

Psychometric properties and social correlates of the revictimizer racism scale in the brazilian context

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Abstract

Background Contemporary manifestations of racism often appear in subtle forms, one of them is the accusations that Black people exploit victimhood narratives. The Revictimizer Racism Scale (RRS), developed in Brazil, was designed to capture this nuanced form of prejudice. The present study aimed to strengthen the psychometric foundations of the RRS and investigate the relationship between its score and sociodemographic, psychosocial, and attitudinal variables.

Method The validity of the RSS, based on internal structure and external variables, reliability, and measurement invariance, was evaluated in a sample of 272 Brazilian adults.

Results Using estimation techniques suitable for ordinal data (WLSMV), we confirmed a unidimensional structure and high internal consistency. Critically, the RRS demonstrated measurement invariance across gender, race, and political orientation, supporting its use in group comparisons. Higher RRS scores were observed among men and right-wing participants. Moreover, revictimizer racism was associated with older age, lower education, stronger beliefs in White-Black resource competition, greater perceived exposure to ethnically diverse environments, less support for racial quota policies, and lower internal/greater external motivation to respond without prejudice. A regression model integrating these variables explained 50% of the scale's variance.

Conclusion The RRS demonstrated good psychometric properties, establishing itself as an instrument with strong validity and reliability for measuring revictimizer racism, a subtle manifestation of prejudice aligned with contemporary social norms.

Keywords Racism · Prejudice · Revictimization · Psychometrics · Brazil

Background

Racism evolves in response to societal changes, often adapting in novel ways to persist over time [1]. The overt old-fashioned prejudice has become less socially acceptable and has been replaced by covert contemporary prejudice [2]. The latter is described by a broad range of characteristics, e.g., subtle, ambiguous, indirect, diffuse, fragmented, and chronic. Authors have addressed these contemporary forms of racism (e.g., aversive racism [3],

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subtle prejudice [4], racial apathy [5], and colorblind racism [6]), their predictors, and outcomes. These contemporary forms of racism may be as harmful as, or even more harmful than, old-fashioned prejudice because they operate under the radar of antiracist norms while reinforcing the moral exclusion of Black people and hierarchical structures of domination [7]. Beyond the need for theoretical refinement of newer forms of racial prejudice, their differences and similarities (for a discussion, see [8]), there is a pressing need for psychological instruments capable of measuring racism and its associations with broader psychosocial and demographic factors.

Revictimizer racism

A contemporary manifestation of racism involves the perception that Black people exploit victimhood narratives [9, 10]. This narrative has gained prominence in, among others, Brazil, a country with one of the largest Black populations [11] and a racial history shaped by the myth of racial democracy [12]. Official statistics consistently show that Black Brazilians experience systemic social disadvantages relative to White Brazilians, including higher unemployment, unmet healthcare needs, environmental exposure, incarceration, homicides, violent deaths, and lower levels of education and income [13, 14]. Despite this social context, Brazilian society has adopted a more conservative stance toward injustices, demands, and achievements of Black individuals (and other political and representative minorities), particularly since the 2010s [10, 15–17]. This trend has been linked to a backlash effect against affirmative action policies, amplified by misinformation and lack of regulation on social media platforms [18, 19]. As a result, demands for racial justice and equality have increasingly been dismissed by some sectors of society as expressions of unwarranted victimhood [10].

In this context, Lima et al. [20] coined the term “revictimizing” to describe a contemporary form of racism characterized by the claim that Black individuals create and exploit narratives of racial victimization to justify their social and economic disadvantages, or to seek unfair advantages. Complaints and discussions on racial issues are dismissed as “whining,” “victimhood,” or excessive rhetoric, and Black people are seen as responsible for the persistence of racism — by supposedly “insisting” on the issue, thereby preventing it from being overcome. Thus, Black individuals experience revictimization: first through experiencing racism and then being blamed for calling attention to or denouncing it. Beliefs of Black victimhood narratives imply a core characteristic of revictimizer racism: the denial or minimization of racism’s existence. This form of racism is also reinforced by meritocratic beliefs portraying Black individuals as socially privileged despite exerting less effort; social and economic failure is thus attributed to a lack of individual will or ability, rather than to structural discrimination [21–23].

To our knowledge, no contemporary racism construct explicitly addresses these characteristics. For instance, cordial racism in Brazil [24] is expressed through ostensibly harmless jokes and popular sayings. Modern racism [25] involves the perception that Black people receive excessive undeserved privileges, which also encompasses meritocratic beliefs, similarly to revictimizer racism. Such beliefs are deeply rooted in contemporary societies and underpin other recent theoretical frameworks. For instance, whereas colorblind racism argues that abstract liberalism (i.e., individualism, meritocracy, and equality) hinders recognition of ethnic-racial inequalities and injustices in U.S. society, revictimizer racism goes further by explicitly portraying minorities’ denunciations of racism as exaggerated, strategic, or self-serving [6, 26]. Likewise, although racial apathy reflects indifference toward racial inequalities and injustices, revictimizer racism is characterized by active attribution of responsibility to Black people for the persistence of racism, since they “insist” on discussing it [2, 5, 27]. In this regard, revictimizer racism converges with existing conceptualizations of contemporary racism while introducing an additional dimension centered on the delegitimization and secondary victimization of anti-racist claims.

Revictimizer racism scale

Given the current social context in Brazil and the need to operationalize the revictimizer racism for research purposes, Lima et al. [20] developed the Revictimizer Racism Scale (RRS). The items were derived from authentic racist comments posted on Brazilian news websites addressing racial issues, ensuring contextual relevance to the

scale. Two initial validation studies demonstrated good psychometric properties. The first study included content validity analyses with 10 expert judges and exploratory and confirmatory factor analyses ($n=121$), supporting a unidimensional¹ structure with adequate fit indices. The second study ($n=104$) provided evidence of convergent validity through associations with the Modern Racism Scale [25, 28] and the Right-Wing Authoritarianism Scale [29, 30]. Interestingly, the RRS showed no significant correlations with internal or external motivation to respond without prejudice [31]. The RRS represents significant advances over previous psychometric instruments designed to measure racism in Brazil: it accounts for racism in its contemporary context, does not exhibit high reactivity to antiracist norms, was developed based on Brazilian sociocultural aspects, and does not conflate racism with political conservatism [20, 24, 25, 32–34]. Additional information comparing the RRS with previously validated Brazilian instruments is available in the supplemental material.

Despite its strengths, the development and validation study of the RRS [20] faces notable limitations. First, the sample composition limits generalizability, as participants were predominantly university students, a group typically less aligned with conservative views and more racially literate. Geographic representation was also restricted, with most participants in Study 2 (80%) originating from a single Brazilian state and no detailed stratification across states or macro-regions reported. Another limitation concerns political orientation. Although its effect was controlled in the analyses, this variable was not thoroughly examined, with right-wing participants underrepresented (6% in Study 2). Second, methodological concerns emerged regarding the procedures used to establish internal structure validity. The study relied on principal axis factoring and maximum likelihood estimation, both of which assume approximately normal data distributions, with principal axis factoring additionally being sensitive to small sample sizes [35, 36]. These limitations highlight the need to re-examine the RRS internal structure using a new sample and more robust extraction methods suitable for ordinal and non-normal data.

Current investigation

Therefore, this study aimed to further investigate the psychometric properties of the RRS using a larger, more sociodemographically diverse sample. We re-examine the internal structure validity and the internal consistency reliability of the RRS through new analytical techniques. Additionally, we checked the measurement invariance across gender, race, geographic region, and political orientation. We also explored how revictimizer racism measured by the RRS relates to key variables: sociodemographic position — (1) gender, (2) age, (3) race, (4) country region, (5) educational level, and (6) family income, — ideological and status-based variables — (7) political orientation, and (8) subjective social status, — motivational and belief-based mechanisms — (9) internal and external motivation to respond without prejudice, and (10) beliefs about resource competition between White and Black individuals — and attitudes — (11) perceived exposure to ethnically diverse environments, (12) subjective racial literacy, and (13) support for racial quota policies.

Gender, age, race, country region, and education reflect structural position, socialization, and exposure to dominant ideologies associated with racial prejudice. Income and subjective social status capture objective and perceived economic security, which shape intergroup attitudes [37]. Including both allows these dimensions to be analytically disentangled. Political orientation robustly predicts contemporary racism, which has intensified amid political polarization in Brazil and globally [38, 39]; right-wing political orientations correlate with greater conservatism, which in turn is associated with racial prejudice [32, 40, 41]. Internal and external motivations to respond without prejudice distinguish egalitarian behavior driven by personal values from that driven by social pressure, and these motivations differentially predict subtle and overt racism [42]. Beliefs about Black–White resource competition operationalize group threat, a central mechanism underlying opposition to affirmative action and revictimization narratives portraying Black advancement as unfair to White [43, 44]. Perceived

¹ The RRS was developed with 22 items, divided into two factors: (1) revictimization (subtle racism, 16 items) and (2) physical and cultural differences between Whites and Blacks (blatant racism, 6 items). The authors conducted Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), which supported the decision to eliminate the second factor entirely, as well as six items from the first factor.

exposure to ethnically diverse environments was included given evidence that diversity can reduce prejudice via contact or elicit backlash under perceived threat [45, 46]. Subjective racial literacy reflects perceived engagement with racial issues. Finally, (low) support for racial quota policies is closely tied to new forms of racism (i.e., subtle and symbolic) and indexes denial of discrimination and beliefs that minorities illegitimately claim victimhood, providing strong construct-validity evidence for the RRS [25, 47].

We went further than exploring social correlates between the RRS and these external variables. After identifying significant group differences and correlations, we developed a multiple linear regression model to predict revictimizer racism. It served as a data- and theory-driven explanatory test, evaluating whether revictimizer racism can be understood as a correlate of a coherent set of ideological, motivational, cognitive, experiential, and structural factors. Finally, we conducted an extreme-groups analysis to compare participants with high and low RRS scores on each psychosocial and attitudinal variable to assess criterion validity. Contrasting individuals at the lower and upper ends of the construct increases sensitivity to theoretically meaningful differences in associated variables, especially for revictimizer racism (and other contemporary forms of racism), which is expressed indirectly and subtly, with restricted variance in the general population [3, 5, 35]. Furthermore, the analysis of extreme groups allows inferences on the comparison between two social groups: individuals who have internalized anti-racist norms and those with higher levels of racism.

Method

The data used in this study was obtained while conducting a previously published investigation [48], in which results from psychometric instruments were related to an experimental psychophysical measure². The project received approval from the Human and Social Sciences Research Ethics Committee at the University of Brasília (reference number: 30539820.9.0000.5540). Data and statistical analyses are publicly available in this study's repository on the Open Science Framework (OSF, <https://osf.io/rjbnw/>).

Participants

Participants were recruited via social media posts and a messaging app, with a link that directed them to an online form. This included the informed consent form, sociodemographic questions, and the psychometric instruments described below. The sample consisted of 272 participants aged between 18 and 68 years ($M=32.6$, $SD=12.0$). Regarding gender, 37.5% identified as male, 62.1% as female, and 0.4% as another gender. Concerning racial self-identification, participants declared their race based on the race-or-color categories established by the Brazilian Institute of Geography and Statistics (IBGE) [49]; the majority (56.3%) reported being White, followed by Brown³ (31.6%), Black (8.5%), Yellow (3.3%), and Indigenous (0.4%). Most participants (45.6%) had completed higher education, followed by incomplete higher education (31.3%), complete secondary education (15.4%), complete primary education (3.7%), incomplete secondary education (2.6%), and incomplete primary education (1.5%). The largest portion of the sample was from the Southeast region (41.2%), followed by the Midwest (34.2%), Northeast (16.2%), South (7.0%), and North 23 (1.5%). Regarding monthly household income *per capita*, family income levels were established based on the nominal monthly household income per capita of the Federal District's population [50]; most participants (26.5%) reported earnings between 2,000 and 4,000 Brazilian reais, followed by 1,000–2,000 reais (23.9%), more than 4,000 reais (23.2%), 500–1,000 reais (17.3%), and

² This study examined the effect of economic scarcity on racial perception using psychosocial and attitudinal variables (including RRS scores). Its scope, analyses, and results do not overlap with those of the present study.

³ Pardo, in Brazilian Portuguese.

up to 500 reais (9.2%)⁴. Finally, 63.6% reported greater affinity with left-wing political orientations, while 36.4% identified with right-wing orientations. For more detailed information, see Supplementary Table 1 in the supplemental materials available on OSF.

Instruments

Revictimizer racism scale (RRS)

This instrument measures revictimizer racism, a contemporary form of racism emerging from Brazil's current political and social landscape [20] presented in the Introduction. The scale comprises 10 items loading on a single factor, rated on a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Item 6 was reverse-scored prior to analysis⁵. The total scale score was computed as the sum of responses across the 10 items. Participants responded to items through self-report positioning. Previous reliability analyses demonstrated internal consistency coefficients ranging from $\alpha=0.86$ to 0.91 across different studies [20, 48].

Internal and external motivation to respond without prejudice scale

The scale is a Brazilian version [51] of the bifactorial scale developed by Plant and Devine [31], and assesses motivations for responding without racial prejudice. The factor Internal Motivation is related to the internalization of egalitarian and anti-racist responses (e.g., “According to my values, it is wrong to use stereotypes in relation to Black people”), consists of 4 items, and showed an internal consistency of $\alpha=0.55$ in the Brazilian version. The factor External Motivation pertains to the pressure exerted by social norms and conventions (e.g., “I try not to show prejudice to avoid disapproval”), includes 5 items, and was found to have an internal consistency of $\alpha=0.80$. Responses are provided on a Likert scale ranging from 1 (strongly disagree) to 9 (strongly agree). For our sample, internal consistency was good for the external motivation factor ($\omega=0.83$, 95% CI [0.80, 0.86]) and acceptable for the internal motivation factor ($\omega=0.72$, 95% CI [0.66, 0.78]).

Questionnaire on beliefs about resource competition between white and black individuals

This instrument measures zero-sum beliefs related to resource competition between White and Black individuals (e.g., “More good jobs for Blacks means fewer good jobs for Whites”). The questionnaire was developed by Krosch and Amodio [44], based on 6 selected and adapted items from Esses et al. [43], which focused on immigrants. Items were translated into Portuguese and adapted for the Brazilian context in the study by Antunes et al. [48]. Responses are provided on a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). For our sample, the confirmatory factor analysis indicated the following fit indices (CFI = 0.99, TLI = 0.99, RMSEA = 0.07, SRMR = 0.02). Internal consistency was high ($\omega=0.94$, 95% CI [0.93, 0.95]).

MacArthur scale of subjective social status

This scale assesses respondents' subjective perception of their social status relative to their society⁶. Both in the original version [52] and the Brazilian version [53], the single-item measure is accompanied by an illustration of

⁴ According to the exchange rate on the closing date of the manuscript data collection, R\$1000 (one thousand Brazilian reais) was equivalent to US\$198 (one hundred and 98 US dollars).

⁵ Item 6 is the only item that should be corrected with reverse scoring. The original article on the construction and validation of the instrument also indicates that item 4 has reverse scoring. However, this is an error that was confirmed by the corresponding author.

⁶ The scale can also include an item to assess social status concerning the neighborhood or workplace, although we did not do so.

a 10-step ladder representing the social hierarchy, where the first and last steps indicate very low and very high social status, respectively. Participants select the step that best represents their position on the social scale. The instrument showed good test-retest reliability ($Kappa = 0.62$, Intraclass Correlation - ICC = 0.67) in the Brazilian version. In our study, rather than presenting an actual ladder, we asked participants to imagine one. All other information, instructions, and response formats were maintained as in the adaptation study.

Sociodemographic, psychosocial, and attitudinal questionnaire

Designed by the authors, this form collected information on age, gender, country region of residence, education, self-declared race, and income. Participants also answered three questions related to racial issues: (1st) “How ethnically diverse do you consider the environments you most frequently visit (university, work, gym, social environments, bars, etc.)?”, with responses ranging from 1 (very little diverse) to 7 (very diverse); (2nd) “From your point of view, how literate are you (how knowledgeable and up-to-date are you) about racial discussions in Brazil?”, with the answer ranging from 1 (very little literate) to 7 (very literate); and (3rd) “How much do you support racial quota policies for public service exams and university admissions?”, with the answer ranging from 1 (totally disagree) to 7 (totally agree). Finally, each participant was asked to choose the political-ideological orientation they most identified with, whether right- or left-wing. The social form provided the following instructions for defining the political-ideological orientation: “Understand ‘right-wing’ as an ideology that believes society progresses when individual rights and civil liberties are prioritized, and the power of government is minimized. ‘Left-wing’ is understood as an ideology that believes the government has an important role in guaranteeing rights and promoting equality among all”.

Data analysis

To determine whether factor extraction was appropriate, we examined the Kaiser-Meyer-Olkin (KMO) index value as a measure of overall sampling adequacy, considering values above 0.70 as acceptable, though above 0.80 as desirable [54]. To gather information about the dimensionality of the structure, we conducted Schwarz’s Bayesian Information Criterion (BIC) dimensionality test, parallel analysis [55], and exploratory graph analysis [56]. All three methods recommend the optimal absolute number of factors to be extracted from the data. We also conducted a closeness-to-unidimensionality assessment. For this purpose, we examined indices derived from unidimensional congruence (UniCo), explained common variance (ECV), and the mean of item residual absolute loadings (MIREAL). UniCo values above 0.95, ECV values above 0.85, and MIREAL values below 0.30 indicate that the structure can be treated as essentially unidimensional [57].

For the confirmatory factor analysis, given the ordinal Likert-type response format of the RRS, we employed the weighted least squares mean and variance adjusted (WLSMV) estimator, which is commonly recommended for categorical data. We evaluated model fit using multiple indices and widely used guidelines for interpreting the adequacy of model–data fit [53, 54]: the scaled chi-square to degrees of freedom ratio ($\chi^2/df < 3$), the comparative fit index (CFI > 0.95), the Tucker–Lewis index (TLI > 0.95), the standardized root mean square residual (SRMR < 0.08), and the root mean square error of approximation (RMSEA < 0.06). Scale reliability was assessed using McDonald’s omega (ω) coefficients and their corresponding confidence intervals. Consistent with common practice in the literature, values around 0.70 or higher were interpreted as indicative of acceptable internal consistency [54, 58]. Measurement invariance across gender (men and women), race (White and Black+Brown⁷), country region (Southeast and Midwest), and political orientation (right- and left-wing) was tested using multi-group confirmatory factor analysis. Due to the limited sample size, the invariance analysis by region did not include participants residing in the North, Northeast, or South, nor did it include participants who self-identified as Yellow or

⁷ Based on the analyses carried out by the IBGE, we grouped individuals who self-identified as Black or Brown because both categories share similar experiences of racial exclusion and discrimination and exhibit comparable social indicators. Therefore, Black and Brown people together are the main beneficiaries of affirmative policies in Brazil.

Indigenous. Models were estimated using the WLSMV estimator based on polychoric correlation matrices, given the ordinal nature of the items. Invariance was assessed sequentially by testing configural, metric, and scalar models. The decision rule regarding the level of invariance achieved was guided by the following recommendation [59]: $\Delta CFI \leq 0.010$ and $\Delta RMSEA \leq 0.015$ for all invariance steps; for the SRMR, values ≤ 0.010 were considered acceptable for metric invariance and ≤ 0.005 for scalar invariance. All the analyses described to this point were conducted using R Studio [60], except for the BIC, parallel analysis, and closeness-to-unidimensionality assessment which were performed using the FACTOR software [61].

Subsequent analyses examined relationships between the RRS scores and sociodemographic variables (age, gender, race, political orientation, country region, educational level, and family income), psychosocial variables (subjective social status, internal and external motivation to respond without prejudice), and attitudinal variables (beliefs about White-Black resources competition, perceived exposure to ethnically diverse environments, subjective racial literacy, and support for racial quota policies). Data normality was assessed using the Shapiro-Wilk test. Given non-normal distributions, we employed nonparametric methods for group comparisons (Mann-Whitney U test) and correlations (rank-order Spearman's coefficient with 95% CI based on 1000 bootstrap replicates). A significance level of 5% (two-tailed) was set for all tests. Effect sizes for nonparametric analyses were computed using the Lenhard and Lenhard [62] calculator.

After identifying significant group differences and correlations related to RRS scores, we developed a multiple linear regression model to predict revictimizer racism. The model included nine predictors, and we used the adjusted R^2 to evaluate model fit. Normality and independence of residual were verified using a Q-Q plot and the Durbin-Watson test, respectively, and collinearity was assessed using Variance Inflation Factor (VIF) statistics.

Finally, we conducted an extreme groups analysis to compare participants with high and low RRS scores on each psychosocial variable. We defined extreme groups as those participants scoring below the first quartile, i.e. quadrant 1 ($Q1 \leq 12$, $n=83$) or above the third quartile, i.e. quadrant 4 ($Q4 > 26$, $n=68$) of the RRS distribution. Group comparisons were performed using the Mann-Whitney U test, with significance levels and effect sizes computed as described previously. All analyses involving the RRS and social variables, including regression and extreme groups analysis, were conducted using Jamovi 2.3 [63] and SPSS 25 [64].

Results

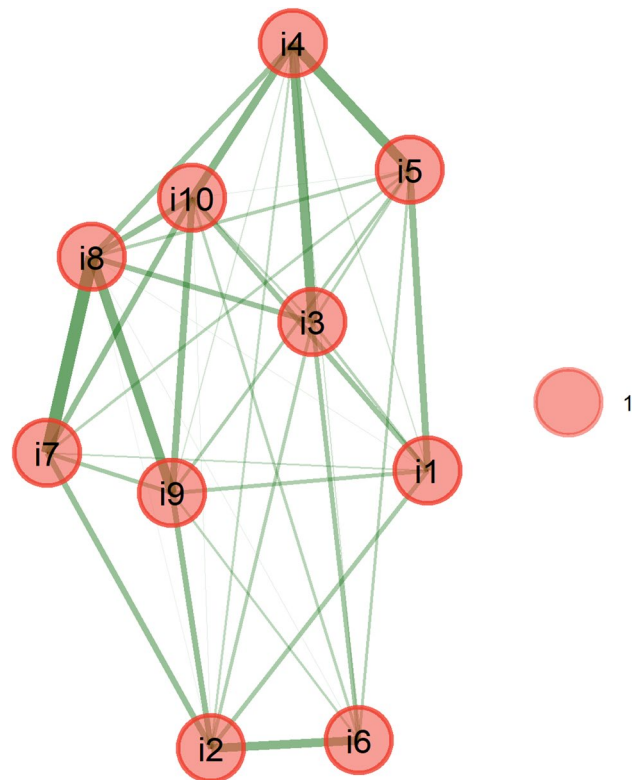
Internal structure and reliability

The initial data analysis indicated excellent overall sampling adequacy ($KMO = 0.93$), supporting the appropriateness of factor analysis. The BIC and parallel analysis results recommended the extraction of one factor. Exploratory graphical analysis also suggested a unifactorial structure with satisfactory fit indices (see Fig. 1). All values obtained from the closeness-to-unidimensionality assessment ($UniCo = 0.994$, $ECV = 0.939$, $MIREAL = 0.157$) indicated that the data can be treated as essentially unidimensional. Taken together with theoretical considerations, all statistical evidence supports the scale's unidimensionality.

Because we found no evidence that bifactor or three-factor structures would be supported by the data, we examined the results of the confirmatory factor analysis using a unidimensional structure. Model fit indices for the proposed structure were as follows. Robust chi-square (75.13) per degree of freedom (35) was 2.15. The CFI was 0.991 and the TLI was 0.998. The RMSEA was 0.065, 90% CI [0.045, 0.085], and the SRMR was 0.039. Table 1 presents the standardized factor loadings of the 10 items in the unidimensional structure.

Furthermore, the instrument showed good reliability as assessed by McDonald's omega, $\omega=0.91$, 95% CI [0.89, 0.93]. The RRS mean score was 20.13 ($SD=9.59$). The scale's mean item score was 2.01 ($SD = 0.36$), below the midpoint (3), $t = -8.70$, $p < .001$ (i.e., there was a general tendency to disagree with the items).

Fig. 1 Graphical analysis of the unifactorial factorial structure of the revictimizer racism scale



Measurement invariance

As shown in Table 2, the results of the invariance analyses for gender (men and women), race (White and Black+Brown), and political orientation (right- and left-wing) largely supported configural, metric, and scalar measurement invariance. Across these groupings, changes in incremental fit indices, particularly ΔCFI , remained within thresholds commonly recommended in the literature at each level of parameter constraint. Changes in absolute fit indices also remained within acceptable ranges. For Brazilian regions (Midwest and Southeast), the decrease in CFI was at the upper bound of commonly recommended cutoffs. More notably, increases in absolute fit indices exceeded widely accepted thresholds when factor loadings were constrained. We therefore examined modification indices (MI) and expected parameter changes (EPC). Both indicated substantial misfit for the item “In general, in Brazil, white people have more rights than black people” ($MI=54.44$, $EPC = 0.54$), suggesting that its factor loading was not invariant across regions. Accordingly, full metric invariance could not be supported. After freeing this loading, model fit improved, and partial metric invariance was supported, with all remaining factor loadings invariant across the two groups. Following the establishment of partial metric invariance, scalar invariance was evaluated by constraining item thresholds to equality across groups. Full scalar invariance was not supported. However, the resulting partial scalar invariance model showed acceptable changes in fit indices relative to the partial metric model, supporting partial scalar invariance. Accordingly, although some evidence of partial measurement invariance was observed, comparisons across regions should be interpreted with caution.

Relationship with demographic, psychosocial, and attitudinal variables

Gender comparison revealed that men ($n=102$, $M \text{ ranking}=155.78$) exhibited higher levels of revictimizer racism compared to women in the sample ($n=169$, $M \text{ ranking}=124.06$), $U=6601.00$, $Z=-3.23$, $p < .001$, $\eta^2 = 0.04$, $d=0.40$. Similarly, political orientation comparisons indicated that those who identified themselves as right-wing ($n=100$, $M \text{ ranking}=184.05$) had significantly higher levels of revictimizer racism than those who identified as

Table 1 Internal Structure of the revictimizer racism scale

Item	Factorial weight
i1. As pessoas discutem o racismo mais do que deveriam. <i>People discuss racism more than they should.</i>	0.72
i2. No Brasil, com as políticas de ação afirmativa, os negros têm mais privilégios que os brancos. <i>In Brazil, with affirmative action policies, Black people have more privileges than White people.</i>	0.74
i3. O que chamam de “privilégio dos brancos” é, na verdade, construído a partir do esforço das pessoas, e não uma vantagem já existente. <i>What they call “white privilege” is actually built on people’s efforts, not an already existing advantage.</i>	0.77
i4. Independentemente da cor da pele, todos têm as mesmas oportunidades na vida desde que se esforcem. <i>Regardless of skin color, everyone has the same opportunities in life as long as they make an effort.</i>	0.85
i5. O racismo não deveria ser usado como justificativa para não atingir objetivos pessoais. <i>Racism should not be used as an excuse for not achieving personal goals.</i>	0.79
i6*. Em geral, no Brasil, os brancos têm mais direitos do que os negros. <i>In general, in Brazil, White people have more rights than Black people.</i>	0.64
i7. O racismo só existe na cabeça das pessoas que se dizem vítimas dele. <i>Racism only exists in the minds of people who claim to be victims of it.</i>	0.84
i8. Se os negros tivessem mais força de vontade, conseguiriam ascender socialmente tanto quanto os brancos. <i>If Black people had more willpower, they would be able to rise socially as much as White people.</i>	0.90
i9. Dizer que no Brasil há desigualdade de oportunidades entre brancos e negros é exagero. <i>To say that in Brazil there is inequality of opportunities between Whites and Blacks is an exaggeration.</i>	0.85
i10. O racismo só se sustenta quando encontra aceitação dos que se dizem discriminados. <i>Racism only sustains itself when it finds acceptance from those who say they are discriminated against.</i>	0.85

Note. The asterisk (*) indicates an inverted item for scoring

Table 2 Measurement invariance across gender, race, country region, and political orientation

	Fit indices							
	χ^2 scaled (df)	χ^2 DIFF	CFI	Δ CFI	RMSEA	Δ RMSEA	SRMR	Δ SRMR
Women ($n=169$) $\times$ Men ($n=102$)								
Configural	116.912 (70)		0.989		0.071		0.050	
Metric	100.410 (79)	-16.50	0.995	0.006	0.045	-0.026	0.055	0.005
Scalar	140.470 (99)	40.06	0.991	-0.004	0.056	0.011	0.050	-0.005
White ($n=153$) $\times$ Black and Brown ($n=109$)								
Configural	105.602 (70)		0.993		0.063		0.047	
Metric	86.674 (79)	-18.93	0.998	0.005	0.027	-0.036	0.049	0.002
Scalar	129.233 (99)	42.56	0.994	-0.004	0.048	0.021	0.047	-0.002
Midwest ($n=93$) $\times$ Southeast ($n=112$)								
Configural	104.15 (70)		0.991		0.069		0.053	
Metric	148.59 (79)	44.45	0.981	-0.010	0.093	0.024	0.086	0.033
Metric partial*	101.87 (78)	-2.28	0.994	0.003	0.055	-0.014	0.062	0.009
Scalar partial	134.93 (98)	33.06	0.990	-0.004	0.061	0.006	0.053	-0.009
Left wing ($n=171$) $\times$ Right wing ($n=100$)								
Configural	113.89 (70)		0.989		0.068		0.053	
Metric	118.19 (79)	4.29	0.990	0.001	0.061	-0.007	0.067	0.014
Scalar	133.44 (99)	15.26	0.991	0.001	0.051	-0.010	0.054	-0.013

*Note. Partial metric invariance was established by freeing the loading of item “In general, in Brazil, white people have more rights than black people”

left-wing ($n=171$, M ranking=107.90), $U=3745.00$, $Z=-7.73$, $p<.001$, $\eta^2=0.22$, $d=1.06$. The large effect size for this difference stands out.

On the other hand, race comparison showed no difference between White ($n=153$, M ranking=125.43) and Black+Brown participants ($n=109$, M ranking=140.02), $U=7409.5$, $Z=-1.54$, $p=.12$, $\eta^2=0.14$, $d=0.80$.

Similarly, no differences were observed in RRS scores across country regions. Those living in the Midwest ($n=93$, $M \text{ ranking}=104.69$) exhibited similar levels of revictimizer racism compared to those in the Southeast ($n=112$, $M \text{ ranking}=101.60$), $U=5051.00$, $Z=-0.37$, $p=.71$, $\eta^2=0.001$, $d=0.05$. Thus, significant differences in revictimizer racism were observed primarily by gender and, especially, political orientation.

Next, we present analyses examining the relationship between RRS scores and sociodemographic variables: age, educational level, and family income. A moderate correlation⁸ was found between age and RRS scores, indicating that older individuals exhibited higher levels of revictimizer racism, $r_s=0.39$, $p<.001$, 95% CI [0.29, 0.50]. Educational level showed a weak negative correlation with RRS scores, $r_s=-0.13$, $p=.032$, 95% CI [-0.25, -0.01], suggesting that higher education levels are associated with lower expression of revictimizer racism. In contrast, no significant correlation was observed between family income and RRS scores, $r_s=0.01$, $p=.113$, 95% CI [-0.03, 0.21].

In addition to sociodemographic variables, we examined the relationship between RRS scores and psychosocial and attitudinal variables. The results revealed weak correlations between RRS scores and internal ($r_s=-0.15$, $p=.013$, 95% CI [-0.26, -0.04]) and external ($r_s=0.21$, $p<.001$, 95% CI [0.09, 0.32]) motivation to respond without prejudice. Weak-to-moderate correlations indicated that stronger beliefs on White-Black resources competition ($r_s=0.29$, $p<.001$, 95% CI [0.18, 0.40]), as well as perceived exposure to ethnically diverse environments ($r_s=0.36$, $p<.001$, 95% CI [0.25, 0.46]), were associated with higher expression of revictimizer racism. Furthermore, a strong correlation demonstrated that higher RRS scores were associated with lower support for racial quota policies for university and public service admissions ($r_s=-0.62$, $p<.001$, 95% CI [-0.70, -0.53]). Beyond the RRS-related findings, some significant correlations were observed among these variables. Table 3 presents the results of all correlations calculated.

Modeling revictimizer racism

After identifying social variables that exhibited differences between groups or were correlated with the RRS score, we built a multiple linear regression model to revictimizer racism. The model included as predictors: gender, left-right political orientation, age, educational level, internal and external motivation to respond without prejudice, beliefs in White-Black resources competition, perceived exposure to ethnically diverse environments, and support for racial quota policies. The model explained a substantial proportion of the variance in RRS scores, $F(10, 261)=28.2$, $p<.001$, adjusted $R^2=0.50$. All variables were associated with RSS score, except gender, internal motivation to respond without prejudice, and beliefs in White-Black resources competition. The analysis also

Table 3 Correlation matrix of the psychometric measures related to the revictimizer racism scale

Psychosocial variables (M±SD)	1	2	3	4	5	6	7	8
1. RRS (20.1±9.6)	—							
2. Subjective Social Status (5.4±1.7)	0.016	—						
3. Internal Motivation (32.5±5.7)	-0.151*	-0.039	—					
4. External Motivation (19.3±11.8)	0.210***	0.009	0.207***	—				
5. Resources Competition (8.8±6.8)	0.286***	0.119	-0.000	0.306***	—			
6. Diverse Environment (4.8±1.7)	0.360***	-0.156**	0.098	0.191**	0.146*	—		
7. Racial Literacy (4.9±1.2)	-0.096	0.045	0.157**	-0.014	-0.037	0.183**	—	
8. Support for Racial Quotas (5.2±2.1)	-0.617***	-0.038	0.129*	-0.004	-0.107	-0.237***	0.188**	—

Note. RSS, Racism Revictimizer Scale. The table shows the Spearman's correlation coefficient. The asterisks (*) indicate the significance level: * $p<.050$, ** $p<.010$, *** $p<.001$

⁸ For practical purposes, we adopted the following rules of thumb for the modular value of correlation coefficients: $r<.3$, weak; $0.3\leq r<.6$, moderate; $r\geq .6$, strong.

Table 4 Differences in psychosocial variables between high- and low-score groups in the revictimizer racism scale

Psychosocial variables	RRS Median (IQR)		RRS Mean ranking		Statistic	Significance	Effect size measures		
	Q1: Low	Q4: High	Q1: Low	Q4: High			Rank biserial	η^2	d
Subjective Social Status	5.0(3.00)	5.0(3.00)	76.48	75.42	2783	0.882	0.014	<0.01	0.02
Internal Motivation	36.0(3.50)	34.50(5.25)	81.10	69.78	2399	0.089	0.150	0.02	0.26
External Motivation	15.0(17.50)	25.0(19.25)	64.87	89.58	1899	<0.001	0.327	0.08	0.58
Resources Competition	6.0(0.00)	7.0(6.25)	65.08	89.32	1916	<0.001	0.321	0.07	0.53
Diverse Environment	4.0(2.50)	5.(2.25)	60.08	95.43	1501	<0.001	0.468	0.16	0.88
Racial Literacy	5.0(1.00)	5.0(2.00)	79.18	72.12	2558	0.308	0.094	0.01	0.16
Support for Racial Quotas	7.0(0.00)	4.(5.00)	102.32	43.88	638	<0.001	0.774	0.44	1.78

Note. RRS, Racism Revictimizer Scale. IQR, interquartile range. Q1 and Q4, first and fourth quadrants of RRS score distribution

revealed that the support for racial quota policies was the main factor associated with RSS score ($s\beta = -0.4520$, $p < .001$, 95% CI $[-0.555, -0.348]$), followed by external motivation to respond without prejudice ($s\beta = 0.2275$, $p < .001$, 95% CI $[0.132, 0.323]$), age ($s\beta = 0.2104$, $p < .001$, 95% CI $[0.118, 0.302]$), political orientation ($s\beta = 0.2091$, $p = .049$, 95% CI $[0.001, 0.417]$), education ($s\beta = -0.1245$, $p = .006$, 95% CI $[-0.213, -0.036]$), and perceived exposure to ethnically diverse environments ($s\beta = 0.1106$, $p = .019$, 95% CI $[0.018, 0.203]$). The full regression table is available on the OSF.

Criterion validity

Finally, we conducted an extreme groups analysis to compare participants who scored high ($Q4 > 26$, $n = 68$) and low ($Q1 \leq 12$, $n = 83$) on the RRS for each of the investigated psychosocial variables. The results are summarized in Table 4. Participants with higher RRS scores exhibited greater external motivation to respond without prejudice, stronger beliefs in resource competition between White and Black individuals, a perception of their environment as more ethnically diverse, and lower support for racial quota policies for public service exams and university admissions compared to participants with lower SRR scores (all comparisons with $p < .001$).

Discussion

The present study aimed to evaluate the psychometric properties of the RRS, developed within the Brazilian context, by examining its internal structure, reliability, and invariance measurement across gender, race, country region, and political orientation. Additionally, we investigated how this new measure of racism relates to sociodemographic, psychosocial, and attitudinal variables.

Dimensionality

The findings indicated that the instrument is conceptually coherent, with items that consistently reflect a single underlying construct: the revictimizer racism. These results indicate the scale's suitability for measuring a contemporary manifestation of racism, which often emerges subtly and is rooted in perceptions that Black individuals portray themselves as victims in order to claim disproportionate advantages, in the denial or minimization of racism, and in meritocratic beliefs that portray Black people as socially privileged [9, 10, 23]. Our results corroborate and expand upon the initial findings of Lima et al. [20]. Notably, we employed a more suitable extraction method for ordinal and non-normal data (WLSMV), confirmed reliability using McDonald's omega coefficients, and verified measurement invariance.

Measurement invariance

Overall, the results supported invariance across gender, race, and political orientation, indicating that revictimizer racism holds the same meaning across these groups and that observed mean comparisons can be interpreted as reflecting true differences at the latent level rather than measurement artifacts [65].

Results for country region revealed a more complex pattern of measurement invariance. Although configural invariance was supported, imposing metric constraints worsened model fit, suggesting that at least one item was not perceived as equally important across regions. Subsequent analyses indicated that this noninvariance was primarily driven by the item ‘White people have more rights than Black people’. At least three, non-mutually exclusive, factors may account for this pattern. First, the racial composition differs between the compared macro-regions (Midwest vs. Southeast) [66], and place of residence has been highlighted as a relevant factor for racial dynamics in Brazil [2, 27, 67], which may shape how salient or personally relevant this item is to respondents. Second, respondents from different regions may attribute different meanings to the item’s statement itself (e.g., applying different thresholds for what counts as unequal rights) even when reporting similar overall levels of revictimizer racism. Third, this noninvariance may reflect regional variation in structural racial inequality and unequal access to rights in Brazil, in the extent to which such inequality is recognized locally, or in both simultaneously. The present data do not allow us to disentangle these possibilities.

Despite this noninvariance for Brazilian regions, the present invariance analyses represent the first systematic examination of measurement equivalence for the RSS. This may provide important guidance for subsequent correlational, regression, and group-comparison analyses in research contexts. At a minimum, these findings delineate the conditions under which such analyses can be conducted with greater caution and highlight specific measurement parameters that warrant further scrutiny in future studies.

Relationship with demographic, psychosocial, and attitudinal variables

In terms of observed means of RRS, we found higher levels of revictimizer racism among men compared to women, consistent with previous studies [68]. This pattern may reflect men’s status as the dominant social group, whose attitudes often intersect with biases toward other minority groups, given the interplay of race and gender biases in social evaluations (see [69]).

Regarding political orientation, higher levels of racism among individuals identifying as conservative/right-wing were expected, given the consistent evidence linking prejudice (not limited to racial prejudice) and conservatism [32, 70, 71]. In this context, previous studies have indicated that racial biases may be partially explained by constructs related to authoritarianism [20, 31] and support for social hierarchies [72]. Although in the presence of conservatism, more explicit and more subtle forms of racism may overlap [8, 73], political ideology should not be considered the primary precursor of racism. For instance, Blatz and Ross [47] showed that even after statistically controlling for conservatism, individuals with high racism scores were less willing to support reparations for minority groups who had suffered physical and sexual violence during childhood, indicating that racial aversion is not reducible to political ideology or beliefs.

In contrast to Lima et al. [20], we found no significant differences in RRS scores based on participants’ skin color. In their study, they found higher levels of revictimizer racism among self-identified White participants compared to Black participants. However, no differences were observed between Brown and White, or Brown and Black, participants. In our study, Black and Brown individuals were grouped into a single category since Brazilian society is characterized by profound racial mixing, and social inequalities similarly affect both groups [13, 14]. This is a common procedure of the IBGE. In addition, our invariance analysis did not segregate Black and Brown participants due to the limited sample size. Future investigations with larger samples may clarify whether Brown participants masked a White-Black score difference on the RRS as found in Lima et al. [20] or whether Black and White racial groups do not differ in revictimizer racism. Additional discussion of the latter hypothesis appears in the supplemental material at OSF for brevity.

Furthermore, no differences in RRS scores were observed between residents of the Southeast and Midwest, the only Brazilian regions compared due to sample size constraints. Given that racism manifests differently across locations, shaped by historical, economic, and social determinants [71, 74], this finding is not unexpected. These regions share closer racial demographics, with White and Black+Brown individuals representing 37–49% and 49–61% of the population, respectively [49]. These proportions differ substantially in other Brazilian regions, such as the South (72% White and 26% Black+Brown), the North (20% White and 75% Black+Brown), and the Northeast (26% White and 62% Black+Brown). Notwithstanding, the difference between the Southeast and the Midwest regions should be interpreted with care due to partial measurement invariance.

RRS scores were positively correlated with age, consistent with previous studies, indicating that racial prejudice (both implicit and explicit) tends to increase with age due factors such as diminished inhibitory control and greater adherence to conservative attitudes [75, 76]. We also observed a negative correlation between RRS scores and educational level, consistent with findings from Lima et al. [20], who reported lower levels of racism among a predominantly university-student sample (nearly 90%). Much research has shown that individuals with higher levels of education tend to exhibit more positive attitudes toward ethnoracial minorities (e.g. [77–79]), . One of the main explanations for these findings is the so-called education's liberalizing effect, i.e. access to broader knowledge, greater critical reflection on racial inequality, and increased acceptance of diversity, among other factors. However, there is also evidence that this effect does not occur uniformly across academic majors (see [80]).

The expansion of ethnoracial diversity in Brazilian university environments, driven by affirmative action policies (e.g. [81], establishing the quota system), was intended to reduce racial biases, as low diversity environments represent one of the markers of structural racism [82]. Nevertheless, progressive societal changes are often accompanied by a resurgence of practices and psychological processes that reinforce inequality and the maintenance of the status quo [83]. This dynamic may be related to higher RRS scores among individuals reporting frequent exposure to highly ethnically diverse environments and among those holding stronger zero-sum beliefs about resource competition between White and Black individuals. Additional discussion on environmental diversity appears in the supplemental material at OSF for the purpose of brevity.

Additionally, we observed a strong negative correlation between RRS scores and support for affirmative action policies in public service and university admissions. Moreover, this variable is the main predictor of RRS score in the multiple linear regression model. This finding was expected, as quota systems are often perceived as unfair advantages granted to minorities, a notion central to revictimizer racism as measured by the RRS [20]. Beyond suggesting that attitudes toward quotas may serve as a proxy for contemporary racial prejudice, this finding provides evidence for the RRS's validity. Given the strength of this association, future studies should investigate the directionality of the relationship and potential mediating factors. We hypothesize that individuals who endorse stronger beliefs about revictimizing racism are consequently less supportive of affirmative action policies, consistent with the findings of Hamilton et al. [26]. These authors showed that colorblind racism influences support for affirmative action policies indirectly, through its impact on awareness of Black people's structural disadvantage. Accordingly, further studies could help disentangle the differences and similarities between revictimizing racism and other contemporary forms of racial prejudice.

Additional evidence for the validity of the RRS was also provided by significant correlations between the RRS and the Internal and External Motivation to Respond Without Prejudice Scale. This finding aligns with prior studies showing a positive correlation between external motivation and racism, and a negative correlation between internal motivation and racism, as observed in instruments like the Modern Racism Scale [31] and the Tolerance for Racism Scale [68]. Conversely, Lima et al. [20] did not find such associations, which was interpreted as the RRS's presumed low reactivity to both political correctness (i.e., external motivation) and antiracist ideals (i.e., internal motivation). We must highlight that only weak correlations were observed between internal/external motivation and revictimizer racism in our study. Other studies using behavioral measures, such as resource allocation tasks [84, 85], found that racial biases may be mediated by explicit prejudice and internal motivation to respond without prejudice, with no significant effects of external motivation. The discrepancies across studies likely reflect the complex interplay between internal and external motivations to respond without prejudice,

which are not mutually exclusive. For instance, Bamberg and Verkuyten [86] found that most individuals' motivation to avoid prejudice reflects a moderate combination of adherence to genuine egalitarian ideals and fear of negative social consequences for appearing prejudiced.

These findings reinforce the importance of assessing participants' demographic and socio-cognitive factors to understand contemporary manifestations of racial bias. In this regard, our study identified a model explaining 50% of the variance in revictimizer racism scores, comprising key predictors such as left-right political orientation, age, educational level, external motivation to respond without prejudice, perceived exposure to ethnically diverse environments, and support for racial quota policies.

Study limitations and future directions

Despite the promising results regarding the reliability and validity of the RRS, the present study had some limitations. First, certain variables known to influence racial bias, such as religiosity and social dominance orientation, were not examined. Second, as in Lima et al. [20], we did not perform a semantic analysis to assess item comprehension. For instance, item 5 contains a double negative, which may hinder understanding. However, during instrument development, the judges did not identify any issues. Moreover, in our study, the high internal consistency and satisfactory fit indices (e.g., 0.79 for item 5) support the scale's quality and suggest that item quality remains robust. Third, although we reached a more racially diverse sample (White=56.3% and Black+Brown=40.1%) compared to Lima et al. [20], it still has room for improvement to get closer to Brazil's racial demographics (White=43.5% and Black+Brown=55.5%, in Feb/2026 [13]). Fourth, a binary measure cannot capture gradations for political orientation. Thus, continuous or Likert-type political orientation measures, which are common in the literature, would contribute more to RRS validity. Additionally, future studies should examine more carefully the interaction between political orientation and race, as the similar RRS scores observed for White and Black+Brown participants in our study may reflect a disproportionate number of conservative Black participants in the sample. Fifth, some of the instruments included in the analyses exhibited model fit indices that fell outside commonly recommended cutoffs. Because these measures were not the primary focus of the present study, this issue should be considered when interpreting secondary findings but do not undermine the central aims of the article.

Another important limitation concerns the statistical power of the invariance analyses. Although the total sample size was sufficient to estimate the model tested in the confirmatory factor analysis, group sizes in the multigroup confirmatory factor analysis consistently comprised one group of approximately 100 participants and another of approximately 150. As a result, the findings should be interpreted with caution, as they may reflect limitations in statistical power rather than true equivalence of the instrument across groups. Reduced group sizes may have limited the sensitivity of the analyses to detect violations of invariance. Monte Carlo simulations with 1,000 replications, conducted based on the scale's 10-item unidimensional model, indicated low statistical power under these conditions, with estimated values of 0.18 for groups of 100 participants, 0.30 for groups of 150 participants, and 0.40 for samples of 200 participants.

Particular attention should be given to the regional comparisons, in which both groups had especially small sample sizes (93 and 112 participants, respectively). Consequently, the invariance results across regions should be interpreted with additional caution, as the limited statistical power may have substantially reduced sensitivity to detect noninvariance. This limitation is particularly relevant given that only partial metric and partial scalar invariance were supported across regions. In contrast, the invariance analyses by gender, race, and political orientation showed stronger overall model fit and did not present the same pattern of localized misfit, suggesting comparatively more robust evidence of invariance across these groups. Nevertheless, future studies with larger and more balanced group sizes are strongly recommended to strengthen inferences regarding model invariance.

Furthermore, future studies should also evaluate the adequacy of the RRS in the additional contexts proposed by its authors, namely assessing responses based on perception of (1) friends' attitudes and (2) society at large. Such studies could provide valuable insights into how individual racism intersects with perceptions of broader

societal norms. Future research in the Brazilian context should include more representative samples from its macro-regions, especially the Northern and Southern regions, where demographic compositions differ markedly from the rest of the country. In such opportunities, regional sociocultural factors that may modulate the revictimizer racism should be tested. Follow-up investigations could also compare the RRS with other established instruments for assessing contemporary racism in terms of their ability to predict relevant outcomes (e.g., support for racial quotas). Longitudinal measures, besides examining the scale's temporal reliability, may be particularly relevant in polarized political contexts, where subtle shifts in political orientation can meaningfully interact with racial attitudes. We recommend translating and validating the RRS in other languages to foment research outside the Brazilian context and see potential in adapting the instrument for other minorities that are likewise stereotyped as socially privileged, perceived as exerting less effort, or accused of "playing the victim" (e.g., women, the LGBTQIA+ population, and immigrants).

Finally, future research using or investigating the properties of the RRS should consider that revictimizer racism may encompass more than one dimension. In the present study, we considered and found evidence for the construct's unidimensionality, in line with the work of Lima et al. (2020). However, it remains for subsequent investigations to determine whether revictimizer racism manifests across multiple dimensions. We hypothesize a two- or three-dimensional structure, with items clustering around specific facets of revictimizer racism: perceived exploitation of Black victimhood narratives (Items 2, 5, 7, 10), denial of racism and racial inequalities (Items 1, 6, 9), and belief in meritocracy (Items 2, 3, 4, 8). Naturally, this remains an open question, part of a broader issue that encompasses other forms (e.g., alternative items, methods, or paradigms) through which revictimizer racism may be assessed. Such efforts could illuminate the presence of revictimizer racism and related prejudices across diverse social, historical, and cultural contexts.

Conclusion

The present study provides empirical evidence that the RRS possesses good psychometric properties, establishing it as a valid and reliable instrument for measuring revictimizer racism, a subtle prejudice that aligns with contemporary social norms. The RRS was developed within the Brazilian context, a country marked by severe social inequalities where racial issues have evolved in a unique way. However, racial issues have become central topics worldwide, and there is a need to build appropriate measurement tools that can be applied quickly and efficiently and that are consistent with the current reality and the dynamic nature of racism. In this regard, the RRS emerges as a valuable instrument for investigating racial biases, enhancing our understanding of this phenomenon, and potentially providing input for affirmative action policies.

Abbreviations

CFI	Comparative Fit Index
CI	Confidence Interval
IBGE	Brazilian Institute of Geography and Statistics
ICC	Intraclass Correlation
KMO	Kaiser-Meyer-Olkin
OSF	Open Science Framework
RRS	Revictimizer Racism Scale
RMSEA	Root Mean Squared Error of Approximation
SRMR	Standardized Root Mean Square Residual
TLI	Tucker-Lewis Index
WLSMV	Weighted Least Squares Mean and Variance Adjusted

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Author contributions RMJ conceptualized and designed the study; design the analytical approach, conducted data collection, analyses, and interpretation; drafted the results; and prepared and revised manuscript drafts. LGB conceptualized and designed the study; contributed to data analysis and interpretation; and prepared and revised manuscript drafts. ESG contributed to the literature review; and revised manuscript drafts. NA contributed to the discussion; and revised manuscript drafts. LCGS designed the analytical approach, conducted data analysis and interpretation and drafted the results; and prepared and revised manuscript drafts. All authors read and approved the final manuscript.

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Data availability Data and material are available at <https://osf.io/rjbwn/>.

Declarations

Ethics approval and consent to participate The study was conducted in accordance with the Declaration of Helsinki and was approved by the Human and Social Sciences Research Ethics Committee at the University of Brasília (reference number: 30539820.9.0000.5540). Informed consent was obtained from all participants through an online check before the data collection.

Consent for publication Not applicable.

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