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ARTIGOS

Características Escolares, Estresse Escolar e Saúde Mental em Adolescentes

School Characteristics, School-related Stress and Mental Health in Adolescents

Caracteristicas Escolares, Estrés Escolar y Salud Mental en Adolescentes

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Resumo: Embora haja relação entre ambiente escolar e saúde mental de estudantes, a mesma não é nítida. Desta forma, tivemos por objetivos 1) descrever associações entre variáveis escolares (estrutura física, convivência, atividades curriculares, ensino/rotina) e medidas de estresse escolar, depressão, qualidade de vida e suporte familiar, 2) testar diferenças entre grupos para tais variáveis e 3) descrever relações de predição entre tais medidas. Avaliamos 196 estudantes de Ensino Médio, de escolas públicas e privadas; estas diferiram em infraestrutura e em ensino/rotina. Tipo de escola e estresse escolar se associaram significativamente. As medidas de saúde mental tiveram correlações significativas e baixas com as variáveis escolares, e moderadas entre si. O grupo de orientação LGBTI+ apresentou menor qualidade de vida e maior nível de depressão que os grupos heterossexuais. Nas análises de regressão, o estresse escolar foi predito por depressão e suporte familiar, enquanto este último previu depressão e qualidade de vida.

Palavras-chave: Depressão; Qualidade de vida; Estresse escolar; Adolescentes; Escola

Abstract: Although school environment and students' mental health are related, this relationship is not clear. Thus, our objectives were 1) to describe associations between school variables (physical structure, coexistence, curricular activities, teaching/routine) and measures of school stress, depression, quality of life and family support, 2) to test for between-groups differences for such variables and 3) to describe predictive relationships between such measures. We evaluated 196 high school students, from public and private schools, which differed in infrastructure and in teaching/routine. School type and school stress were significantly associated. There were significant and moderate correlations between mental health measures among themselves, and low (although significant) ones with school variables. The LGBTI + group had a lower quality of life and a higher depression level than heterosexual groups. In the regression analyzes, school stress was predicted by depression and family support, while the latter predicted depression and quality of life.

Keywords: Depression; Quality of life; Academic stress; Adolescents; School.

Resumen: Aunque existen relaciones entre entorno escolar y salud mental de estudiantes, esta relación no está clara. Así, nuestros objetivos fueron 1) describir asociaciones entre variables escolares (estructura física, convivencia, actividades curriculares, enseñanza/rutina) y estrés escolar, depresión, calidad de vida y apoyo familiar, 2) testar diferencias entre los grupos para tales variables y 3) describir relaciones predictivas entre tales medidas. Evaluamos a 196 estudiantes de secundaria, de escuelas públicas y privadas, que diferían en infraestructura y en enseñanza/rutina. Tipo de escuela y estrés escolar se asociaron significativamente. Hubo correlaciones mutuas, moderadas e significativas de las medidas de salud mental, e correlaciones bajas con las variables escolares. El grupo de orientación LGBTI + tenía calidad de vida más baja y nivel más alto de depresión

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que los grupos heterosexuales. En los análisis de regresión, depresión y apoyo familiar predijeron el estrés escolar, mientras que este último predijo depresión y calidad de vida.
Palabras clave: Depresión; Calidad de vida; Estrés escolar; Adolescentes; Colegio

According to a World Health Organization report (WHO, 2017), depression diagnosis rates increased over the last ten years. From 2005 to 2015, depression cases increased 18% around the world, raising to a 322 million total. In Brazil, over 11.5 million people (5.8% of the population) fit diagnostic criteria for depression, while over 18.6 million (9.3% of the population) fit criteria for anxiety disorders.

Besides bringing great suffering to the individual and enormous social and public costs, depression relates to both poor quality of life and increased suicidal risk (WHO, 2017). In this context, adolescents display a high risk for mental health suffering; in Brazil, such period includes persons aged 10 to 18 years old (Estatuto da Criança e do Adolescente, 1990). Studies described in the following paragraphs show that school-age adolescents experience high levels of stress and anxiety, as well as depressive symptoms.

Thiengo et al. (2014) conducted an extensive systematic review of more than 7000 articles to determine the prevalence of mental disorders in children and adolescents. The prevalence of anxiety disorders varied between 3.3 to 32.3% in the studies examined, while 0.6 to 30% of the participants showed significant signs of depression. Coutinho et al. (2016) investigated the relationship between depression and quality of life in the school environment in adolescents. The authors observed a negative correlation between depression and quality of life, especially emotional state (psychological welfare, happiness and willingness; r = -0.54), feelings and positive emotions (r = -0.65), and family emotional support (r = -0.54).

In this age group, school settings have a prominent socialization role; therefore, it may work both as a protection or risk factor in mental health (Lipp et al., 2002; Pinto et al., 2017). In India, Jayanthi et al. (2015) tracked depressive symptoms in 2432 adolescents, of which 26.3% had severe symptoms. Among depressed adolescents, 78.4% showed high levels of school stress, while 41.9% of adolescents without depressive symptoms showed such stress level. Besides finding a moderate positive correlation (r = 0.52) between severity of depression and school stress, Jayanthi et al. (2015) also identified that adolescents undergoing school stress are 2.4 times more likely to develop depression than adolescents with low stress. Other recent studies (Singh et al., 2017; Liu, 2017; Lipp et al., 2002; Coutinho et al., 2016) also observed positive correlations between stress, depression and school variables such as lack of support, academic performance and school type (public or private).

Anxiety and stress are frequently associated with depression (Lacerda et al., 2017). Students submitted to high rates of anxiety and stress in their schools (such as excessive demand for results, unbridled competitiveness, violence and bullying) are more susceptible to present depressive symptoms than the average population (Lipp et al., 2002; Bowes et al., 2016). In periods of school transition, stress may be intensified, as well as mental disorders' risk (Correia-Zanini & Marturano, 2015). In the literature, another school-related risk factor is inadequate physical structure or teaching methodology (Soares Neto et al., 2013; Leão et al., 2011). It is important to note that such factors can possibly be even more damaging to children and adolescents exposed to other vulnerabilities, such as family history of depression, low out-of-school psychosocial support, and exposure to violence (Dell'Aglio & Hutz, 2004; Baptista & Oliveira, 2004).

The school infrastructure (i.e., facilities, pedagogical equipment and services) has an effect on school-related stress; therefore, schools should be favorable places for the teaching-learning process, social relationships and motor development (Soares Neto et al., 2013). Besides that, Ochoa et al. (2012) assert that students' perception of the offered infrastructure is more important than actual school conditions. Pinto et al. (2017) also underline the association between depression and quality of life with school variables such

as academic support and guidance (as well as students' socioeconomic context), showing that students with better mental and social support present better mental health scores.

Besides school-related variables, socio-economic ones have an important role in adolescents' depressive symptoms. Although the effect size is not constant, the socio-economic context may be an important factor to mental health (Campos et al., 2018). However, Baptista & Oliveira (2004) and Dell'Aglio & Hutz (2004) indicate a negative correlation between depressive symptoms and family support perception, understood as the pattern of behaviors and confrontation strategies, as well as the development of self-esteem and bonds experienced on family relationships.

The studies mentioned show that depression has a high prevalence among adolescents and has a positive correlation with stress and anxiety in the school environment. Moreover, depression is inversely proportional to quality of life and family support perception. Additionally, there is evidence showing that the type of school and characteristics of the school environment may work as a risk or protection factor concerning the development of depressive symptoms. Finally, the literature points out that the socioeconomic context is a significant factor for mental health. Although such evidence, we did not find recent Brazilian literature with multiple measures (i.e., socioeconomical, school-related and psychosocial ones) on the relation between school environment and depression.

Therefore, the present study aimed to comprehend with further details the interaction between school environment variables and depression. More precisely, we investigated the relationship between depression rates, quality of life and family support perception with school-related variables, such as infrastructure, social relationships, teaching and school routines and extracurricular activities. In addition, our aims were to test for group differences along these variables and to determine the extension to which school and socioeconomic variables predict mental health indicators.

We proposed that 1) school-related variables are significantly related to students' mental health indicators; 2) the perception of the school as a friendly and supportive environment has a benign effect on psychological welfare and 3) perception of support and hospitality in the school is more important than its infrastructure for students' mental health.

Method

Participants. Hundred-ninety-six High School students participated in the research. We obtained the sample by convenience, according to school and students availability to take part of the study. We describe the sample profile on Table 1. The students were from four different schools (two public and two private) in Curitiba – PR – Brazil. Most of the sample was composed by female students (n = 146); such significant gender difference was due to one of the public schools, which offers technical education, mostly attended by girls.

We divided participants in subgroups of gender and sexual orientation due to our interest of exploring possible differences between male and female heterosexual participants, who composed the majority of the sample, and non-heterosexual participants. Scientific literature has shown that gender and sexual orientation is associated with mental health levels and academic performance (Rosenkrantz et al., 2017; Becker et al., 2014). We grouped Non-heterosexual participants all together due to their small sample size and with the purpose of identifying possible effects of social exclusion due to sexual orientation. The LGBT+ sample was also composed mostly of participants who identified themselves as girls (87.5%).

Table 1 - *Sociodemographic profile of the study's Sample (n = 196).*

School type and grade X demographic variables 1st grade [f (%)]		Public (n=119)		Private (n=77)		Total
		2nd grade [f (%)]	1st grade [f (%)]	2nd grade [f (%)]		
Socio-economic level (n)	Low	6 (3.1%)	8 (4.1%)	0	6 (3.1%)	20 (10.3%)
	Medium	32 (16.3%)	72 (36.7%)	24 (12.2%)	38 (19.4%)	166 (84.6%)
	High	1 (0.5%)	0	5 (2.6%)	4 (2%)	10 (5.1%)
Age (years)	Mean	15.28	16.30	15.14	16.19	15.90
	Standard deviation	0.68	0.71	0.52	0.57	0.82
Sexual orientation (n)	Male Heterosexual	2 (1%)	11 (5.6%)	13 (6.6%)	19 (9.7%)	45 (23%)
	Female Heterosexual	28 (14.3%)	48 (24.5%)	14 (7.1%)	21 (10.7%)	111 (56.6%)
	LGBT+	9 (4.6%)	21 (10.7%)	2 (1%)	8 (4.1%)	40 (20.4%)
Adult family members (n)	1 parent	15 (7.7%)	27 (13.8%)	5 (2.6%)	17 (8.7%)	64 (32.7%)
	2 parents	20 (10.2%)	42 (21.4%)	20 (10.2%)	27 (13.8)	109 (55.6%)
	1 parent + grandparents	0	3 (1.5%)	0	0	3 (1.5%)
	2 parents + grandparents	2 (1%)	3 (1.5%)	2 (1%)	3 (1.5%)	10 (5.1%)
	Grandparents	2 (1%)	5 (2.6%)	2 (1%)	1 (0.5%)	10 (5.1%)
TOTAL		39 (19.9%)	80 (40.8%)	29 (14.8%)	48 (24.5%)	196 (100%)

Note. Both public and private school samples were constituted of two institutions each. For public schools, n1 = 77 (1st grade = 29; 2nd grade = 48); n2 = 42 (1st grade = 10; 2nd grade = 32). For private schools, n1 = 65 (1st grade = 21; 2nd grade = 44); n2 = 12 (1st grade = 8; 2nd grade = 4).

Measures

Sociodemographic Questionnaire: Elaborated by the authors, including identification, familiar composition and an external measure of socio-economic level (Critério Brasil, 2018).

School Variables Questionnaire (Questionário sobre variáveis escolares [QVE]): Elaborated by the authors for the present study, consists of 41 items about participants' perception of four dimensions: Infrastructure (QVE-D1), Social relationships (QVE-D2), Teaching and school routines (QVE-D3), and Extracurricular activities (QVE-D4). The items were elaborated based on previous studies on the issue (Leão et al., 2011; Ochoa et al., 2012). From the description of school characteristics in the literature, we developed mostly Likert-type items (for example, "how do you assess your school's following items"; "have you seen any of the following situations"), and one

yes/no item ("how many of the following items are there in your school?"). In the sample herein studied, Cronbach alphas were 0.88 for QVE total score, 0.79 for QVE-D1, 0.74 for QVE-D2, 0.59 for QVE-D3, and 0.85 for QVE-D4.

Vulnerability to School Stress Scale *(*Escala de Vulnerabilidade ao Estresse Escolar [EVESC]; Baptista, Noronha et al., 2019): A 46-item scale that assesses stress in students answered on a four-point Likert scale (from "never" to "always"). The items are constructed based on the cognitive perspective of stress, taking into account the assignment of meaning of various stressors (Lazarus, 2007) and concern the relationship between teacher and student, routines and difficulties in conducting school activities and also the adequacy of the physical environment of the school; in our sample, Cronbach alpha for this measure was 0.95.

Baptista Depression Scale - Children and Adolescents Version (Escala Baptista de Depressão Infanto-Juvenil [EBADEP-IJ]; Baptista, 2018): It consists 27-item, unifatorial measurement of depressive symptoms in individuals from 7 to 18 years of age, on a Likert three-point scale (from "never/less times" to "many times/less"). The scale has clinical studies and validity evidences (Grendene et al., 2018; Baptista, Cunha & Hauck, 2019), and has separate standards for children and adolescents, male and female, and specific cut-off points (no symptoms, mild, moderate and severe symptoms); in our sample, Cronbach's alpha for this measure was 0.94.

Perception of family support inventory (Inventário de Percepção de Suporte Familiar [IPSF]*;* Baptista, 2010) - Composed of 42 items, it evaluates the perception of family relationships in affectivity, autonomy and adjustment, answered on a Likert scale of three points (from "almost never/never" to "almost always/ever"). We used a smaller, 13-item version of this instrument, after a content analysis, since reduced versions of the IPSF in samples of children and adolescents have shown adequate evidence of validity (Baptista et al., 2020). This item reduction did not affect the reliability of the measurement (Cronbach alpha = 0.88).

Youth Quality of Life - Research Version *(*YQOL--R; Topolski et al., 2002): Consists of 42 items for assessing four domains (personal, relational, environmental and general quality of life) in individuals aged 11 to 18 years old. We used the adaptation of this measure for the Brazilian culture by Salum et al. (2012), who reported sound psychometric indicators (evidence for an overall score via principal component analysis; Cronbach alpha = 0.885; n = 412). In our sample, the Cronbach alpha for this measure was 0.98.

Procedure. After approval of schools and the Department of Education of the state of Paraná, we presented the research to the students. The ones who agreed to take part of the study informed their consent along with their responsible adults by signing a form. Participants answered the protocol through an internet link provided at the time of application. The first researcher was available throughout the whole application to answer questions and check for the correct filling of the protocol.

Data analysis. All measures' scores were correlated. After it, we compared participants' scores on the measures by kind of school and school grade, using Student's "t" and Mann-Whitney's tests (see next topic). For socio-economic level (high, medium and low), sexual orientation (male heterosexual, female heterosexual and LGBT+) and adult family members (one parent, two parents, one parent and grandparents, two parents and grandparents), we used ANOVAs. All statistical comparisons adopted a significance level of $p < 0.05$. For the post hoc analyses, we used a Bonferroni correction for significance level.

At last, we performed multiple, standard linear regression analyses; although such model can reduce the explanation of strongly correlated variables (Mourão et al., 2021), we did not find previous studies that could justify adopting other regression methods. The dependent variables were school stress, depression and quality of life levels, while school-related, demographic and the other mental health variables were the independent ones.

Results

Table 2 shows the sample's average scores for the protocol, as well as the correlation among all measures. As shown above, the participants presented mild symptoms of depression, according to EBADEP-IJ's scores.

Table 2 - *Descriptive statistics and correlations for measures' scores*

	QVE-D1	QVE-D2	QVE-D3	QVE-D4	QVE-Total	EVESC	EBADEP-IJ	IPSF	YQOL-R
X	38.7	41.5	29.4	7.62	117	98.7	22.3	27.5	61.4
SD	5.91	7.45	4.86	5.85	17.3	25.8	12.5	5.66	21.2
Min	23	19	16	0	67	49	0	12	17
Max	52	58	44	24	167	183	49	36	100
	QVE-D1	QVE-D2	QVE-D3	QVE-D4	QVE total	EVESC	EADEP-IJ	IPSF	YQOL-R
QVE-D1	1	-	-	-	-	-	-	-	--
QVE-D2	0.35***	1	-	-	-	-	-	-	-
QVE-D3	0.54***	0.48***	1	-	-	-	-	-	-
QVE-D4	0.27***	0.19**	0.34***	1	-	-	-	-	-
QVE	0.74***	0.75***	0.79***	0.61***	1	-	-	-	-
EVESC	-0.33***	-0.49***	-0.47***	-0.20**	-0.52***	1	-	-	-
EBADEP-IJ	-0.34***	-0.34***	-0.38***	-0.20**	-0.44***	0.34***	1	-	-
IPSF	0.26***	0.24***	0.40***	-0.17*	0.36***	-0.15*	-0.65***	1	-
YQOL-R	0.39***	0.31***	0.41***	0.17*	0.44***	-0.22**	-0.76***	0.64***	1

Note. X = average score; SD- Standard deviation; Min = Minimum score; Max = Maximum score; QVE-D1 = Infrastructure; QVE-D2 = Social relationships; QVE-D3 = Teaching and school routines; QVE-D4 = Extracurricular activities; QVE - School Variables Questionnaire; EVESC = Vulnerability to School Stress Scale; EBADEP - IJ = Baptista Depression Scale; IPSF = Perception of family support inventory; YQOL-R = Youth Quality of Life. * = p< .05; ** = p< .01; *** = p< .001.

As also shown in Table 2, Pearson's correlation values between the mental health measures, as well as QVE (total and by dimension); all correlations were significant. As shown above, the depression measure (EBADEP-IJ) had a strong, negative correlation with quality of life (YQOL-R), a moderate, negative correlation with family support perception (IPSF) and a low, positive correlation with school perception (QVE) and school stress (EVESC). QVE's total score was positive and moderately correlated to school stress (EVESC) and had a positive, moderate correlation with family support perception and quality of life; these two last measures had a positive and moderate correlation.

For testing the difference between scores, we used Student's "t", since the analyzed groups are independent and presented a normal distribution to most of the measures. Two of the measures did not have a normal distribution, namely, QVE's D2 (social relationships) and YQOL-R; we used Mann-Whitney's test for comparing these measures along school type. For the sample's grades, EVESC, YQOL-R and QVE's Social relationships dimension did not have a normal distribution.

Comparisons along groups showed no statistically significant difference between students of public and private schools for quality of life, depression and family support perception. This pattern suggests that type of school attended is not decisive to the levels of mental health indicators in this sample. In contrast, we found statistically significant differences among schools for two QVE dimensions (Teaching and school

routines and Extracurricular activities) and QVE total. In these measures, private school students had higher scores than public school ones. For Teaching and school routines, private school students had an average score of 30.8, while public school ones had an average score of 28.6 ($p < 0.001$; $d = -0.50$). For Extracurricular activities and QVE total, private school students had, respectively, average scores of 11.8 and 124.6, compared to private school scores of 4.9 and 112.6 ($p < 0.001$ for both comparisons; $d = -1.45$ and -0.71, respectively).

Concerning 1st and 2nd grades average scores comparison, regardless of the type of school attended, there was no significant difference for neither of the measures. It is possible to state, based on data, that the school grade does not mediate mental health and perception of school environment significantly. Once we did not obtain a significant difference concerning school type or grade in relation to mental health indicators, we performed the following analyses without distinction of school variables, having focused on socio-economic and demographic variables.

Scores' comparisons by socio-economic level, sexual orientation and adult family members are presented in Table 3. For the number of adults in the closest family, we found no statistically significant difference between the groups. Because of that, we did not show such results in Table 3. This result suggests that the number of adults in the closest family does not affect mental health indicators, or perception of school environment significantly.

Table 3 - *ANOVA comparisons for the study's protocol measures*

Variable		Socioeconomic class (Low, Medium, High)	Gender and sexual orientation (M-HT; F-HT; LGBT+)
QVE - D1	Ap/ε^2	NS	NS
	PH	-	-
QVE – D2	Ap/ε^2	NS	0.03 / 0.04
	PH	-	NS
QVE – D3	Ap/ε^2	<.001 / 0.05	0.01 / 0.04
	PH	0.03 (High X Low); 0.005 (High X Medium)	NS
QVE – D4	Ap/ε^2	0.01 / 0.05	<.001 / 0.11
	PH	0.034 (High X Low); 0.01 (High X Medium)	0.001 (F-HT X M-HT); <.001 (LGBT+ X M-HT)
QVE	Ap/ε^2	<.001 / 0.07	<.001 / 0.09
	PH	0.015 (High X Low); <.001 (High X Medium)	<.001 (LGBT+ X M-HT)
EVESC	Ap/ε^2	NS	0.009 / 0.05
	PH	-	0.009 (LGBT+ X M-HT); 0.004 (LGBT+ X F-HT)
EBADEP - IJ	Ap/ε^2	0.05 / 0.03	<.001 / 0.24
	PH	0.03 (High X Low)	<.001 (LGBT+ X M-HT); <.001 (LGBT+ X F-HT)
IPSF	Ap/ε^2	0.02 / 0.04	<.001 / 0.1
	PH	0.04 (High X Low)	<.001 (LGBT+ X M-HT); <.001 (LGBT+ X F-HT)
YQOL - R	Ap/ε^2	NS	<.001 / 0.17
	PH	-	<.001 (LGBT+ X M-HT); <.001 (LGBT+ X F-HT)

Note: HT = Heterosexual; Ap/ε^2 = ANOVA (p-level) / Effect size; PH = Post hoc comparisons; NS = Non-significant. QVE-D1 = Infrastructure; QVE-D2 = Social relationships; QVE-D3 = Teaching and school routines; QVE-D4 = Extracurricular activities; QVE - School Variables Questionnaire; EVESC = Vulnerability to School Stress Scale; EBADEP - IJ = Baptista Depression Scale; IPSF = Perception of family support inventory; YQOL-R = Youth Quality of Life.

Concerning the socioeconomic level, a statistically significant difference was found on the QVE's total score and two of its dimensions (Teaching and school routines, and Extracurricular activities). Students of higher socioeconomic class (which all attend private schools) perceive the school environment in a more positive way, compared to the other groups. For mental health indicators, we only found statistically significant differences between the high and low socioeconomic class groups. These groups differed for depression and family support perception, with higher socioeconomic-level students displaying more positive indicators. However, we asseverate that an effect of sample size might explain this result, as both high and low socioeconomic class groups are smaller, compared to the middle-class group (which in its turn included 84.7% of the participants).

For gender and sexual orientation, we observed statistically significant differences via ANOVA between the three groups for three QVE dimensions, except Infrastructure. However, we did not observe significant differences on post hoc comparisons with the Bonferroni correction, suggesting that the group effect is diffuse, although significant.

For mental health indicators, though, we found significant differences for both ANOVA and post hoc comparisons. The LGBT+ group had significantly higher school stress scores, when compared to the heterosexual, male group both heterosexual group. We also found that the LGBT+ group displayed a significantly higher average score for depression and lower average scores for both quality of life and family support perception, compared to the other groups. Such pattern suggests that the LGBT+ group is more vulnerable than heterosexuals in this sample; also, the average score for depression in the LGBT+ group indicates moderate depression diagnosis (Baptista, 2018).

Table 4 shows the regression analyzes for school stress, depression and quality of life as dependent variables. For all the analyses, we considered the same independent variables: type of school, school grade, gender and sexual orientation, number of adults in the closest family, socio-economic class, having a mental health diagnosis, QVE dimensions and the other mental health measures. The confidence interval was 95% ($p < 0.05$) for all models.

For school stress, the model was statistically significant ($R = 0.615$; $R^2 = 0.378$; $F = 8.51$; $p < 0.001$). Two QVE dimensions (Teaching and school routines, and Social relationships), along with depression and family support perception were significantly predictive of school stress, in order of magnitude for this model. The effect of school type on school stress was also significant on Student's t comparisons (see Table 4). In short, depression and school characteristics (along with family support perception) are, respectively, important risk and protection factors for school stress.

Table 4 - *Regression analysis for school stress, depression and quality of life, regarding sample's socio-demographic profile and protocol measures*

	School stress				Depression				Quality of life		
	β	*t*	*p*		β	*t*	*P*		β	*t*	*P*
Regression model	22.04	6.56	< .001	Regression model	7.54	4.72	< .001	Regression model	14.84	1.06	0.29
Type of school	4.11	-0.97	0.33	Type of school	1.32	2.84	0.005	Type of school	2.48	1.75	0.08
School grade	3.26	1.00	0.32	School grade	1.06	-1.46	0.15	School grade	1.99	0.65	0.51

Gender and sexual orientation	2.83	0.47	0.64	Gender and sexual orientation	0.87	4.66	<.001	Gender and sexual orientation	1.72	0.07	0.95
Adults in the family	1.60	0.92	0.36	Adults in the family	0.52	0.35	0.73	Adults in the family	0.96	-2.31	0.02
Socio-economic class	4.10	-0.63	0.53	Socio-economic class	1.34	-1.06	0.29	Socio-economic class	2.50	-0.24	0.81
Mental health diagnosis	4.15	-0.04	0.97	Mental health diagnosis	1.34	1.81	0.07	Mental health diagnosis	2.5	-0.05	0.96
QVE-D1	0.32	-0.82	0.41	QVE-D1	0.10	-0.21	0.83	QVE-D1	0.19	2.41	0.02
QVE-D2	0.24	-4.37	<.001	QVE-D2	0.08	-0.25	0.80	QVE-D2	0.15	0.82	0.41
QVE-D3	0.43	-3.69	<.001	QVE-D3	0.15	0.77	0.44	QVE-D3	0.27	1.27	0.21
QVE-D4	0.35	0.62	0.54	QVE-D4	0.11	-1.03	0.30	QVE-D4	0.21	-1.73	0.08
Depression	0.22	3.27	0.001	School stress	0.02	3.27	0.001	School stress	0.04	1.95	0.05
Family support perception	0.39	2.09	0.04	Family support perception	0.12	-4.76	<.001	Family support perception	0.23	3.89	<.001
Quality of life	0.03	1.97	0.05	Quality of life	0.01	-7.99	<.001	Depression	0.12	-7.96	<.001

Note. QVE-D1 = Infrastructure; QVE-D2 = Social relationships; QVE-D3 = Teaching and school routines; QVE-D4 = Extracurricular activities.

The regression analysis for depression was also significant ($R = 0.846$; $R^2 = 0.716$; $F = 35.3$; $p < 0.001$). Four variables came out as predictive of such measure (in order of magnitude): quality of life, family support perception, gender and sexual orientation and school stress. These results are not a surprise, since depression related to the other mental health indicators. A partly unexpected finding was the relevant impact of sexual orientation: Belonging to the LGBT+ group was a risk factor for mental suffering in this sample.

Finally, the model with quality of life as the dependent variable was significant ($R = 0.811$; $R^2 = 0.657$; $F = 26.8$; $p < 0.001$). Four independent variables were statistically predictive, namely, in order of magnitude: depression, family support perception, adults in the family, and the QVE infrastructure dimension. Type of school and other QVE dimensions were not significantly relevant to quality of life in this sample, even though this same measure predicts school stress (see paragraph above).

In summary, regression analyses showed that school variables are predictive of school stress but do not relate to depression and quality of life at a significant level (unless QVE Infrastructure for the latter). Depression seems to be highly associated with school stress and quality of life, being a predictive factor, and also being predicted by them. Gender and sexual orientation was - along with depression - consistent mental health predictors.

Discussion

One of the aims of the present study was to investigate whether schools' characteristics are important predictive factors for mental health, especially depression. Previous work, such Singh et al. (2017) and Liu (2017) demonstrated a positive

correlation between school stress, depression and the school environment - more specifically, lack of support on school environment, academic performance and the type of school attended (public or private). In our study, however, we identified a low, although positive correlation between school characteristics in general and depression (see Table 2).

Another objective was to estimate whether the studied variables predict mental health. In the same direction, the regression analyses showed the type of school attended is significant to determine school stress; we also observed an important link between school stress and depression, which were mutually predictive. It must be noted that that differences between the group samples for type of school (private, n = 77; public, n = 119) and gender (the female heterosexual group is almost twice bigger than the other groups) should account for these results, in terms of associations' magnitude. Further studies with size-controlled groups should investigate this hypothesis in more detail.

An expected result not confirmed in our study was a difference in depression rates and school stress depending on the school grade (Singh et al., 2017; Liu, 2017). In theory, one should such difference, because the transition years (in this case, to High School) may be a more difficult period of adjustment (Correia-Zanini & Marturano, 2015). However, we did not observe significant differences for any of the measures in this sample. Methodological differences seem to explain such results (especially the type of instruments used), as well as differences of sample size (even though such difference is smaller for school grade than for other participants' sociodemographic characteristics). In addition, one should account for cultural differences for such result (for example, Singh et al.'s sample was Chinese).

Other data, though, replicates literature's findings. For example, we also observed differences in school perception (namely, QVE Infrastructure dimension) for school type, in agreement with Soares Neto et al. (2013), who asseverate that public schools tend to have worse infrastructure than private ones in Brazil. In the same direction, we found infrastructure perception to be predictive of quality of life levels.

According to Leão et al. (2011), the type of school is very important to students' lives; also, many of their expectations derive from their contact with the school. In our study, school variables did not seem to be of vital importance for students, though. Our observation suggests that the school environment is not a predictive factor for mental health if compared to other sources of stress, considering the present sample. In addition, as the low socioeconomic level group is small, we could not observe a relevant effect of such variable to stand from the analysis. At last, we underline that the public schools' participants presented good general conditions and infrastructure, which does not reflect the reality of a relevant part of such schools in Brazil.

The same hypothesis could explain the pattern of YQOL-R scores in our sample, which were positively correlated with school perception and family support perception, but negatively correlated with school stress (to a low extent) and depression (to a moderate extent). As the YQOL-R measure covers more life domains than school stress, the hypothesis above should also explain the lack of relations with school stress in regression analyzes.

The association between depression and other mental health indicators (school stress and quality of life) are consistent with the scientific literature (Singh et al., 2017; Liu, 2017; Coutinho et al., 2016). Family support perception also correlated positively to other mental health indicators (Baptista & Oliveira, 2004; Dell'Aglio & Hutz, 2004). Despite the low associations of depression and other mental health measures, the regression analyses showed a relevant and significant association of such variables. On the other hand, depression and quality of life did not significantly relate to school support and academic guidance (in our study, QVE dimensions of Teaching and School Routines and Extracurricular activities), nor to the students' socioeconomic context, as previously suggested (Pinto et al., 2017). As we mentioned above, sample size issues should also account

for the results herein reported.

A relevant finding of the present study was that gender and sexual orientation had a relevant effect on the dependent variables. About 24% of the participants identified themselves with the LGBT+ sexual orientation; this group had significantly lower scores in the perception of the school's social relationships and extracurricular activities as well as in the quality of life, and higher rates of school stress, and depression rates compared to the other groups. This study's findings are similar to Meyer's (2003), who observed inferior levels of psychological well-being in non-heterosexual individuals. In addition, our results agree with Becker et al. (2014) in terms of the need to take preventive measures to avoid mental suffering in non-heterosexual populations (Meyer, 2003; Benner et al., 2015).

The results herein presented corroborate two of the previously formulated hypotheses. We observed that school characteristics are related to students' mental health indicators (mainly depression), even though to a small extent. We also observed that the perception of the school as a welcoming place might have a positive effect on the student's well-being, compensating other risk factors to this indicator (such as familiar relations and social vulnerability). However, we did not corroborate one of the hypotheses, as we expected that school support perception would be more important to the students' mental health than the available infrastructure.

The limitations of our study consist of its relatively small sample and lack of control for group size. Future research should address such issues; also, we recommend that future research dedicate more attention to gender and sexual orientation's mediation on mental health and school perception, considering the relevance of such effect, herein reported.

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