

A general consensus in the fields of psychology, sociology, and epidemiology is that racial discrimination (RD) is linked to deleterious mental health outcomes for African American (AA) individuals, including negative affect, distress, depression or depressive symptoms, anxiety, and psychiatric symptoms (Banks, Singleton, & Kohn-Wood, 2008; Brondolo et al., 2008; Paradies, 2006; Pascoe & Smart Richman, 2009; Pieterse, Todd, Neville, & Carter, 2012; Williams & Mohammed, 2009). Nevertheless, little is known about *how* RD contributes to mental health outcomes, particularly on a day-to-day level. Specifically, existing research is not clear on whether AAs' responses to RD differ from their responses to nonracial stressors (Harrell, 2000). Second, it is not clear how responses to RD unfold over time and whether those trajectories are different from the trajectories of nonracial stressors. Third, while it is known that racial identity predicts AAs' vulnerability to RD events (Neblett, Shelton, & Sellers, 2004; Sellers & Shelton, 2003), few researchers have examined how racial identity predicts AAs' responses at the daily level (see Burrow & Ong, 2010, for an exception) or over time.

The present study aims to expand researchers' understanding of the impact of RD in AAs' lives in two ways. First, using the daily diary approach, the present study comparatively examines AA college students' mental health from the day before racial¹ and nonracial stressors occur through two days following. Second, the study examines whether racial identity attitudes moderate the daily relationship between RD and depressive symptomatology both on the day the event occurs and over time. Since RD has been consistently linked to depressive symptoms, we focus on the daily association between RD and depressive symptomatology (Brown et al., 2000; Chao, Mallinckrodt, & Wei, 2012; Gaylord-Harden & Cunningham, 2009; Klonoff, Landrine, & Ullman, 1999; Seaton & Douglass, 2014). Other studies have examined the daily impacts of RD but only focused on one day following the event (Seaton & Douglass, 2014). We follow individuals on the day preceding the event, on the day of the event, and on the two days that follow the event in an attempt to capture the ways in which RD may contribute to poorer mental health.

The Impact of Racial Versus Nonracial Stressors

Consistent with a stress and coping framework (Harrell, 2000; Sellers, Morgan, & Brown, 2001), we conceptualize RD as a stressor potentially associated with negative mental health outcomes. A number of researchers have found evidence that RD is

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¹ Throughout this article, we use the terms RD and racial stressors interchangeably.

positively associated with indicators of depressive symptomatology (Brown et al., 2000; Chao et al., 2012; Gaylord-Harden & Cunningham, 2009; Pieterse et al., 2012). For instance, Brown and colleagues found that RD significantly predicted higher levels of psychological distress and that it was marginally associated with the likelihood of having a current diagnosis of clinical depression (Brown et al., 2000). Similarly, Gaylord-Harden and Cunningham (2009) reported that RD was positively associated with depression and anxiety among AA adolescents from low-income communities.

In their efforts to understand RD's impacts, several scholars have suggested that racial stressors may be experienced more intensely than nonracial stressors (Harrell, 2000; Utsey, Giesbrecht, Hook, & Stanard, 2008). Some laboratory studies are consistent with these suggestions (Brondolo, Rieppi, Kelly, & Gerin, 2003; King, 2005). For example, King (2005) found that AA female undergraduates who were negatively evaluated by two White male peers and perceived the event as being race-related experienced a stress response. Participants who made gender-based attributions for the negative evaluation did not experience a stress response. On the contrary, perceiving events as racial may create a less negative response than perceiving an event as nonracial because individuals are able to attribute the discrimination to perpetrators' prejudice instead of their own characteristics (Crocker & Major, 1989). In one study, Crocker, Voelkl, Testa, and Major (1991) found that Black individuals who received negative feedback from an evaluator and who believed that race was a factor experienced fewer decreases in self-esteem compared to those individuals who did not believe race was a factor. While laboratory studies are ideal for comparing the impact of racial and nonracial stressors because of their experimental controls, they may be limited with regard to ecological validity; that is, they may not closely resemble the racial stressors that AAs experience in their real lives. Therefore, these laboratory studies may not accurately reflect the true differences in the impact of racial versus nonracial stressors. The current study uses a daily diary study to overcome this limitation.

Daily Relationship Between RD and Outcomes

Daily diary studies have been successful at measuring the relationship between racial stressors and psychological outcomes in an ecologically valid way. For example, in their 2-week daily diary study, Seaton and Douglass (2014) found that 97% of the adolescents in their sample experienced at least one instance of RD. Moreover, the adolescents' experiences with racial discrimination were linked to depressive symptoms on the same day as well as on the following day. In another 2-week daily diary study, Ong, Fuller-Rowell, and Burrow (2009) found that AAs' reports of daily RD were positively associated with daily distress, including anxiety, negative affect, and depression. Daily diary studies can also illuminate the differences between racial and nonracial stressors: in their 20-day daily diary study, Hoggard, Byrd, and Sellers (2012) found that AA college students did not appraise racial and nonracial stressors differently, although they employed less planful problem-solving and more ruminative, avoidance, and confrontive coping for the racial stressors as compared with the nonracial stressors.

Moving Beyond Proximal Outcomes

Daily diary studies can also help to elucidate how responses to RD events evolve over time and contribute to the understanding of how RD contributes to long-term outcomes. Though scholars suspect that AAs' responses to RD and other stressors may linger after the onset of these stressors (Brosschot, Gerin, & Thayer, 2006; Utsey et al., 2013), surprisingly few studies have investigated racial minorities' responses to RD at more than one time point. A notable exception is a daily diary study wherein Ong and colleagues focused on Asian Americans' affective and somatic responses to racial microaggressions on the day that the event occurred as well as on the following day (Ong, Burrow, Fuller-Rowell, Ja, & Sue, 2013). However, it is possible that Ong et al., 2013's findings may not be generalized to AAs since the two groups may experience different kinds of racial stressors. For instance, AAs are more likely to experience criminality-related racial stressors whereas Asian Americans are more likely to be treated as foreigners (Liang, Li, & Kim, 2004; Sue et al., 2007; Sue, Capodilupo, & Holder, 2008). Therefore, researchers are still unclear about how AAs' responses to RD events evolve over time. The present study extends the extant literature by focusing on the daily relationship between racial stressors and depressive symptoms over the course of four days, from the day before an event occurs to two days later, and determining whether this daily relationship differs from that of nonracial stressors among AA college students. In doing so, we attempt to ascertain whether RD is a unique stressor with both immediate and lasting effects on mental health.

The Importance of Racial Identity

There is mounting evidence that racial identity attitudes influence how AAs respond to RD (Bridges, 2010; Burrow & Ong, 2010; Fuller-Rowell et al., 2012; Lee & Ahn, 2013; Sellers et al., 2006; Sellers & Shelton, 2003). The present study will apply the Multidimensional Model of Racial Identity (MMRI) to its examination of RD (Sellers, Smith, Shelton, Rowley, & Chavous, 1998). According to the MMRI, racial identity is the part of a person's self-concept that is related to his or her membership within a race (Sellers et al., 1998). The MMRI proposes three stable aspects of AA racial identity, two of which have been found to be particularly relevant to understanding the impact of RD on psychological functioning (Sellers et al., 2006). Centrality refers to the extent to which a person normatively defines himself/herself with regard to race (Sellers et al., 1998). Racial regard refers to a person's affective and evaluative judgment of his or her race. The regard dimension consists of both a private and a public component. Private regard refers to the extent to which individuals feel positively or negatively toward AAs and their membership in that group. Public regard refers to the extent to which an individual feels that outgroup members view AAs positively or negatively.

A common finding in the racial identity literature is that high racial centrality, high private regard, and low public regard may be protective for AAs in the context of RD (Bynum, Best, Barnes, & Burton, 2008; Neblett et al., 2004; Sellers, Caldwell, Schmeelk-Cone, & Zimmerman, 2003). In their investigation, Sellers et al. (2003) found that the association between RD and perceived stress was weaker for individuals for whom race was a more central identity (high racial centrality). Bynum and colleagues found that

among Black males who experience racism, those who reported that they feel more positively about being Black (high private regard) were less likely to exhibit anxiety-related symptoms than those who reported that they feel less positively about being Black (low private regard) (Bynum et al., 2008). Finally, Sellers et al. (2006) reported that individuals who believe that other groups hold more negative attitudes toward AAs (low public regard) were at a greater risk for experiencing RD but were also buffered from the impact of RD on psychological functioning.

Despite evidence that racial identity attitudes attenuate or exacerbate responses to RD, the field has little understanding of how racial identity attitudes operate at the daily level. To our knowledge, only one study has examined the moderating role of racial identity in the daily relationship between RD and mental health among AAs (Burrow & Ong, 2010). In their study, Burrow & Ong (2010) reported that high racial centrality increased the likelihood that AA participants would experience everyday RD and exacerbated the daily relationship among RD, negative affect, and depressive symptoms. Surprisingly, public regard did not predict the frequency with which the AA participants experienced RD or moderate the daily relationship between RD and distress.

The Present Study

The present study aims to build upon and expand previous research (Burrow & Ong, 2010; Ong et al., 2013; Seaton & Douglass, 2014) in several important ways. First, the present study addresses concerns associated with the cross-sectional nature of RD studies as well as the ecological validity of laboratory-based studies. Specifically, we use a daily diary methodology and a longitudinal analysis tracking depressive symptoms from the day before participants report an event until two days later. The daily diary approach allows us to examine actual events occurring in participants' lives, while a longitudinal analysis allows us to examine potential causal effects of stressors and to control for individual differences. The use of a daily diary methodology also reduces the possibility of bias as a result of recall as individuals report on the events they experienced on the same day that they experienced the event as well as the outcomes for that day, reducing the noise that would interfere with these relationships. Second, the present study examines the ways in which racial identity modifies the daily relationship between racial stressors and depressive symptoms.

The present study attempts to answer four specific questions: First, do racial stressors have a more negative impact on depressive symptoms than nonracial stressors on the day that they occur? Second, do racial and nonracial stressors differ in their impact on depressive symptoms over time? Third, does racial identity buffer the impact of racial stressors on depressive symptoms on the day the events occur? Fourth, does racial identity buffer the impact of racial stressors on depressive symptoms over time?

Based on findings of previous research (King, 2005), we expect that the racial stressors will be more strongly and positively associated with overall depressive symptomatology. Second, we predict that racial stressors will have a more negative impact on depressive symptoms than nonracial stressors over time. This hypothesis is consistent with the notion that RD may be experienced more negatively in the moment, that RD has lingering effects, and that AAs may employ more ruminative coping, a

mechanism by which individuals may experience extended or prolonged stress responses (Brosschot et al., 2006), for racial stressors than nonracial stressors (Hoggard et al., 2012). Third, we predict that AAs who are high on racial centrality, high on private regard, or low on public regard will be buffered from the negative impact of racial stressors on depressive symptoms on the day the event occurs. These predictions are consistent with previous research (Bynum et al., 2008; Sellers et al., 2003; Sellers et al., 2006). Fourth, we predict that AAs who are high on racial centrality, high on private regard, or low on public regard will be buffered from the negative impacts of racial stressors on depressive symptoms over time. We expect racial identity to have little or no impact on the daily relationship between nonracial stressors and depressive symptomatology since racial identity should only be related to outcomes in race-related situations (Sellers et al., 1998).

Because our analysis investigated change over time and we had the opportunity to include four time points (the day before the event, the day of the event, and two days following), we modeled the effect of time and explored linear, quadratic, and cubic effects. A linear model would suggest that symptoms either increased or decreased consistently over the course of the four days. For example, after a racial event, an individual shows greater depressive symptoms each day following the event. A quadratic model would suggest that symptoms increased (or decreased) initially and then fell (or rose) at a later point, while a cubic model would suggest that there were two changes in direction. If the data supported a cubic model, depressive symptoms may increase immediately after the event, then drop below baseline, perhaps as individuals seek additional support, then return to baseline. While we did not have a hypothesis about the model, we did compare each model.

Method

Participants and Research Design

Data for the present study were gleaned from a larger 4-year longitudinal study of self-identified AA college students from three U.S. universities. The three universities included two large predominantly White institutions (PWIs), one in the Midwest (4% AA students) and the other from the South (7% AA students), and a medium-size historically Black college/university (HBCU; 87% AA students) located in the mid-Atlantic region of the United States. Each year, participants in the larger longitudinal study were asked to participate in both an annual survey of their attitudes, experiences, and well-being as well as one of three different 20-day repeated ministudies. Participants were randomly rotated through the three ministudies through the course of the first three years of the study. During the fourth year of the study, two of the ministudies were discontinued and we only collected data for the ministudy focusing on the participants' experiences with racial stressors over the course of 20 days. To insure that participants did not have data from multiple years while also maximizing the number of participants included in the analyses, we only focused on the fourth year of data collection for the ministudy study that examines participants' daily experiences with racial stressors.

The same longitudinal dataset was used in our earlier work (Hoggard et al., 2012). That study focused on years 2 and 3 of the data, while the current study focuses on year 4. Thus, while some individuals are included in both papers, the data do not overlap.

During the fourth year, there were 375 students who participated in the annual survey and who were therefore eligible to participate in the daily diary study. Of these 375 students, 315 participated in the daily diary study (response rate of 84%). Of these participants, 225 (71%) reported experiencing at least one stressful event ($M = 1.24$, $SD = 1.17$, range 0–6) and thus were included in the analysis. The final sample is 75.7% female and 28.2% were students at the HBCU. Participants ranged in age from 18 to 23 ($M_{\text{age}} = 20.65$, $SD = 0.64$). We compared those in the final sample ($N = 225$) to all who participated in the year 4 diary study ($N = 315$) to determine whether individuals who reported stressful events during the diary period differed somehow from those who did not report any stressful events. Those who reported any stressful event did not differ significantly from those who did not on a variety of variables: No significant differences were found for school-type (HBCU vs. PWI) [$\chi^2(1, N = 315) = .18$, $p = .39$], or socioeconomic status [$t(197.34) = 0.42$, $p = .68$]. Those reporting any stressful event were more likely to be male than the rest of the sample, $\chi^2(1, N = 315) = 10.1$, $p < .001$. Indeed, AA males may perceive more RD than their female counterparts (Seaton, Caldwell, Sellers, & Jackson, 2008). Participants included in the present sample were slightly older ($M = 20.92$, $SD = .50$) than the rest of the sample ($M = 20.48$, $SD = .66$), $t(214.49) = -6.42$, $p < .001$. We also found no differences in participants' attitudes regarding the extent to which being Black is central to the definition of the self [$t(265) = -0.51$, $p = .61$], in how positively they feel about being Black [$t(265) = 1.42$, $p = .16$], or in the extent to which participants felt members of other groups view Blacks positively [$t(265) = -0.48$, $p = .64$].

The final daily data was constructed from the daily surveys. First, we selected for days in which participants reported a racially stressful event or another stressful event. Then, we identified the day immediately preceding each event day as well as the two days immediately following each event day. Each selected day, if available, was included in the dataset and coded with a time variable to indicate its place in the sequence of events. Thus, each event sequence consisted of at least one day (the day of the event) and up to three days surrounding the event day. In terms of missing data, the average days of data per event was 2.67. The analysis used all available data to estimate parameters. There was no missing data in outcomes or covariates at the daily or event level. Participants with missing data at the person level ($n = 5$) were excluded from the analysis.

Procedure

The Registrar's office at the two PWIs provided contact information for all students who self-identified as AA. We recruited these students via email and telephone solicitations. At the HBCU, we used campus-wide outreach methods including posting flyers and making classroom announcements. At all universities, the students were informed that we were examining AA college students' daily life experiences. All participants provided written informed consent before participating in the annual survey portion of the study and were compensated with \$15 for participating in the annual survey. Participants completed the annual surveys online individually and in small groups at a designated research or computer laboratory monitored by research staff. In compliance with the Institutional Review Boards of the participating institu-

tions, participants also provided informed consent for their participation in the 20-day assessments. Over a 20-day period, participants were asked each evening to complete a brief online survey. Participants were first asked whether they experienced a racial stressor in the past 24 hr. If they reported that they did experience such an event, they were then asked to provide a written description of the event. If participants reported that they had not experienced a racial stressor, they were then asked whether they experienced any other stressful event. If so, the participants were then asked to provide a written description of the event. Next, participants reported on their depressive symptoms for that day. Participants were given \$3 for every daily survey they completed and were offered an opportunity to earn up to \$60 for their participation in the 20-day assessments.

Measures

The analysis was conducted in HLM 6.0 (Raudenbush, Bryk, & Congdon, 2000), which allows for the modeling of change over time with person-level controls. Because our analysis consisted of a 4-day sequence for each event, nested within individuals, we used a three-level hierarchical linear model. Level one represented the daily level, and variables included the outcomes and an indicator of time. Level two represented the event sequence level, and those variables included whether the event was racial or nonracial, the number of days since the individual's last reported event, and whether the previous event was racial or nonracial. Finally, level three represented the person level and included controls from the annual survey and the total number of events the individual reported.

Daily level measures. Participants' depressive symptoms were assessed using the Center for Epidemiological Studies Depression scale (CES-D; Radloff, 1977). The CES-D is a 20-item, well-validated scale that is appropriate for assessment of depressive symptoms in nonclinical samples. The CES-D scale strongly correlates with other self-reported depression inventories as well as with variables closely related to clinical diagnoses of depression (Nguyen, Kitner-Triolo, Evans, & Zonderman, 2004). The CES-D's factor structure has also been validated with AA samples (Conerly, Baker, Dye, Douglas, & Zabora, 2002; Nguyen et al., 2004). For instance, after factor analyzing their data, Nguyen et al., 2004 cross-validated their results with those of other nationally representative samples of African American participants ($n = 988$) and White Americans ($n = 666$) and found support for their factor structure. Participants were asked to report whether they had felt or behaved in a certain way in the past 24 hr on a scale of 0 (*did not happen today*) to 2 (*happened today*). Items were coded such that higher scores were indicative of more negative outcomes. Cronbach's alpha for the full sample of days ($N = 1,038$) was .88. We also created an indicator of time for each day coded -1 (day before the event), 0 (day of the event), 1 (day after the event), or 2 (two days after event).

Event-level measures. A dummy code indicated whether the event was racial or nonracial, based on the participants' responses to the daily survey asking whether they had experienced a stressor in the past 24 hr. The participants responded to the following prompt: *Have you experienced a situation today in which you feel that you have been discriminated against because of your race?* If participants indicated that they had experienced such an event, the

event sequence was coded as racial. They then responded to the following prompt: *Please describe the event in as much detail as possible. If you experienced more than one racist event today, please describe the first one that comes to mind.* If the participants responded that they had not experienced a racial event, they were asked if they had experienced any other stressful event. If they responded in the affirmative to this question, the event sequence was coded as a nonracial event. Participants were also asked to describe the event. Out of 390 events, 45 (11.5%) were racial. We also imputed the number of days since the previous stressful (whether racial or not) event, and created a dummy code for whether the previous event was racial or nonracial to use as controls.

Person-level measures. Person-level variables were assessed during the annual survey. Participants' gender, age, cohort, year in school, and institution type (PWI or HBCU) were measured as single-item indicators. Socioeconomic status (SES) was a composite variable consisting of standardized household income and mother's education. We also calculated the total number of events each person reported during the diary time period.

Our controls included cohort, gender, age, SES, and self-esteem. Previous research has supported the conclusion that women report greater depressive symptoms than men (Piccinelli & Wilkinson, 2000). Similarly, education and income are associated with a variety of mental health symptoms (Blazer, Kessler, McGonagle, & Swartz, 1994). Finally, we were interested in differences between experiences at the predominantly White institutions (PWIs) and the historically Black university (HBCU) because previous research has indicated a more positive racial climate and fewer instances of discrimination at predominantly Black institutions (Cabrera, Nora, Terenzini, Pascarella, & Hagedorn, 1999).

Racial identity. Participants' racial identity attitudes were assessed using the shortened version of the Multidimensional Inventory of Black Identity (MIBI-S), a questionnaire based on the Multidimensional Model of Racial Identity (Sellers, Rowley, Chavous, Shelton, & Smith, 1997). The centrality scale has four items ($\alpha = .87$). A higher score on the scale indicates that race is a more central identity for the individual. A sample item is, "I have a strong attachment to other Black people." The private regard subscale has three items ($\alpha = .76$). A higher score on the private regard subscale indicates that the individual holds more positive attitudes about being AA. A sample item is, "I am proud that I am Black." Finally, the public regard subscale has four items ($\alpha = .81$). A higher score on the public regard scale indicates that the individual believes that other groups hold more positive attitudes toward AAs. A sample item is, "Overall, Blacks are considered good by others." Responses to all items are made on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The MIBI is a theoretically-derived instrument that is based on the constructs within the MMRI and has been found to be related to race-relevant activities in predictable ways (Sellers et al., 1997).

Self-esteem. Participants' self-esteem was assessed using the Rosenberg Self-Esteem scale (RSE; Rosenberg, 1979). The RSE Scale ($\alpha = .96$) consists of 10 items measuring levels of self-acceptance. Higher scores correspond to higher levels of self-esteem. A sample item is "I feel that I'm a person of worth at least on an equal plane with others." Responses to all items were made on a 4-point Likert-type scale ranging from 0 (*strongly disagree*)

to 3 (*strongly agree*). The RSE has been shown to have convergent validity with various other measures of self-esteem (Blascovich & Tomaka, 1991; Byrne, 1983). In fact, Blascovich and Tomaka (1991) argued that the RSE is the standard against which new unidimensional self-esteem measures are evaluated. The RSE has also been shown to be a valid and reliable measure of self-esteem among AAs (Hughes & Demo, 1989).

Depressive symptomatology. Depressive symptoms were measured during the annual survey using the same CES-D scale as the daily survey, with a different response timeframe. For each item, participants were asked to report whether they felt or behaved in a certain way during the past week. Responses to all items were made on a 4-point Likert-type scale ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*). Reliability across the sample of days was .88.

Analysis

The analysis consisted of three steps. In the first step, we modeled the relationship between depressive symptoms and time with event type (racial or nonracial) as a direct effect of the outcome. In the second step, we examined the interactions between (a) time and event type, and (b) event type and racial identity. In the third step, we looked at the three-way interaction between time, event type, and racial identity. Preliminary analyses indicated that a polynomial change model with quadratic and cubic terms best fit the data. Therefore, in each step we tested for quadratic (one change in direction) and cubic (two changes in direction) effects of time to explore the shifts in symptoms over time. Continuous person-level variables and the number of days since the last event were grand-mean centered in the analysis to facilitate interpretation of the effects (Hofmann & Gavin, 1998). At the daily level, the time variable was not centered.

Results

Descriptive statistics are reported in Table 1. Our first research question was whether racial stressors have a more negative impact on depressive symptoms, compared to nonracial stressors, on the day they occur (i.e., the model intercept). This question is answered by Model 1 in Table 2. Accounting for controls, there was no significant difference in reported symptoms on the day an event occurred ($\gamma = -0.011, p = .781$). Thus, our first hypothesis, that racial stressors would have a more negative effect, was not confirmed. Figure 1 illustrates this relationship. Though participants

Table 1
Descriptive Statistics for Study Variables

	Mean	SD
Age	20.48	0.66
SES	0.04	0.84
Self-esteem annual	2.87	0.55
Centrality annual	5.57	1.27
Private regard annual	5.99	0.98
Public regard annual	3.65	1.18
Depressive symptoms annual	0.62	0.40
Total events reported	1.73	1.03
Depressive symptoms daily	0.43	0.27
Days since previous event	5.82	2.77

Table 2
Results for Depressive Symptoms

Depressive symptoms total	Model 1			Model 2			Model 3		
	γ	SE	Sig.	γ	SE	Sig.	γ	SE	Sig.
Intercept	0.509	0.062	0.000	0.520	0.062	0.000	0.526	0.062	0.000
Cohort 1	-0.004	0.042	0.924	-0.007	0.043	0.862	-0.009	0.043	0.833
HBCU (vs. PWI)	0.067	0.033	0.043	0.064	0.033	0.052	0.064	0.033	0.052
Gender	-0.018	0.036	0.628	-0.017	0.036	0.648	-0.019	0.037	0.612
Age	-0.023	0.029	0.432	-0.023	0.030	0.438	-0.023	0.030	0.454
Socioeconomic status	-0.017	0.018	0.325	-0.018	0.018	0.321	-0.017	0.018	0.326
Self-esteem	-0.135	0.031	0.000	-0.137	0.032	0.000	-0.138	0.032	0.000
Centrality	0.015	0.017	0.363	0.012	0.018	0.489	0.043	0.023	0.063
Private regard	-0.030	0.022	0.183	-0.018	0.025	0.466	-0.055	0.032	0.090
Public regard	0.002	0.011	0.839	0.001	0.012	0.952	0.027	0.016	0.096
Depressive symptoms (annual)	0.267	0.038	0.000	0.265	0.038	0.000	0.266	0.039	0.000
Total events reported	0.011	0.014	0.446	0.010	0.014	0.470	0.010	0.014	0.475
Days since previous event	-0.004	0.003	0.251	-0.004	0.003	0.284	-0.003	0.003	0.324
Racial previous event	-0.038	0.040	0.339	-0.048	0.040	0.229	-0.049	0.041	0.231
Racial event	-0.011	0.040	0.781	-0.068	0.043	0.115	-0.065	0.043	0.130
Racial event \times Centrality				0.009	0.047	0.843	-0.050	0.044	0.256
Racial event \times Private regard				-0.077	0.050	0.126	-0.001	0.073	0.992
Racial event \times Public regard				-0.006	0.027	0.834	-0.030	0.031	0.327
Time	-0.057	0.016	0.001	-0.058	0.017	0.001	-0.066	0.016	0.000
Time \times Centrality							-0.059	0.015	0.000
Time \times Private regard							0.060	0.024	0.011
Time \times Public regard							-0.023	0.012	0.066
Time \times Racial event				0.007	0.051	0.892	-0.040	0.047	0.391
Time \times Racial event \times Centrality							0.013	0.048	0.781
Time \times Racial event \times Private regard							-0.097	0.072	0.176
Time \times Racial event \times Public regard							0.130	0.038	0.001
Time ²	-0.135	0.018	0.000	-0.144	0.019	0.000	-0.156	0.018	0.000
Time ² \times Centrality							-0.070	0.018	0.000
Time ² \times Private regard							0.092	0.030	0.002
Time ² \times Public regard							-0.028	0.016	0.079
Time ² \times Racial event				0.090	0.056	0.109	0.154	0.053	0.004
Time ² \times Racial event \times Centrality							0.169	0.050	0.001
Time ² \times Racial event \times Private regard							-0.146	0.066	0.027
Time ² \times Racial event \times Public regard							-0.090	0.052	0.083
Time ³	0.062	0.010	0.000	0.065	0.011	0.000	0.073	0.010	0.000
Time ³ \times Centrality							0.047	0.011	0.000
Time ³ \times Private regard							-0.058	0.017	0.001
Time ³ \times Public regard							0.013	0.008	0.113
Time ³ \times Racial event				-0.033	0.029	0.245	-0.056	0.025	0.024
Time ³ \times Racial event \times Centrality							-0.075	0.026	0.005
Time ³ \times Racial event \times Private regard							0.084	0.040	0.037
Time ³ \times Racial event \times Public regard							0.022	0.024	0.364
Variance components	Coefficient	SD	Sig.	Coefficient	SD	Sig.	Coefficient	SD	Sig.
Level 1	0.050	0.223		0.050	0.223		0.047	0.216	
Level 2	0.029	0.171	0.000	0.028	0.168	0.000	0.029	0.171	0.000
Level 3	0.099	0.010	0.000	0.102	0.010	0.000	0.099	0.010	0.000
Time slope	0.000	0.015	0.125	0.000	0.016	0.099	0.000	0.016	0.127

Note. HBCU = historically Black college/university; PWI = predominantly White institution.

who reported a racial event had slightly higher symptoms on the day the event occurred (Time = 0), this difference was not significant.

Our second question was whether racial and nonracial stressors differed in their impact over time. The interactions between time

and event type in Model 2 show no difference in the linear ($\gamma = 0.007, p = .892$), quadratic ($\gamma = 0.090, p = .109$), or cubic ($\gamma = -0.033, p = .245$) relationship between time and depressive symptoms as a consequence of event type. This finding contradicted our second hypothesis. Again, Figure 1 illustrates this

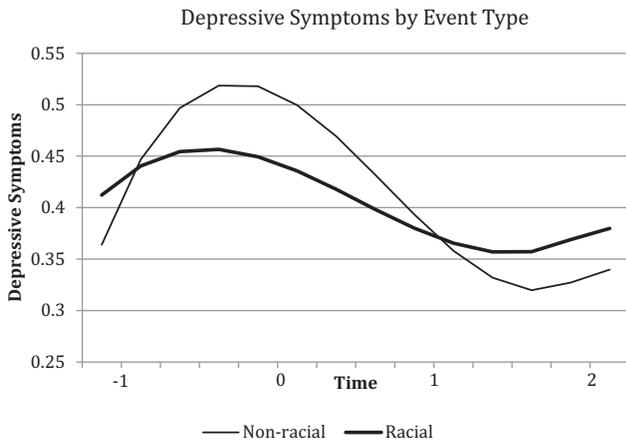


Figure 1. Relationship between time and depressive symptoms by event type.

relationship: depressive symptoms had a similar pattern of increase and decrease over time for racial and nonracial events.

Our third question concerned the moderating relationship of racial identity on the day events occurred. The interactions between event type and racial identity in Model 2 addressed this question. There were no significant interactions with event type for centrality ($\gamma = -0.009, p = .843$), private regard ($\gamma = -0.077, p = .126$), or public regard ($\gamma = -0.006, p = .834$). Thus, our hypothesis was not confirmed.

Our fourth question was whether racial identity moderated the effects of racial and nonracial stressors over time. The three-way interactions between time, event type, and racial identity in Model 3 addressed this question. We did find significant interactions for each racial identity variable, which are plotted in Figures 2–4. The figures plot each racial identity variable at one standard deviation above and below its mean (Aiken, West, & Reno, 1991). As can be seen in Figure 2, there was a similar pattern of change in depres-

sive symptoms for nonracial events and for racial events for low centrality individuals. That is, depressive symptoms increased when an event occurred (Time = 0) and gradually decreased by the second day (Time = 2). However, for high centrality individuals, depressive symptoms were higher for this group on the day before an event occurred (Time = -1) and decreased after the event.

Figure 3 illustrates the interaction for private regard. Individuals who reported nonracial events show increases in depressive symptoms when an event occurs (Time = 0) and then lower symptoms in the following days. High private regard individuals, on the other hand, do not experience an increase in depressive symptoms, although they do show a drop in depressive symptoms after an event occurs. Low private regard individuals report relatively high depressive symptoms across all four days, and only show a small decrease, unexpectedly, in depressive symptoms, when an event occurs.

Finally, Figure 4 illustrates the interaction for public regard. Similar to the interaction for centrality, individuals who experience a nonracial event and high public regard individuals who experience a racial event show a similar increase and decrease in depressive symptoms following an event. However, low public regard individuals have higher depressive symptoms before an event (Time = -1) occurs and these drop after the event. In sum, our fourth hypothesis was partially confirmed because African American students who are high on centrality, high on private regard, and low public regard show different patterns of reactions to racial stressors. Nevertheless, these changes are not in line with our hypothesis of buffering.

Discussion

The objectives of the present study were to investigate the immediate and longer-term impact of racial stressors on the daily depressive symptomatology of AA college students as compared with nonracial stressors. We used a daily diary methodology wherein AA college students reported on racial and nonracial stressors that occurred in their real lives and we tracked their

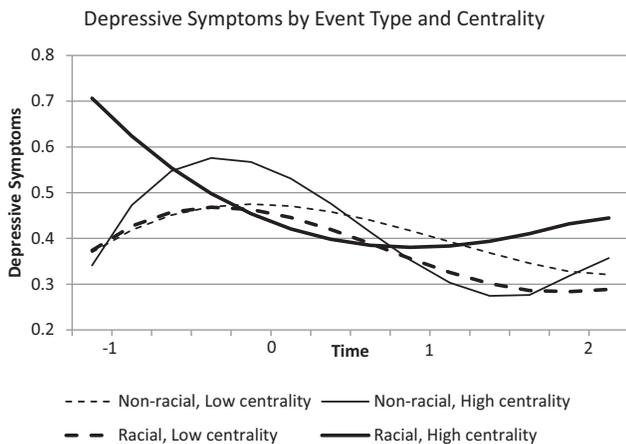


Figure 2. Relationship between time and depressive symptoms by event type and centrality. Note: “high” and “low” centrality are plotted at one standard deviation above and below the mean, respectively.

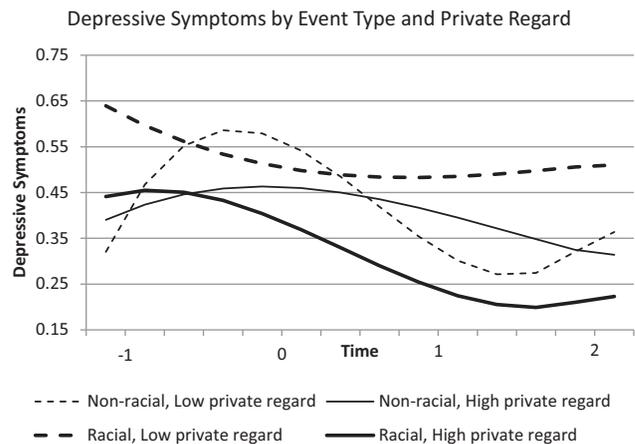


Figure 3. Relationship between time and depressive symptoms by event type and private regard. Note: “high” and “low” private regard are plotted at one standard deviation above and below the mean, respectively.

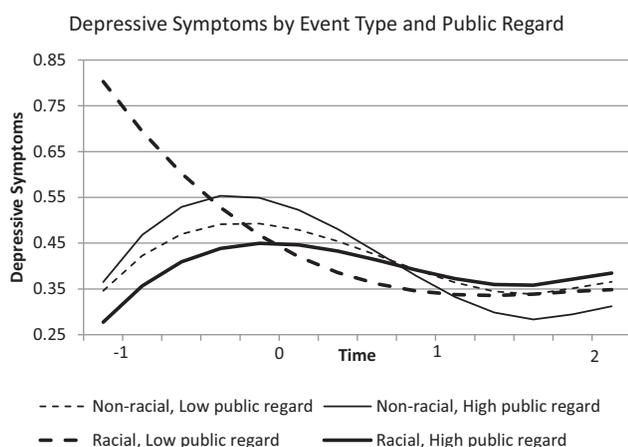


Figure 4. Relationship between time and depressive symptoms by event type and public regard. Note: “high” and “low” public regard are plotted at one standard deviation above and below the mean, respectively.

depressive symptoms from the day before the event until two days later. Based on the findings of previous laboratory and daily diary studies (King, 2005), we hypothesized that racial stressors would have a more negative impact on the depressive symptoms of AA college students than nonracial stressors both on the day that these events occurred as well as over time. The findings were not consistent with our hypothesis that AA students report more depressive symptoms when they experience a racial event compared with a nonracial event. However, the results are consistent with the work of Hoggard and colleagues (2012), who found that AA college students did not appraise racial and nonracial stressors that occurred in their lives differently with regard to how taxing and stressful the events were or how successfully they were coped with. It is possible that there were no differences because RD is such a frequent stressor in the lives of AAs that they are equally prepared to deal with racial and nonracial stressors. Though only 15% of our sample experienced a racial stressor during the diary period, other research has found that 60% of AAs experience day-to-day discrimination (Kessler, Mickelson, & Williams, 1999) and that 55% of AA college students experience at least one or two incidents that are probably or definitely racist during a two week interval (Swim, Hyers, Cohen, Fitzgerald, & Bylsma, 2003). It is important to note, however, that the AA participants’ racial identity attitudes shaped their responses to the racial and nonracial stressors and provided further insight into how the two kinds of stressors were experienced.

The second objective was to examine the role of racial identity in the daily relationship between racial stressors and depressive symptoms. We hypothesized that AA college students who are high on racial centrality, high on private regard, or low on public regard would be buffered from the negative impact of racial stressors on depressive symptoms on the day the events occur as well as over time. Interestingly, the findings indicate that individuals who are relatively high on racial centrality, low on private regard, or low on public regard experienced higher levels of total depressive symptoms on the day before a racial event occurred. One possibility is that these individuals, particularly high centrality and low public regard individuals, live in a state of worry and in

anticipation of race-related stress. As race-related stress has been identified as a unique source of chronic worry for AAs (Rucker, West, & Roemer, 2010), this racial vigilance may contribute to chronically high levels of depressive symptoms for these AAs as compared with their less race central or high public regard counterparts on days for which racial events do not occur. It is also possible that their vigilance could make them more likely to report a stressful event, and to attribute it to race.

The present study makes several important contributions to the extant RD literature. First, the present study compares the impact of racial and nonracial stressors in an ecologically valid manner. Second, the study examines multiple dimensions of depressive symptoms and racial identity over time and is therefore able to capture complex and dynamic processes. Third, the present study provides insight with regard to potential mechanisms by which RD may negatively impact health and well-being. For instance, RD may strain its AA victims’ interpersonal interactions, thereby adding to their stress burden. Another mechanism by which RD may negatively impact the lives of many AAs is by leading to worry about the ongoing threat of discrimination (Carter et al., 2013; Williams & Mohammed, 2009).

One limitation of the study is that not all participants had complete data for each sequence of events, thus estimates for each day better reflect the participants with data for that day. A second limitation is that participants reported a greater number of nonracial events than racial events. A higher number of racial events and a larger sample size would provide smaller confidence intervals and potentially more precise effects. Future research can also explore a wider variety of outcomes, including physiological and cognitive effects. We encourage future research to build on the present findings. Research designs that will maximize ecological validity insure that AAs’ actual RD experiences, not artificial experiences, are being captured. In doing so, it is important that researchers examine the shorter term and longer term effects or correlates of RD. For many outcomes, we found that racial identity was a significant moderator over time (slope) but not on the day a racial stressor occurred. Moreover, it is important that researchers include biological measures (e.g., cortisol, ambulatory blood pressure) in addition to self-reported measures to capture the various ways in which RD may impact the biological and emotional systems at the daily level. Finally, another important next step is to examine the impact of racial stressors among community samples since the inclusion of a more diverse sample (e.g., age, socioeconomic status) will shed light on whether the various RD and racial identity processes play out in a similar fashion. Our results suggest that counselors who work with African American college students, in particular, and African Americans in general, should pay attention to variation in racial identity beliefs in their clients and how those beliefs might be related to differing reactions to racial stressors. Future research can also explore potential interventions that can be delivered immediately after stressors occur to mitigate their negative effects.

In conclusion, the combination of racial and nonracial stressors that AAs experience may contribute to poorer health outcomes for these individuals. The findings reviewed here suggest that it may be important for mental health professionals to carefully probe AAs for their diverse experiences—both racial and nonracial—and provide culturally sensitive and comprehensive therapy and counseling. According to Harrell (2000), “mental health practitio-

ners have had little systematic guidance in exploring the multiple ways that racism may influence their clients' well-being" (Harrell, 2000, p. 42). Based on the findings of the present study, we also suggest that researchers and practitioners pay close attention to racial identity as an individual difference factor, the emotion regulation processes that may be impeded when individuals experience racial stressors, resulting in more interpersonal problems, and chronic worry and anticipatory stress as a pathway to illness for some individuals.

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