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Article

Unspoken Distress: Emotional Expression and Mental Health Outcomes in the Context of Racial Violence

Ivy Smith ^{1,*}, Sheretta T. Butler-Barnes ², Marlena Debreaux ², Emani Sargent ² and Jenika Scott ²

¹ Division of Computational and Data Sciences, Washington University in St. Louis, St. Louis, MO 63130, USA

² George Warren Brown School of Social Work, Washington University in St. Louis St. Louis, MO 63130, USA

* Correspondence: ivy.s@wustl.edu

Abstract

This study examines the association between Black women's emotional responses to racial violence and their mental health outcomes, specifically clinical indicators of anxiety, depression, and hostility. Drawing on self-reported emotions from 384 participants (Mage = 37), this study uses the Multiple Affect Adjective Checklist-Revised (MAACL-R) to assess emotional responses to racial violence and determine whether participants met threshold criteria for mental health risk. Sentiment analysis was applied to participant responses, and linear regression was used to evaluate associations between negative and neutral sentiment scores and clinical outcomes. Findings revealed that negative sentiment scores were significantly associated with higher depression and hostility T scores. Neutral sentiment scores were largely nonsignificant but were weakly negatively associated with anxiety. These results highlight the psychological toll of racial violence, suggesting that negative sentiment, possibly reflecting emotional burden, frustration, or suppressed distress, may be an important indicator of compromised mental health. To better support Black women's psychological well-being, findings highlight the need for culturally responsive mental health interventions that consider how emotional expression, especially of distress, is shaped by racialized experiences and social context.

Keywords: racial violence; racial trauma theory; black women; emotional responses; mental health outcomes; depression; anxiety

1. Introduction

Racial violence remains a persistent and deeply harmful issue in the United States, leaving lasting emotional and psychological tolls on those who experience or witness it [1] (pp. 12-15). According to the U.S. Department of Justice Community Relations Service [2], racial violence is most often reported in hate crimes, which are increasingly on the rise. In 2023, race and ethnicity were the motivations for the most hate crimes, accounting for 5,900 incidents [2]. Anti-Black or African American hate crimes represent the largest proportion of these incidents [2]. For Black communities, these acts are not isolated events but part of a historical and ongoing pattern of racialized trauma, reinforced by systemic racism and social inequities [3,4] (see [3], pp. 384–405; [4], pp. 675–687). Black women, in particular, bear a unique burden at the intersection of race and gender, where their lived experiences of racial violence are reinforced by systems of racism and sexism that often results in social invisibility [5,6] (see [6], pp. 1241–1299). Despite this, the mental health outcomes of racial violence on Black women, such as anxiety and depression, and emotional states such as hostility, remain underexamined in empirical research.

Existing studies have shown that exposure to racial violence, whether direct or vicarious, is associated with heightened stress responses and increased risk of psychological disorders, including depression and anxiety [7–9] (see [7], pp. 508–517; [9], pp. 31–43). According to Williams [10] (pp. 466–485), experiencing discrimination is linked to higher levels of depression, anxiety, and overall

psychological distress. Moreover, research on anxiety-related disorders found that experiences of racial discrimination contribute to posttraumatic stress and racial trauma among people of color [9] (pp. 31–43). However, less is known about the specific emotional expressions and sentiment patterns that may serve as indicators of mental health concerns among Black women. Traditional clinical measures, while valuable, may overlook how racialized experiences shape the way emotions are expressed or suppressed in social contexts.

To address this gap, this study examines the association between Black women's emotional responses to racial violence and clinical indicators of anxiety, depression, and hostility. Using data from the Multiple Affect Adjective Checklist-Revised (MAACL-R) and employing sentiment analysis, we investigate the relationship between negative and neutral emotional tones and mental health outcomes. By integrating computational tools with self-reported emotional data, this research seeks to highlight the nuanced psychological burden of racial violence and highlight the importance of culturally responsive mental health interventions tailored to Black women's lived experiences.

1.1. Black Women and Racial Violence

Black women's experiences with racial violence are shaped by both their racial identity and gendered realities. Unlike their male or white female counterparts, Black women are often subjected to intersecting forms of violence, including police violence, medical neglect, workplace discrimination, and racialized sexual violence [11–13] (see [11], pp. S29–S36; [12], pp. 1003–1028; [13], pp. 589–590). These encounters are not only frequent but also culturally minimized, rendering Black women's pain and trauma largely invisible [12] (pp. 1003–1028). The murder of Breonna Taylor and the systemic neglect of Black maternal health serve as obvious reminders of how Black women are uniquely situated in a cycle of violence [14].

Researchers have emphasized that racial violence against Black women is both structural and interpersonal [11] (pp. S29–S36). It includes not only physical acts of aggression but also emotional, verbal, and psychological forms of racial harm, often perpetuated through institutions and normalized in public discourse [11] (pp. S29–S36). Exposure to such violence, whether direct or vicarious through social media, can create a chronic state of emotional stress and racialized trauma [15] (pp. 3450–3467).

1.2. Black Women and Mental Health

Although conversations about mental health have increased in recent years, Black women continue to be overlooked in research, underdiagnosed in clinical practice, and inadequately served by the mental health system [16–18] (see [16], pp. 324–339; [18], pp. 1124–1144). A combination of cultural stigma, long-standing distrust of medical institutions, and structural barriers contributes to lower rates of diagnosis and treatment among Black women [17–19] ([18], pp. 1124–1144). At the same time, studies consistently demonstrate that Black women face elevated risks for emotional distress due to chronic and intersecting stressors such as racism, sexism, and economic adversity [20–22] (see [20] pp. 481–501; [21], pp. 322–332; [22], pp. 561–569). For example, Millender et al. [21] (pp. 322–332) found that young Black mothers exposed to discrimination reported greater stress, harmful coping patterns, and diminished emotional well-being. Similarly, Stevens-Watkins et al. [22] (pp. 561–569) argue that the intersection of race and gender creates a heightened vulnerability to stress and adverse health outcomes for Black women.

Together, these findings highlight the need to understand Black women's mental health within the broader context of racialized stress and institutional violence. Race-related stress has been repeatedly linked to adverse psychological outcomes, and research shows that Black women may communicate distress through somatic symptoms, irritability, or social withdrawal [23] (pp. 1–8). Because these expressions may differ from commonly assumed indicators of mental illness, clinicians unfamiliar with culturally specific symptom presentations may overlook or misinterpret them [24] (pp. 1–10). These challenges are particularly visible in the diagnosis of depression, which frequently goes unrecognized in clinical settings among Black women [23,24] (see [24], pp. 1–10; [23], pp. 1–8).

1.2.1. Black Women and Depression

Depression is among the most frequently documented mental health outcomes associated with racial discrimination for Black women [25]. However, their depressive symptoms often differ from patterns typically observed among white populations. Emotional numbing, chronic fatigue, and social disengagement can be more common than traditional symptoms such as crying or sadness [26] (pp. 93–102). Cultural expectations surrounding strength and self-reliance may further suppress reporting of depressive symptoms [27] (pp. 122–125). In Woods-Giscombe et al.'s [18] study, participants emphasized the need to present themselves as strong, even when struggling internally, and expressed concern that seeking mental health support might be perceived as weakness.

Additionally, ongoing exposure to racism, financial strain, and extensive caregiving responsibilities can contribute to racial battle fatigue (RBF), a cumulative stress experience marked by psychological, physical, and behavioral changes such as anxiety, headaches, sleep disturbances, irritability, and withdrawal [28] (pp. 182–189). Many of these symptoms overlap with clinical depression, suggesting that the persistent demands of RBF may increase Black women's susceptibility to depressive disorders [28] (pp. 182–189). Worsening this concern, Black women are less likely to seek formal mental health services and more likely to rely on informal or self-managed coping strategies, which can hide the severity of depressive symptoms [23] (pp. 1–8).

Collectively, these factors highlight the complex ways depression shows up in Black women due to racism, gendered expectations, and a lack of culturally responsive care. Although depression is a significant concern, anxiety is another important and related mental health issue.

1.2.2. Black Women and Anxiety

For many Black women, anxiety is shaped by the ongoing anticipation of discrimination or racial harm, a phenomenon known as racial vigilance [29] (pp. 211–220). This heightened awareness can lead to physical reactions such as muscle tension and elevated heart rate, as well as behavioral responses including avoidance, overpreparedness, irritability, or withdrawal [30,31] (see [30], pp. 253–267; [31], pp. 129–136). Anxiety levels may increase in academic or workplace settings, especially in predominantly white institutions (PWIs), where Black women often navigate the pressure to perform well academically or professionally [28,32] (see [28], pp. 182–189).

The cultural expectation that Black women must remain strong and emotionally suppressed may also discourage open acknowledgment of anxiety, resulting in internalized stress that remains untreated [33] (pp. 395–404). This phenomenon aligns with the Superwoman Schema, which describes the pressure many Black women feel to be resilient, self-sacrificing, and emotionally suppressed [34] (pp. 503–518). Moreover, exposure to vicarious racial trauma can trigger anxiety responses similar to symptoms associated with post-traumatic stress [4,35,36] (see [4], pp. 675–687; [35], pp. 371–377; [36], pp. 1–9). MacIntyre et al. [9] (pp. 31–43) reported that Black women often experience heightened vigilance, fear, and anxiety as a result of both direct and indirect encounters with racism. Overall, anxiety among Black women reflects not only the physical effects of racial vigilance but also the emotional burden of dealing with systemic inequities and the expectation of always being strong. These combined burdens can also manifest in other personality traits, such as hostility.

1.2.3. Black Women and Hostility

Hostility in Black women is often misunderstood or pathologized in clinical and social contexts [37] (pp. 27–34). While hostility can be a symptom of underlying distress, it is frequently framed as an inherent character trait, reinforcing harmful stereotypes like the “angry Black woman” [37] (pp. 27–34). This framing not only ignores the structural and contextual origins of hostility but also perpetuates stigma that dismisses Black women's emotional experiences.

Additionally, chronic hostility can have health costs, contributing to physiological stress responses such as hypertension, sleep disturbance, and cardiovascular strain, as well as increasing

vulnerability to depression and anxiety [38,39] (see [38], pp. 117–126; [39], pp. 196–204). This dual role highlights hostility's complex role in stress and coping mechanisms. Clinically, misinterpreting hostility as defiance or aggression rather than a signal of cumulative stress can lead to underdiagnosis, pathologizing, or inadequate treatment of Black women [37] (pp. 27–34). Recognizing hostility as both a response to oppression and a sign of emotional burden highlights it as an important indicator of Black women's mental health rather than a character flaw.

1.3. Racial Trauma Theory

Racial Trauma Theory illustrates how repeated exposure to racism and racial violence can result in trauma-like symptoms such as hypervigilance, emotional dysregulation, and avoidance [4] (pp. 675–687). It frames racism not just as a stressor but as a traumatic experience that affects both mental and physical health [4] (pp. 675–687). Unlike acute traumatic events, racial trauma is often cumulative and chronic, arising from both direct and vicarious experiences of discrimination, microaggressions, and systemic violence [40]. (pp. 1849–1863). This frames racism as a source of ongoing psychological harm rather than temporary distress [40] (pp. 1849–1863).

Researchers note that the symptoms of racial trauma mirror those of post-traumatic stress disorder (PTSD), including intrusive thoughts, avoidance behaviors, heightened arousal, and negative shifts in mood or cognition [36,41] (see [36], pp. 1-9). However, because racial trauma is not formally recognized in diagnostic systems such as the DSM-5, its effects may be underdiagnosed or misattributed to other conditions, leaving individuals with inadequate support. Notably, the theory also acknowledges the intergenerational and collective dimensions of trauma, where historical events such as slavery, segregation, and racial violence continue to shape the emotional health of Black communities [4,42] (see [4], pp. 675–687; [42], pp. 434–440).

For Black women, racial trauma often intersects with gendered oppression, creating compounded stressors that manifest in both psychological and physiological outcomes [43] (pp. 197–212). This theory underscores the emotional burden of racism on Black women. It helps explain why negative sentiment and suppressed emotions may be indicators of trauma-related mental health outcomes in research contexts. By situating racism within a trauma framework, Racial Trauma Theory provides a lens for understanding the severity of psychological harm. It underscores the importance of culturally responsive measures in capturing the experiences of Black women.

2. Materials and Methods

2.1. Metrics of Racial Violence

Understanding the psychological impact of racial violence among Black women requires tools that can measure both emotional expression and mental health concerns with cultural and contextual sensitivity. While qualitative narratives remain powerful, quantitative and computational tools have increasingly been used to capture emotional responses to racialized trauma. This study employs two distinct yet complementary approaches: the Multiple Affect Adjective Checklist-Revised (MAACL-R) and sentiment analysis.

2.1.1. Multiple Affect Adjective Checklist-Revised (MAACL-R)

The Multiple Affect Adjective Checklist-Revised (MAACL-R) is a validated self-report instrument designed to measure both positive and negative affect, and it is frequently used in the diagnosis and treatment of mood disorders [44]. The checklist contains 132 adjectives and includes five scales: anxiety (e.g., afraid, fearful, frightened, panicky, shaky), depression (e.g., alone, destroyed, forlorn, lonely, lost, miserable), hostility (e.g., annoyed, critical, cross, cruel, disagreeable), positive affect (e.g., happy, joyful, pleasant), and sensation seeking (e.g., adventurous, daring, energetic) [45]. In addition, it contains two composite scales: dysphoria (calculated as anxiety + depression + hostility) and positive affect plus sensation seeking (calculated as positive affect +

sensation seeking) [45]. Participants are asked to select adjectives that describe their current emotional state, and their responses are scored to generate standardized T scores for each emotional category. The instrument has been widely used in both clinical and research settings to detect subclinical and clinical levels of psychological distress [46–48] (see [46], pp. 599–604; [47], pp. 193–206; [48], pp. 309–319).

In the context of racial violence, the MAACL-R serves as a culturally neutral tool to quantify mental health outcomes while allowing participants to report their own emotional states without requiring narrative explanation. For example, Utsey [49] (pp. 69–87) utilized the checklist to examine the relationship between distress stemming from racism and psychological well-being. He found that hostility significantly predicted race-related stress among African American men. This finding demonstrates the efficiency of the MAACL-R in racialized research contexts, where it provides a standardized measure of emotional risk while reducing clinical bias. Given the historical underdiagnosis and misdiagnosis of Black women in mental health settings, tools like the MAACL-R are crucial for identifying risk in ways that reflect subjective experience rather than reinforcing medical stereotypes.

2.1.2. Sentiment Analysis

Sentiment analysis, a technique from the field of Natural Language Processing (NLP), is used to evaluate the emotional polarity of textual data, typically categorized as positive, negative, or neutral [50]. In racial trauma research, sentiment analysis allows researchers to assess the emotional tone embedded in personal narratives, survey responses, or social media content. This computational approach is particularly useful when working with qualitative data, where manual coding may be limited by time and subjectivity.

Although sentiment analysis has been criticized for lacking nuance, especially when analyzing the complex landscape of trauma and marginalization, it offers insight into the overall affective patterns within participants' responses. For Black women, whose emotional expression may be limited by cultural norms or external expectations, sentiment scores can reveal underlying distress not always captured through traditional clinical tools. When used together with the MAACL-R, sentiment analysis can provide a broader picture of emotional well-being.

The present study draws on data from the Black Families and Racial Justice Study (BFRJS), a three-year longitudinal project led by the research team since 2022. The BFRJS follows approximately 700 Black families across Missouri, including parents and adolescents, to capture their experiences over time. The project was intentionally developed with community partnership in mind, recruiting families from rural, urban, and suburban areas to reflect the varied contexts in which Black families live. Participants also represent a broad range of socioeconomic backgrounds, creating opportunities to examine how differences in income, education, and location shape family dynamics and well-being. This design allows for an in-depth exploration of participants' immediate emotional responses to racial violence while centering their own experiences of how they felt in those moments.

2.2. Participants

The current analysis focuses on data from the first wave of the BFRJS. In Wave 1, 384 Black women participated. Household income for this group typically fell between \$25,000 and \$50,000. On average, participants reported completing some college or an associate's degree ($M = 4.28$, $SD = .69$).

2.3. Procedure

In this study, Black women participated during the first phase by completing surveys administered either online or in person. It took approximately 45 minutes to one hour for participants to complete the survey. The surveys included demographic items as well as measures of participants' racialized experiences. All participants provided informed consent before beginning the surveys. The project received Institutional Review Board approval (IRB #202112032). Recruitment took place over

a six-month period as part of the broader three-year study. Recruitment materials were shared through local agencies, community organizations, and other Black community-centered spaces. Participants could choose to complete the surveys electronically or request physical paper copies. Outreach efforts were deliberately community-driven and supported by local leaders to promote participation.

2.4. Measures

2.4.1. Demographics

Participants reported key sociodemographic characteristics, including age, educational attainment, and household income. Summary statistics for these variables, including means and standard deviations, are presented in Table 1.

Table 1. Mean and Standard Deviation of Demographic Variables.

| Demographic Variables | Mean | SD |
|------------------------|-------|-------|
| Age | 37.04 | 3.835 |
| Education ¹ | 4.28 | .693 |
| Income | 2.14 | .516 |

¹ Note. Education = Associate degree or some college, Income = \$25,000 to \$50,000 per year.

2.4.2. Racial Violence

As a part of the survey, participants were asked to reflect on their emotional reactions to incidents of racial violence. They were provided the following prompt: “Below are some feelings that parents/people may feel in response to racial injustices. Choose the words that describe how you feel in response to racial violence against Black Americans (for example, police brutality, hate crimes, etc.). Racial violence can bring up a lot of different emotions – we want you to check all the words that describe your feelings?” Emotional responses were measured using the Multiple Affect Adjective Checklist-Revised (MAACL-R), a validated self-report instrument widely used to assess emotional states in relation to external stressors [44]. The MAACL-R includes three negative affect subscales, anxiety, depression, and hostility, with established internal consistency reliability (α) ranging from .70 to .92 [44].

2.4.3. Data Preparation

All survey responses were cleaned and preprocessed prior to analysis. For the sentiment analysis component, participants selected adjectives from the MAACL-R that were retained in the dataset. However, the analysis relied on the sentiment scores (negative, neutral, and positive) derived from these selections rather than the raw adjective data. Participants’ chosen words were processed using NLP techniques in Python and classified into sentiment categories using a transformer-based model consistent with prior affective computing research. Positive sentiment scores were removed from subsequent models due to severe multicollinearity with negative sentiment scores, which would have inflated variance and compromised the interpretability of the regression estimates.

For the psychological analyses, participants’ chosen MAACL-R items were converted into standardized T scores for the depression, anxiety, and hostility subscales following established scoring procedures. Demographic variables (age, income, and education) were coded as continuous or ordinal depending on their original response format. Age was treated as a continuous variable. Education and household income were measured using ordered categorical scales (e.g., 1 = Junior High School or Less; 1 = Less than \$25,000). Given the ordered nature of these constructs, both variables were included as ordinal predictors in the regression models. Missing data were handled using listwise deletion because fewer than 5% of cases had incomplete responses, and sensitivity checks indicated that results were robust to this approach.

2.4.4. Sentiment Analysis with RoBERTa

Sentiment analysis was applied to participants' MAACL-R adjective selections to quantify the emotional tone of their responses. The analysis focused on negative and neutral sentiment scores due to the multicollinearity issues described above. This approach ensured a more precise estimation of how participants' emotional expressions related to clinically meaningful mental health outcomes.

Two continuous sentiment variables, negative sentiment scores and neutral sentiment scores, were generated for each participant. These values represent the proportion of chosen words that fall into each sentiment category relative to the participant's total number of selected words. This proportional scoring provided a standardized index of emotional tone that complemented the MAACL-R subscale T scores, allowing for the integration of computational and psychological measures of affect.

Sentiment classification was conducted using the pre-trained RoBERTa model "cardiffnlp/twitter-roberta-base-sentiment" via the Hugging Face Transformers library [51] and ran on GPU resources when available. Raw text from the MAACL-R was cleaned and entered into the RoBERTa sentiment pipeline, which labeled each word as positive, neutral, or negative. To evaluate model performance, a benchmark dataset was created by independent annotation of research team members using majority voting. An initial model evaluation yielded 48% accuracy, prompting a 5-fold cross-validation procedure. For each fold, data were split into stratified training and test sets. The model was fine-tuned on the training sets and evaluated on the test sets using the Hugging Face Trainer API. Performance metrics (accuracy, precision, recall, and F1-score) and a confusion matrix were computed using scikit-learn. Following cross-validation, the final model was retrained on the full labeled dataset and used to generate sentiment predictions and confidence scores for all responses. RoBERTa's contextual embedding capabilities enabled effective identification of nuanced emotional language in participants' responses.

2.4.5. Data Analysis Plan

Three multiple linear regression models were estimated to examine the relationship between participants' emotional sentiment scores and mental health outcomes. Each model included negative and neutral sentiment scores and demographic covariates (age, income, and education) as predictors.

1. Depression Model
 - Outcome: MAACL-R Depression T scores
 - Predictors: Negative sentiment scores, neutral sentiment scores, age, income, education
2. Anxiety Model
 - Outcome: MAACL-R Anxiety T scores
 - Predictors: Negative sentiment scores, neutral sentiment scores, age, income, education
3. Hostility Model
 - Outcome: MAACL-R Hostility T scores
 - Predictors: Negative sentiment scores, neutral sentiment scores, age, income, education

These models tested whether participants expressed emotions, as captured through sentiment analysis, aligned with elevated levels of anxiety, depression, and hostility as measured by the MAACL-R.

2.4.6. Rationale for Analytic Approach

Linear regression was used to examine the associations between participants' sentiment scores and their MAACL-R T scores. This approach aligns with the study's aim of assessing how expressed emotions relate to variation in anxiety, depression, and hostility outcomes. Demographic variables were included as covariates to reduce potential confounding and to account for key social determinants of mental health, including socioeconomic status and educational attainment.

Together, these models provide a systematic way to examine whether negative and neutral sentiments expressed in responses to racial violence are associated with clinically meaningful mental

health indicators among Black women. They also account for relevant demographic factors that may influence their relationships.

Sentiment analysis was conducted in Python using standard natural language processing libraries. All statistical analyses, including regression modeling, were conducted in SPSS (Version 31).

3. Results

3.1. Depression

The regression model predicting depression T scores from the MAACL-R was statistically significant, $F(5, 377) = 6.73$, $p < .001$, with an R^2 of .08, indicating that approximately 8% of the variance in depression scores was explained by the predictors. Negative sentiment scores were a significant positive predictor of depression ($B = 9.15$, $SE = 2.00$, $\beta = .24$, $t = 4.58$, $p < .001$). In contrast, neutral sentiment scores were not significant ($p = .342$). Among demographic covariates, age demonstrated a marginal association with depression ($p = .054$), whereas education and income were not significant predictors. These results suggest that higher levels of negative sentiment were strongly associated with increased depression, while demographic factors served primarily as control variables. Table 2 presents the linear regression results examining associations between sentiment scores, demographic covariates, and depression T scores.

Table 2. Linear Regression Predicting Depression T scores (MAACL-R).

| Predictors | <i>B</i> | <i>SE</i> | β | <i>p</i> |
|-----------------------------|----------|-----------|---------|----------|
| Age | 0.32 | 0.17 | .10 | .054 |
| Education | -0.98 | 0.93 | -.06 | .293 |
| Income | -0.44 | 1.26 | -.02 | .728 |
| Negative Sentiment Score | 9.15 | 2.00 | .24 | < .001 |
| Neutral Sentiment Score | -8.84 | 9.30 | -.05 | .342 |

3.2. Anxiety

The regression model predicting anxiety T scores was also statistically significant, $F(5, 377) = 8.58$, $p < .001$, with an R^2 of .10, explaining 10% of the variance. Negative sentiment scores demonstrated a marginal positive association with anxiety ($B = 2.66$, $SE = 1.37$, $\beta = .10$, $t = 1.95$, $p = .052$). Neutral sentiment scores were also marginal, showing a negative association that approached significance ($B = -12.30$, $SE = 6.36$, $\beta = -.10$, $t = 1.93$, $p = .054$). Age was a significant predictor, with older participants reporting higher anxiety ($B = 0.58$, $SE = 0.11$, $\beta = .26$, $t = 5.07$, $p < .001$). Education and income were not significant predictors of anxiety. These findings indicate that age was the strongest demographic predictor of anxiety, while sentiment-related variables showed weaker, borderline associations. Table 3 presents the linear regression results examining associations between sentiment scores, demographic covariates, and anxiety T scores.

Table 3. Linear Regression Predicting Anxiety T scores (MAACL-R).

| Predictors | <i>B</i> | <i>SE</i> | β | <i>p</i> |
|------------|----------|-----------|---------|----------|
| Age | 0.58 | 0.11 | .26 | < .001 |
| Education | -0.91 | 0.64 | -.07 | .155 |

| | | | | |
|--------------------------------|--------|------|------|------|
| Income | -0.16 | 0.86 | -.01 | .849 |
| Negative Sentiment Score | 2.66 | 1.37 | .10 | .052 |
| Neutral Sentiment Score | -12.30 | 6.36 | -.10 | .054 |

3.3. Hostility

The regression model predicting hostility T scores was statistically significant, $F(5, 377) = 9.35$, $p < .001$, with an R^2 of .11, accounting for 11% of the variance. Negative sentiment scores were a significant predictor ($B = 13.56$, $SE = 2.65$, $\beta = .26$, $t = 5.12$, $p < .001$). Age also significantly predicted hostility ($B = 0.60$, $SE = 0.22$, $\beta = .14$, $t = 2.71$, $p = .007$). Education demonstrated a marginal negative association with hostility ($p = .055$), whereas income and neutral sentiment scores were not significant predictors. Overall, these results suggest that negative sentiments were consistently associated with higher hostility, and age also contributed meaningfully to variance in hostility outcomes. Table 4 presents the linear regression results examining associations between sentiment scores, demographic covariates, and hostility T scores.

Table 4. Linear Regression Predicting Hostility T scores (MAACL-R).

| Predictors | <i>B</i> | <i>SE</i> | β | <i>p</i> |
|--------------------------------|----------|-----------|---------|----------|
| Age | 0.60 | 0.22 | .14 | .007 |
| Education | -2.37 | 1.23 | -.10 | .055 |
| Income | 0.05 | 1.67 | .00 | .978 |
| Negative Sentiment Score | 13.56 | 2.65 | .26 | < .001 |
| Neutral Sentiment Score | -10.63 | 12.33 | -.04 | .389 |

4. Discussion

This study examined the association between Black women's emotional responses to racial violence in Missouri and their clinical indicators of depression, anxiety, and hostility using the MAACL-R in combination with sentiment analysis. Across all models, negative sentiment scores consistently predicted higher depression and hostility T scores and demonstrated a marginal association with anxiety, highlighting the psychological burden associated with negative affective responses to racial violence. Neutral sentiment scores were largely nonsignificant, though they showed a weak negative association with anxiety that approached significance. Demographic factors, particularly age, were significant in some models. These findings suggest that expression of negative emotions are important indicators of psychological distress in the context of racialized trauma. Also, they suggest that social and structural positioning may shape how racial violence translates into mental health outcomes.

The findings align with existing literature documenting the association of racial violence with an increased risk of depression and anxiety among Black populations [9,10] (see [9], pp. 31–43; [10], 466–485). This study extends prior work by focusing specifically on Black women and integrating sentiment analysis with the MAACL-R. By doing so, the current study highlights that emotional responses of racial violence among Black women are not only measurable through clinical assessments. These emotional responses are also evident in the affective tone of their expressed emotions. This combined approach provides a more nuanced understanding of racial trauma and its mental health effects among Black women.

Demographic factors also contributed to the outcomes. Age was positively associated with both anxiety and hostility. It also demonstrated a marginal association with depression. Among Black women in Missouri, this suggests that the cumulative impact of racial violence may increase across their life course. This finding aligns with previous literature by Chatters et al. [52] (pp. 113–118), who utilized life course theory to understand the effects of racism across the life course of older Black Americans. In contrast, education and income were not significant predictors across models. This finding suggests that socioeconomic attainment alone may not offer protection against the psychological effects of racial violence. Moreover, this pattern highlights the importance of considering structural racism and gendered racial stressors that persist regardless of socioeconomic status.

The consistent role of negative sentiments across outcomes suggests that Black women's emotional expressions, including anger, sadness, and frustration, are not purely reactive in state. They may also serve as indicators of elevated risk for clinically significant mental health outcomes among this population. In particular, hostility, which is often stigmatized through stereotypes such as the "angry Black woman," emerged as an important emotional state strongly associated with negative sentiment. Rather than pathologizing this trait, it should be understood within the broader context of systemic oppression, where hostility may function as both an indicator of distress and a form of self-protection.

Our findings contribute to a growing body of work that positions racial violence as a determinant of health, with specific implications for Black women's mental health. The integration of clinical and computational tools emphasizes the importance of utilizing multi-method approaches for capturing the complexity of racialized emotional experiences among Black women. This research suggests that interventions targeting Black women must account for the emotional burden of racial violence. Furthermore, it should avoid framing emotional responses such as anger or frustration as maladaptive in isolation. Instead, culturally responsive mental health services should recognize these responses as rooted in Black women's lived experiences of racial trauma.

Future research should build on this study by employing longitudinal designs to examine how emotional responses evolve over time and whether they predict long-term clinical outcomes. Also, incorporating additional protective factors such as social support and coping strategies would deepen the understanding of how Black women navigate and resist the psychological harms of racial violence. Lastly, computational approaches could be refined by further training the RoBERTa model on a large collection of text specific to Black women and racial violence. This would ensure the emotional expressions of Black women are accurately represented.

5. Limitations

Several limitations should be acknowledged when interpreting the findings of this study. One limitation of the study was its focus on Black women residing in Missouri. While this demographic is key to understanding the psychological consequences of racial violence in this specific historical and geographical context, the findings may not be generalizable to Black women in other regions of the United States or to other racial and ethnic groups. Additionally, a non-random, community-based recruitment strategy may limit the representativeness of the sample.

Another limitation of the study is that analyses were conducted on cross-sectional data. As such, causal inferences cannot be drawn about the relationship between emotional responses to racial

violence and clinical indicators of mental health outcomes. Longitudinal analysis would need to be conducted to examine how these emotional patterns evolve and whether they predict future risk for clinical depression, anxiety, or hostility.

Although the MAACL-R is a validated instrument, it is limited by its reliance on self-report data, which may be influenced by cultural expectations surrounding emotional expression. Sentiment analysis, while providing valuable computational insight, is also limited in its ability to capture the full nuance of Black women's emotional lives, especially when those emotions are shaped by cultural, historical, and contextual factors that may not be easily reducible to positive, negative, or neutral categories.

Another limitation was the exclusion of positive sentiment scores due to multicollinearity. This decision reduced the scope of the analyses and potentially overlooked the protective role that positive emotions may play in shielding against distress. Additionally, while regression models accounted for demographic covariates such as age, education, and income, other potentially relevant factors were not included and may have influenced the results.

Lastly, the study used T score cutoffs on the MAACL-R as indicators of mental health risk. While these thresholds are widely used in clinical research, they do not substitute for a full clinical assessment. Therefore, the findings should be interpreted as suggestive of elevated risk rather than diagnostic of depression, anxiety, or hostility.

6. Conclusions

This study examined the association of Black women's emotional responses to racial violence and how it relates to clinical indicators of depression, anxiety, and hostility. By combining the Multiple Affect Adjective Checklist-Revised (MAACL-R) with sentiment analysis, the study demonstrated that negative sentiments consistently predicted higher levels of psychological distress across all models. Neutral sentiments were largely nonsignificant, highlighting the relevance of negative affect as an indicator of vulnerability. Demographic factors such as age and education also influenced outcomes, highlighting the complex ways in which social position shapes mental health concerns.

These findings contribute to the growing body of literature that racial violence is not only a social and political issue but also a serious determinant of health. For Black women, the emotional burden of racial violence is both measurable and clinically meaningful, with implications that extend across generations. By integrating computational and clinical tools, this study provides a more nuanced understanding of how racial trauma manifests emotionally and psychologically in Black women's lives in Missouri.

This study reinforces the urgent need for culturally responsive mental health providers and interventions that recognize the intersectional realities of Black women and validate their emotional responses as rooted in systemic oppression rather than pathology. Future research should continue to refine multi-method approaches and explore coping strategies that may minimize the effects of racial violence. Addressing these issues is critical not only for improving clinical outcomes but also for advancing racial and gender equity in mental health care.

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Abbreviations

The following abbreviations are used in this manuscript:

| | |
|---------|---|
| MAACL-R | Multiple Affect Adjective Checklist-Revised |
| RBF | Racial Battle Fatigue |
| PWIs | Predominantly White Institutions |
| PTSD | Post-Traumatic Stress Disorder |
| NLP | Natural Language Processing |
| RoBERTa | Robustly Optimized BERT Approach |

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