Does the way I see you affect the way I see myself? Associations between interviewers' and interviewees' "color/race" in southern Brazil

Como te percebo afeta o modo como me vejo? Relações da "cor/raça" de entrevistadores e de entrevistados no Sul do Brasil

João Luiz Bastos [1]
Samuel Carvalho Dumith [1]
Ricardo Ventura Santos [2,3]
Aluísio J. D. Barros [1]
Giovâni Firpo Del Duca [1]
Helen Gonçalves [1]
Ana Paula Nunes [1]

[1] Faculdade de Medicina, Universidade Federal de Pelotas, Pelotas, Brasil.
[2] Escola Nacional de Saúde Pública Sergio Arouca, Fundação Oswaldo Cruz, Rio de Janeiro, Brasil.
[3] Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brasil.

Correspondence
J. L. Bastos
Programa de Pós-graduação em Epidemiologia, Faculdade de Medicina, Universidade Federal de Pelotas.
Rua Marechal Deodoro 1160, 3º piso, Pelotas, RS 96020-220, Brasil.
joao.luiz.epi@gmail.com

Abstract

This study assessed the associations between female interviewers' self-classified "color/race" and participants' self- and interviewer-classified "color/race". A cross-sectional study was carried out among adult individuals living in Pelotas, southern Brazil. Associations were examined by means of contingency tables and multinomial regression models, adjusting for interviewees' socioeconomic and demographic factors. Individuals aged ≥ 40 years were 2.1 times more likely to classify themselves as brown (versus white) when interviewed by black (as compared to white) interviewers. Participants in the same age group were 2.5 times less likely to classify themselves as black (versus white), when interviewed by black interviewers. These differences were even greater among men 40 years or older. Compared to white interviewers, black female interviewers were 2.5 times less likely to classify men aged ≥ 40 years as black. These results highlight the complexity of racial classification, indicating the influence of the interviewer's physical characteristics on the interviewee's "color/race".

Ethnic Group and Health; Race Relations; Epidemiological Measurements

Introduction

As observed in other areas of social epidemiology, scientific output in the health field indexed in the PubMed database (http://www.ncib.nlm.nih.gov/pubmed) with the terms *race relations*, *population groups*, *race*, and *minority groups* has shown an exponential absolute growth, particularly from 1985 to 2007 [1]. Although this increase is not as expressive when observed in the context of studies in epidemiology and public health [1], it is noteworthy the use of "color" and "race" classifications to analyze patterns and causes of inequality related to the health-disease process [2,3]. Racial categories are sometimes used in these studies as markers for socioeconomic conditions, exposure to discrimination, or genetic composition, although a significant body of evidence since the mid-20th century suggests that "race" as an analytical category has little or no biological validity in humans [4,5].

Representing the growing interest in "race" are the debates waged in the literature on racial inequalities in health [6,7], including an example in the study by Fry et al. [8] in relation to HIV/AIDS in Brazil. These discussions involve a wide variety of ideological hues and encompass aspects related to the causes of these inequalities as well as forms of control, strategies for amelioration, and their possible socio-political repercussions. However, the importance of the relationship between "race" and health is not limited to public health

research, with a renewed interest and outstanding contributions from other fields, like sociology, psychology, and anthropology [8,9].

In parallel with the production of epidemiological studies employing racial classifications in their analyses, some authors [2,3,4] have highlighted problems, difficulties, and possible implications in the acritical use of the "race" variable in health research. Kaplan & Bennet [2], for example, suggest that validity and reliability, two crucially important properties for any analysis, cannot be assumed for the "race" variable. Along this same line, Laguardia [3] emphasizes that the pertinence of "race" in health research has been questioned, on grounds that the purported construct to which it refers is elusive, or in most cases unspecified. This lack of conceptual clarity would leave room for multiple interpretations concerning the associations between "race" and given health conditions, so that it would not contribute substantially to the formulation of effective public policies. Meanwhile, Senior & Bhopal [4] highlight the dynamic and fluid nature of racial categorizations, which can rapidly outdate the research findings, in addition to impeding comparisons over time, across generations, or between populations with different histories of migration and race relations.

Not coincidentally, various authors have approached the contextual dependence, subjectivity, and indetermination of racial classification in Brazil. As opposed to the binary model, which tends to predominate in the United States [10], the Brazilian color continuum is based on the assignment of social distinctions to various tones and terminologies used to very specifically allocate individuals along a spectrum ranging from black to white.

Oracy Nogueira may have been one of the first authors to comment on the relationship between color and class in Brazil, as early as the 1950s. According to the author, "... *the concept of white and non-white varies in Brazil as a function of the degree of miscegenation, from individual to individual, from class to class, from region to region*" [11] (p. 80). Meanwhile, Guimarães [12] cites Thales de Azevedo and Marvin Harris among the pioneers in identifying the whitening process in racial classification in Brazil by means of qualitative research in the 1960s and 1970s. Given the social identification of color groups with class and social status characteristics, there would be a tendency among socially rising blacks and browns to classify themselves (and be socially accepted) as whites. The findings of these qualitative studies have been corroborated by quantitative studies with a nationwide scope [13], as well as by other studies located in cities whose racial compositions differed markedly from each other, specifically Pelotas [14] and Rio de Janeiro [15] in the South and Southeast of the country, respectively.

Still, the complexity of the Brazilian racial classification system goes beyond the whitening phenomenon, as illustrated by the study by Sansone [16] in the cities of Salvador and Camaçari (Bahia State, Northeast Brazil). In addition to observing that the Brazilian Portuguese term "*negro*" (roughly equivalent to "black" in English) rather than "*preto*" (the official term used by the national census bureau) is more widely used by young people in these two cities, the author noted that interviewees could define themselves with other terms and in other racial categories even over the course of a single interview. In short, he observed that the choice of terms for racial classification is determined by characteristics like schooling, income, and the interviewee's phenotypic preferences (skin color, type of hair, eye color, etc.), as well as by social context – family, group of friends, affective relations, religious life – time of day, and the place in which such categorization takes place.

Few quantitative studies have focused on aspects that influence racial classificatory dynamics, particularly in the context of health research, in which both self-classification and interviewer-classification have been adopted. As a unique example, the study by Hill [17] in the United States assessed to what extent interviewers' "race" influences their perception concerning classification of the interviewee's color. Based on social psychology theories, Hill demonstrated a tendency by interviewers to attenuate the color variation in participants belonging to "races" different from their own. In this sense, and assuming the contingent nature of racial categorization in Brazil, the current article intends to discuss the use of the "color/race" variable in the context of a health study, examining the relationship between the interviewer's self-classification and both the interviewee's self-classification and classification by the interviewer.

Methods

The study was conducted in the city of Pelotas, Rio Grande do Sul State, with approximately 340 thousand inhabitants, located in the southernmost area of Brazil. The current study is part of a larger research project on health conditions and behavior in the city's adult population, coordinated by Master's students in the Graduate Epidemiology Program at the Federal University in Pelotas (UFPEL), conducted every other year [18]. The study excluded residents of extended care

facilities for the elderly, hospitals, and prisons, as well as those whose relatives or household members reported some type of mental impairment that would prevent them from participating in the interview.

The sampling process was conducted in two stages, using the census tracts from the 2000 population census by the Brazilian Institute of Geography and Statistics, or National Census Bureau (IBGE; http://www.ibge.gov.br) as the primary sampling units and the households as the secondary sampling units. The sample size to meet the demand by the research team was set at 3 thousand individuals. In order to minimize costs and compensate for the sampling design effect, we chose to work with 126 census tracts, systematically selected from a list containing all 404 tracts in the city, ordered by mean income of the heads of household. Considering the goal of visiting 12 households per tract, 1,534 households were selected, with selection probability proportional to the tract's size. All adult household residents (≥ 20 years) were eligible for the study, totaling 3,170 individuals.

Data were collected from the households by female interviewers who received 40 hours of training. It was recommended that interviewers dress and behave appropriately to convey seriousness, respect, and cordiality towards the interviewees. The interviewers recruited for the study (n = 31) resided in Pelotas, were over 18 years of age, and had at least 11 years of schooling (equivalent to a complete secondary education), and the majority (n = 29) belonged to classes B or C according to the Brazilian Economic Classification Criterion of the Brazilian Association of Market Research Companies (ABEP; http://www.abep.org/codigosguias/ABEP_CCEB.pdf).

A pilot study was conducted in a census tract not selected for the sample in order to verify the understanding of the questions in the questionnaire and adjust the fieldwork logistics. Prior to the home visits, fieldwork supervisors approached the residents in order to announce the study, deliver a letter briefly explaining the purposes, and schedule the interview. All the interviewers were instructed to make at least three visits to conduct the interview at the selected households before giving up and classifying the residents as losses or refusals.

Data were collected from October 23, 2007, to January 15, 2008. A coded and previously tested questionnaire was applied. Information on the interviewee's "color/race" was obtained in two ways. At the beginning of the household visit, the interviewer introduced herself and observed some characteristics of the interviewee, including gender and "color/race". No prior indica-

tion was provided on how the interviewers were supposed to classify the interviewees' "color/race"; they were instructed to do so based only on their own perceptions. Next, a set of socio-demographic questions were asked, including an item on the participant's "color/race" (using the question "*What is your color or race?*"). Both the "color/race" observed by the interviewer (interviewer-classified) and that stated by the interviewee (self-classification) were recorded according to the five categories used by the National Census Bureau (IBGE), white, brown, black, yellow, and indigenous, plus "other" for individuals that preferred a term not mentioned above. For self-classification of "color/race", all the response categories were read to the respondents after posing the question. Individuals that chose the category "other" or that did not answer the question on "color/race", as well as those self-classified and interviewer-classified as yellow or indigenous were left out of the final analyses in this study, since they were numerically negligible. Besides "color/race", the other interviewee characteristics that were recorded were: gender (male/female); age (divided into 20-39 and ≥ 40 years); marital status (married/living with a partner versus single/without a partner, separated/divorced, or widow/er); schooling (subdivided into 0-4, 5-8, 9-11, and ≥ 12 years of schooling), and family income (categorized in quartiles).

During the initial months of the fieldwork, the interviewer themselves were asked to complete a form on their own socioeconomic conditions, including the "color/race" self-classification ("*What is your color or race?*"), according to the IBGE categories. In this case, the category "other" was not included, unlike the interviews with household residents. Likewise, no prior indication was provided on how the interviewers should classify themselves in terms of "color/race". They were all blind as to the study's objectives and hypotheses. One of the interviewers could not be located, since she had dropped out of the study after one week of work. Since she had conducted only 11 interviews, we chose to exclude them from the present analysis. Of the 30 interviewers remaining in the study, 23, 4, and 3 classified themselves as white, black, and brown, respectively. The interviewers conducted a mean of 96 interviews each (median = 108), ranging from 11 to 257.

With the aim of facilitating the data collection quality control, 10% of the respondents were visited a second time at their homes to answer an abridged version of the questionnaire. The kappa coefficient for self-classification of "color/race" in the main questionnaire and abridged questionnaire was 0.7. The data were transferred to

computer files using double keying-in, by two different data processors, with Epi Info, version 6.04 (Centers for Disease Control and Prevention, Atlanta, USA). Later, the databank was transformed into Stata v. 9 format (Stata Corp., College Station, USA), where the data cleaning and statistical analyses were performed. Statistical significance was set at 5% for two-tailed tests. Considering the study design, in which the observations within each census tract could be correlated, we used the "svy" option in Stata to adjust all the precision estimates and respective p-values.

Initially, all the participants were described as to "color/race" self-classification and interviewer-classification. Next, the distribution of the interviewees' interviewer-classified and self-classified "color/race" was observed according to the interviewers' "color/race" by means of contingency tables. The statistical association between these variables was examined using the chi-square test. Measures of variation in the proportion of whites, browns, and blacks according to the interviewers' "color/race" were added to these tables in order to examine whether there was a greater variation in "color/race" self-classification or interviewer-classification among the interviewees.

The association between the study participants' and interviewers' "color/race" was also tested with regression models. Although the interviewee's "color/race" was a three-category variable, after excluding yellow, indigenous, "other", and unknown, preliminary analyses with ordinal logistic regression suggested that the assumption of the model's proportionality was being violated, as verified by the Brant test. Thus, the multinomial regression model was used, with the category "color/race" white as the reference for all analyses. In order to also examine the association between the interviewer's "color/race" and that of the interviewee, categorized dichotomously as white and brown/black, the logistic regression model was used. Statistical significance and the precision of the effect measures calculated in the regression models were verified with the Wald test for heterogeneity and 95% confidence intervals.

Exploratory analyses demonstrated an important association between the interviewer's "color/race" and that of the interviewee, in specific age and gender strata. We thus constructed tables for the sample as a whole and by groups defined according to these two variables. In the regression models, all the analyses were adjusted for the interviewee's marital status, schooling, family income, and gender when the entire sample was being analyzed. These adjustments aimed to rule out the possibility of the interviewers having been distributed non-randomly among the

interviewed households and that this might have influenced the possible relations between the interviewers' and interviewees' "color/race".

The study was approved by the Institutional Review Board of the UFPEL School of Medicine. All those who agreed to participate in the study signed a free and informed consent form, having received a guarantee of confidentiality for the information they provided.

Results

Of the total 3,170 eligible participants, 6.2% were considered losses or refusals. Median age of interviewees was 43.0 years, with a mean of 44.7 years (standard deviation – SD = 17.0), and approximately 20% of the adults were 60 years or older. Of the total, 56.8% were females. Median and mean family income were R$ 1,211.00 and R$ 1,806.59 (SD = 1,849.99), respectively. Mean schooling was 8.2 years for the sample as a whole (median = 8.0), and was similar for men and women.

Table 1 shows the distribution of the sample according to "color/race" self-classification and interviewer-classification. In this table, the proportion of whites was higher among the interviewer-classified as compared to self-classified. Meanwhile, browns were relatively more frequent when "color/race" self-classification was considered. The percentage of blacks practically did not vary according to the type of "color/race" classification used. The highest absolute and relative frequencies of yellow, indigenous, "other", and unknown were observed when self-classification was adopted. Thus, when self-classification was adopted there was greater variation in "color/race" categorization. Among the 55 self-classified in the "other" category, the term most frequently used was "*moreno*, roughly tan" (n = 26), followed by "*alemão*, literally German" (n = 4), "*mestizo*" (n = 3), "*mulatto*" (n = 3), "*misturado*, literally mixed" (n = 2), "*misto*, literally mixed" (n =2), "*miscigenado*, literally miscegenated" (n =2), "*negro*" (n = 2), "*bugre*, a pejorative term for indigenous, roughly savage" (n = 2), "*multiétnico*, or multiethnic" (n = 1), "*índio com castelhano*, or Indian with Spanish" (n = 1), "*português com índio*, or Portuguese with Indian (n = 1), "*latino*" (n = 1), "*triguenho*, or olive-skinned" (n = 1), and "*euro-descendente*, or European descendant" (n =1). For three other participants, it was not possible to determine the answer given to the "other" category, since their questionnaires could not be located. In relation to the four individuals that were classified by interviewers in the "other" category, three were classified as "*mulatto*" and

Table 1

Distribution of study subjects according to self-classified and interviewer-classified "color/race". Pelotas, Rio Grande do Sul State, Brazil, 2008.

"Color/race"	Self-classification		Interviewer-classification	
	n	%	n	%
White	2,241	75.3	2,380	80.0
Brown	210	7.1	171	5.8
Black	404	13.6	413	13.9
Yellow	25	0.8	2	0.0
Indigenous	34	1.1	5	0.2
Other	55	1.9	4	0.1
Unknown	6	0.2	-	-
Total	2,975	100.0	2,975	100.0

one as "*miscegenated*". Individuals self-classified and interviewer-classified as yellow, indigenous, "other", and unknown were excluded from further analyses in the study, totaling 120 and 11 for self-classified and interviewer-classified subjects, respectively.

As indicated next, the interpretation of the findings depends on a uniform distribution of interviewers and interviewees without regard to either's "color/race". The way the households were divided among the interviewers meets this assumption. However, some underlying mechanism may have led to the assignment of areas with greater or lesser presence of a given "color/race" to interviewers of specific "colors/races". To ensure independent distribution of the interviewers' characteristics, we tested the association between the interviewers' "color/race" and the interviewees' schooling and income, and no statistically significant associations were observed in any of the cases (results not shown).

Tables 2 and 3 show the relationship between "color/race" for interviewers and interviewees. For men of any age, there were a higher proportion of individuals self-classified as brown when the interviewers were black (Table 2), and a higher proportion of self-classified whites when the interviewers were brown. The proportion of self-classified browns was even higher for black interviewers, when analyzing men and women 40 years or older and men only in this same age bracket (Table 2). Comparing the interviewer's "color/race" and the interviewee's "color/race" as classified by the interviewer, no statistically significant associations were observed (Table 3). The same occurred when these potential associations were investigated according to age bracket and gender. The variations calculated in Tables 2 and 3 show a wider variation in the self-clas-

sification of "color/race" as compared to classification by the interviewer. These estimates also indicate a wider variation in "color/race" classification among men as compared to women, both for self-classification and classification by the interviewer.

Analyses with multinomial regression models (Table 4 and 5), adjusting for the interviewee's gender (in the case of models including men and women), marital status, schooling, and income generally corroborated the data presented in the contingency tables. Individuals of both sexes 40 years or older showed 2.1 greater odds of classifying themselves as brown rather than white when interviewed by black interviewers as compared to white (Table 4). Such differences were even greater among men 40 years or older, who showed 2.8 greater odds of classifying themselves as brown rather than white, when interviewed by black as compared to white interviewers. Meanwhile, men in this age bracket showed 5.0 lower odds of classifying themselves as black as compared to white, when interviewed by black as compared to white interviewers. Furthermore, black interviewers showed 2.5 lower odds of classifying men 40 years or older as black rather than white, when compared to white interviewers (Table 5).

Analyses that combine browns and blacks in a single category (Tables 6, 7, 8, and 9) obscure the above-mentioned differences, showing smaller differences and absence of statistical significance in all the associations tested.

Discussion

The current study's findings not only articulate with research in health, but also with the fields of sociology and anthropology of race relations in

Table 2

Interviewee's "color/race" self-classification in relation to interviewer's "color/race" for the total sample (N = 2,855) and according to gender and age. Pelotas, Rio Grande do Sul State, Brazil, 2008.

Interviewer's "color/race" self-classification (n)	Interviewee's "color/race" self-classification (%)								
	Men and women (n)			Men (n)			Women (n)		
	White	Brown	Black	White	Brown	Black	White	Brown	Black
Total sample									
All interviewers (30)	78.5 (2,241)	7.4 (210)	14.1 (404)	77.5 (958)	9.0 (112)	13.5 (167)	79.3 (1,283)	6.1 (98)	14.6 (237)
White (23)	78.3	6.5	15.2	77.1	7.9	15.0	79.2	5.5	15.3
Brown (3)	83.2	5.7	11.1	83.7	5.7	10.6	82.7	5.8	11.5
Black (4)	76.3	11.7	12.0	74.7	16.0	9.4	77.5	8.7	13.8
Variation *	6.9	6.0	4.1	9.0	10.3	5.6	5.2	3.2	3.8
p-value		0.078			0.028			0.462	
20-39 years									
All interviewers (30)	75.8 (913)	7.8 (94)	16.4 (198)	74.5 (407)	9.9 (54)	15.6 (85)	76.8 (506)	6.1 (40)	17.1 (113)
White (23)	75.8	7.2	17.0	74.0	9.4	16.6	77.2	5.4	17.4
Brown (3)	82.2	7.7	10.1	82.6	7.3	10.1	81.7	8.3	10.0
Black (4)	72.2	10.1	17.7	71.1	13.5	15.4	72.9	7.5	19.6
Variation *	10.0	2.9	7.6	11.5	6.2	6.5	8.8	2.9	9.6
p-value		0.413			0.566			0.493	
≥ 40 years									
All interviewers (30)	80.5 (1,328)	7.0 (116)	12.5 (206)	79.7 (551)	8.4 (58)	11.9 (82)	81.0 (777)	6.1 (58)	12.9 (124)
White (23)	80.1	6.1	13.8	79.4	6.9	13.7	80.6	5.5	13.9
Brown (3)	83.9	4.3	11.8	84.7	4.2	11.1	83.3	4.4	12.3
Black (4)	80.0	13.2	6.8	78.0	18.3	3.7	81.4	9.6	9.0
Variation *	3.9	8.9	7.0	6.7	14.1	10.0	2.7	5.2	4.9
p-value		0.012			0.001			0.318	

* Variation was calculated as follows: considering the total sample, with no breakdown by gender or age, the variation for white participants was obtained by taking the highest proportion (83.2%) and subtracting the lowest (76.3%), as observed according to interviewer's color/race. In this example, the subtraction yielded a variation of 6.9 percentage points.

Brazil. The differences in the population's distribution according to self-classification and interviewer-classification, as well as the associations between the "color/race" of interviewers and interviewees, emphasize the contingent nature of this type of classification in Brazil. Far from an immutable essence, an individual's "color/race" results from a complex and subjective process of identity negotiation, involving historical, sociocultural, educational, economic, and gender dimensions [11,16,19,20,21,22,23].

Recently published studies have conducted comparative analyses of the results of "color/race" classification based on different methodological strategies in Brazil [13,14,15,23,24]. The current study is part of this line of research, and is innovative in the sense of having analyzed the association between the interviewer's "color/race" and the distribution of interviewees' self-classification and classification by interviewers.

An initial aspect that deserves mention is the wider variation in self-classification as compared to classification by the interviewer. Importantly, the parameters that influence the two classification strategies are not the same. In self-classification, individuals use criteria (e.g., ancestry, family history, ethnic-cultural belonging, socioeconomic characteristics, among others) that can differ from those influencing an observer, who performs the classification largely on the basis of physical appearance. The IBGE classification system used in this study includes a combination of "color" in the categories white, black, brown, and yellow and "race" or ethnicity in the indigenous category. The latter refers to the socio-cultural dimensions of belonging, sometimes dissociated from appearance, which do not apply the same as with other categories.

The current study's most relevant and innovative finding involves the associations between the interviewer's "color/race" and the distribution of self-classified "color/race" among interviewees 40 years and older, especially men. According to the study, men, especially 40 years and older,

Table 3

Interviewer-classification of interviewee's "color/race" according to interviewer's "color/race", for the total sample (N = 2,964) and according to gender and age. Pelotas, Rio Grande do Sul State, Brazil, 2008.

Interviewer's "color/race" self-classification (n)	Interviewer-classification of interviewee's "color/race" (%)								
	Men and women (n)			Men (n)			Women (n)		
	White	Brown	Black	White	Brown	Black	White	Brown	Black
Total sample									
All interviewers (30)	80.3 (2,380)	5.8 (171)	13.9 (413)	79.9 (1,023)	6.8 (87)	13.3 (170)	80.6 (1,357)	5.0 (84)	14.4 (243)
White (23)	79.6	5.9	14.5	79.1	6.9	14.0	80.1	5.1	14.8
Brown (3)	83.1	4.6	12.3	85.3	2.8	11.9	81.3	6.0	12.7
Black (4)	81.1	6.2	12.7	79.8	9.2	11.0	82.1	4.0	13.9
Variation *	3.5	1.6	2.2	6.2	6.4	3.0	2.0	2.0	2.1
p-value		0.850			0.365			0.877	
20-39 years									
All interviewers (30)	78.7 (994)	6.2 (78)	15.1 (191)	78.6 (449)	8.1 (46)	13.3 (76)	78.8 (545)	4.6 (32)	16.6 (115)
White (23)	78.5	6.7	14.8	78.2	8.9	12.9	78.9	4.9	16.2
Brown (3)	81.6	5.2	13.2	84.2	2.9	12.9	78.8	7.6	13.6
Black (4)	77.6	4.9	17.5	76.6	8.4	15.0	78.4	2.2	19.4
Variation *	4.0	1.8	4.3	7.6	6.0	2.1	0.5	5.4	5.8
p-value		0.770			0.651			0.502	
≥ 40 years									
All interviewers (30)	81.5 (1,386)	5.5 (93)	13.1 (222)	81.0 (574)	5.8 (41)	13.2 (94)	81.9 (812)	5.2 (52)	12.9 (128)
White (23)	80.4	5.3	14.3	79.8	5.3	14.9	80.9	5.2	13.9
Brown (3)	84.1	4.2	11.7	86.3	2.7	11.0	82.7	5.2	12.1
Black (4)	84.3	7.3	8.4	82.9	9.9	7.2	85.3	5.5	9.2
Variation *	3.9	3.1	5.9	6.5	7.2	7.7	4.4	0.3	4.7
p-value		0.275			0.146			0.682	

* Variation was calculated as follows: considering the total sample, with no breakdown by gender or age, the variation for white participants was obtained by taking the highest proportion (83.1%) and subtracting the lowest (79.6%), as observed according to interviewer's color/race. In this example, the subtraction yielded a variation of 3.5 percentage points.

tended to classify themselves as brown when responding to black (as compared to white) interviewers. This "classificatory shift" of "color/race" occurred with white men, but was especially intense in black men. Meanwhile, black interviewers tended to classify interviewees more as white than as black, in the case of interviewer-classification of "color/race". Importantly, we consider these findings preliminary, requiring subsequent confirmation with further research. In addition, if these findings are not the result of random error and truly reflect the complexities of classificatory dynamics, the study's methodological design does not allow us to indicate the specific factors that purportedly influence interviewee's "color/race" self-classification and interviewer-classification vis-à-vis the interviewer's "color/race". Nevertheless, if the "classificatory shift" observed here is actually a phenomenon present during "color/race" classification, there is unquestionably an interaction between the age, gender, and "color/race" dimensions in the results of the observed classificatory processes.

Especially if confirmed by future research, this study's findings challenge the assumption that research subjects' "color/race" classification is independent of the interviewer's characteristics. That is, there is no neutral situation. To give a concrete example, the current study's findings indicate that the interaction between research subjects and interviewers of different genders and "colors/races" is the equivalent of using different "instruments" to measure a target variable. An analogy would be to use different stadiometers and scales in a single study to measure height and weight. It thus becomes important to reflect on the possible implications of this study's findings both at the local level and in the broader sphere of scientific studies and census surveys in Brazil.

In the current study, a wider variation in the attribution of "color/race" was observed among

Table 4

Multinomial regression to estimate the effect of interviewer's "color/race" on the interviewee's "color/race" self-classification. Pelotas, Rio Grande do Sul State, Brazil, 2008.

Model	Interviewer's "color/race"	Interviewee's "color/race" self-classification *		p-value **
		Brown [OR (95%CI)]	Black [OR (95%CI)]	
1	White	1.0	1.0	0.310
	Brown	1.0 (0.4-2.6)	0.5 (0.3-1.1)	
	Black	1.4 (0.9-2.4)	1.0 (0.5-1.8)	
2	White	1.0	1.0	0.003
	Brown	0.8 (0.4-1.6)	0.9 (0.4-1.9)	
	Black	2.1 (1.1-4.0)	0.4 (0.2-1.0)	
3	White	1.0	1.0	0.504
	Brown	0.7 (0.2-2.2)	0.5 (0.2-1.8)	
	Black	1.4 (0.8-2.7)	0.7 (0.3-1.7)	
4	White	1.0	1.0	<0.001
	Brown	0.7 (0.3-1.7)	0.9 (0.4-2.4)	
	Black	2.8 (1.3-6.0)	0.2 (0.1-0.7)	
5	White	1.0	1.0	0.267
	Brown	1.4 (0.4-5.3)	0.5 (0.3-1.1)	
	Black	1.4 (0.7-3.0)	1.1 (0.6-2.1)	
6	White	1.0	1.0	0.285
	Brown	0.8 (0.3-1.9)	0.9 (0.4-1.8)	
	Black	1.5 (0.8-3.1)	0.6 (0.2-1.3)	

* White color/race was the outcome reference category;

** Wald test for heterogeneity.

Model 1 = men and women 20-39 years of age, adjusted for gender, marital status, schooling, and family income; Model 2 = men and women ≥ 40 years, adjusted for gender, marital status, schooling, and family income; Model 3 = men 20-39 years of age, adjusted for marital status, schooling, and family income; Model 4 = men ≥ 40 years, adjusted for marital status, schooling, and family income; Model 5 = women 20-39 years of age, adjusted for marital status, schooling, and family income; Model 6 = women ≥ 40 years, adjusted for marital status, schooling, and family income.

men, and a major portion of the observed associations were identified when male participants were answering questions by female interviewers, i.e., when the subject's and interviewer's gender was not the same. The main implication for studies in Pelotas focusing on maternal and child health [25] (and in which women have been used as interviewers) is that under these conditions the "color/race" classification may not suffer as much influence with the operational scenario in which the data collection takes place. In this sense, conducting surveys in which the interviewee and interviewer are matched by gender might tend to reduce the complex nature of classifying "color/race". However, this strategy does not guarantee that other dynamics do not occur in the interview or that the "color/race" variable does not undergo influence from actors in the scene.

In fact, this concern is present in other studies approaching "racial" inequalities and experiences of discrimination. For example, the Multi-City Study of Urban Inequality attempted to match participants and interviewers according to the same racial group [17]. Krieger et al. [26] opted for an audio and computer-assisted data collection procedure when conducting a validation study on a racial discrimination scale. The aim was to increase the odds of obtaining sensitive information, in addition to allowing individuals with less schooling to participate.

On a wider level, scientific studies and IBGE surveys in Brazil that involve recording "color/race" have not generally highlighted the interviewer's characteristics as possibly influencing the classificatory processes. The IBGE ten-year censuses and National Household Sample Surveys (PNADs) employ a wide diversity of interviewers, with an important combination of age, gender, and "color/race" attributes. Based on our findings, it is not possible to make any inferences beyond the urban area of Pelotas, but

Table 5

Multinomial regression to estimate the effect of interviewer's "color/race" on classification of the interviewee's "color/race" by the interviewer. Pelotas, Rio Grande do Sul State, Brazil, 2008.

Model	Interviewer's "color/race"	Interviewee's "color/race" self-classification *		p-value **
		Brown [OR (95%CI)]	Black [OR (95%CI)]	
1	White	1.0	1.0	0.795
	Brown	0.8 (0.3-1.9)	0.9 (0.4-1.9)	
	Black	0.7 (0.4-1.3)	1.1 (0.6-1.9)	
2	White	1.0	1.0	0.284
	Brown	0.8 (0.4-1.8)	0.9 (0.4-2.0)	
	Black	1.1 (0.6-2.0)	0.5 (0.3-1.0)	
3	White	1.0	1.0	0.686
	Brown	0.4 (0.1-1.4)	0.9 (0.3-2.8)	
	Black	0.9 (0.4-1.9)	0.9 (0.4-1.9)	
4	White	1.0	1.0	0.183
	Brown	0.5 (0.1-2.0)	0.9 (0.3-2.4)	
	Black	1.4 (0.5-3.7)	0.4 (0.2-0.9)	
5	White	1.0	1.0	0.465
	Brown	1.4 (0.5-4.0)	0.8 (0.3-2.0)	
	Black	0.4 (0.1-1.3)	1.1 (0.6-2.1)	
6	White	1.0	1.0	0.677
	Brown	1.0 (0.4-2.2)	0.9 (0.4-1.9)	
	Black	0.9 (0.4-1.7)	0.6 (0.3-1.2)	

* White color/race was the outcome reference category;

** Wald test for heterogeneity.

Model 1 = total sample 20-39 years of age, adjusted for gender, marital status, schooling, and family income; Model 2 = total sample ≥ 40 years, adjusted for gender, marital status, schooling, and family income; Model 3 = men 20-39 years of age, adjusted for marital status, schooling, and family income; Model 4 = men ≥ 40 years, adjusted for marital status, schooling, and family income; Model 5 = women 20-39 years of age, adjusted for marital status, schooling, and family income; Model 6 = women ≥ 40 years, adjusted for marital status, schooling, and family income.

there appears to be no doubt that interviewer-interviewee mediations emerge at the levels of age, gender, and "color/race" that could potentially apply to Brazil's reality as a whole.

As indicated, the current study aimed to explore the complexity of the "color/race" classificatory process, focusing not only on self-classification and classification by the interviewer, but also considering the interviewer's "color/race". Two particular aspects stand out. The first is the fact that the research strategy involved a particular interviewer profile, namely that of young educated women. Second, we only have the interviewers' self-classification and thus lack results for how the interviewees' perceive the interviewers' "color/race".

Women were selected as interviewers for this and other studies in Pelotas, since it was noted that they are received better and show lower rates of losses and refusals in household surveys. Still, as described in the literature,

these advantages may be accompanied by negative factors like a potential bias (in the epidemiological sense of the term) while obtaining information that is more heavily loaded with social values. Streiner and Norman [27] comment that the answers given to female interviewers can differ from those collected by their male counterparts, especially when studying themes related to sexual behaviors and policy. The fact that the current study only used women to conduct the interviews probably prevented a more detailed examination of how "color/race" was classified. Since the female study subjects did not have the opportunity to be interviewed by male interviewers, this association between "color/race" could not be examined. Thus, beyond representing a limitation in this study, we can speculate that studies involving interviewers of both genders establish a more complex operational data collection scenario for classifying "color/race".

Table 6

Interviewee's "color/race" self-classification according to interviewer's "color/race", for the total sample (N = 2,855) and according to gender and age. Pelotas, Rio Grande do Sul State, Brazil, 2008.

| Interviewer's "color/race" self-classification (n) | Interviewee's "color/race" self-classification (%) | | | | | |
| | Men and women (n) | | Men (n) | | Women (n) | |
	White	Brown and black	White	Brown and black	White	Brown and black
Total sample						
All interviewers (30)	78.5 (2,241)	21.5 (614)	77.5 (958)	22.5 (279)	79.3 (1,283)	20.7 (335)
White (23)	78.3	21.7	77.1	22.9	79.2	20.8
Brown (3)	83.2	16.8	83.7	16.3	82.8	17.2
Black (4)	76.3	23.7	74.7	25.3	77.5	22.5
Variation *	6.9		9.0		5.3	
p-value		0.421		0.479		0.505
20-39 years						
All interviewers (30)	75.8 (913)	24.2 (292)	74.5 (407)	25.5 (139)	76.8 (506)	23.2 (153)
White (23)	75.8	24.2	74.0	26.0	77.2	22.8
Brown (3)	82.2	17.8	82.6	17.4	81.7	18.3
Black (4)	72.1	27.9	71.2	28.8	72.9	27.1
Variation *	10.1		11.4		8.8	
p-value		0.242		0.504		0.218
≥ 40 years						
All interviewers (30)	80.5 (1,328)	19.5 (322)	79.7 (551)	20.3 (140)	81.0 (777)	19.0 (182)
White (23)	80.1	19.9	79.4	20.6	80.6	19.4
Brown (3)	83.9	16.1	84.7	15.3	83.3	16.7
Black (4)	80.0	20.0	78.0	22.0	81.4	18.6
Variation *	3.9		6.7		2.7	
p-value		0.631		0.515		0.731

* Variation was calculated as follows: considering the total sample, with no breakdown by gender or age, variation for white participants was obtained by taking the highest proportion (83.2%) and subtracting the lowest (76.3%), as observed according to interviewer's color/race. In this example, the subtraction yielded a variation of 6.9 percentage points.

Thus, the absence of the interviewer's "color/race" as classified by the study participants, the fact that interviews were only conducted by women with at least a high school education, and the limitation of the findings to the context of one city in southern Brazil where most of the population classify themselves as white and the proportion of blacks far exceeds that of browns should be viewed as important limitations to the current study. Broadly speaking, these caveats speak for the implementation of similar and more sophisticated studies in other regions of Brazil, especially regions with a distinct "color/race" composition. As discussed, such studies could corroborate the current findings and provide them with greater consistency. In addition, when comparing this work's findings with those of similar studies, we should recall that our data collection used household rather than street interviews, as in the case of the study by Silva [10]. By visiting randomly selected households, the interviewers made contact with the participants' daily reality, which may also have influenced their classification of interviewees' "color/race".

A last important element relates to the analytical strategy adopted in this study. Various studies in the health literature have grouped blacks and browns in a single category [28,29,30,31]. This procedure has generally been used as a justification to maintain high statistical power, since the two groups taken separately would constitute sparse strata. Another alleged reason for this procedure is that in some cases browns and blacks share similar socioeconomic conditions, especially for schooling and income. As suggested by Tables 6, 7, 8, and 9, this strategy not only led to loss of statistical significance for the target associations, but also attenuated the magnitude of the observed differences in the preference for a given "color/race" category. This attenuation can also occur in studies whose objective is to speculate on causes of inequality patterns according to "color/race".

Table 7

Interviewer-classification of interviewee's "color/race" according to interviewer's "color/race", for the total sample (N = 2,964) and according to gender and age. Pelotas, Rio Grande do Sul State, Brazil, 2008.

Interviewer's "color/race" self-classification (n)	Interviewer-classification of interviewee's "color/race" (%)					
	Men and women (n)		Men (n)		Women (n)	
	White	Brown and black	White	Brown and black	White	Brown and black
Total sample						
All interviewers (30)	80.3 (2,380)	19.7 (584)	79.9 (1,023)	20.1 (257)	80.6 (1,357)	19.4 (327)
White (23)	79.7	20.3	79.1	20.9	80.1	19.9
Brown (3)	83.1	16.9	85.3	14.7	81.3	18.7
Black (4)	81.2	18.8	79.8	20.2	82.1	17.9
Variation *	3.4		6.2		2.0	
p-value		0.616		0.564		0.611
20-39 years						
All interviewers (30)	78.7 (994)	21.3 (269)	78.6 (449)	21.4 (122)	78.8 (545)	21.2 (147)
White (23)	78.5	21.5	78.2	21.8	78.9	21.1
Brown (3)	81.6	18.4	84.3	15.7	78.8	21.2
Black (4)	77.6	22.4	76.6	23.4	78.4	21.6
Variation *	4.0		7.7		0.5	
p-value		0.787		0.635		0.969
≥ 40 years						
All interviewers (30)	81.5 (1,386)	18.5 (315)	81.0 (574)	19.0 (135)	81.9 (812)	19.1 (180)
White (23)	80.4	19.6	79.8	20.2	80.9	19.1
Brown (3)	84.1	15.9	86.3	13.7	82.8	17.2
Black (4)	84.3	15.7	82.9	17.1	85.3	14.7
Variation *	3.9		6.5		4.4	
p-value		0.275		0.498		0.143

* Variation was calculated as follows: considering the total sample, with no breakdown by gender or age, variation for white participants was obtained by taking the highest proportion (83.1%) and subtracting the lowest (79.7%), as observed according to interviewer's color/race. In this example, the subtraction yielded a variation of 3.4 percentage points.

Important nuances can be omitted by combining browns and blacks in a single category. Thus, unless there is a theoretically consistent justification or preliminary analyses have demonstrated a lack of differences between browns and blacks, the two should not be analyzed jointly, as if they constituted an internally homogeneous group.

In conclusion, given the complexity involved in characterizing "color/race", it is crucial that properties like their validity and reliability not be taken for granted. Although various other authors have already taken this same position and have even stimulated the debate with the publication of reference guides and glossaries on the definitions and uses of the "race" variable in health research [2,32,33], such initiatives still need to reverberate more strongly among researchers. The following questions thus remain: Based on what assumptions and using which procedures have data on "color/race" been collected in epidemiological studies? What are the potential influences of interviewers' personal characteristics on the collection of research subjects' "color/race" data? What impact can such influences have on the study findings? How have the analyses been performed, particularly in relation to combining or not combining "color/race" categories? The answers to these questions are complex and require an interdisciplinary perspective. By properly considering these issues in health research planning and analysis, we can foster important reflections and ultimately help increase the usefulness of research results for improving the population's health and living conditions.

Table 8

Logistic regression to estimate the effect of the interviewer's "color/race" on the interviewee's "color/race" self-classification, dichotomized (white = 0; brown and black = 1). Pelotas, Rio Grande de Sul State, Brazil, 2008.

Model	Interviewer's "color/race"	OR (95%CI)	p-value *
1	White	1.0	0.377
	Brown	0.7 (0.4-1.2)	
	Black	1.1 (0.7-1.8)	
2	White	1.0	0.838
	Brown	0.9 (0.5-1.5)	
	Black	0.9 (0.5-1.6)	
3	White	1.0	0.559
	Brown	0.6 (0.2-1.5)	
	Black	1.0 (0.6-1.7)	
4	White	1.0	0.901
	Brown	0.8 (0.4-1.8)	
	Black	1.0 (0.5-2.1)	
5	White	1.0	0.585
	Brown	0.7 (0.3-1.7)	
	Black	1.2 (0.7-2.0)	
6	White	1.0	0.714
	Brown	0.8 (0.5-1.4)	
	Black	0.8 (0.5-1.5)	

* Wald test for heterogeneity.

Model 1 = total sample 20-39 years of age, adjusted for gender, marital status, schooling, and family income; Model 2 = total sample ≥ 40 years, adjusted for gender, marital status, schooling, and family income; Model 3 = men 20-39 years of age, adjusted for marital status, schooling, and family income; Model 4 = men ≥ 40 years, adjusted for marital status, schooling, and family income; Model 5 = women 20-39 years of age, adjusted for marital status, schooling, and family income; Model 6 = women ≥ 40 years, adjusted for marital status, schooling, and family income.

Resumo

Avaliou-se a relação entre "cor/raça" de entrevistadoras, auto e heteroclassificação de "cor/raça" dos entrevistados. Foi realizado um estudo com indivíduos adultos de Pelotas, Rio Grande do Sul, Brasil. As associações foram verificadas com tabelas de contingência e modelos multinomiais, ajustando-se para variáveis sócio-econômicas e demográficas dos entrevistados. Indivíduos com ≥ 40 anos tiveram uma chance 2,1 vezes maior de se classificarem como pardos do que como brancos, quando abordados por entrevistadoras pretas, em relação às brancas. Entrevistados dessa mesma faixa etária apresentaram 2,5 vezes menos chances de se classificarem como pretos do que como brancos, ao serem abordados por entrevistadoras pretas. Essas diferenças foram mais expressivas entre homens de ≥ 40 anos. Entrevistadoras pretas tiveram chance 2,5 vezes menor de classificar homens de ≥ 40 anos como pretos do que como brancos, em comparação com as brancas. Os resultados indicam o caráter complexo da classificação racial, sugerindo a influência de características pessoais das entrevistadoras sobre a "cor/raça" dos entrevistados.

Raça e Saúde; Relações Raciais; Medidas em Epidemiologia

Table 9

Logistic regression to estimate the effect of interviewer's "color/race" on classification of the interviewee's "color/race" by the interviewer, dichotomized (white = 0; brown and black = 1). Pelotas, Rio Grande do Sul State, Brazil, 2008.

Model	Interviewer's "color/race"	OR (95%CI)	p-value *
1	White	1.0	0.869
	Brown	0.9 (0.5-1.6)	
	Black	0.9 (0.6-1.5)	
2	White	1.0	0.343
	Brown	0.9 (0.4-1.8)	
	Black	0.7 (0.4-1.1)	
3	White	1.0	0.769
	Brown	0.7 (0.3-1.8)	
	Black	0.9 (0.5-1.5)	
4	White	1.0	0.499
	Brown	0.8 (0.3-2.0)	
	Black	0.7 (0.4-1.3)	
5	White	1.0	0.976
	Brown	1.0 (0.5-2.0)	
	Black	0.9 (0.5-1.6)	
6	White	1.0	0.295
	Brown	0.9 (0.5-1.7)	
	Black	0.7 (0.4-1.1)	

* Wald test for heterogeneity.

Model 1 = total sample 20-39 years of age, adjusted for gender, marital status, schooling, and family income; Model 2 = total sample ≥ 40 years, adjusted for gender, marital status, schooling, and family income; Model 3 = men 20-39 years of age, adjusted for marital status, schooling, and family income; Model 4 = men ≥ 40 years, adjusted for marital status, schooling, and family income; Model 5 = women 20-39 years of age, adjusted for marital status, schooling, and family income; Model 6 = women ≥ 40 years of age, adjusted for marital status, schooling, and family income.

Contributors

J. L. Bastos proposed the theme, drafted the first version of the manuscript, and performed most of the statistical analyses. S. C. Dumith collaborated in the study design, performed part of the statistical analyses, and critically revised the text. R. V. Santos proposed the theme, participated in the analyses, contributed to the drafting of the article, and critically revised the text. A. J. D. Barros supervised the statistical analyses, participated in the drafting of the manuscript, and critically revised the text. G. F. Del Duca planned the study, coordinated the fieldwork, and critically revised a preliminary version of the text. H. Gonçalves collaborated in the study's development, drafted sections of the manuscript, and critically revised the text. A. P. Nunes contributed critical observations to a preliminary version of the article.

Acknowledgments

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