

# Prejudice against sexual and gender diversity and beliefs about sex education among university students

## *Preconceito contra diversidade sexual e de gênero e crenças sobre educação sexual entre estudantes universitários*

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### Abstract

Discrimination against sexual and gender minorities is a persistent problem in several contexts. This article sought to investigate prejudice against sexual and gender diversity and beliefs about sex education among students of *licenciatura* (Brazilian term for a bachelor of education degree with a specialization) courses from different areas, and whether there are differences in the manifestation of these attitudes and beliefs between freshmen and seniors. Five hundred eighty university students participated in this study and the data was collected through scales to measure sexual and gender prejudice and beliefs about sex education, and through a sociodemographic characterization form. The results showed that prejudice and belief indices varied by area of study and differences were observed in the mean values of beliefs, but not in those of prejudice, between freshmen and seniors. The importance of more investments is emphasized so that undergraduate students present lower levels of this type of prejudice when completing their respective courses.

**Keywords:** Gender identity; Prejudice; Sex education; Sexuality.

### Resumo

*A discriminação de minorias sexuais e de gênero é um problema persistente em diversos contextos. Neste artigo buscou-se investigar preconceito contra diversidade sexual e de gênero e crenças sobre educação sexual entre estudantes de*

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*cursos de licenciatura de áreas distintas e se há diferenças nas manifestações dessas atitudes e crenças entre ingressantes e concludentes. Participaram deste estudo 580 estudantes universitários e os dados foram coletados através de escalas para medir preconceito sexual e de gênero e crenças sobre educação sexual e de uma ficha de caracterização sociodemográfica. Os resultados mostraram que os índices de preconceito e de crenças variaram por área e foram observadas diferenças nas médias de crenças, mas não nas de preconceito, entre ingressantes e concludentes. Ressalta-se a importância de que haja mais investimentos voltados à conscientização dos estudantes de graduação para que, ao concluírem seus respectivos cursos, apresentem menores níveis desse tipo de preconceito.*

**Palavras-chave:** *Identidade de gênero; Preconceito; Educação sexual; Sexualidade.*

Prejudice against non-heterosexual, transgender, and/or non-normative gender groups or people remains a problem that is expressed in its classic (explicit/flagrant) or modern (implicit/subtle) form, despite the advances that include the creation of norms that inhibit its manifestation in Western societies (Bartos & Hegarty, 2018; Costa & Nardi, 2015; Fleury & Torres, 2007; Goldberg & Allen, 2018). This phenomenon has been investigated in studies on homophobia (Lamontagne et al., 2018; Paternotte, 2015) and sexual prejudice (Herek, 2000, 2004; Bartos et al., 2014), and, although these terms can be understood as corresponding, for some authors it seems more coherent to refer to sexual prejudice to approach this problem at a more comprehensive level (Costa & Nardi, 2015; Herek, 2004). In investigations in this field, it is also important to consider studies on prejudice against sexual and gender diversity (Costa, & Nardi, 2015; Costa et al., 2016; Herek, 2016).

Sexual prejudice is understood as negative attitudes towards non-heterosexual sexualities, identities, behaviors, and communities that are based on knowledges and structures that lower these attributes of human sexuality (Costa & Nardi, 2015; Herek, 2004). Prejudice against sexual and gender diversity, however, can manifest itself through social conceptions that translate into sexual stigmas (related to homosexual desires, behaviors, relationships, and communities) and gender minority stigmas (related to non-normative gender identities, experiences, expressions, and communities), guided by structural norms that maintain the inferiority of such sexuality and gender expressions (Herek, 2016; Stucky et al., 2020).

In Brazil, prejudice against sexual and gender diversity remains common in its classic form (Costa et al., 2013). This is reflected in the fact that this country has recorded high rates of homophobic violence (Ministério dos Direitos Humanos, 2018) and murders of trans and gender-diverse people (UNAIDS, 2016) in recent years, which makes this a persistent and structural problem (Ministério dos Direitos Humanos, 2018).

Regarding investments to combat discrimination that result in such violence, it is known that, from the beginning of the 2000s, several campaigns against sexual prejudice took place in South America (Lyra, 2008). In Brazil, it was from that time that advances occurred in the implementation of public policies to combat violence against Lesbians, Gays, Bisexuals, and Transgenders (LGBT) by expanding the political agenda committed to the citizenship of these people (Feitosa, 2019; Santos et al., 2017); and teacher training was recognized as a strategy for promoting respect for diversity and for transforming this reality (Borges & Meyer, 2008).

The recognition of the importance of investments in the educational context to combat violence against LGBT was a major advance since education is the most used technique to reduce sexual prejudice in the world (Bartos et al., 2014). Interventions involving university students are considered important and have shown effects in reducing prejudice and changing understandings, emotions, and behaviors that are directed towards LGBT (Bartos et al., 2014; Bartos & Hegarty, 2018; Mizock et al., 2017). Activities such as classes and courses on diversity are important for university students in general, because they help to promote respect for differences and generates awareness, acceptance, and better interaction with individuals from target groups of this type of prejudice (Costa, Peroni et al., 2015; Goldberg & Allen, 2018).

The university has an important role in transforming reality and overcoming any type of prejudice and discrimination. Specifically with regard to teacher training, passing through *licenciatura* courses (Brazilian term for a bachelor of education degree with a specialization) should promote the development of skills that contribute to working with issues related to sexual and gender diversity, and overcoming discrimination (Conselho Nacional de Educação, 2015). This is because, according to recommendations of the *Parâmetros Curriculares Nacionais* (PCN, National Curriculum Parameters), teachers are expected to be able to develop sexual orientation actions, which involve issues about gender and sexuality (Palma et al., 2015). It is important to note that, in this article, the term Sex Education (SE) will be used to refer to what PCN define as sexual orientation, which refers to practices that seek to guide children, adolescents and young people on issues related to sexuality in schools.

The literature shows that higher levels of education correlate with lower levels of prejudice (Dovidio et al., 2010; Herek, 2000). Therefore, it is consistent to think that training in Higher Education should contribute to the reduction of prejudice related to gender and sexuality issues, especially when it comes to *licenciatura* courses, so that teachers can contribute more effectively to promote respect for diversity and transformation of that reality, since the conceptions that these professionals have about such themes influence the way they approach subjects related to them in schools (Gesser et al., 2012; Gesser et al., 2015; Marcon et al., 2016; Santos & Cerqueira-Santos, 2020).

Regarding research on these themes in Brazil, two studies stand out with the conclusion of undergraduate courses in Pedagogy (Dinis & Cavalcanti, 2008) and in Biological Sciences (Souza & Dinis, 2010), from the *Universidade Federal do Paraná* (UFP, Federal University of Paraná), in which concepts of gender and sexuality were investigated in the initial phase of teacher education. In both studies, it was found that even the participants who reported that sexuality issues were addressed during graduation, declare that they do not feel prepared to work with issues related to this theme.

In this context, a study carried out at the *Universidade Federal do Rio Grande do Sul* (UFRGS, Federal University of Rio Grande do Sul) (Costa, Peroni et al., 2015) also investigated prejudice against sexual and gender diversity among students from different undergraduate courses. The results of this investigation showed that the levels of prejudice varied by areas of knowledge, and differences in the rates of prejudice were observed between the participants who did and those who did not have specific training on gender and sexuality, but these rates did not vary by the time of graduation.

Other studies on this type of prejudice among university students have found results that confirmed the manifestation of such attitudes in this population (Afonso et al., 2018; Dunbar et al., 1973; Lacerda et al., 2002). However, none of them focused on investigating the relationship between higher education training and changes in attitudes and conceptions about sexual and gender diversity. In general, investigations on this type of prejudice are scarce in Brazil (Costa et al., 2013).

Considering this scenario, the present study aimed to investigate prejudice against sexual and gender diversity and beliefs about SE among *licenciatura* students from different areas and if there are differences in the manifestation of these attitudes and beliefs between freshmen and seniors. Specifically, it sought (1) to verify if there are differences in the manifestation of prejudice against sexual and gender diversity and beliefs about SE among participants by (A) area of knowledge, (B) freshmen and seniors in the general sample, (C) freshmen and seniors per course, (E) and freshmen and seniors who did or did not have training on SE; and (2) to analyze the relationship between the prejudice rates, beliefs, and quantity of training activities in higher education. Therefore, it was assumed that there are differences in the rates of prejudice against sexual and gender diversity and beliefs about SE by area of knowledge and that senior students have lower levels of prejudice and higher levels of positive beliefs about SE.

## Method

To achieve the objectives proposed in this article, a study was carried out with a quantitative and cross-sectional design, with parallel, descriptive, and correlational samples.

### Participants

A total of 580 students from a public university in the Northeastern Region of Brazil participated in this investigation, from the first and the last three semesters of graduation (having had a curricular internship) of twelve *licenciatura* courses in the areas of Linguistics, Letters, and Arts ( $n = 154$ , 26.6%), Humanities ( $n = 188$ , 32.4%), Exact and Natural Sciences ( $n = 145$ , 25.0%), and Biological and Health Sciences ( $n = 93$ , 16.0%). Most declared to be female ( $n = 333$ , 57.4%), heterosexual ( $n = 451$ , 77.8%), to have a religion ( $n = 389$ , 67.0%), and the mean age of the sample was 23.46 years ( $SD = 7.21$ ), ranging from 18 to 63 years. Table 1 shows the distribution of participants by sociodemographic characteristics and by course among freshmen, seniors, and the general sample.

**Table 1**

*Sociodemographic characteristics and courses of the freshmen, seniors, and general sample*

Variables	Categories	Freshmen		Seniors		Total Sample	
		<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Gender	Male	143	46.0	101	37.5	244	42.1
	Female	166	53.4	167	62.1	333	57.4
	Other	2	0.6	1	0.4	3	0.5
Sexual Orientation	Heterossexual	245	78.8	206	76.6	451	77.8
	Bissexual	39	12.5	25	9.3	64	11.0
	Homossexual	24	7.7	30	11.2	54	9.3
	Other	3	1.0	8	3.0	11	1.9
Religious Affiliation	Catholic	129	41.5	104	38.7	233	40.2
	Evangelical	54	17.4	42	15.6	96	16.6
	Spiritist	7	2.3	13	4.8	20	3.4
	Other	22	7.1	18	6.8	40	6.9
	None	99	31.8	92	34.2	191	32.9
Area of Knowledge	Linguistics, Letters, and Arts						
	Visual Arts	28	50.9	27	49.1	55	9.5
	English Language	23	50.0	23	50.0	46	7.9
	Portuguese Language	30	56.6	23	43.4	53	9.1
	Humanities						
	Philosophy	20	58.8	14	41.2	34	5.9
	Geography	27	57.4	20	42.6	47	8.1
	History	25	53.2	22	46.8	47	8.1
	Pedagogy	34	56.7	26	43.3	60	10.3
	Exact and Natural Sciences						
	Physics	29	60.4	19	39.6	48	8.3
	Mathematics	29	55.8	23	44.2	52	9.0
	Chemistry	21	46.7	24	53.3	45	7.8
	Biological and Health Sciences						
Biological Sciences	25	43.1	33	56.9	58	10.0	
Physical Education	20	57.1	15	42.9	35	6.0	
Totais		311	53.6	269	46.4	580	100
Age		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
		20.92	5.441	26.39	7.890	23.46	7.219

## Instruments

A form was used to identify sociodemographic characteristics and information about the participants' curriculum. This instrument consisted of a questionnaire structured with items on age, gender, sexual orientation, religion, course, semester of graduation, and participation in some SE training activity before and/or during college.

To investigate prejudice against sexual and gender diversity, the Scale of Prejudice Against Sexual and Gender Diversity (PASGD; Costa, Bandeira et al., 2015) was used, which measures prejudice against diversity of sexual orientation and against non-conformity of gender and transsexuality. The PASGD consists of 16 items related to attitudes of rejection of sexual diversity (for example: "Sex between two men is totally wrong") and gender (for example: "Effeminate men do not make me comfortable") that can be answered on a five-point Likert scale (ranging from "Strongly disagree" to "Strongly agree"). In the study of construction and validation of this scale, the authors found good evidence of validity and reliability ( $\alpha = 0.93$ ) and, in the present study, a good internal consistency was also observed, with a Cronbach's alpha coefficient of 0.92.

To investigate beliefs about SE was used an adapted version of a scale that was initially constructed measure the teachers' attitudes towards SE, validated by Reis and Vilar (2006) in Portugal ( $\alpha = 0.80$ ). While the original scale of Reis and Vilar (2006) seeks to investigate teachers' attitudes towards SE, the version adapted for this study proved to be adequate to investigate positive beliefs about SE. An Exploratory Factor Analysis confirmed that the instrument had good psychometric properties to measure this construct in the Brazilian sample studied. The version of the scale used in this study, called the Scale of Beliefs about Sex Education in School (SBSES), consisted of 10 items, of which six are positive (for example: "Sex education in school is very important for children") and four are negative (for example: "Sex education in schools motivates early sexual behavior"), which can be answered using a five-point Likert scale (ranging from "Strongly disagree" to "Strongly agree"). In order to calculate the participants' scores, the negative items had their scores reversed. In the evaluation of the psychometric properties, the items were organized in a single factor structure; the set presented a good internal consistency, with a Cronbach's alpha coefficient of 0.89.

## Procedures

Data collection took place face-to-face through an active survey, with group application of the research instruments (form and scales mentioned above) and occurred between February and June of the year 2019. The classes with *licenciatura* students in the first and last semesters were listed, through consultations on the institutional website or in the departments' secretariats. Moreover, with institutional authorization signed by the dean, the best times for the researcher to go to the classrooms were scheduled with the professors of the respective classes.

Visits were made to the selected classes to present the research and invite students to answer the questionnaire, under the condition that they agree to the Free and Informed Consent Form and sign it. On average, the participants took about 20 minutes to answer the instruments. The accomplishment of this research was conditioned to the approval of the project by the Research Ethics Committee of the *Universidade Federal de Sergipe* (UFS, Federal University of Sergipe) (Opinion n° 3.090.496) and all participants were informed about the characteristics of the research and about the voluntary participation, through the reading of the informed consent form.

## Data Analysis

The collected data were analyzed in the SPSS (version 23). Initially, descriptive analyses were carried out to characterize the sample in terms of the distribution of participants and mean PASGD and SBSES scores.

Then, unidirectional variance analyses were conducted to check for differences in the means of prejudice and beliefs by area of knowledge. Student's *t*-tests were performed for independent samples to verify differences between the means of freshmen and seniors in the general sample and in specific groups, delimited by course and by training in SE. Pearson's correlations were conducted to verify the interaction between PASGD and SBSES scores; and between the scores of these scales and the amount of training activities in SE carried out by freshmen and seniors.

## Results

Descriptive analyses of the PASGD scores showed that the mean level of prejudice in this sample was 1.47, with a standard deviation of 0.64, which is a relatively low value and indicates that in general the participants demonstrated to be somewhat prejudiced, although the individual scores varied from 1.00 to 4.13 points. In relation to SBSES, the mean score of the sample was 4.02, with a standard deviation of 0.69, which is a relatively high value and indicates that, in general, the participants have more positive beliefs about SE, although the individual scores varied from 1.20 to 5.00 points. The mean scores of the participants, on both scales, were also calculated by area of knowledge (Figure 1) and unidirectional variance analyses were conducted to check if there were statistically significant differences between the mean values found.

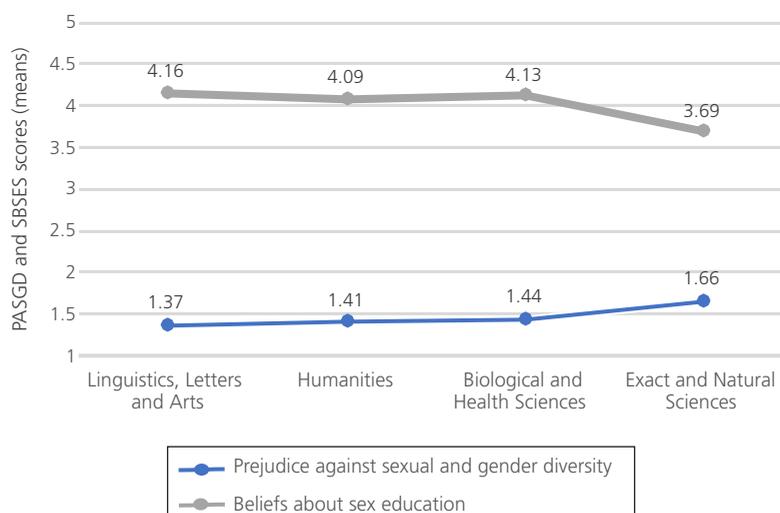
As there was no variance homogeneity in the distribution of scores in the PASGD, Welch's adjusted *F* value was observed, which indicated that the means of prejudice differed by areas of knowledge [Welch's  $F(3, 576) = 5.466; p = 0.001$ ]. A Bonferroni Post Hoc test showed differences between the mean prejudice scores in Exact and Natural Sciences and Humanities and Linguistics, Letters, and Arts; the mean scores in Biological and Health Sciences did not differ from any of the others.

Results of the variance analysis for SBSES scores by areas of knowledge also showed that there was no variance homogeneity in the distribution of the participants' scores and the Welch's adjusted *F* value indicated differences between the mean beliefs about SE by area [Welch's  $F(3, 576) = 15.606; p < 0.001$ ]. The results of a Bonferroni test indicated that only the mean scores in Exact and Natural Sciences differed from the others.

Regarding the interaction between the PASGD and SBSES scores, a Pearson correlation test showed that the indices of these instruments showed a negative correlation in this sample ( $r = -0.602, p < 0.001$ ), and as the prejudice means increases, beliefs about SE decrease, as can be seen in Figure 1.

**Figure 1**

*Means of prejudice against sexual and gender diversity and beliefs about sex education by area of knowledge*



The results of the *t* tests performed showed that there was no statistically significant difference [ $t(578) = 0.836; p > 0.05$ ] between the means of prejudice of the freshmen [ $M(SD) = 1.49(0.66)$ ] and seniors [ $M(SD) = 1.44(0.62)$ ] in the general sample. However, when these analyses were made by course (Table 2), differences were observed between the means of the participants majoring in Philosophy [ $M(SD)$  freshmen = 1.45(0.63);  $M(SD)$  seniors = 1.10(0.20)] and in History [ $M(SD)$  freshmen = 1.54(0.63);  $M(SD)$  seniors = 1.21(0.39)], with the values of  $t(24.19) = 2.277, p < 0.05$ , and of  $t(40.91) = 2.145, p < 0.05$ , respectively.

On average, freshmen participants [ $M(SD) = 3.91(0.70)$ ] have more negative beliefs about SE than the senior ones [ $M(SD) = 4.14(0.67)$ ], with  $t(578) = -0.007, p < 0.001$ . When compared by course (Table 2), these differences remain between participants majoring in English Language [ $M(SD)$  freshmen = 3.88(0.82);  $M(SD)$  seniors = 4.49(0.36);  $t(30.14) = -3.244, p < 0.005$ ]; Philosophy [ $M(SD)$  freshmen = 3.77(0.93);  $M(SD)$  seniors = 4.64(0.29);  $t(23.97) = -3.910, p < 0.005$ ]; History [ $M(SD)$  freshmen = 3.82(0.70);  $M(SD)$  seniors = 4.46(0.52);  $t(45) = -3.504, p < 0.005$ ]; and Chemistry [ $M(SD)$  freshmen = 3.42(0.64);  $M(SD)$  seniors = 3.82(0.67);  $t(43) = -2.019, p < 0.05$ ].

**Table 2**

*Differences between the means of prejudice against sexual and gender diversity and beliefs about sexual education of freshmen and seniors participants*

Scale	Groups	n	Freshmen		Seniors		Student's <i>t</i> -test	<i>p</i> -value
			M	SD	M	SD		
PASGD	Total Sample	580	1.49	0.66	1.44	0.62	0.836	0.403
	Linguistics, Letters and Arts							
	Visual Arts	55	1.12	0.25	1.29	0.47	-1.660	0.105
	English Language	46	1.60	0.92	1.22	0.43	1.802	0.081
	Portuguese Language	53	1.47	0.70	1.57	0.86	-0.458	0.649
	Humanities							
	Philosophy	34	1.45	0.63	1.10	0.20	2.277	0.032
	Geography	47	1.37	0.58	1.30	0.53	0.440	0.662
	History	47	1.54	0.63	1.21	0.39	2.145	0.038
	Pedagogy	60	1.49	0.63	1.62	0.66	-0.759	0.451
	Exact and Natural Sciences							
	Physics	48	1.82	0.73	1.66	0.54	0.793	0.432
	Mathematics	52	1.53	0.67	1.75	0.71	-1.182	0.243
	Chemistry	45	1.69	0.76	1.53	0.74	0.723	0.474
	Biological and Health Sciences							
Biological Sciences	58	1.29	0.48	1.48	0.66	-1.189	0.240	
Physical Education	35	1.55	0.71	1.47	0.56	0.367	0.716	
SBSES	Total Sample	580	3.91	0.70	4.14	0.67	-4.007	0.000
	Linguistics, Letters and Arts							
	Visual Arts	55	4.26	0.43	4.13	0.56	0.914	0.365
	English Language	46	3.88	0.82	4.49	0.36	-3.244	0.003
	Portuguese Language	53	4.14	0.57	4.08	0.77	0.329	0.744
	Humanities							
	Philosophy	34	3.77	0.93	4.64	0.29	-3.910	0.001
	Geography	47	4.01	0.74	4.30	0.72	-1.327	0.191
	History	47	3.82	0.70	4.46	0.52	-3.504	0.001
	Pedagogy	60	3.91	0.77	4.17	0.65	-1.371	0.176
	Exact and Natural Sciences							
	Physics	48	3.65	0.66	3.84	0.65	-0.975	0.334
	Mathematics	52	3.86	0.58	3.53	0.77	1.753	0.086
	Chemistry	45	3.42	0.64	3.82	0.67	-2.019	0.050
	Biological and Health Sciences							
Biological Sciences	58	4.22	0.37	4.22	0.60	-0.025	0.980	
Physical Education	35	3.84	0.75	4.19	0.63	-1.438	0.160	

Note: PASGD: Scale of Prejudice Against Sexual and Gender Diversity; SBSES: Scale of Beliefs about Sex Education in School.

Mean scores of prejudice and beliefs about SE were also compared between freshmen and seniors who reported having already done some training activity on SE (before or during college) and among those who reported not having done any activity of this type. In this case, statistically significant differences were observed only in the mean beliefs about SE among those who reported having done any of these activities [ $M(SD)$ freshmen = 4.00(0.68)]; [ $M(SD)$ seniors = 4.29(0.65);  $t(177) = -2.865, p < 0.005$ ].

Analyses of Pearson's correlation coefficients conducted between prejudice scores (PASGD), beliefs about SE (SBSES), and SE training activities (sum of the number of activities reported by the participants) between the freshmen participants and the senior ones made it possible to have a better understanding of the relationship between these variables. Beliefs about SE showed a moderate correlation with prejudice among the freshmen ( $r = -0.587, p < 0.001$ ) and this interaction was strong among the seniors ( $r = -0.628, p < 0.001$ ). And beliefs about SE also correlated with SE training activities, but only among seniors ( $r = 0.189, p < 0.005$ ). Prejudice, however, showed no correlation with these activities in either group.

## Discussion

The participants in this study had a mean level of prejudice against sexual and gender diversity that seems relatively low since the scores could vary from 1 (without prejudice) to 5 points (maximum prejudice). However, this result is worrying because the instrument used can measure manifestations of flagrant prejudice, therefore, any score above the minimum value of the scale refers to explicit attitudes that have been less and less accepted in the face of changes in social norms and advances in anti-discrimination policies in Western countries (Bartos & Hegarty, 2018; Costa & Nardi, 2015; Goldberg & Allen, 2018). Such results also demand attention because the individual scores have reached a high amplitude and because they reflect attitudes of future teachers, who are important agents for the fight against prejudice (Borges & Meyer, 2008; Leão et al., 2010).

The *Diretrizes Curriculares Nacionais* (National Curriculum Guidelines) for teacher training provide that *licenciatura* courses deal with content and strategies that contribute to promoting equality and combating sexual and gender discrimination (Conselho Nacional de Educação, 2015). However, the emphasis given to such topics and the way they are approached varies according to the curriculum of each area, which reflects the manifestation of different attitudes among students from different areas. In the present study, this can be seen in the lowest levels of prejudice and highest levels of positive beliefs the students of the areas of Linguistics, Letters, and Arts, Humanities, and Biological and Health Sciences; which can be explained by the greater susceptibility of courses in these areas to discuss social issues that may involve sexuality. The results of a study that sought to investigate the offer of subjects that discuss sexuality subjects in *licenciatura* courses at 38 Brazilian universities confirm this, as it was observed that courses such as Pedagogy (58), Social Sciences (41), and History (20) were the ones that concentrated these disciplines, among the 137 identified (Rizza et al., 2018).

The lowest levels of prejudice among participants in the areas of Humanities and Linguistics, Letters, and Arts, intermediate among those in Biological and Health Sciences, and higher among those in Exact and Natural Sciences confirmed the hypothesis that there are differences in prejudice levels among *licenciatura* students by area of knowledge. This corroborates the results of the study by Costa, Peroni et al. (2015) who investigated the manifestations of these attitudes among university students and found that the levels of this type of prejudice also varied by area of knowledge in the same order.

The hypothesis that *licenciatura* seniors have less prejudice than freshmen was refuted, since no statistically significant differences were observed between these two groups in the general sample, although this variation was observed among Philosophy and History students. Regarding other studies that investigated

this, Costa, Peroni et al. (2015) analyzed the relationship between prejudice levels and the number of periods attended by the participants in their study and, similarly, found no correlation between university time and decreased manifestation of these attitudes. It points to the existence of gaps in Higher Education about the commitment to transforming reality and combating discrimination and prejudice. Because, since prejudice against sexual and gender diversity is a serious problem in Brazil, given the high rates of homophobic violence (Ministério dos Direitos Humanos, 2018), against trans and gender-diverse people (UNAIDS, 2016), the university must contribute to changes in attitudes and concepts that underlie these manifestations of violence.

The scarcity of studies that analyze the effects of Higher Education in reducing prejudice against sexual and gender diversity in the Brazilian reality adds to other important problems to be investigated in this context, such as the training that these professionals have in order to work with SE actions and how these actions have been developed. This is reflected in the results of a systematic review of the Brazilian literature on homophobia and school (Santos & Cerqueira-Santos, 2020) which showed that many teachers mention the lack of training, starting with *licenciatura* courses, as one of the factors associated to the difficulties they have in intervening more adequately in situations of homophobic discrimination. The results of this review revealed that many of the situations involving homophobia at school have teachers as conniving agents or even perpetrators of this type of violence. Another systematic review of the literature on SE in Brazilian schools (Furlanetto et al., 2018) also found that SE actions are far from being developed as directed by the PCN.

The hypothesis that *licenciatura* seniors have more positive beliefs about SE than freshmen was confirmed in the general sample and, specifically, among participants in the English, Philosophy, History, and Chemistry courses. This shows that SE can be better viewed by students who are about to become qualified to be teachers of Basic Education, which reveals better perspectives regarding the approach of these themes by these future professionals. Variations in means among participants in the first three courses can be explained by the fact that they are from the areas that most tend to address social issues in view of the greater concentration of subjects on these topics (Rizza et al., 2018). In relation to the means of the participants in the Chemistry course, who also presented this variation, the result can be justified by the fact that this course, at the university where the research took place, has in its curriculum the mandatory subjects of "Human rights, diversity, and inclusive education" and "Workshop on human rights, diversity, and education in chemistry".

The results of the present study suggest a better scenario for beliefs about SE among students in the areas of Humanities and Linguistics, Letters, and Arts, especially for those in the English, Philosophy, and History courses, because in addition to having even more positive beliefs when completing their respective courses, they were the participants of these two areas that presented the best means for this variable among all participants in general. Therefore, it is important to recognize and value the characteristics and strategies used in these courses that may have contributed to these outcomes, so that more investments are made to enhance and expand their effects.

It is evident the need for interventions so that other students, from other courses, also have more positive beliefs about SE and the themes it involves (such as the topic of sexual and gender diversity), as this can reflect on a future professional performance of higher quality. These changes are necessary because the conceptions or representations that teachers have about sexuality and gender issues are related to their difficulties to work with these themes and impact the quality of the SE actions developed by them (Gesser et al., 2012; Gesser et al., 2015; Marcon et al., 2016).

Differences in the manifestations of beliefs about SE only between freshmen and seniors who reported having done SE training activities show that investing more in this type of specific training is an important strategy for changing conceptions about SE. What is also supported by the correlation between such beliefs and the number of activities performed by the seniors participating, indicating that the more students do activities of this type, the more they tended to have positive beliefs about SE.

As the participants in this study did not differ in levels of prejudice between freshmen and seniors, not even between those who reported having undergone training in SE, it is important to think about more interventions during college that promote changes in such attitudes. In the Brazilian context, Costa, Peroni et al. (2015) reiterated the importance of such interventions occurring more comprehensively when they found that previous training on gender and sexuality influenced the levels of prejudice among the participants in their study. Other studies also recommend that, for changes in situations of violence resulting from conceptions of gender and sexuality, systematic and broader interventions are necessary (Lundgren & Amin, 2015), that involve changes in curricula so that activities such as classes and courses on diversity are implemented for undergraduate students in general (Costa, Peroni et al., 2015; Goldberg & Allen, 2018).

The implementation of actions that contribute even more to the development of positive beliefs about SE can also produce effects in decreasing levels of prejudice against sexual and gender diversity, given the correlation between these variables. According to what was observed in this study, the specific training on SE that these students have during graduation is associated, to some extent, with differences in beliefs on SE, but this is still not significantly related to variations in the levels of prejudice. Therefore, it seems promising to invest in the expansion and quality of this training in SE for changes in this direction, since this is already foreseen in the basic education teacher curriculum (Conselho Nacional de Educação, 2015).

Still regarding to the national literature that reinforces the need for more investments of this type, it is clear that the initial training of teachers presents problems in relation to the inclusion of these themes in the curriculum, even when this is clearly proposed. According to the studies by Dinis and Cavalcanti (2008), and Souza and Dinis (2010), for example, most Pedagogy and Biological Sciences seniors, respectively, reported that they feel unable to deal with conflicts that involve issues about sexuality at school, not being familiar with the PCNs about SE, and feeling lack of discussions about sexual diversity, even when they recognized that the topic of sexuality was addressed during college.

Regarding the limitations of the present study and suggestions for other studies, despite the associations (or absences) observed, causal conclusions between the investigated variables are not possible due to the cross-sectional design of the proposed investigation. It is suggested longitudinal studies to be carried out to accompany the same subjects from the beginning to the end of their respective courses to verify whether such relationships are maintained when the effects of individual differences between the participants are controlled. Investigations of this type involving students from other states and regions may also contribute to the collection of data that best represent the Brazilian reality about this problem.

Despite its limitations, this study shows that concluding a *licenciatura* course does not necessarily imply lower levels of prejudice, although this seems to influence the conceptions about SE. It contributes to better understand the profile of students in Higher Education, regarding attitudes towards diversity and these specific beliefs, through the analysis of (in)differences by training areas and time at university. The results help to think about how the university has produced knowledge and prepared professionals in (Higher) education for (Basic) education; as well as on the advances and contradictions related to educational guidelines and the results of initial teacher training to overcome discrimination and violence. And that is reflected in the paradox present in society in general, which advances in overcoming flagrant manifestations of prejudice, but continues to promote rejection and discrimination through biased attitudes that are manifested in a subtle way.

## Contributors

E. CERQUEIRA-SANTOS was responsible for supervision and guidance in all stages of this study (general design, analyses and interpretation of data), as well as the review and approval of the final version of this article. J. J. SANTOS was responsible for the general conception of this study; for the collection, analyses and interpretation of data, as well as for writing the article.

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