



Rumination as a Mediator of the Association Between Racial Discrimination and Depression Among Black Youth

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Abstract

Background Racial discrimination constitutes a significant risk factor for depressive symptoms among Black youth. Rumination, a maladaptive self-regulatory stress response, is a notable pathway by which racial discrimination contributes to depressive symptoms among racial/ethnic minority adults. Yet, examinations of the mechanistic nature of rumination in the context of racial discrimination among racial/ethnic minority youth remain limited. The present study investigated rumination as a mediator of the association between racial discrimination and depressive symptoms among Black youth.

Methods Data for the current study were drawn from baseline questionnaire responses of community recruited Black pre- and early adolescents ($N = 158$, 53% female, $M_{\text{age}} = 11.50$) in the southeast USA participating in an ongoing longitudinal study examining the effects of interpersonal stressors on youth mental health outcomes.

Results After adjusting for age and gender, mediation analyses revealed a significant indirect effect of racial discrimination on depressive symptoms through rumination, estimate = 0.29, 95% confidence interval [0.12, 0.47]. Racial discrimination was positively associated with rumination ($b = .74$, $SE = .23$, $p = .001$), and rumination, in turn, was positively associated with depressive symptoms ($b = .40$, $SE = .06$, $p < .001$).

Conclusion Consistent with previous research, we found racial discrimination to be directly and indirectly associated with depressive symptoms among Black youth. Findings provide evidence of the cognitive burden of discriminatory experiences and suggest that rumination represents a potential pathway that can be targeted at early developmental stages to reduce the deleterious impact of racism-related stressors.

Keywords Racial discrimination · Racism-related stress · Depression · Rumination · Black youth

Depression among children and adolescents is a major public health concern in the USA. Rates of depression have steadily increased among teenagers within the USA, with one study noting an increase from 8.7% in 2005 to 12.7% in

2015 among youth aged 12–17 [1]. While the psychosocial burden of depression is significant across the life course, its impact is particularly noteworthy during childhood and adolescence. Early life experiences of depression have been linked to a myriad of health risk factors, including increased substance use [2], social and educational concerns [3], and increased vulnerability to psychopathology later in life [4]. Although research investigating racial/ethnic disparities in the prevalence of adolescent depression has produced equivocal results [5, 6], several studies have found that Black youth evidence higher rates of depression relative to their White peers [7–9].

The disparate rates of depressive symptoms among Black youth may be related, in part, to culturally relevant stressors such as racial discrimination [10]—personal and degrading actions experienced by minorities on the basis of race [11]. Although the association between racial discrimination and depressive symptoms has been well established [12, 13], the

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underlying mechanisms that explain this relationship among Black youth remain unclear. Considering that depression is among the strongest predictors of suicide [14], which has increased among Black youth by nearly 90% between 2007 and 2017 [15], elucidating mechanisms that link discrimination and depression within this population can inform interventions that can save lives.

Rumination, defined as the passive and repetitive perseveration on one's own negative mood and problems during periods of distress [16], is one possible pathway by which racial discrimination leads to depressive symptoms among Black youth. Given its passive and perseverative nature, scholars have conceptualized rumination as a maladaptive form of coping that can increase risk for depressive symptoms in the context of stressful life events [17]. Indeed, individuals who engage in ruminative thinking are highly attuned to their emotional state and are more inclined to perseverate on the causes, meaning, and consequences of distressing mood symptoms [16]. Moreover, rumination has been linked to more intense and longer-lasting bouts of negative emotions [18], increased stress sensitivity [19], reductions in cognitive control [20], and difficulties disengaging with self-critical thoughts [21].

The biopsychosocial model of racism asserts that rumination represents one of several psychological responses that can inform the extent to which racial discrimination shapes health outcomes [22]. To this end, studies among Black adults have illustrated that racial discrimination is indirectly related to depressive symptoms through rumination [23, 24]. Yet, research examining rumination within the context of racial discrimination among Black youth remains nascent. Considering the significance of rumination within adult populations in the context of racism-related stressors, and evidence suggesting that racial discrimination is more likely to elicit ruminative coping strategies relative to general stressors [25], the purpose of this study is to examine whether rumination helps explain the association between racial discrimination and depressive symptoms among Black youth.

Racial Discrimination and Depression

Racial discrimination represents a common occurrence in the lives of Black youth, with upwards of 90% of youth reporting at least one incident of race-based mistreatment in their lifetime [26]. Recent research demonstrates that daily encounters of racial discrimination are equally pervasive, with Black youth reporting exposure to direct and vicarious expressions of racial discrimination on average of five times per day [27]. Unfortunately, this data suggests that from an early age, the daily lived experiences of Black youth are marred by chronic reminders of their devalued and

marginalized status in society—a notion further reinforced by the recurrent incidents of racism-related violence directed towards Black individuals across the country.

The deleterious impact of chronic exposure to racial discrimination has been well documented among Black youth [13, 28], with the association between racial discrimination and depressive symptoms being particularly pronounced [12]. For example, cross-sectional studies have demonstrated positive associations between racial discrimination and depressive symptoms among Black adolescents [27, 29, 30]. In concordance with this literature, longitudinal research has demonstrated that chronic encounters of racial discrimination precede *and* increase risk for depressive symptoms across sensitive developmental periods [31–33]. For instance, English and colleagues (2014) found racial discrimination predicted increases in depressive symptoms one year later among Black youth in grades 7 to 10 [34]. Furthermore, Assari and colleagues (2017) found that experiences of racial discrimination among Black adolescents was associated with increased depressive symptoms over a decade later [35].

Rumination as a Mechanism Linking Racial Discrimination and Depression

According to Harrell (2000), the link between racial discrimination and health outcomes is mediated by coping [35]. That is, experiences of racial discrimination give rise to maladaptive or adaptive coping strategies that significantly contribute to subsequent psychological adjustment outcomes. Racial discrimination experiences may give rise to ruminative coping strategies as individuals may perseverate on discriminatory encounters, question the accuracy of their perceptions, and ponder alternate explanations as to why the event occurred [35]. This perseverative state can be emotionally and cognitively taxing [36], and may prolong and intensify stress responses following discriminatory encounters, leaving individuals more susceptible to depressive symptoms [37].

A growing body of literature supports the role of rumination as a key pathway by which discrimination affects depressive symptoms. For example, previous work has found that brooding rumination, a subtype of rumination wherein an individual passively dwells on negative emotions, mediated the relationship between discrimination-related stress and psychological distress (including depressive symptoms) among a sample of Black and lesbian, gay, and bisexual young adults [38]. Similar results were also found by Miranda and colleagues (2013), who illustrated that brooding rumination mediated the association between racial discrimination and depressive symptoms among a sample of Hispanic emerging adults [24]. Moreover,

Borders and Liang (2011) found that angry rumination, or the perseveration on instances of mistreatment, mediated the relationship between racial discrimination and depressive symptoms among a sample of minority emerging adults [23]. More recently, Hill and Hoggard (2018) found that racial discrimination was indirectly associated with depressive symptoms among a sample of Black female college students through rumination, though this indirect relationship was only observed among women reporting higher levels of John Henryism (a maladaptive high-effort form of coping) [39]. Taken with research suggesting that the link between rumination and depressive symptoms among early adolescents is comparable to that of adults [37], there is value in improving understanding of the developmental significance of rumination as an explanatory mechanism of the racial discrimination-depression link among Black youth.

Current Study

Recent literature forecasting future directions in racism research among Black youth highlights the immediate need for investigations into developmental pathways that undergird the relationship between racial discrimination and health outcomes [40]. Thus, in line with the Biopsychosocial Model of Racism [22], the purpose of this study was to cross-sectionally examine rumination as an explanatory pathway of the relationship between racial discrimination and depressive symptoms among a community sample of Black youth. We hypothesized that racial discrimination would be positively associated with depressive symptoms among Black youth. We also predicted that rumination would mediate the association between racial discrimination and depressive symptoms, such that greater exposure to racial discrimination would be associated with higher endorsements of rumination, which in turn, would be associated with higher endorsements of depressive symptoms.

Method

Data in the current study were drawn from the baseline data of an ongoing longitudinal study examining the effects of interpersonal stressors on youth mental health outcomes (the “CHARM” study). Eligible youth were in 3rd, 6th, or 9th grade at study entry and fell between the ages of seven years and 16 years at the time of consent. Youth included in the current investigation ($n = 158$; 53% female) were a subset of participants identified as monoracial or multiracial Black: 146 (92.4%) identified as Black, 10 (6.3%), identified as Black and White, and two (1.3%) identified as Black Hispanic. Youth in the current sample were between the ages of 8 and 15 years old ($M = 11.50$, $SD = 2.42$). Parent-reported

median household income was reported to be \$30,001—\$40,000 for the current subsample.

Procedures

Following approval from the authors’ institutional review board, participants were recruited from a large diverse city in the Southeastern USA. Recruitment sites included local schools, pediatric outpatient clinics, and the broader community. Recruitment consisted of posting flyers in public locations in the community and a pediatric primary care unit, published ads in local newspapers and magazines, distributing information via flyers, letters to parents sent home with students, social media ads, and through a study website. Only youth with written parental consent were eligible for participation. At the time of the study, youth and a respective caregiver (legal guardian) attended a laboratory visit which included a comprehensive set of neuroimaging, self-report questionnaires, and clinical interview assessments that lasted approximately eight hours. Included within the self-report data collected were the key variables of interest within the current study. Participants were compensated for completing the baseline assessment.

Measures

Sociodemographic Information Caregiver reported youth age, gender, race/ethnicity, and socioeconomic status were collected during baseline data collection.

Racial Discrimination Experiences of racial discrimination were assessed using the *Race-Related Events Scale* (RES) [41]. The RES is a 22-item checklist that assesses lifetime exposure to racial discrimination. On the RES, participants are instructed to indicate whether they encountered any of the 22 specific events listed because of their race or ethnicity by checking “yes” or “no”. An example item on the RES is “Insulted or called an insulting name because of my race or ethnicity.” Total scores on the RES were utilized for analyses and were calculated by summing items across the 22-items ($\alpha = 0.87$). Higher scores on the RES are indicative of higher lifetime experiences of racial discrimination. Previous research has established the reliability and construct validity of the RES among racial and ethnic minority samples [42], with additional research demonstrating that items on the RES evidence sound internal consistency [41].

Rumination The *Children’s Response Styles Questionnaire* (CRSQ) [43] was used to assess youth rumination. Informed by Nolen-Hoeksema’s Response Style Questionnaire [16], the CRSQ is a 25-item self-report measure that consists of three subscales that describe specific cognitive responses to depressive symptoms (rumination, problem solving,

distraction). Given the focus of the current study, only the Ruminative Response subscale was used, which is a 13-item subscale that measures self-focused responses to negative mood. Responses on the Ruminative Response subscale are rated from 1 (*almost never*) to 4 (*almost always*), with a sample item being: “When I am sad, I think about a recent situation wishing it had gone better.” Total scores on this subscale were utilized for analyses ($\alpha=0.85$) and were calculated by summing participant responses on all items, with higher scores being suggestive of higher levels of ruminative response styles. Empirical research has demonstrated the rumination subscale to exhibit high internal consistency and validity among youth and adolescent samples [44].

Depression Youth depressive symptoms were assessed using the *Children's Depression Inventory* (CDI) [45]. The CDI is a 27-item self-report measure that assesses cognitive, affective, and behavioral symptoms of depression. Responses for each item on the CDI are scored from 0 to 2 (e.g., *I am sad some of the time, most of the time, all the time*). Item scores on the CDI are combined into a total score, ranging from 0 to 54, with higher scores being representative of greater depression symptom severity ($\alpha=0.88$). The CDI has been extensively utilized within diverse youth samples [46], and has demonstrated high internal consistency and construct validity among adolescents [47].

Analytic Plan

All study analyses were conducted via SPSS version 25.0. Data were evaluated for the presence of outliers and normality. Descriptive statistics and Pearson correlations were computed to characterize the sample (see Table 1). To analytically test study hypotheses, we employed Hayes's (2012) PROCESS macro, within SPSS [48]. The PROCESS macros utilize ordinary least squares estimation to compute model parameters for theoretically constructed path models such as simple mediation. Using PROCESS Model 4, we tested the hypothesis that there is an indirect effect of racial discrimination on depressive symptoms through rumination,

controlling for age and gender. Although socioeconomic status was originally included as a covariate within mediation models, it was removed given that it was not related to any of the key study variables at the bivariate level. The PROCESS macro generates direct effects as well as bias-corrected bootstrapped confidence intervals (5,000) for the indirect effects.

Results

Descriptive Analyses

Descriptive statistics (i.e., correlations, means and standard deviations) are summarized in Table 1. Caregiver reported SES was unrelated to gender ($r=0.074$, $p=0.376$), age ($r=0.085$, $p=0.317$), depressive symptoms ($r=-0.014$, $p=0.872$), racial discrimination ($r=-0.025$, $p=0.765$), or rumination ($r=-0.047$, $p=0.587$). Gender was positively associated with depressive symptoms ($r=0.230$, $p=0.004$; higher for females), but was unrelated to age ($r=0.072$, $p=0.386$), racial discrimination ($r=-0.009$, $p=0.915$), or rumination ($r=0.156$, $p=0.056$). Age was positively associated with depressive symptoms ($r=0.167$, $p=0.046$), but was unrelated to racial discrimination ($r=0.167$, $p=0.046$) or rumination ($r=-0.047$, $p=0.587$). Rumination and racial discrimination were also positively correlated ($r=0.336$, $p<0.001$).

Prior to conducting primary analyses, we assessed continuous study variables for normality using a combination of several outlier detection criterion including Mahalanobis distance [49], Cook's Distance [50], and the leverage method [51]. Four cases were identified as outliers and were subsequently removed, in addition to another 17 cases due to missing/incomplete data. Thus, our main analyses were conducted on a sample of 137 Black youth. Significant differences were noted when comparing participant data for those included and excluded from principal analyses. Specifically, results from independent sample *t*-tests illustrated that participants excluded from analyses for outlying or missing data were found to report higher levels of depressive symptoms ($M=16.19$, $SD=11.40$) relative to youth

Table 1 Intercorrelations, means, standard deviations for key study variables ($N=158$)

Variable	1	2	3	4	5	6
1. Gender	—					
2. Age	0.07	—				
3. SES	0.07	0.09	—			
4. Racial discrimination	-0.01	0.06	-0.03	—		
5. Rumination	0.16	0.13	-0.05	0.34**	—	
6. Depressive symptoms	0.23**	0.17*	-0.01	0.35**	0.64**	—
Mean	0.53	11.50	7.39	2.59	24.98	8.89
SD	0.50	2.42	3.56	3.52	9.00	7.57

* $p<0.05$; ** $p<0.01$

Table 2 Direct and total effect models of the relation between racial discrimination and depressive symptoms through rumination

	Rumination			Outcome			Depression ^T					
	Estimate	SE	<i>p</i>	Estimate	SE	<i>p</i>	Estimate	SE	<i>p</i>			
Racial discrimination	<i>a</i>	0.73	0.23	<0.001	<i>c'</i>	0.35	0.15	0.002	<i>c</i>	0.65	0.17	<0.001
Rumination	–	–	–	<i>b</i>	0.40	0.06	<0.001	–	–	–	–	–
Gender		3.06	1.33	0.024		2.80	0.88	0.002		4.02	1.01	<0.001
Age		0.28	0.28	0.324		0.22	0.18	0.220		0.33	0.21	0.118
<i>R</i> ²				0.12				0.43				0.21

DE direct effect model, T total effect model

who were included within analyses ($M = 8.04$; $SD = 6.53$); $t(16.70) = 2.81$, $p = 0.013$.

Direct and Indirect Effect of Racial Discrimination on Depressive Symptoms

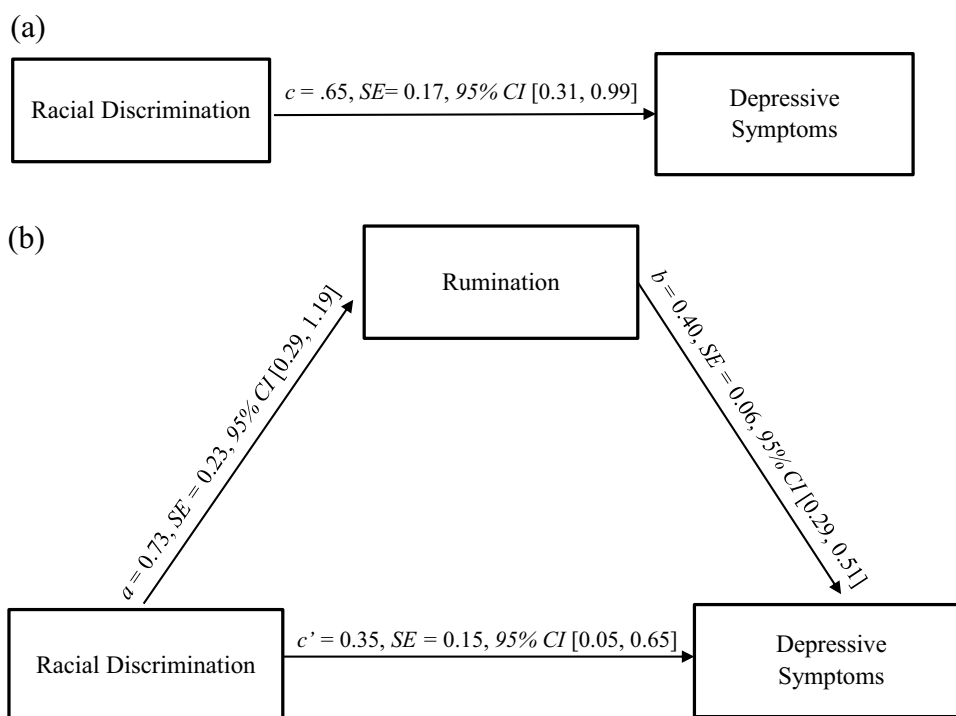
To test our primary research questions, we examined the direct and indirect effects of racial discrimination on depressive symptoms through rumination, adjusting for the effects of age and gender. Results for our main analyses are presented in Table 2 and in Fig. 1. Results revealed a significant total effect of racial discrimination on depressive symptoms, not accounting for rumination, $b = 0.65$, $SE = 0.17$, 95% CI [0.31, 0.99], $p < 0.001$ (path *c*). In addition, racial discrimination was positively associated with rumination, $b = 0.73$, $SE = 0.23$, 95% CI

[0.29, 1.19], $p = 0.002$ (path *a*) and depressive symptoms (path *c'*: estimate = 0.35, $SE = 0.15$, 95% CI [0.05, 0.65], $p = 0.021$). Moreover, rumination was positively associated with depressive symptoms, $b = 0.40$, $SE = 0.06$, 95% CI [0.29, 0.51], $p < 0.001$ (path *b*). The indirect effect of racial discrimination on depressive symptoms was also significant, as the bootstrapped confidence interval did not include zero ($ab = 0.29$, $SE = 0.09$, 95% CI [0.12, 0.47]).

Discussion

The current work is among the first to investigate the indirect effect of racial discrimination on depressive symptoms via rumination within a sample of Black youth. In line with our first hypothesis, results demonstrated that racial

Fig. 1 a Total effect path model of the association between racial discrimination and depressive symptoms. b Indirect effect path model of the association between racial discrimination and depressive symptoms through rumination



discrimination was positively associated with depressive symptoms. Consistent with our second prediction, racial discrimination was associated with higher endorsements of rumination, which was in turn, associated with greater endorsements of depressive symptoms. As a composite, results underscore the need to elucidate *how* racial discrimination contributes to poor mental health outcomes, so as to identify targetable mechanisms that can inform the development and/or modification of culturally relevant interventions that promote positive psychosocial adjustment among Black youth in the context of racism-related stressors.

Our results demonstrate that discriminatory experiences may be associated with increased engagement in rumination among Black youth. Such findings largely parallel research among Black adults that has found racial discrimination to increase risk for engagement in rumination [23, 24]. There are multiple reasons why this may be the case. Pre-and-early adolescents may still be in the process of developing coping strategies needed to adaptively negotiate instances of race-based mistreatment [52]. Drawing from theories of stress and coping [53], Black youth may be at heightened risk to appraise racial discriminatory experiences as stressful, and therefore, more likely to utilize maladaptive coping strategies such as rumination to process or make sense of discriminatory events. In line with this notion, previous research demonstrates that the cognitively taxing nature of discriminatory experiences can encumber positive coping strategies that may be more active or approach oriented, which may limit an individual's ability to regulate or suppress thoughts about a distressing event [54, 55]. Thus, experiences of racial discrimination, which can occur unexpectedly and manifest in a multitude of ways (e.g., in vivo, vicariously, virtually), may deplete positive psychosocial resources that otherwise regulate negative thoughts and feelings [56], leaving youth more susceptible to perseverate about the event, the reason it occurred, and the negative feelings that follow.

Results from the current study also support and build upon research demonstrating that rumination represents a specific psychological pathway connecting stressful life events to depression among early adolescents [57, 58]. Indeed, experiences of racial discrimination and rumination about discriminatory encounters have been linked to higher levels of negative affect among Black youth and emerging adults [59, 60], suggesting that individuals may experience and dwell on negative feelings related to incidents of race-based mistreatment well after the event has passed. Ruminating about negative feelings can prolong and increase harmful thinking patterns that undergird and ultimately contribute to the onset of depressive symptoms [61], especially when one ruminate about negative affect relating to personally invalidating experiences [62]. Consequently,

it is possible that chronic discriminatory encounters can exacerbate and prolong negative thoughts about oneself and attributions about why the event occurs, in addition to negative emotions, and maladaptive coping skills, leaving Black youth more vulnerable to depressive symptomatology. Notably, researchers have also postulated that rumination in the context of racial discrimination may also be related to heightened levels of hypervigilance, which has also been noted as an important determinant of racial and ethnic mental and physical health disparities [63, 64].

Limitations and Future Directions

The results of the current study should be considered in the context of several limitations. First, our sample was comprised of a limited number of Black pre-and-early adolescent youth reporting relatively mild depressive symptoms. Consequently, our findings may not generalize to the larger population of Black youth. It is further acknowledged that youth who reported higher levels of depressive symptoms were more likely to be excluded from primary analyses relative to that of youth reporting mild symptoms, thus further limiting generalizability. Additional work is needed within a larger and more representative population to better elucidate the generalizability of study findings. Second, although mediational analyses were utilized to examine the explanatory nature of rumination in the context of racial discrimination and mental health, the present work is cross-sectional. Therefore, we are unable to definitively conclude that experiences of racial discrimination lead to rumination and rumination leads to depression, as it is also possible that rumination may lead to a greater awareness of racial discrimination experiences, and that depressive symptoms may lead to rumination. Accordingly, longitudinal investigations are needed to establish the causal ordering and potential bidirectional associations among key study variables. Prospective investigations would also provide important information regarding potential ways in which racial discrimination may combine with other social and developmental stressors to further increase risk for depressive symptoms as Black youth mature. Third, although research has found that racial discrimination and rumination may confer greater risk for depressive symptoms among girls relative to boys [65] potential gender differences were not explored in the current work and represent an important avenue for future investigations.

Clinical Implications

Limitations aside, this study lends credence to research highlighting that rumination is an important mechanism that can be targeted within clinical practice to potentially

reduce depressive symptoms within the context of discrimination [23, 63]. As rumination represents a passive form of coping, practitioners may find value in helping Black youth develop or further strengthen active coping strategies (e.g., social support seeking) that advance their ability to identify, process, and adaptively negotiate racially stressful encounters. Active coping has been associated with reductions in rumination and mental health concerns in the context of discrimination [63, 64]. Cognitive behavioral (e.g., ruminative focused cognitive behavioral therapy) approaches have also been demonstrated to be effective in reducing rumination and depressive symptoms [66]. Although the efficacy of these treatments among Black youth has yet to be investigated, the principles that anchor these treatments (e.g., behavioral activation, functional analysis, cognitive processing) may be useful in combating maladaptive thinking patterns and coping strategies that stem from discriminatory encounters.

Conclusion

Prior research has provided evidence that rumination represents a key pathway by which racial discrimination contributes to depressive symptoms among Black adults. However, there has been insufficient information to determine if this indirect effect remains among Black youth. This study directly addresses this gap in the literature by examining the direct and indirect associations between racial discrimination and depressive symptoms through rumination. Findings from the current work replicate and extend previous research, illustrating that rumination is associated with both racial discrimination and depressive symptoms and partially accounts for the relationship between racial discrimination and depressive symptoms among Black pre-and-early adolescent youth. These findings provide additional evidence of the cognitive burden of discriminatory experiences among Black youth and highlight the need for research to further understand how youth process, make sense, and negotiate racism-related experiences across sensitive developmental periods.

Author Contribution All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by Donte Bernard, Colleen Halliday, Funlola Are, and Carla Kmett Danielson. The first draft of the manuscript was written by Donte Bernard, Colleen Halliday, Funlola Are, and Devin Banks. All authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data availability Available upon request.

Code Availability Available upon request.

Declarations

Ethics Approval The current study was approved by the IRB at the institution where the study was conducted.

Consent to Participate Informed consent was obtained from parents and/or legal guardians.

Consent for Publication Participants signed informed consent forms, which included publication.

Conflict of Interest The authors have no relevant financial or non-financial interests to disclose.

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