ARTICLES

TEACHERS' EXPECTATIONS AND RACIAL MISMATCH IN BRAZILIAN PUBLIC SCHOOL[1]

ANDRÉ VIEIRA[I]

TRANSLATED BY Julie Ciancio[II]

ABSTRACT

This article examines the extent to which racial similarities or discrepancies between teachers and students in Brazilian public schools influence teachers' expectations. Additionally, it analyzes the occurrence of gender differences in the expectations and their intersectionality with racial differences. The data used come from the 2013 edition of Prova Brasil *(BRASIL, 2015). The main conclusion is that the racial similarity between teachers and classes of black students is associated with higher teachers' expectations for students, especially regarding the completion of elementary school and university entrance. Moreover, classes taught by female teachers are also linked to higher expectations. However, expectations are largely explained by the students' learning of mathematics and the teaching environment in the class.*

TEACHERS • EXPECTATIONS • ACADEMIC ACHIEVEMENT • RACE RELATIONS

ATTENTES DES PROFESSEURS ET MISMATCH RACIAL DANS L'ENSEIGNEMENT PUBLIC AU BRÉSIL

[I]
Universidade Federal do Rio de Janeiro (UFRJ), Rio de Janeiro (RJ), Brazil; *ahpvieira@gmail.com*

[II]
California State University, San Bernardino, California, USA; *language.and.culture@ gmail.com*

RÉSUMÉ

L'article examine dans quelle mesure les similitudes et différences raciales entre professeurs et élèves dans les écoles publiques brésiliennes influencent les attentes des professeurs. Ce travail analyse aussi le rôle que les différences de genre jouent dans ces attentes et leur intersectionnalité avec les différences raciales. Les données utilisées sont celles de la Prova Brasil 2013 *(BRASIL, 2015). La conclusion principale est qu'une similarité raciale entre professeurs noirs et classes d'élèves noirs est associée à de plus grandes attentes de la part des premiers, particulièrement en ce qui concerne la fin de ce cycle d'enseignement et l'entrée à l'université. En outre, le fait que les professeurs de ces classes soient des femmes est lié à de plus grandes attentes, même si elles s'expliquent en grande partie par l'apprentissage des élèves en mathématiques, ainsi que par l'environnement pédagogique de la salle de classe.*

ENSEIGNANT • RENDEMENT SCOLAIRE • ATTENTE • RELATIONS RACIALES

André Vieira

EXPECTATIVAS DE LOS PROFESORES Y MISMATCH (DISPARIDAD) RACIAL EN ESCUELA PÚBLICA BRASILEÑA

RESUMEN

El artículo examina en qué medida las similitudes o discrepancias raciales entre profesores y alumnos en las clases de las escuelas públicas brasileñas influencian las expectativas docentes. Adicionalmente, se analizan la existencia de diferenciales de género en las expectativas y la interseccionalidad con las diferencias raciales. Los datos utilizados son de la Prova Brasil 2013 *(BRASIL, 2015). La principal conclusión es que la similitud racial entre profesores y clases de alumnos negros está asociada a mayores expectativas docentes, especialmente en cuanto a la conclusión de la ensino fundamental y entrada en la universidad. Además, el hecho de que las clases sean impartidas por profesoras también está vinculado a mayores expectativas. Sin embargo, las expectativas se explican en gran medida por el aprendizaje de los estudiantes en matemáticas y el ambiente pedagógico en el aula.*

PROFESOR • RENDIMIENTO ESCOLAR • EXPECTATIVA • RELACIONES RACIALES

EXPECTATIVAS DOS PROFESSORES E MISMATCH RACIAL NA ESCOLA PÚBLICA BRASILEIRA

RESUMO

O artigo examina em que medida as similaridades ou discrepâncias raciais entre professores e alunos nas turmas das escolas públicas brasileiras influenciam as expectativas docentes. Adicionalmente, são analisadas a ocorrência de diferenciais de gênero nas expectativas e a interseccionalidade com as diferenças raciais. Os dados utilizados são da Prova Brasil 2013 *(BRASIL, 2015). A principal conclusão é que a similaridade racial entre professores e turmas de alunos negros está associada a maiores expectativas docentes, especialmente quanto à conclusão do ensino fundamental e entrada na universidade. Além disso, o fato de as turmas serem lecionadas por professoras também está vinculado a maiores expectativas. Contudo, as expectativas são explicadas em grande medida pelo aprendizado dos estudantes em matemática e pelo ambiente pedagógico em sala de aula.*

PROFESSORES • EXPECTATIVAS • RENDIMENTO ESCOLAR • RELAÇÕES RACIAIS

T**HE EXISTENCE OF SOCIO-DEMOGRAPHIC DIFFERENTIALS IN EDUCATIONAL ACHIEVEMENT** is already well documented. The association between sociocultural factors and school trajectories, however, is less studied and equally important in understanding these differences. Sociology of education literature has revealed that these factors are often more relevant to the definition of the students' school trajectory than the conventional measurements of economic capital held by their families (BARBOSA; RANDALL, 2006). This paper examines the formation of expectations of Brazilian public school teachers about the educational achievement of students. More specifically, we analyze the influence of differences in racial composition – or "racial disparities", as some authors prefer to call it (GERSHENSON; HOLT; PAPAGEORGE, 2016) – of teachers and students in the 9th grade on the expectations regarding the educational success of students.

There are reasons to pay attention to teachers' expectations in schools. In the international literature, researchers have been engaged in investigating teachers' expectations as a possible mechanism by which performance inequalities between students from major or minority social groups, men and women, and students from more or less affluent families, can emerge and grow (TIMMERMANS, DE BOER, VAN DER WERF, 2016). Although national studies that specifically address the influence of school or class racial profiling on teacher expectations are not known, recent analyses have identified racial discrepancies in

the probability of success in schools (LOUZANO, 2013) and in student assessment (GOIS, 2009), as well as socioeconomic differentials in teachers' expectations (INSTITUTO AYRTON SENNA, 2015). Research with public schools in Belo Horizonte, Brazil found different educational expectations according to gender, but not according to the students' skin color (BARBOSA; RANDALL, 2006). These results point to the relevance of studies that examine racial inequalities more closely with regard to these expectations.

Recent papers published in other countries show that skin color interferes with teachers' assessment of their students. Same-race teachers tend to be more generous in their expectations of student success and in assessments and recommendations for the continuation of students' educational trajectories (GERSHENSON, HOLT, PAPAGEORGE, 2016, GRISSOM, REDDING, 2015). Teachers' expectations also color or pale students' beliefs and aspirations, particularly of those who are poorer and who tend to have little contact with school children outside the school setting (GERSHENSON; HOLT; PAPAGEORGE, 2016). The impact of expectations may assume, in this process, the well-known self-fulfilling prophecy or exert the so-called "Pygmalion effect."

In this study, we seek to reflect on the following research questions: first, to what extent are teachers' expectations associated with racial differences between teachers and students? Second, to what extent do the racial match between the two groups influence these expectations? In other words, would black teachers have higher expectations for black students than for whites, and vice versa? And would such racial similarity exert unequal influence on the different facets of teacher expectations? Second, to what extent is this association between racial profiling and expectations explained by other observed characteristics of students in general and of their families and teachers as well? And third, are there institutional variations between expectations, or rather, is there a school effect behind the formation of teachers' expectations?

To answer these questions, we used data from the 2013 edition of *Prova Brasil* for teachers and students in the 9th grade of secondary school who have completed mathematics and Portuguese tests (BRASIL, 2015). The analytical sample is nationally representative and was composed of 53,841 classes in 18,923 state and municipal public schools. Although the data do not allow for the investigation of the disaggregated expectations according to the characteristics of individual students, there is reason to believe that aggregate data per class is relevant and meets the demands of this study. It should be emphasized that teachers' expectations are measured by the class, and not by individual students, in *Prova Brasil* questionnaires.

In order to examine the effects of the classes' racial profiling on expectations, we estimated linear mixed-effect regressions (or multilevel, as they are better known in the Portuguese literature), in which the dependent variables are the teachers' expectations in terms of the proportion of students they believe will complete elementary school and high school, and enter university. The mediation of racial match between teachers and students on expectations was measured by interactive terms in the models. The main conclusion of the analysis is that black students matched to a same-race teacher are associated with higher teachers' expectations, especially regarding the completion of elementary education and university entrance. In addition, classes taught by female teachers are also linked to higher expectations. The data do not allow us to state, as discussed below, whether the strength of the association between racial profiling and expectations changes according to the school.

PREVIOUS STUDIES

The research on teachers' expectations and its impact on student performance dates back to an old tradition initiated by Rosenthal and Jacobsen's (1968/2003) controversial experimental study, Pygmalion in the class, which demonstrated that when teachers expected students to have a high level of performance, students tended to confirm this expectation - a phenomenon that became known as a "self-fulfilling prophecy", as originally defined by Merton (1948). Since then, many studies with distinct naturalistic and experimental approaches have identified relatively small effects of self-fulfilling prophecies in student performance (RUBIE-DAVIES, 2008; JUSSIM; HARBER, 2005). In this tradition of studies, teacher expectations often refer to teachers' inferences about students' potential for success based on teachers' knowledge about the behavior and performance of these students (TIMMERMANS, DE BOER; VAN DER WERF, 2016).

Considering that only imprecise expectations can lead to self-fulfilling prophecies, another line of research investigates whether there are particular subgroups of students for whom teachers' inferences about their future performance are less accurate. For the most part, the accuracy of teachers' expectations is established based on the correspondence between them and the students' prior performance since expectations are expected to be informed inferences and based on past and present records of behavior and performance. The opposite of this assumption, that is, skewed or "differentiated" expectations, would occur when teachers systematically expected too much or too little from a specific group of students (VAN DEN BERGH et al., 2010). In recent literature, demographic characteristics of students and their families,

such as socioeconomic status, race, or minority status and gender, have been the variables most commonly investigated in relation to teachers' expectations (RUBIE-DAVIES, 2008).

Studies focused on the spontaneous occurrence of differentiated expectations according to students' attributes have hitherto indicated inconclusive results (ALVIDREZ, WEINSTEIN, 1999; MCKOWN; WEINSTEIN, 2008). In their review of the relevant literature, Jussim and Harber (2005) argue that teacher expectations would not be skewed because their differences regarding subgroups of demographically stigmatized students would closely match the performance inequalities between these groups. However, a considerable number of studies published after this review found significant differences in expectations for students from distinct demographic groups after controlling for students' previous performance (RUBIE-DAVIES; HATTIE; HAMILTON, 2006; VAN DEN BERGH et al., 2010; MCKOWN; WEINSTEIN, 2008). In general terms, for students with equivalent performance, teachers tend to have lower expectations for students from less affluent families or for male students (TIMMERMANS, DE BOER; VAN DER WERF, 2016). Student-teacher demographic match also matters in the formation of expectations: teachers tend to have higher expectations when students have demographic origins and demographic attributes similar to their own.

Research focused specifically on the issue of racial differences in teachers' expectations has also indicated racial biases. In a recent study of the impact of racial mismatch between teachers and students on teacher perceptions of student traits and abilities, Dee (2005) concluded that students assigned to teachers of different gender and race are more likely perceived as disruptive students and less inclined to complete homework in comparison to those assigned to teachers with similar demographic attributes. Ehrenberg, Goldhaber, and Brewer (1994) observed a robust correlation between teacher-student demographic match and a teacher-student index of teacher perceptions, which included, for example, questions about the likelihood of a student entering university. In a more recent study, Gershenson, Holt and Papageorge (2016) found that non-black teachers had significantly lower expectations for black students than black teachers. The results suggested an important intersection between demographic attributes: black teachers had, on average, the highest expectations for black students, in comparison with the other groups of teachers; and female students were given, on average, the highest expectations.

Skewed teacher expectations may also have long-term effects on student achievement. The literature recognizes three mechanisms by which expectations can be incorporated into the students' own beliefs: first, the student's perception that teachers have low expectations about them may exacerbate the negative effects of the "stereotype

threat" (Steele, 1997); second, students stigmatized by teachers can modify their expectations and behaviors to conform to the teachers' expectations (FERGUNSON, 2003); and, finally, teachers who stigmatize certain types of students can modify the way they are taught, evaluated, and advised, leading to worse educational outcomes for this group of students (FERGUNSON, 2003). Gershenson, Holt, and Papageorge (2016) found evidence for some of these processes: black students, particularly boys, who had non-black teachers in a subject in 10th grade were less likely to enroll in this discipline in the future. In another study, Grisson and Redding (2015) indicated that black students with white-matched academic performance were less likely to be referred to programs for highly-skilled students if the teacher were white.

In this article, we argue for the relevance of research dedicated specifically to the influence of the racial profiles of students and teachers on the expectations of Brazilian teachers. There is reason to believe that processes found in other contexts are equally relevant in the country's educational system. We sought to contribute to the discussion about the institutional effects of schools on student outcomes and, particularly, on teachers' attitudes. Although the available data do not allow replicating study designs in which expectations are disaggregated by individual students, it is possible to believe that the results of this research reveal important patterns of racial inequalities in the country's education system with potential long-term effects worthy of further investigation.

METHODOLOGY
DATA

The present study used data from the *Avaliação Nacional do Rendimento Escolar* [National Assessment of Educational Performance] – Anresc/*Prova Brasil* – 2013 (BRASIL, 2015). *Prova Brasil* is a biannual census evaluation involving students in the 4th grade (5th year) and 8th grade (9th year) of regular primary and secondary education in public schools that have at least 20 students enrolled in the grades evaluated. The tests evaluate school performance in two areas of knowledge: Portuguese (focus on reading) and mathematics (emphasis on problem solving).[2] For this study, only the data referring to students and teachers of the 9th year (8th grade) of secondary school were selected because the contextual questionnaire applied to these students included questions about their educational aspirations, which is a control variable relevant to the present study. It is important to highlight that only the teachers who teach the subjects that were tested are invited to provide information for the *Prova Brasil* contextual questionnaire.

Even though the data that make up the Basic Education Evaluation System – Saeb – are among the best available in the country

2
Specifically in 2013, for the 9th grade (8th year) of secondary education and the 3rd (final) year of high school, the subject sciences was experimentally added (BRASIL, 2015).

to study the research questions in this study, as well as to investigate cognitive performance factors (SOARES; COLLARES, 2006), they have limits that should be considered. Although in small proportions, some of the variables relevant to this study had missing information: in the analytical data for the teachers, the variable referring to expectations in relation to the conclusion of elementary school showed a 15.7% missing rate, while the other variables showed a rate of less than 5.0%. For the analytical data for students, the educational aspiration variable had 11.7% missing data and the others, less than 6.0%. In view of the small number of missing data, we decided to eliminate the missing cases, not to impute them.

Another structural limit of the data is the fact that the information related to the student's family, as well as some related to teacher activity, come from the students themselves. The variables that informed the family social capital included in the statistical models, as will be seen, illustrate this point. It is assumed, however, that although the students' knowledge is not completely accurate, it is not vitiated.

Finally, there is little reason to believe that the racial profiling of student groups or teachers significantly influences the formation of groups or the assignment of teachers to classes. Although there is no systematic survey of the national or subnational legislation ruling class formation or teacher assignment to classes, some studies point to the fact that performance and age criteria are most frequently used by school management in the distribution of students in classes (OLIVEIRA, 2013; SOARES, 2007).

On the other hand, the questionnaire answered by the principals of public schools in *Prova Brasil* probably provides more complete and comprehensive data in this sense. In 2013 two questions were included on the main criterion used for class formation and assignment of classes to teachers (see Tables A.2 and A.3 in the Appendix). Of the 18,407 schools in the analytical sample, only one-fifth followed "other criteria", other than those concerning the students' age and school performance, for class formation. Regarding the assignment of classes to teachers, principals followed "other criteria", other than those related to length of service, teacher preference, principal choice, etc. in less than one-third of schools or did not specify the criterion used for class assignment. Among the schools that followed other criteria for class formation, in a little more than one third (35.8%), principals did not specify the criterion for assigning classes to teachers or followed other criteria. In other words, according to these data, only a small group of schools *may have* followed purely race-biased criteria for class formation or assignment, and certainly a very small number of principals *may have* adopted racial criteria in both decisions.

DESCRIPTION OF VARIABLES

The focus variables in this study were those related to teachers' expectations about 9th grade secondary school students (questions "TX_RESP_Q094", "TX_RESP_Q095", and "TX_RESP_Q096" from the teacher questionnaire). The unit of analysis are the classes, not the students. The database used contained two variables related to students' mathematics and Portuguese proficiency, as well as information about previous educational trajectory (failure or drop out), attitudes towards the subjects tested and educational aspirations, students' socio-demographic attributes, and the socioeconomic status of families. Teacher training, working time in general and in the specific class or grade, and the proportion of the discipline content actually taught were also available. Teacher expectations were defined as inferential judgments based on the student's history at school or in the class and on their present behavior and performance. Descriptive statistics of the specified variables can be seen in Table 1.

Teachers' expectations

The questionnaire asks teachers – in three different questions – to inform how many students in the class they expect, respectively: to complete primary school; to complete high school; and to enter university. The answer options are: "A few students"; "A little less than half of the students"; "A little more than half of the students"; and "Almost all students". The Spearman's rank correlation coefficients (or Spearman's rho) between the three expectations items (see Table A.1 in the Appendix) indicated that although the three questions do not measure totally different things – in particular, high school completion and university entrance – they are not redundant because they measure the same dimension. These three variables were coded on an interval scale of 1-4 and later, and separately, summed and aggregated per class. The final variables included in the estimated models consisted of three interval scales referring to the three types of expectations, each with amplitude of 1-4, with intervals of 0.5. We therefore estimated separate regressions for each of the expectation variables.

TABLE 1
AVERAGE OF THE ANALYTICAL SAMPLE BY TYPE OF CLASS

CLASS-LEVEL VARIABLES	TOTAL	NON-BLACK MAJORITY	BLACK MAJORITY	MIXED RACES
Teachers' expectations				
Expectation to complete ES	3.78	3.83	3.77	3.79
Expectation to complete HS	3.46	3.51	3.44	3.42
Expectation to enter HE	2.11	2.19	2.09	2.05
Race (teachers)				
Non-black	0.47	0.78	0.36	0.64
Blacks	0.34	0.09	0.42	0.17
Mixed races	0.19	0.13	0.21	0.20
Gender (teachers)				
Female	0.60	0.69	0.57	0.66
Male	0.16	0.12	0.18	0.14
Half male, half female	0.23	0.20	0.24	0.19
Gender (students)				
Female majority	0.51	0.50	0.52	0.45
Male majority	0.40	0.42	0.40	0.42
Half male, half female	0.08	0.08	0.08	0.13
Other variables				
Social capital	11.90	11.9	11.8	11.9
Grade repetition	0.49	0.37	0.53	0.43
Educational aspiration	2.30	2.35	2.28	2.37
Attitude (mathematics)	0.43	0.43	0.43	0.42
Attitude (Portuguese)	0.46	0.42	0.47	0.42
Mathematics proficiency	245	259	241	248
Portuguese proficiency	241	253	237	243
Teacher w/ a bachelor's degree in education	0.90	0.92	0.89	0.88
Teaching experience	2.05	2.09	2.04	2.05
Teaching experience (grade/class)	1.53	1.56	1.52	1.52
Content taught	0.45	0.53	0.43	0.46
SES	0.02	0.44	-0.12	0.23
N	53.841	12.725	39,542	1,574

Source: Elaboration of the author based on the data from *Prova Brasil* 2013 (BRASIL, 2015).

Race or skin color of teachers and students

In the *Prova Brasil* contextual questionnaires, students and teachers of the disciplines tested – that is, Portuguese and mathematics[3] – must indicate, among the options *white*, *brown*, *black*, *yellow,* and *indigenous*, the one that best describes them. This formulation, as we can see, does not allow a distinction between "color", "race" or "ethnic origin" in the sense discussed by Guimarães (1995) and Schwartzman (1999), which precludes a conceptual distinction between terms when speaking of race or color. In this article, black and brown respondents were aggregated into the category "black". *Yellow* or *indigenous* respondents were not considered due to the small number of cases and their distribution concentrated in a few units of the Brazilian federation.

In the analytical sample, 43% of the classes had only one teacher and 57%, two teachers. For this reason, the 50% cut-off point was necessarily adopted to decide (for classes with two teachers) which ones had black teachers and which had non-black teachers. In order to standardize the racial and gender classification categories of the classes and teachers, the same cut-off point of 50% was also adopted for students. The two racial variables of students and teachers aggregated per class, therefore, indicate, respectively, whether most of the students in the class were black or non-black or if the set of students was mixed (i.e., neither racial group comprised the highest part of the class),[4] and whether all teachers in the subjects studied were black or non-black, or whether the set of teachers was mixed (i.e. the class had a self-declared black teacher and a white teacher).

Characteristics of students, families, teachers, and schools

The main hypothesis of this article, that the differences in teachers' expectations regarding students are partly explained by the racial composition of the classes, theoretically assumes that an important part of the teachers' subjective evaluations is associated with the behavior and performance of the students, as well as observation and/or perception by the teacher about the student's preparation in the home environment for school success. It is expected that components related to the social origin of the student would configure the subjective evaluations of teachers in different ways, particularly in contexts of considerable levels of inequalities in terms of possession of economic resources and access to educational resources. Although data from *Prova Brasil* allow only indirect measures of family income, such as scales based on the existence of household amenities in the student's home, these scales proved to be adequate for use in educational research (SOARES; COLLARES, 2006). Numerical variables were standardized. The following variables were added to the regression equations:

- composition of classes by gender according to students and teachers: for students, this variable encompassed the categories "male

3
The *Prova Brasil* microdata do not allow one to distinguish the teachers of the other disciplines from the teachers of those disciplines evaluated (Portuguese and mathematics). The 3 options for the subject taught are: Portuguese, Mathematics, and More than one discipline. In the analytical sample of teachers used in this study, 45% taught Portuguese, 45% mathematics, and only 6% taught more than one subject (there were 4% missing answers). Due to the low proportion of teachers who taught more than one subject and the inability to distinguish teachers with more or less frequent contact with students, we preferred not to use the filter by subject nor to consider such information in weighing the impact of racial match expectations.

4
We decided to adopt this codification for racial variables after successive formal tests with other categorizations, such as white, black, and brown majorities. The present coding was chosen due to not only the few cases of predominantly black classes, which would affect the accuracy of the estimates, but also because they allow comparisons with previous national and international studies.

majority (base)", "neither male nor female" and "female majority"; and, for teachers, it was codified as "female", "male" and "half male, half female";

- proportion of students with very positive attitudes in Portuguese and in mathematics: attitudes were considered very positive when students responded that they liked the discipline and always or almost always did the homework assigned for that subject;
- proportion of students with scholastic backwardness;
- index of average educational aspirations for the classes: students considered with high aspirations were those who answered that they intend to "only continue studying" after the end in the 9th year; next were the students who wanted to "continue studying and work", and those who wanted to "work only";
- index of average social capital of the classes: sum of the variables that indicated parents' incentive to read, to study, and not to miss class; presence at parent-teacher conferences; and parents' interest in what is happening at school;
- average proficiency in Portuguese and mathematics;
- Mean socioeconomic status – SES – of the classes: the socioeconomic status of students was measured by means of the synthesis, in a single measurement, of several items from the contextual questionnaire answered by the students about their parents' schooling and occupational sector, possession of various household amenities and hiring domestic workers. Details on the calculation of SES are seen in Alves, Soares, and Xavier (2014). After formal tests and residual regression analysis, quadratic and cubic terms of the socioeconomic status were added;
- index of teaching experience: the categorical or textual responses to the question "How long have you been working as a teacher?" were recoded into 1-5 years, 6-20 years, and more than 20 years;
- index of teacher experience in the class or grade surveyed: the original categorical responses were coded in the same manner as the previous index for the question "How many years have you taught in the grade/class in which you are currently working?";
- proportion of teachers with a teaching degree;
- proportion of teachers who have been able to cover 80% or more of the content expected for the subject at that grade level during the school year. This variable is taken as a proxy for didactic efficiency.

ANALYTICAL MODELS

The multilevel regression models were developed for the analysis of educational data in which the students are organized into groups, and these, into schools, which, in turn, are organized into systems (SOARES and ANDRADE, 2006). In this sense, this is the type of modeling that

is most appropriate for the data and research problems in this article. However, one of the methodological peculiarities of the present study is that the first level of the hierarchical structure of the data used is composed of the class, and not of students, as it is more usually found in literature. The main reason for this lies in the nature of the teacher's expectations measurement, which was given per class (and not per student), as asked in the *Prova Brasil* questionnaire.

In addition to the class level, the school level was also included in the estimated models. However, two filters were necessary to accomplish this addition: firstly, the withdrawal of schools with only one class in the sample, which implied the loss of about 10% of schools – a similar procedure was adopted in a recent study (PALERMO; SILVA; NOVELLO, 2014); second, the exclusion of classes with less than 10 students, which reduced the number of classes by 6%.[5] These two procedures allowed for a more precise distinction of the variance between the class and the school levels, as well as greater precision in the coefficient estimates and standard errors of the regressions. Considering the filters applied and the last adjustments in the data, the analytical base counted on 53,841 classes and 18,923 state and municipal schools.

First, a multilevel model was estimated in which the scales of the three types of teacher expectations were used separately as a dependent variable and only the random intercept of the school level was included (null model). The results of these null models are not presented in the following tables. They indicated, however, the pertinence of considering variations between schools in the model (log-likelihood – 2LL – equal to 4,745; 6,740; and 9,291; for three degrees of freedom, respectively, for the three models with teacher expectations). In Model 1, the covariates related to demographic characteristics, attitudinal attributes, and student proficiency, as well as those related to teacher experience and training, were added as explanatory variables. Model 2 included the variables related to the racial makeup of students and teachers in the classes as predictors. In the final model, the interactions between the racial profiles of students and teachers were added.

RESULTS
SOCIO-DEMOGRAPHIC COMPOSITION OF THE GROUPS

The first rows of Table 1 show that teachers have decreasing expectations when they are asked about more advanced transitions in the school system (such as entering university). However, teachers have consistently higher expectations for non-black student groups compared to black majority and mixed-gender students. These differences are statistically significant, with the exception of the difference between black and mixed classes.

5
The recommendation is that multilevel models should be run on samples with a minimum of ten observations per group with a minimum of 100 groups (HOX, 2002, p. 174-175).

Another notable difference is in the disproportionately high frequency with which black students experience racial mismatch in the class, in part because most of the classes are mostly black (73.4%) and most groups are mostly taught by non-black or mixed-race teachers (66.4%). However, it is noteworthy that, although only 23.6% of the classes are composed of majority non-black of students, 77.7% of these classes are mostly taught by non-black teachers. Formal tests have indicated that the racial profiles of the classes by students and by teachers are not independent.[6] The majority black classes also have average performances in mathematics and Portuguese and average socioeconomic status, significantly lower than majority non-black classes, besides concentrating substantially higher levels of scholastic backwardness.

CORRESPONDENCE BETWEEN TEACHERS' EXPECTATIONS, RACIAL COMPOSITION AND AVERAGE PERFORMANCE OF CLASSES

The zero-order correlations between teachers' expectations and the socio-demographic characteristics and other attributes of the classes are presented in Table 2. The greatest association was found between the average proficiency of the classes in Portuguese and in mathematics (r = 0.89). Modest correlations were found between the socioeconomic level of the classes and their average proficiency in mathematics (r = 0.48), Portuguese (r = 0.47), and between socioeconomic status and the proportion of students with scholastic backwardness in classes (r = -0.41). Smaller but still statistically significant correlations are indicated between this last variable and the average proficiency of the classes in Portuguese (r = -0.30) and in mathematics (r = -0.28) and between the average socioeconomic status of the classes and the proportion of students in the class with very positive attitudes towards mathematics (r = -0.30). Among the variables correlated with teachers' expectations, the average proficiency of the students in the two subjects mentioned are highlighted, both indicating a small correlation (r = 0.24) with the expectations of entering university.

MULTILEVEL MODELS FOR THE ASSOCIATION OF TEACHERS' EXPECTATIONS AND THE RACIAL PROFILES OF THE CLASSES

Given the space limit, only the regression results estimated with the final models for the three types of teacher expectations – completion of elementary education, completion of high school, and university admission (or higher education admission, as shown in the tables) – are presented in Table 3 (the results of the intermediate models can be seen in Tables A.4, A.5, and A.6 in the Appendix). In the basic model (Model 1) as seen in the tables in the Appendix, the average proficiencies and attitudes and other characteristics of the students and teachers were included as

6
The chi-square test indicated that the racial composition of the class by teachers and by students is not independent (p < 0.000).

explanatory variables of teachers' expectations. The models estimated next (Model 2) incorporated the variables referring to the racial profiles of the classes. Finally, the interactions between the racial composition of the students and teachers in the classes were added to the complete models, whose results are shown in Table 3 – since the interactions were not statistically significant for the model with the expectations of high school graduation, they were not included in the final specification of this model. With the inclusion of the interactive terms, we sought to answer the main research question of this article, which is: does the importance of the students' racial profiles to teachers' expectations vary according to the different racial profiles of the teachers? Or rather, do teachers' expectations differ according to racial similarity or discrepancy between teachers and students? And would such racial similarity exert unequal influence on the three different types of expectations considered in this study?

The coefficients estimated in the intermediate models showed only marginal changes with the progressive introduction of the covariates, with an expected exception for the coefficients of the racial variables, which were reduced or lost significance after the inclusion of the interactive terms (this discussion will be resumed later). The results of the final models indicate the relevance of the gender profile of the classes, of their average performance in the subjects evaluated and of the class environment for the three types of teacher expectations. Groups taught mostly by female teachers, with higher average performances in Portuguese and mathematics, and that are taught the content more effectively receive, on average, higher expectations. These attributes make even more difference to the higher expectations, such as those related to university entrance (equivalent to an increase of 0.41 in the scale used, compared with 0.20 for the expectations of completion of elementary education).

The potential differences between schools in the impact of class racial profiles on teachers' expectations are one of the research questions of this study. Attempts to estimate a model in which there were variations in the effects of racial profiling across schools have, however, met the limits of viability set by the available data. Although the analytical sample is reasonably large, the main problem lies in the fact that it does not support such a large number of parameters (in this case, random effects) to be estimated. Thus, only the variance of the intercept of expectations according to the schools was maintained in the models. In the final models estimated for the three types of teachers' expectations – relative to completion of elementary education, completion of high school, and university entrance – the differences between the schools explained 31.20%, 35.64%, and 40.84% of the variance, respectively. These proportions suggest that there are

substantive differences between schools in terms of the impact they can have on teachers' expectations, particularly for expectations that are often considered higher, such as those concerning the chances of students entering higher education.

The variables related to class racial profiles showed different patterns for each type of teacher expectation. In particular, black or mixed-race teachers have, on average, expectations that students will either finish high school or enter university slightly higher than non-black teachers. On the other hand, black teachers have slightly lower expectations than non-blacks for students to complete primary school. The racial composition of the students, considered in isolation, proved to be irrelevant to the expectations of elementary education completion and university entrance and had little influence on the expectations of high school graduation – in favor of the majority black classes. The three types of expectations are most strongly influenced by three sets of variables: student learning in mathematics and Portuguese; the pedagogical environment in the class (indicated by the proportion of discipline content actually taught); and gender profile of teachers (in favor of female teachers). On the other hand, as assumed, teachers expect less from the classes, for the three types of expectations, when they have more students with scholastic backwardness. Combined, the variables referring to class racial profiles explained 7.1%, 2.4%, and 4.6% of the variance for the three types of expectations, respectively, proportions substantially lower than those referring to the average proficiency in mathematics (23.1%, 24.2%, and 30.5%, respectively), and to the proportion of teachers who were successful in teaching the discipline content (22.2%, 25.2%, and 14.7%, respectively) (contribution of the other variables available in Table A.7 in the Appendix).

TABELA 2
ZERO-ORDER CORRELATIONS BETWEEN THE VARIABLES OF THE ESTIMATED MODELS

	EXPECTATION TO COMPLETE ES	EXPECTATION TO COMPLETE HS	EXPECTATION TO COMPLETE HE	RACE (STUDENTS)	RACE (TEACHERS)	GENDER (STUDENTS)	GENDER (TEACHERS)	SOCIAL CAPITAL	GRADE REPETITION	EDUCATIONAL ASPIRATION
Expectation to complete ES										
Expectation to complete HS	0,51*									
Expectation to complete HE	0,23*	0,49*								
Race (students)	-0,06*	-0,05*	-0,07*							
Race (teachers)	-0,04*	0,00*	0,02*	0,33*						
Gender (students)	0,02*	0,04*	0,05*	0,02*	0,04*					
Gender (teachers)	0,06*	0,06*	0,11*	-0,12*	-0,14*	-0,02				
Social capital	0,07*	0,11*	0,09*	-0,05*	-0,03*	0,04*	0,03			
Grade repetition	-0,11*	-0,12*	-0,1*	0,29*	0,17*	-0,04*	-0,08*	-0,20*		
Educational aspiration	-0,05*	-0,11*	-0,12*	-0,08*	-0,12*	-0,08*	0,08*	-0,04*	0,01*	
Attitude (mathematics)	0,05*	0,09*	0,09*	0,10*	0,12*	0,16*	-0,07*	0,14*	0,05*	-0,25*
Attitude (Portuguese)	0,07*	0,09*	0,1*	-0,01*	0,05*	0,05*	0,02*	0,11*	-0,04	-0,20*
Proficiency (mathematics)	0,17*	0,19*	0,24*	-0,34*	-0,18*	0,03*	0,13*	0,19*	-0,28*	0,04*
Proficiency (Portuguese)	0,16*	0,19*	0,24*	-0,31*	-0,16*	0,15*	0,11*	0,19*	-0,30*	0,04*
Teacher with bachelor's degree in education	0,04*	0,00*	0,00*	-0,05*	-0,05*	0,00*	0,08*	0,01*	-0,03*	0,04*
Experience (teaching)	0,04*	0,02*	0,01*	-0,04*	-0,07*	0,01*	0,13*	0,03*	-0,02*	-0,02*
Experience (grade/class)	0,01*	-0,01*	-0,01*	-0,04*	-0,05*	0,02*	0,01*	0,00*	0,02*	-0,01*
Content taught	0,14*	0,19*	0,17*	-0,11*	-0,08*	0,03*	0,03*	0,05*	-0,03*	-0,04*
SES	0,05*	0,04*	0,12*	-0,40*	-0,27*	-0,12*	0,15*	0,15*	-0,41*	0,28*

*p<0,05

(to be continued)

TABELA 2
ZERO-ORDER CORRELATIONS BETWEEN THE VARIABLES OF THE ESTIMATED MODELS

	ATTITUDE (MATHEMATICS)	ATTITUDE (PORTUGUESE)	PROFICIENCY (MATHEMATICS)	PROFICIENCY (PORTUGUESE)	TEACHER WITH BACHELOR'S DEGREE IN EDUCATION	EXPERIENCE (TEACHING)	EXPERIENCE (GRADE/CLASS)	CONTENT TAUGHT	SES
Expectation to complete ES									
Expectation to complete HS									
Expectation to complete HE									
Race (students)									
Race (teachers)									
Gender (students)									
Gender (teachers)									
Social capital									
Grade repetition									
Educational aspiration									
Attitude (mathematics)									
Attitude (Portuguese)	0,30*								
Proficiency (mathematics)	-0,02*	0,14*							
Proficiency (Portuguese)	0,04*	0,07*	0,89*						
Teacher with bachelor's degree in education	-0,04*	-0,02*	0,08*	0,08*					
Experience (teaching)	-0,01*	0,00*	0,08*	0,08*	0,13*				
Experience (grade/class)	0,01*	0,01*	0,06*	0,06*	0,08*	0,54*			
Content taught	0,01*	0,05*	0,23*	0,21*	0,05*	0,05*	0,06*		
SES	-0,30*	-0,14*	0,48*	0,47*	0,12*	0,07*	0,04*	0,13*	

*p<0,05

(*continuation*)

Source: Elaboration of the author based on the data from Prova Brasil 2013.

TABLE 3
COEFFICIENTS OF MULTIPLE REGRESSIONS

DEPENDENT VARIABLE: TEACHERS' EXPECTATIONS	COMPLETE ES		COMPLETE HS		Enter HE	
	β	$EP(\beta)$	β	$EP(\beta)$	β	$EP(\beta)$
Fixed part						
Intercept	3.77*** (0.01)		3.39*** (0.01)		1.87*** (0.01)	
Black majority (students)	(0.01 (0.01)		0.02** (0.01)		0.01 (0.01)	
Mixed races (students)	0.00 (0.02)		-0.02 (0.02)		-0.03 (0.02)	
Blacks (teachers)	-0.07*** (0.02)		0.04*** (0.01)		0.06*** (0.02)	
Mixed races (teachers)	0.00 (0.01)		0.02*** (0.01)		0.06*** (0.02)	
Neither male nor female (students)	-0.01 (0.01)		-0.00 (0.01)		0.02 (0.01)	
Female majority (students)	-0.00 (0.00)		0.00 (0.01)		0.02*** (0.01)	
Neither male nor female (teachers)	0.01 (0.01)		0.02** (0.01)		0.10*** (0.01)	
Female (teachers)	0.03*** (0.01)		0.05*** (0.01)		0.18*** (0.01)	
Social capital	0.01*** (0.00)		0.03*** (0.00)		0.02*** (0.00)	
Grade repetition	-0.04*** (0.00)		-0.05*** (0.00)		-0.03*** (0.00)	
Educational aspiration	-0.02*** (0.00)		-0.04*** (0.00)		-0.06*** (0.00)	
Attitude (mathematics)	0.01*** (0.00)		0.01*** (0.00)		0.02*** (0.00)	
Attitude (Portuguese)	0.01*** (0.00)		0.02*** (0.00)		0.04*** (0.00)	
Proficiency (mathematics)	0.06*** (0.01)		0.11*** (0.00)		0.14*** (0.02)	
Proficiency (Portuguese)	0.06*** (0.01)		0.10*** (0.01)		0.15*** (0.02)	
Teacher w/ a bachelor's degree in education	0.01*** (0.00)		-0.00 (0.00)		-0.01*** (0.00)	
Teaching experience (teaching)	0.01*** (0.00)		0.00 (0.00)		-0.004 (0.00)	
Teaching experience (grade/class)	-0.01** (0.00)		-0.01*** (0.00)		-0.02*** (0.00)	
Content taught	0.05*** (0.00)		0.09*** (0.00)		0.10*** (0.00)	
SES	-0.04*** (0.01)		-0.06*** (0.01)		0.07*** (0.01)	
SES^2			0.05*** (0.01)		0.11*** (0.01)	
SES^3			0.02*** (0.01)		0.06*** (0.01)	
Interactive Terms (students*teachers)						
Black majority*blacks	0.05*** (0.02)				0.08*** (0.02)	
Mixed races*blacks	0.07** (0.04)				0.05 (0.05)	
Black majority*mixed races	-0.02 (0.01)				0.03 (0.02)	
Mixed races*mixed races	-0.00 (0.03)				-0.02 (0.05)	
Intercept variance at the school-level	0.06 (0.00)		0.36 (0.00)		0.26 (0.00)	
Notes	47,402		50,911		51,071	

Source: Elaboration of the author based on the data from *Prova Brasil* 2013 (BRASIL, 2015).
Note: *p<0,1; **p<0,05; ***p<0,01

The introduction of the interactive terms in the estimated models, as mentioned, was aimed at capturing possible mediations of the racial similarity between teachers and students in the configuration of teachers' expectations. The interactions were shown to be statistically significant. However, and interestingly, this occurred only in the models where the dependent variables were the expectations of elementary education completion and university entrance. There was no good explanation for the absence of significance for high school completion expectations. In the estimates, the basic categories were classes with mostly non-black teachers and students. In cases with statistical significance, interactions indicated that racial correspondence between teachers and students matters to teachers' expectations: black teachers have, on average, higher expectations for majority black classes than

non-black teachers. Moreover, the interaction between the racial profiles of teachers and black students revealed a positive coefficient for the expectations of elementary education completion, as opposed to the coefficient of only black teacher groups. The substantive implication of this finding is that similarity or racial match between groups of black students and teachers is capable of reversing mean negative trends in teacher expectations.

TABLE 4
REGRESSION COEFFICIENTS BY CLASS RACIAL COMPOSITION – EXPECTATION TO COMPLETE ELEMENTARY SCHOOL

DEPENDENT VARIABLE: TEACHERS' EXPECTATION TO COMPLETE ES	BLACK MAJORITY		NON-BLACK MAJORITY		MIXED RACES	
	β	$EP(\beta)$	β	$EP(\beta)$	β	$EP(\beta)$
Fixed part						
Intercept	3.78*** (0.01)		3.77*** (0.01)		3.79*** (0.04)	
Blacks (teachers)	-0.02*** (0.01)		-0.06*** (0.01)		0.01 (0.03)	
Mixed races (teachers)	-0.02** (0.01)		0.00 (0.01)		0.01 (0.03)	
Neither male nor female (students)	-0.00 (0.01)		-0.01 (0.01)		-0.03 (0.04)	
Female majority (students)	-0.01 (0.01)		-0.00 (0.01)		-0.06** (0.03)	
Neither male nor female (teachers)	0.01 (0.01)		0.02 (0.01)		0.01 (0.04)	
Female (teachers)	0.04*** (0.01)		0.03** (0.01)		0.05 (0.04)	
Social capital	0.01*** (0.00)		0.02*** (0.01)		0.05*** (0.02)	
Grade repetition	-0.04*** (0.00)		-0.03*** (0.01)		-0.06*** (0.01)	
Educational aspiration	-0.02*** (0.00)		-0.01** (0.00)		0.01 (0.01)	
Attitude (mathematics)	0.01*** (0.00)		0.00 (0.00)		0.02 (0.01)	
Attitude (Portuguese)	0.01*** (0.00)		0.01 (0.00)		0.01 (0.01)	
Proficiency (mathematics)	0.05*** (0.01)		0.11*** (0.02)		0.02 (0.06)	
Proficiency (Portuguese)	0.07*** (0.01)		0.02 (0.02)		0.10* (0.06)	
Teacher w/ a bachelor's degree in education	0.01*** (0.00)		0.02*** (0.00)		0.00 (0.01)	
Teaching experience (teaching)	0.01* (0.00)		0.01** (0.00)		0.04** (0.01)	
Teaching experience (grade/class)	-0.00 (0.00)		-0.01* (0.00)		-0.03* (0.01)	
Content taught	0.05*** (0.00)		0.04*** (0.00)		0.06*** (0.01)	
SES	-0.04*** (0.01)		-0.03*** (0.01)		-0.14*** (0.03)	
Random part						
Intercept variance at the school-level	0.07 (0.00)		0.06 (0.00)		0.01 (0.00)	
Notes	34,553		11,454		1,395	
Log-Likelihood	-21,738.73		-5,767.81		-840.27	
Akaike Inf. Crit.	43,523.45		11,581.63		1,726.53	
Bayesian Inf. Crit.	43,717.81		11,750.59		1,847.07	

Source: Elaboration of the author based on the data from *Prova Brasil* 2013 (BRASIL, 2015).
Note : *p<0,1; **p<0,05; ***p<0,01

TABLE 5

REGRESSION COEFFICIENTS BY CLASS RACIAL COMPOSITION – EXPECTATION TO ENTER HIGHER EDUCATION

| DEPENDENT VARIABLE: TEACHERS' EXPECTATION TO ENTER HIGHER EDUCATION	BLACK MAJORITY		NON-BLACK MAJORITY		MIXED RACES	
	β	$EP(\beta)$	β	$EP(\beta)$	β	$EP(\beta)$
Fixed part						
Intercept	1.89***	(0.01)	1.75***	(0.03)	1.80***	(0.06)
Blacks (teachers)	0.14***	(0.01)	0.09***	(0.02)	0.15***	(0.06)
Mixed races (teachers)	0.08***	(0.01)	0.05**	(0.02)	0.08	(0.05)
Neither male nor female (students)	0.01	(0.01)	0.03	(0.02)	-0.06	(0.06)
Female majority (students)	0.02**	(0.01)	0.02	(0.01)	-0.07	(0.04)
Neither male nor female (teachers)	0.10***	(0.01)	0.13***	(0.03)	0.06	(0.07)
Female (teachers)	0.17***	(0.01)	0.22***	(0.02)	0.17***	(0.06)
Social capital	0.01***	(0.00)	0.08***	(0.01)	-0.01	(0.03)
Grade repetition	-0.03***	(0.00)	-0.01	(0.01)	-0.08***	(0.02)
Educational aspiration	-0.06***	(0.00)	-0.06***	(0.01)	-0.07***	(0.02)
Attitude (mathematics)	0.03***	(0.00)	-0.00	(0.01)	0.00	(0.02)
Attitude (Portuguese)	0.04***	(0.00)	0.02***	(0.01)	0.06**	(0.02)
Proficiency (mathematics)	0.12***	(0.02)	0.22***	(0.03)	0.14	(0.09)
Proficiency (Portuguese)	0.15***	(0.02)	0.14***	(0.03)	0.18*	(0.10)
Teacher w/ a bachelor's degree in education	-0.01**	(0.00)	-0.03***	(0.01)	0.00	(0.02)
Teaching experience (teaching)	-0.00	(0.01)	-0.00	(0.01)	-0.02	(0.02)
Teaching experience (grade/class)	-0.01**	(0.00)	-0.03***	(0.01)	-0.01	(0.02)
Content taught	0.10***	(0.00)	0.11***	(0.01)	0.12***	(0.02)
SES	0.07***	(0.01)	0.18***	(0.03)	0.15*	(0.08)
SES^2	0.09***	(0.02)	0.14***	(0.02)	0.25***	(0.06)
SES^3	0.06***	(0.01)	-0.01	(0.02)	0.03	(0.07)
Random part						
Intercept variance at the school-level	0.26	(0.00)	0.24	(0.01)	0.25	(0.01)
Notes	37,234		12,323		1,514	
Log-likelihood	-41,967.07		-13,892.10		-1,724.32	
Akaike Inf. Crit.	83,980.14		27,830.21		3,494.64	
Bayesian Inf. Crit.	84,176.21		28,000.85		3,617.06	

Source: Elaboration of the author based on the data from *Prova Brasil* 2013 (BRASIL, 2015).
Note: *p < 0.1; **p < 0.05; ***p < 0.01

In order to explore in more detail the results pointed out by the final models in which the interactions were significant, the same models were estimated separately for the three racial groups mostly composed of black, non-black, and mixed-race students. The results can be seen in Tables 4 and 5. As anticipated by Table 3, the variables presented higher coefficients, in general, in the models in which the expectation for students to enter university was the dependent variable. The results indicate that black teachers have lower expectations that predominantly black classes complete primary school than non-black teachers. However, these expectations are still higher than those for

majority non-black classes. We have seen that this negative trend is reversed when one considers the interaction between the racial profiles of students and teachers. On the other hand, black teachers have higher expectations for students entering university, regardless of the racial makeup of the group. For all the three racial groups, female teachers have higher expectations than male teachers. Interestingly, similar to the socioeconomic level of the group, the average proficiency in mathematics seems to be more relevant to expectations in relation to the predominantly non-black groups than to the other racial groups, although the opposite occurs with Portuguese proficiency. For this sample of majority non-black groups, it is suggested that the social origin of the students, their academic abilities, and parents' involvement with the education of their children are equally or more relevant factors for the teacher's expectations than the racial makeup of students. In order to avoid in advance the interpretation of the academic performance component as suggestive of supposed meritocratic concern on the part of teachers, it is worth remembering that a considerable number of studies argue that the effect of social classes can be mediated entirely by the students' access to higher levels of education (e.g.; KAREN, 2002; DAVIES, GUPPY, 1997).

FIGURE 1
MARGINAL EFFECTS OF INTERACTION BETWEEN RACIAL PROFILES OF STUDENTS AND TEACHERS IN TEACHING EXPECTATIONS
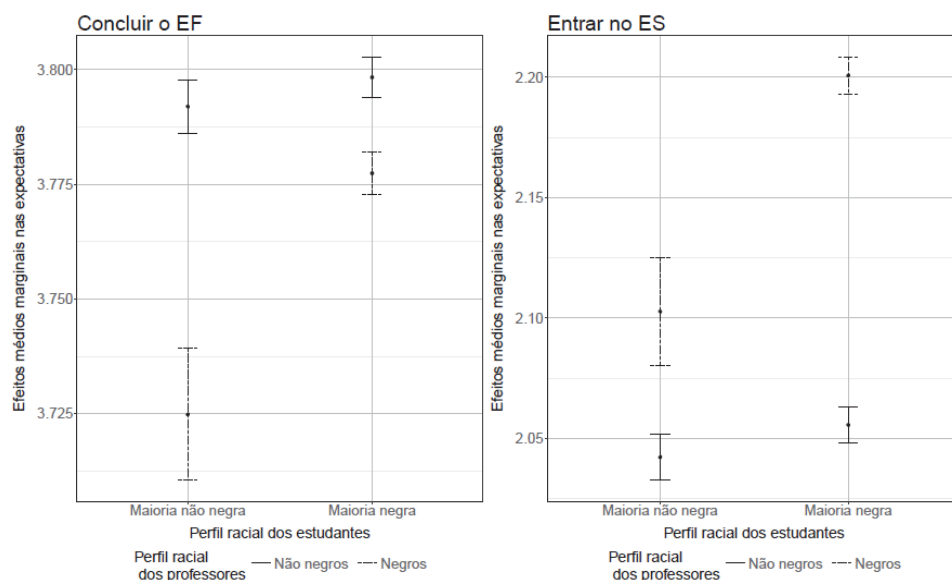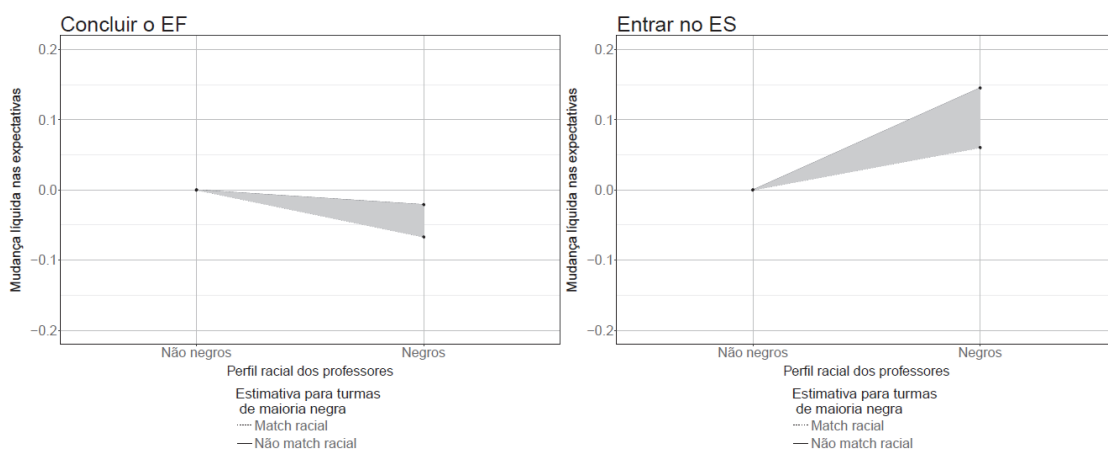

Source: Elaboration of the author based on the data from *Prova Brasil* 2013 (BRASIL, 2015).

The results of the interactions of the models presented in Table 3 and discussed above can be better understood with the aid of some graphs. The marginal effects of class racial profiles on expectations are seen in Figure 1. The estimates that appear in these graphs indicate the effects of the pure coefficients of the racial variables and the intercept. The values of the other covariates are set in typical values (averages for numerical covariates and proportional distribution for categorical covariates). In this case, we assumed that the classes are composed of approximately equal numbers of male and female students. With this method, the racial differentials of teacher expectations seem to be clearer: for the two types of expectations considered, controlling for the other characteristics of the classes, black teachers have substantially higher expectations in relation to the predominantly black classes than to non-black classes. On the other hand, the expectations of non-black teachers remain essentially unchanged between the two racial groups. According to the relevant literature, these results suggest that groups with equivalent academic performance, with teachers with similar training, experience, and teaching efficiency, and with the same average socioeconomic level receive from their teachers different expectations according to their racial profile: considered in aggregate, black teachers have higher expectations for school success for black students than non-black teachers. In addition, these racial differences in teacher expectations appear to be even stronger for higher expectations, such as those related to university entry chances.

Another interesting presentation of the results of the interactions between the racial profiles of the classes can be seen in Figure 2. In these graphs, we present the conditional effects (or actual change, or impact, as they are also called) of a moderating effect – in this case, the racial match of the classes – on the dependent variable, teachers' expectations. We selected only the models in which the interactions showed to be significant, that is, those in which the expectation of elementary education completion and university entrance are listed as dependent variables. Note the "pure" effect of racial similarity between teachers and students in mostly black classes in the absence and presence of this racial similarity. For this, all other covariates are set to zero (i.e.; ignored or uncontrolled). As indicated in the charts, the upper line shows the presence of the racial match and the bottom line, its absence. As noted before, the racial similarity between mostly black classes and black teachers results in an increase in average teacher expectations, especially for those higher expectations. In the absence of racial match in black classes, non-black teachers would, on average, have lower expectations both for students completing elementary school and entering higher education.

FIGURE 2

CONDITIONAL EFFECTS OF INTERACTION BETWEEN RACIAL PROFILES OF STUDENTS AND TEACHERS IN TEACHING EXPECTATIONS

Source: Elaboration of the author based on the data from *Prova Brasil* 2013 (BRASIL, 2015).

The results of the multilevel models indicated that teachers' gender is also associated with the expectations of success for the classes. In Figure 3, we sought to make clear the comparison between predicted mean values of expectations, according to the racial and gender profiles of the classes. Again, we selected only the models in which the interactions showed to be significant, that is, those in which the expectations of completion of elementary education and university entrance are listed as dependent variables. As noted, female teachers have significantly higher expectations than male teachers, both in black majority and non-black majority classes, with or without racial match. However, in cases of racial similarity between black teachers and students, we observe a consistent increase in expectations both for completion of elementary school and for university entrance. For black majority classes, female teachers tend to have higher expectations than male teachers, both when they have the same skin color as the aggregated students as well as when they have a different skin color. Thus, the highest expectations found belong to female and black female teachers in relation to female and black majority classes, for both expectations, while male black teachers tend to have the lowest expectations for the completion of elementary school, and non-black male teachers have the lowest expectations for university entrance. Previous literature suggests that these findings can be explained not only by the gender issue of female teachers, but also by the socialization process of the female students, which would make them supposedly more prepared for school life (DURU-BELLAT, 1990). The results presented here indicate possible racial coloration in the processes of socialization between teachers and students in the class environment.

FIGURE 3
CONDITIONAL EFFECTS OF RACIAL AND GENDER PROFILES OF EXPECTATIONS
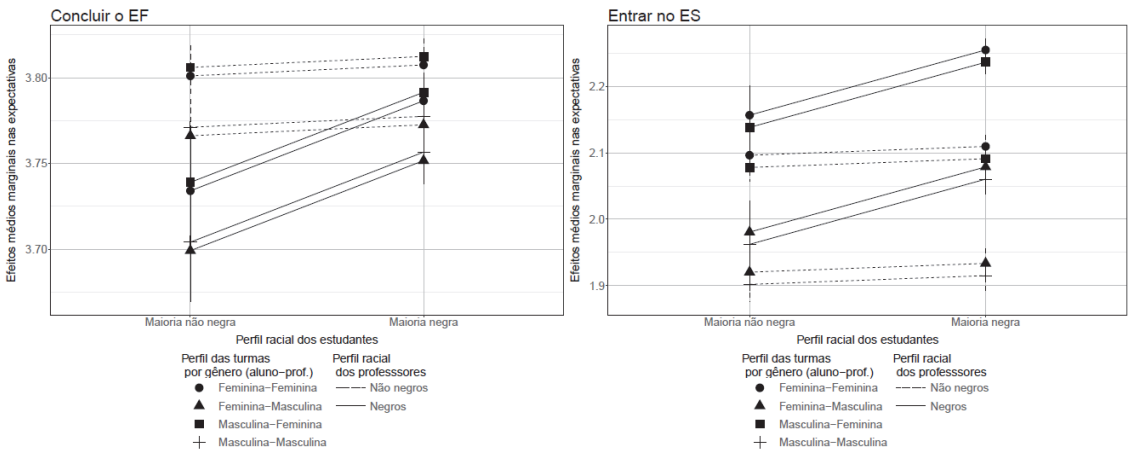
Source: Elaboration of the author based on the data from *Prova Brasil* 2013 (BRASIL, 2015).

CONCLUSIONS

Skin color and gender of students and teachers in Brazilian public schools seem to matter in the configuration of teachers' expectations about their students' success. Corroborating findings in the literature of studies conducted in other countries, the evidence in this article suggests that racial or gender similarity or discrepancy between the aggregate of teachers and students in the class exerts an independent influence on teachers' expectations about their students, especially those related to elementary education completion and university entrance. In these cases, specifically, the results pointed out that black teachers have significantly higher expectations for majority black classes than non-black teachers. This difference is reinforced when classes are taught by black female teachers. The influence of racial match on teacher expectations seems to be even stronger when it comes to the higher expectations regarding the chances of access to higher education. It should be noted, however, that the data analyzed contained only the universe of Portuguese and mathematics teachers, disciplines that were assessed in *Prova Brasil* 2013 (BRASIL, 2015). The relevance of these results is highlighted by recent evidence that skewed expectations and information boundaries affect student decision-making and outcomes as well as the findings that teachers have a crucial influence on students' beliefs, particularly the poor, about their own chances of success.

The results also suggest, however, that most of the variance of teachers' expectations in the three dimensions analyzed in this study is explained by the average learning performance of students in mathematics and by the proportion of successful teachers in teaching their subject content. Thus, although data point especially to the

occurrence of racial bias in expectations, they also lend themselves to theoretical interpretations that teachers' expectations reflect, to a large extent, concrete and objective differences in performance or school trajectory between groups of students and in terms of discrepancies in school or pedagogical environment in schools – Jussim and Harber (2005) argue accordingly.

Substantially, the findings of this article raise issues pertaining to more than one line of research, ranging from the literature on racial inequalities, teacher effectiveness, and approaches centered on schools as cultural institutions, to studies on bureaucratic representation. Although recent evidence indicates that teachers influence student outcomes throughout their life cycle, the mechanisms through which teacher intervention is felt are still poorly understood. The results found in the present study point to the small importance of teaching attributes such as experience and pedagogical training for the formation of teachers, in the aggregate and on average, of the types of teachers' expectations analyzed.

Racial disparities in teacher expectations can contribute to intra-school or intra-class segregation based on students' skin color, with consequences for both black and non-black students. This type of unwanted effect is also quite relevant for researchers dedicated to the analysis of schools as a cultural and organizational institution. In this perspective, the school is understood as a dual structure (material and cultural) capable of influencing the behavior of agents, how they interact, respond, and use resources. Agents, in turn, maintain or modify the structure as they experience it. In this sense, less segregated schools can be understood as instruments of "academic incorporation" of the disadvantaged students (CARTER, 2012). Although the results of the school effect of this article do not allow us to know how the interactions between racial profiles of teachers and students vary between schools, it is expected that they will lead to studies dedicated to a more thorough examination of how racial segregation occurs in practice.

As teachers' perceptions and expectations about students are affected by their race or skin color, the teacher's natural discretion in the school environment may lead to unequal treatment of different groups of students. Racialized perceptions may lead teachers to misrepresent the behavior of black students by virtue of different social backgrounds or cultural backgrounds: a behavior that can be understood as an age characteristic by a teacher may be considered disruptive by a colleague. The important role of teacher discretion in the teaching and assessment processes has been studied in the political science literature more associated with the theory of bureaucratic representation. One of the hypotheses proposed by this research program with relevance to this paper suggests that teachers belonging to minority population groups

may behave differently in order to produce benefits for students seen as minority students. Behind this behavior would be social origins and values shared by the two groups. It should be recognized, however, that the findings of this study say very little to substantively contribute to this discussion.

The present study has some additional limitations. First, the cross-sectional nature of the data does not allow the investigation of properly causal processes of expectation formation. Second, the lack of information regarding the socioeconomic level of public school teachers in *Prova Brasil* databases resulted in the omission of an important variable in the estimated models. Third, although the teacher expectation variables constructed for this article allow the analysis of racial differentials in these expectations, the substantive interpretation and practical meaning of the values of the scales used should be refined in future studies. Finally, the results do not allow us to discuss the mechanisms regarding the formation of teachers' expectations, nor the way in which the racial composition of the classes according to teachers and students is associated with patterns of interactions or behaviors in the class or in the school environment.

The general results presented here about possible racial and gender bias in teachers' expectations highlight, as mentioned, the relevance of the topic for future research. First, it is desirable that other studies attempt to measure the same phenomenon for a larger group of teachers, not just those evaluated in *Prova Brasil*. Additional areas of educational policy that deserve attention in subsequent research also include how teachers shape expectations, what types of interventions can eliminate biases in teachers' expectations, the impact of school workforce composition on overall patterns of school inequalities, and how teachers' expectations affect student's long-term results. The last question, in particular, which escapes the pretensions of this article, received only tentative answers in recent literature (GERSHENSON; HOLT; PAPAGEORGE, 2016).

Black students in Brazilian public schools not only have the worst average performances and the lowest chances of educational success, but also suffer from low school expectations depending on whether or not they have the same skin color as their teachers. The importance of this perverse regularity seems to be even clearer in the last years of basic education. It is possible that unequal expectations and educational outcomes are at least in part associated: low expectations embedded in the attitudes and beliefs of socially vulnerable students may have impacts on their performance and outcomes in adult life, which are largely unmeasured. In other words, there are reasons to believe that teachers' expectations are crucial components in the troubled school trajectory of a large part of the Brazilian school population. Exactly

how much and by what mechanisms they operate are elements to be explored in future studies.

REFERENCES

ALVES, Maria Teresa Gonzaga; SOARES, José Francisco; XAVIER, Flavia Pereira. Índice socioeconômico das escolas de educação básica brasileiras. *Ensaio*: Avaliação e Políticas Públicas em Educação, Rio de Janeiro, v. 22, n. 84, p. 671-703, 2014.

ALVIDREZ, Jennifer; WEINSTEIN, Rhona S. Early teacher perceptions and later student academic achievement. *Journal of Educational Psychology*, Washington, DC, v. 91, n. 4, p. 731-746, 1999.

BARBOSA, Maria Ligia; RANDALL, Laura. Desigualdades sociais e a formação de expectativas familiares e de professores. *Caderno CRH*, Salvador, v. 17, n. 41, p. 299-308, 2006.

BRASIL. Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira – Inep. *Microdados da Aneb e da Anresc (Prova Brasil)*: leia-me. Brasília: Inep, 2015. Disponível em: <http://portal.inep.gov.br/basica-levantamentos-acessar>. Acesso em: 13 abr. 2017.

CARTER, Prudence L. *Stubborn roots*: race, culture, and inequality in U.S. and South African Schools. Oxford, UK: Oxford University Press, 2012.

DAVIES, Scott; GUPPY, Neil. Fields of study, college selectivity, and student inequalities in higher education. *Social Forces*, Oxford, v. 75, n. 4, p. 1417, Jun. 1997.

DEE, Thomas S. A teacher like me: does race, ethnicity, or gender matter? *American Economic Review*, v. 95, n. 2, p. 158-165, Apr. 2005.

DURU-BELLAT, Marie. *L'école dês filles*: quelle formation pour quels rôles sociaux? Paris: L'Harmattan, 1990.

EHRENBERG, Ronald; GOLDHABER, Daniel; BREWER, Dominic. *Do teachers' race, gender, and ethnicity matter?* Evidence from NELS88. Cambridge, MA: National Bureau of Economic Research, Mar. 1994 (NBER working paper, n. 4669).

FERGUNSON, R. F. Teachers' perceptions and expectations and the black-white test score gap. *Urban Education*, v. 38, n. 4, p. 460-507, 1 Jul. 2003.

GERSHENSON, Seth; HOLT, Stephen B.; PAPAGEORGE, Nicholas W. Who believes in me? The effect of student-teacher demographic match on teacher expectations. *Economics of Education Review*, v. 52, p. 209-224, Jun. 2016.

GOIS, Antônio. Professor dá a aluno nota maior que Saresp. *Folha de S.Paulo*, São Paulo, 28 dez. 2009. Caderno Cotidiano.

GRISSOM, Jason A.; REDDING, Christopher. Discretion and disproportionality: explaining the underrepresentation of high-achieving students of color in gifted programs. *Aera Open*, Washington, DC, v. 2, n. 1, p. 1-25, 2015.

GUIMARÃES, Antonio Sergio Alfredo. "Raça", racismo e grupos de cor no Brasil. *Estudos Afro-Asiáticos*, Rio de Janeiro, n. 27, p. 45-63, 1995.

HOX, Joop. *Multilevel analysis*: techniques and applications. New York: Routledge. 2002.

INSTITUTO AYRTON SENNA. Comportamento influencia visão do professor sobre aluno. São Paulo: Instituto Ayrton Senna, 2015. Disponível em: <http://www.institutoayrtonsenna.org.br/todas-as-noticias-/comportamento-influencia-visao-professor-sobre-aluno/>. Acesso em: 25 maio 2017.

JUSSIM, Lee; HARBER, Kent D. Teacher expectations and self-fulfilling prophecies: knowns and unknowns, resolved and unresolved controversies. *Personality and Social Psychology Review*, v. 9, n. 2, p. 131-155, May 2005.

KAREN, David. Changes in access to higher education in the United States: 1980-1992. *Sociology of Education*, v. 75, n. 3, p. 191-210, Jul. 2002.

LOUZANO, Paula. Fracasso escolar: evolução das oportunidades educacionais de estudantes de diferentes grupos raciais. *Cadernos Cenpec/Nova série*, São Paulo, v. 3, n. 1, jun. 2013.

MCKOWN, Clark; WEINSTEIN, Rhona S. Teacher expectations, classroom context, and the achievement gap. *Journal of School Psychology*, v. 46, n. 3, p. 235-261, Jun. 2008.

MERTON, R. K. The Self-Fulfilling Prophecy. *The Antioch Review*, [s.l.], v. 8, n. 2, p. 193, 1948.

OLIVEIRA, Ana Cristina Prado de. Política pública e gestão escolar: um estudo de caso no Rio de Janeiro. *Jornal de Políticas Educacionais*, Curitiba, v. 7, n. 14, p. 29-37, jul./dez. 2013.

PALERMO, Gabrielle A.; SILVA, Denise Britz do Nascimento; NOVELLO, Maria Salet Ferreira. Fatores associados ao desempenho escolar: uma análise da proficiência em matemática dos alunos do 5º ano do ensino fundamental da rede municipal do Rio de Janeiro. *Revista Brasileira de Estudos de População*, Rio de Janeiro, v. 31, n. 2, p. 367-394, jul./dez. 2014.

ROSENTHAL, Robert; JACOBSON, Lenore. *Pygmalion in the classroom*: teacher expectation and pupil's intellectual development. Carmarthen: Crown House, 2003. 1ª edição em 1968.

RUBIE-DAVIES, Christine. Teacher expectations. In: GOOD, Thomas L. (Ed.). *21st century education*: a reference handbook. Thousand Oaks, CA: Sage, 2008. p. I-254-I-264.

RUBIE-DAVIES, Christine; HATTIE, John; HAMILTON, Richard. Expecting the best for students: teacher expectations and academic outcomes. *British Journal of Educational Psychology*, v. 76, n. 3, p. 429-444, Sep. 2006.

SCHWARTZMAN, Simon. Fora de foco: diversidade e identidades étnicas no Brasil. *Novos Estudos CEBRAP*, São Paulo, n. 55, p. 83-96, 1999.

SOARES, José Francisco. Melhoria do desempenho cognitivo dos alunos do ensino fundamental. *Cadernos de Pesquisa*, São Paulo, v. 37, n. 130, p. 135-160, abr. 2007.

SOARES, Jose Francisco; ANDRADE, Renato Júdice de. Nível socioeconômico, qualidade e equidade das escolas de Belo Horizonte. *Ensaio*: Avaliação e Políticas Públicas em Educação, Rio de Janeiro, v. 14, n. 50, p. 107-126, jan./mar. 2006.

SOARES, José Francisco; COLLARES, Ana Cristina Murta. Recursos familiares e o desempenho cognitivo dos alunos do ensino básico brasileiro. *Dados*: Revista de Ciências Sociais, Rio de Janeiro, v. 49, n. 3, p. 615-650, 2006.

STEELE, Claude M. A threat in the air. How stereotypes shape intellectual identity and performance. *The American Psychologist*, v. 52, n. 6, p. 613-629, Jun. 1997.

TIMMERMANS, Anneke C.; DE BOER, Hester; VAN DER WERF, Margaretha P. C. An investigation of the relationship between teachers' expectations and teachers' perceptions of student attributes. *Social Psychology of Education*, v. 19, n. 2, p. 217-240, Jun. 2016.

VAN DEN BERGH, Linda; DENESSEN, Eddie; HORNSTRA, Lisette; HOLLAND, Rob W.; VOETEN, Marinus. The implicit prejudiced attitudes of teachers: relations to teacher expectations and the ethnic achievement gap. *American Educational Research Journal*, v. 47, n. 2, p. 497-527, 1 June 2010.

APPENDIX

TABLE A.1
CORRELATION BETWEEN TEACHING EXPECTATION VARIABLES

	ES EXPECTATION	HS EXPECTATION	HE EXPECTATION
ES expectation	1.00	0.48	0.24
HS expectation	0.48	1.00	0.49
HE expectation	0.24	0.49	1.00

Source: Own elaboration based on data from Brazil 2013 (BRASIL, 2015).

TABLE A.2
CRITERIA FOR GROUP FORMATION, BRAZIL – 2013

CRITERIA FOR GROUP FORMATION	N	%
Age homogeneity	6.923	37.61
Another criteria	3.694	20.01
Heterogeneity in school performance	3.169	17.21
Absence of criteria	2.720	14.78
Age heterogeneity	1.122	6.09
Heterogeneity in school performance	648	3.52
No answer	131	0.71
Total	**18,407**	**100.00**

Source: Elaboration of the author based on the data from Prova Brasil 2013 (BRASIL, 2015).

TABLE A.3
CRITERIA FOR THE ASSIGNMENT OF CLASSES TO TEACHERS, BRAZIL – 2013

CRITERIA FOR THE ASSIGNMENT OF CLASSES TO TEACHERS	N	%
Teacher assignment based on length of service	7,278	39.54
Assignment by the school board	2.720	14.78
Other criteria	2.273	12.35
Teachers' preference	2.025	11.00
Moving teachers between grade levels	1,223	6.64
Experienced teachers with slower learning groups	877	4.76
Keeping the class together with the same teacher	861	4.68
Absence of criteria	752	4.08
Experienced teachers with faster learning groups	215	1.17
No answer	124	0.67
Class draw among teachers	59	0.32
Total	18,407	100.00

Source: Elaboration of the author based on the data from Prova Brasil 2013 (BRASIL, 2015).

TABLE A.4

COEFFICIENTS OF MULTIPLE REGRESSIONS – EXPECTATION TO COMPLETE ELEMENTARY SCHOOL

VD: EXPECTATION TO COMPLETE ES	MODEL 1		MODEL 2		MODEL 3	
	β	$EP(\beta)$	β	$EP(\beta)$	β	$EP(\beta)$
Fixed part						
Intercept	3.76***	(0.01)	3.77***	(0.01)	3.77***	(0.01)
Black majority (students)			0.01	(0.01)	0.01	(0.01)
Mixed races (students)			0.01	(0.01)	0.003	(0.02)
Blacks (teachers)			-0.02***	(0.01)	-0.07***	(0.02)
Mixed races (teachers)			-0.01**	(0.01)	0.00	(0.01)
Neither male nor female (students)	-0.00	(0.01)	-0.01	(0.01)	-0.01	(0.01)
Female majority (students)	-0.01	(0.00)	-0.00	(0.004)	-0.00	(0.00)
Neither male nor female (teachers)	0.01*	(0.01)	0.01	(0.01)	0.01	(0.01)
Female (teachers)	0.04***	(0.01)	0.03***	(0.01)	0.03***	(0.01)
Social capital	0.01***	(0.00)	0.01***	(0.00)	0.01***	(0.00)
Grade repetition	-0.04***	(0.00)	-0.04***	(0.00)	-0.04***	(0.00)
Educational aspiration	-0.02***	(0.00)	-0.02***	(0.00)	-0.02***	(0.00)
Attitude (mathematics)	0.01***	(0.00)	0.01***	(0.00)	0.01***	(0.00)
Attitude (Portuguese)	0.01***	(0.00)	0.01***	(0.00)	0.01***	(0.00)
Proficiency (mathematics)	0.06***	(0.01)	0.06***	(0.01)	0.06***	(0.01)
Proficiency (Portuguese)	0.06***	(0.01)	0.06***	(0.01)	0.06***	(0.01)
Teacher w/ a bachelor's degree in education	0.01***	(0.00)	0.01***	(0.00)	0.01***	(0.00)
Teaching experience (teaching)	0.01***	(0.00)	0.01***	(0.00)	0.01***	(0.00)
Teaching experience (grade/class)	-0.01**	(0.00)	-0.01**	(0.00)	-0.01**	(0.00)
Content taught	0.05***	(0.00)	0.05***	(0.00)	0.05***	(0.00)
SES	-0.04***	(0.01)	-0.04***	(0.01)	-0.04***	(0.01)
*Interactive Terms (students*teachers)*						
Black majority*blacks					0.05***	(0.02)
Mixed races*blacks					0.07**	(0.04)
Black majority*mixed races					-0.02	(0.01)
Mixed races*mixed races					-0.00	(0.03)
Intercept variance at the school-level	0.06	(0.00)	0.06	(0.00)	0.06	(0.00)
Notes	47,402		47,402		47,402	
Log-likelihood	-28,214.09		-28,204.29		-28,197.33	
Akaike Inf. Crit.	56,466.18		56,454.58		56,448.66	
Bayesian Inf. Crit.	56,632.74		56,656.21		56,685.36	

Source: Elaboration of the author based on the data from Prova Brasil 2013 (BRASIL, 2015).

Nota: *p<0,1; **p<0,05; ***p<0,01

TABLE A.5

COEFFICIENTS OF MULTIPLE REGRESSIONS - EXPECTATION TO COMPLETE HIGH SCHOOL

VD: TEACHERS' EXPECTATION TO COMPLETE HS	MODEL 1		MODEL 2	
	β	$EP(\beta)$	β	$EP(\beta)$
Fixed part				
Intercept	3.41*** (0.01)		3.38*** (0.01)	
Black majority (students)			0.02** (0.01)	
Mixed races (students)			-0.02 (0.02)	
Blacks (teachers)			0.04*** (0.01)	
Mixed races (teachers)			0.02*** (0.01)	
Neither male nor female (students)	-0.00 (0.01)		-0.00 (0.01)	
Female majority (students)	0.00 (0.01)		0.00 (0.01)	
Neither male nor female (teachers)	0.02** (0.01)		0.02** (0.01)	
Female (teachers)	0.05*** (0.01)		0.05*** (0.01)	
Social capital	0.03*** (0.00)		0.03*** (0.003)	
Grade repetition	-0.05*** (0.00)		-0.05*** (0.00)	
Educational aspiration	-0.04*** (0.00)		-0.04*** (0.00)	
Attitude (mathematics)	0.01*** (0.00)		0.01*** (0.00)	
Attitude (Portuguese)	0.02*** (0.00)		0.02*** (0.00)	
Proficiency (mathematics)	0.11*** (0.01)		0.11*** (0.01)	
Proficiency (Portuguese)	0.10*** (0.01)		0.10*** (0.01)	
Teacher w/ a bachelor's degree in education	-0.00 (0.00)		-0.00 (0.00)	
Teaching experience (teaching)	0.00 (0.00)		0.00 (0.00)	
Teaching experience (grade/class)	-0.01*** (0.00)		-0.01*** (0.00)	
Content taught	0.09*** (0.00)		0.09*** (0.00)	
SES	-0.07*** (0.01)		-0.06*** (0.01)	
SES^2	0.04*** (0.01)		0.05*** (0.01)	
SES^3	0.03*** (0.01)		0.02*** (0.01)	
Intercept variance at the school-level	0.13 (0.00)		0.13 (0.00)	
Notes	50,911		50,911	
Log-likelihood	-44,250.64		-44,230.73	
Akaike Inf. Crit.	88,543.27		88,511.46	
Bayesian Inf. Crit.	88,728.87		88,732.41	

Source: Elaboration of the author based on the data from Prova Brasil 2013 (BRASIL, 2015).

Note: *p < 0.1; **p < 0.05; ***p < 0.01

TABLE A.6

COEFFICIENTS OF MULTIPLE REGRESSIONS – EXPECTATION TO ENTER HIGHER EDUCATION

VD: TEACHING EXPECTATION TO ENTER HE	MODEL 1		MODEL 2		MODEL 3	
	β	$EP(\beta)$	β	$EP(\beta)$	β	$EP(\beta)$
Fixed part						
Intercept	1.95***	(0.01)	1.86***	(0.01)	1.87***	(0.01)
Black majority (students)			0.03***	(0.01)	0.01	(0.01)
Mixed races (students)			-0.03*	(0.02)	-0.03	(0.02)
Blacks (teachers)			0.13***	(0.01)	0.06***	(0.02)
Mixed races (teachers)			0.07***	(0.01)	0.06***	(0.02)
Neither male nor female (students)	0.01	(0.01)	0.02	(0.01)	0.02	(0.01)
Female majority (students)	0.02***	(0.01)	0.02***	(0.01)	0.02***	(0.01)
Neither male nor female (teachers)	0.10***	(0.01)	0.10***	(0.01)	0.10***	(0.01)
Female (teachers)	0.17***	(0.01)	0.18***	(0.01)	0.18***	(0.01)
Social capital	0.02***	(0.00)	0.02***	(0.00)	0.02***	(0.00)
Grade repetition	-0.02***	(0.00)	-0.03***	(0.00)	-0.03***	(0.00)
Educational aspiration	-0.06***	(0.00)	-0.06***	(0.00)	-0.06***	(0.00)
Attitude (mathematics)	0.02***	(0.00)	0.02***	(0.00)	0.02***	(0.00)
Attitude (Portuguese)	0.04***	(0.00)	0.04***	(0.00)	0.04***	(0.00)
Proficiency (mathematics)	0.13***	(0.02)	0.14***	(0.02)	0.14***	(0.02)
Proficiency (Portuguese)	0.15***	(0.02)	0.15***	(0.02)	0.15***	(0.02)
Teacher w/ a bachelor's degree in education	-0.02***	(0.00)	-0.01***	(0.00)	-0.01***	(0.00)
Teaching experience (teaching)	-0.00	(0.00)	-0.00	(0.00)	-0.00	(0.00)
Teaching experience (grade/class)	-0.02***	(0.00)	-0.02***	(0.004)	-0.02***	(0.00)
Content taught	0.09***	(0.00)	0.10***	(0.004)	0.10***	(0.00)
SES	0.04***	(0.01)	0.07***	(0.01)	0.07***	(0.01)
SES^2	0.11***	(0.01)	0.11***	(0.01)	0.11***	(0.01)
SES^3	0.07***	(0.01)	0.06***	(0.01)	0.06***	(0.01)
Interactive Terms (students*teachers)						
Black majority*blacks					0.08***	(0.02)
Mixed races*blacks					0.05	(0.05)
Black majority*mixed races					0.03	(0.02)
Mixed races*mixed races					-0.02	(0.05)
Intercept variance at the school-level	0.27	(0.00)	0.26	(0.00)	0.26	(0.00)
Notes	51,071		51,071		51,071	
Log-likelihood	-57,205.75		-57,080.35		-57,074.10	
Akaike Inf. Crit.	114,453.50		114,210.70		114,206.20	
Bayesian Inf. Crit.	114,639.10		114,431.70		114,462.60	

Source: Elaboration of the author based on the data from *Prova Brasil* 2013 (BRASIL, 2015).

Note: *p < 0.1; **p < 0.05; ***p < 0.01

TABLE A.7
**PROPORTION OF THE VARIANCE EXPLAINED BY INDEPENDENT VARIABLES,
BY ESTIMATED MODEL**

VARIABLES	COMPLETE ES	COMPLETE HS	ENTER HE
	EXPLAINED %	EXPLAINED %	EXPLAINED %
Race (students)	4.04	2.3	3.21
Race (teachers)	3.14	0.09	1.45
Gender (students)	1.28	2.12	2.01
Gender (teachers)	2.77	1.65	8.29
Social capital	7.97	10.93	7.61
Grade repetition	18.10	15.35	11.56
Educational aspiration	5.62	9.25	7.69
Attitude (mathematics)	3.64	3.14	3.2
Attitude (Portuguese)	1.70	2.26	1.98
Proficiency (mathematics)	23.18	24.23	30.47
Proficiency (Portuguese)	1.49	1.37	2.2
Teacher w/ a bachelor's degree in education	1.50	0	0.26
Teaching experience	0.35	0	0.1
Teaching experience (grade/class)	0.08	0.19	0.15
Content taught	22.19	25.22	14.68
SES	2.33	1.11	2.54
SES^2	--	0.52	1.44
SES^3	--	0.26	0.93
Interactive Terms (students*teachers)	0.61	0	0.25

Source: Elaboration of the author based on the data from *Prova Brasil* 2013 (BRASIL, 2015).