



SEÇÃO: ARTIGO

## Psychological factors associated with adolescent sexual behavior: the role of self-esteem and self-efficacy

*Fatores psicológicos associados com comportamento sexual em adolescentes: o papel da autoestima e da autoeficácia*

*Factores psicológicos asociados con la conducta sexual en adolescentes: el papel de la autoestima y la autoeficácia*

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**Received on:** Oct. 22, 2019.

**Approved on:** Feb. 24, 2021.

**Published on:** Agust. 10, 2021.

**Abstract:** Sexually transmitted infections are increasing in Brazilian adolescents and youth. The aim of this study was to investigate the association of self-esteem, self-efficacy, and other psychosocial variables with condom use behavior and sexual debut in a sample of adolescents from Santa Maria-RS. Data was collected with 452 adolescents (57% girls), mean age of 15.9 years ( $SD = 1.4$ ), using the Brazilian Youth Questionnaire – Phase II. Condom use behavior was not associated with self-esteem or self-efficacy in the logistic regression model, contrary to the main hypothesis. General self-efficacy was positively associated with sexual debut, while religiosity was negatively associated with this outcome. Family support was associated with older age at sexual debut. The findings support the importance of analyzing different sexual behaviors separately, as they may have distinct predictors. Studies should use specific measures of self-efficacy when studying sexual behavior and measure how participants value different sexual behaviors.

**Keywords:** condoms, adolescence, self-efficacy, self-esteem, religiosity

**Resumo:** A incidência de infecções sexualmente transmissíveis vem aumentando entre adolescentes brasileiros. Este estudo investigou a associação de autoestima, autoeficácia e outras variáveis psicossociais com o uso de preservativo e o início da vida sexual em adolescentes de Santa Maria, RS. Foram coletados dados com 452 adolescentes (57% meninas), de idade média de 16 anos ( $DP=1,4$ ), usando o Questionário da Juventude Brasileira – Fase II. Desses, 52% haviam iniciado a vida sexual. Dentre os resultados, o uso de camisinha não esteve associado com a autoestima ou a autoeficácia no modelo de regressão logística, contrariando a hipótese principal. A autoeficácia associou-se com início da vida sexual, enquanto a religiosidade com sua não ocorrência. Já o apoio familiar esteve associado com início da vida sexual mais tardio. Os resultados sugerem a importância de analisar comportamentos sexuais separadamente, pois eles podem ter preditores distintos. Estudos futuros devem utilizar medidas de autoeficácia específicas para comportamentos sexuais e mensurar a importância atribuída aos comportamentos.

**Palavras-chave:** preservativos, adolescência, autoeficácia, autoestima, religiosidade

**Resumen:** Las infecciones de transmisión sexual están aumentando en adolescentes brasileños. El objetivo de este estudio fue investigar la asociación de autoestima, autoeficacia, y otras variables psicosociales con el comportamiento sexual en adolescentes. Los datos fueron recolectados con 452 adolescentes (56% niñas), con edad promedio de 15.9 años ( $DP=1,4$ ), utilizando el Cuestionario de la Juventud Brasileña. El uso del condón no se asoció con la autoestima o la autoeficacia en el modelo de regresión logística, contrario a la hipótesis principal. La autoeficacia general se asoció positivamente con el debut sexual, mientras que la religiosidad se asoció negativamente. El apoyo familiar se asoció con la edad avanzada en el debut sexual. Los hallazgos respaldan la importancia de



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analizar diferentes comportamientos sexuales por separado, ya que pueden tener predictores distintos. Lo uso de medidas específicas de autoeficacia y de importancia percibida es recomendado para estudiar comportamientos sexuales.

**Palabras clave:** condones, adolescencia, autoeficacia, autoestima, religiosidad

Adolescence, which spans from puberty until the onset of adulthood, is characterized by the adolescent's differentiation from their family and greater approximation with their peers (Huang et al., 2012). It is common for adolescents to perform exploratory behaviors in the new environments that they are experiencing, searching for novel feelings or peer approval (Cruzeiro et al., 2010). In this setting, the performance of risk behaviors is a concern for families and institutions. Risk behaviors are those that increase the probability of adverse outcomes, such as injuries, mental illness or sexually transmitted infections (STIs). The use of psychoactive substances, antisocial behavior or having unprotected sex are some examples of risk behaviors that may occur during adolescence (Zappe & Dell'Aglio, 2016b). However, risk behavior performance differs between adolescents. Studies have shown that psychological constructs such as self-esteem and self-efficacy may help to understand why some adolescents are more inclined to the performance of risk behaviors than others (Bermúdez et al., 2019; Danielson et al., 2014; Louwet et al., 2018; Xu et al., 2017).

This article focuses on the performance of sexual risk behaviors in adolescence, operationalized mainly as the inconsistent use of condoms. Condom use is a central behavior for sexual and public health, due to the ability of condoms to protect against both STIs and unwanted pregnancies (*Ministério da Saúde* [MS], 2017). Currently, STI cases are increasing in the young population of Brazil, including adolescents over the age of 13 (MS 2018a; 2018b; Saffier et al., 2017). However, even with widespread communication of the importance of preventive behavior and the increased accessibility of condoms in health services in Brazil, reports of condom use are still low (MS, 2016; Woolley & Macinko, 2019). In a survey with the general population, 36% of participants between the ages of 15 and 24 had not used condoms in their last

sexual intercourse (MS, 2016). Woolley and Macinko (2019) report a similar proportion in the sample of the National Survey of School Health (PeNSE 2015; n = 120.301), with 33% of girls and 30% of boys stating that they had not used a condom in their last intercourse. It is important to consider that different recall period may generate different results. For example, in a sample of adolescents from Pelotas-RS, inconsistent condom use was reported by 41% of the sample (n = 513) when the criterion for consistent condom use was the last three instances of sexual intercourse (Cruzeiro et al., 2010).

The inconsistent use of condoms by Brazilian adolescents appears to be associated with several social and demographic variables, such as sex, parent education, income and skin color (Woolley & Macinko, 2019). The findings are inconclusive for sex differences, with studies showing similar rates of condom use between boys and girls (Neto & Cerqueira-Santos, 2012; Woolley & Macinko, 2019), or small effects (Cruzeiro et al., 2010). However, sex may mediate the effect of other demographic variables. For boys, having black or mixed skin color and being in the lower-income bracket accounted for a 25% decrease chance to have used a condom during their last intercourse. As for girls, a similar effect was only found for the difference in condom use between mixed and white girls (Woolley & Macinko, 2019).

While condom use is the main preventive behavior against STIs and unplanned pregnancies, it is also valuable to understand what drives adolescents to have their first sexual experiences, as early sexual debut is often linked to smaller rates of condom use (Alves et al., 2015; Gräf et al., 2020; Moreira et al., 2018; Paiva et al., 2020). During adolescence, the changing dynamics of family and community relationships, as well as the construction of a self-identity may play a part in increasing the occurrence of sexual risk behaviors. Factors such as religiosity, family and community support, and dealing with stressful environments have been linked with sexual risk behaviors (Estrada et al., 2017; Paiva et al., 2020; Zappe & Dell'Aglio, 2016a; 2016b). Religiosity has been shown to correlate with sexual debut,

but had no association with a general sexual risk behavior measurement (Cerqueira-Santos & Koller, 2016). In a sample of 925 adolescents, specific religions were associated with delayed sexual debut, while adolescents that reported no affiliation also reported earlier sexual debut. As for condom use, attending religious service was associated with less frequent condom use at sexual debut, among sexually active adolescents (Paiva et al., 2020). Adolescents that report better relationships with their family, with openness to discuss issues have lesser chances of engaging in sexual risk behaviors, and the same applies to community support. Being exposed to stress generating events, such as violence and or parental divorce, has also been linked to increased sexual risk behavior in adolescents, as well as with other risk behaviors (Zappe & Dell'Aglio, 2016a; 2016b). In fact, risk behaviors in adolescence tend to occur in addition to each other, such that drug use and sexual risk behavior are also entwined in this developmental phase (Huang et al., 2012; Zappe et al., 2018; Zappe & Dell'Aglio, 2016b). Even in instances in which drug usage is not directly associated with unprotected sex, reporting sexual intercourse under the influence of drugs has been associated with condomless sex in adolescents (Nehl et al., 2016).

Being that adolescence is a period of development of one's identity, it is likely that valuing oneself more should prevent the performance of harmful behaviors. Therefore, it would be expected for adolescents with high self-esteem to be less prone to performing risk behaviors, as they would value their health more than their peers would. However, it is unclear if there is a specific link between self-esteem and condom use behavior. In a study with young South African women, higher self-esteem correlated with a better sense of future and relationship control, and with a lower probability of HIV diagnosis (Louw et al., 2018). Still, self-esteem was not associated with reported condom use behavior. A similar finding was reported in a sample of 159 Brazilian adolescents, in which self-esteem did not account for changes in condom use behavior.

It did associate with other sexual behaviors, as adolescents with higher self-esteem reported fewer instances of sexual intercourse under the influence of drugs (Neto & Cerqueira-Santos, 2012). A latent-class analysis with 701 adolescent girls split the sample between high-risk and low-risk clusters, based on previous STI diagnoses, the number of sexual partners, history of having sex under the influence of drugs, and condom use behavior (Danielson et al., 2014). The high-risk group presented with lower self-esteem when compared to the low-risk group, as well as with lower sex refusal self-efficacy and more fear of condom negotiation. The high-risk group also reported more instances of sexual violence and other trauma, which the authors claim may also explain lower levels of self-esteem. Self-esteem was also positively associated with condom use in a sample of 919 refugee adolescent girls in Ethiopia, despite no connection between self-esteem and sexual violence in the multivariate analysis (Bermúdez et al., 2019). Overall, the links between self-esteem and sexual health outcomes vary substantially between studies. Meta-analytic findings show that there is a consistent, small effect of self-esteem on positive sexual health outcomes. However, there also seems to be some publication bias, with negative or null findings more likely to be found on unpublished research (Sakaluk et al., 2020). These results highlight the need for a better understanding of whether self-esteem is related to the performance of sexual risk behavior during adolescence, and how does it affect condom use behavior in particular.

One possible explanation for the discrepancy of the effects of self-esteem in predicting condom use behavior is that condom use is not a behavior that is completely under an individual's control. Namely, in order to use a condom during sexual intercourse, all sexual partners must agree to it. While being assertive during condom negotiation is a challenge that persists after adolescence, it can be even more harmful in this period due to the novelty of sexual relations and pressure to conform to peer norms. Based on this rationale, the construct of self-efficacy could explain why

adolescents may have a hard time using condoms even if they would like to be protected. Self-efficacy measures how individuals perceive their abilities to succeed in a task even in the face of adversities. Transposing this idea to condom use, self-efficacy would be the perceived ability to always use condoms even when there are obstacles to the behavior, such as having an unwilling partner or having to postpone the intercourse in order to acquire condoms first. The evidence for sex-specific self-efficacy shows that it is positively correlated with consistent condom use. Palacios (2019) reports that sexual self-efficacy was a significant predictor of sexual behavior in a sample of 1012 Mexican adolescents. Xu et al. (2017) propose that condom use self-efficacy is crucial to understanding condom use behavior, given that it modulates the effect of other variables, such as perceived costs and benefits of using condoms, in a study with 1012 Bahamian students. The study measured condom use in the last six months with three levels: "Never used", "Sometimes used", "Always used". It was found adolescents with higher self-efficacy were more likely to report having always used condoms, while others had a similar distribution between "Sometimes" and "Always" categories (Xu et al., 2017). Sousa et al. (2017), in a study to adapt the condom use self-efficacy scale with Brazilian adolescents and young adults, found that condom use self-efficacy was positively associated with condom use behavior, even for people in stable relationships. These findings suggest that self-efficacy is a possible pathway for changing condom use behavior in adolescence.

This article aimed to investigate the association between psychological (self-esteem, general self-efficacy, religiosity, future expectations) and social context variables (perceived family support, perceived community support) with adolescent sexual behavior. Specifically, we examined the association of these factors with the occurrence of sexual debut, the age at sexual debut, and the frequency of condom use in the sample, controlling for social and demographic variables and other risk behaviors, such as drug use behavior.

It is hypothesized that higher self-efficacy and self-esteem will be associated with more frequent use of condoms in the last year and older age at sexual debut when controlling for demographic variables, family and community support, religiosity, life stress and drug use in the past month. It is also expected that, controlling for other predictors, higher religiosity and family support will be associated with later sexual debut, while drug use will be associated with earlier sexual debut.

## Method

### Participants

The data were collected with students from public schools of [Identifying information retracted]. The 15 institutions were randomly selected with a block draw. Data were collected with 535 students. Inclusion criteria were as follows: being between 13 and 19 years old, having answered in a correct manner the questions on (1) sex, (2) age, (4) race/color and (42) sexual debut. After the exclusion of incomplete or older cases, the final database was made up of 452 participants, 257 girls and 195 boys. The mean age was 15.9 years ( $SD = 1.4$ ). Self-declared white adolescents were the majority of the sample (68.6%), followed by mixed (21.7%) and black (6.9%). Most participants were single at the time of data collection (88.7%).

### Measures

Data was collected using the *Questionário da Juventude Brasileira - Fase II* (Brazilian Youth Questionnaire - Phase II; Dell'Aglio et al., 2011). Social and demographic data from questions 1 (sex), 2 (age) and 4 (race/color) will be used in the analysis. Questions pertaining to income will not be used due to a high frequency of missing values.

The independent variables sexual debut, age at sexual debut, and frequency of condom use in the last year were coded from the responses to items 42 and 45. For question 45, which measures condom use frequency in the last year with four levels: "Never", "A few times", "Often, but not always", and "Always", responses were dichotomized so that "Always" (1) was considered consistent use and the other responses were

considered inconsistent use (0). Unless otherwise stated, all the following scales had a response scale ranging from 1 to 5.

The Rosenberg Self-Esteem Scale (Sbicigo et al., 2010) was the item 74 of the questionnaire. Made up of ten items, had  $\alpha = .87$  in this sample. This scale contains inverted items, such as "Sometimes, I feel useless".

The General Self-Efficacy Scale (Sbicigo et al., 2012) was used, reproduced in item 76 of the questionnaire. Composed of eleven items, had  $\alpha = .89$  in this sample. Example items: "I have trust I can do well in unexpected situations" and "I can generally deal with any adversity".

Substance use was measured by the sum of answers to item 36, concerning the use of nine different substances in the last month: alcohol, tobacco, thinners, cannabis, cocaine, crack, ecstasy, steroids, and methamphetamines. Responses were collected on a four-point scale, with labels "Not in the last month", "Fewer than once a week", "Once to four times a week" up to "Five or more times a week".

Twenty 20 dichotomous items assessed the presence of life stressors. The items asked participants if they had ever experienced situations such as being mugged or having their parents go through a divorce. Responses were summed to compose an index of life stressors.

The Religiosity Scale (Cerqueira-Santos & Koller, 2009), reproduced in item 29, was used to measure participants' religiosity. It is made up of nine items ( $\alpha = .89$ ). Examples of items: "Religion/spirituality has been important in my life" and "I follow religious recommendations in my daily life".

The community support scale, item 68 on the questionnaire, was composed of six items about the adolescent's perception of the community they live in ("I feel safe in my community/neighborhood"). In this sample, it had  $\alpha = .75$ .

Perception of family support was measured with a 15-item scale, reproduced in item 30 of the questionnaire. It assesses aspects of family relationships, as perceived by the respondent ("My parents know whom I spend time with" and "We talk about our family issues"). In this sample, it had  $\alpha = .90$ .

Future expectations were measured by a scale present in item 76 of the questionnaire, made up of 9 items ( $\alpha = .87$ ). In this scale, participants had to rate their chances of "Getting into college" or "Having a family", for instance.

### Procedures

Two classes from each participating school were randomly selected for data collection, which took place in the respective classrooms during school hours. Previously trained researchers guided questionnaire application. In case any participant requested support after collection, the appointed psychologist would provide the necessary assistance and referral, if necessary.

All participants of age had access to an informed consent form before data collection and were duly informed of their rights as participants. Participants that were minors received a consent form to deliver to their parents and were only included if they returned it signed. These participants also received an assent form before deciding to participate in the study. The project was evaluated and approved by the Research Ethics Committee of the [Identifying information retracted], CAAE 306.036.

### Data analysis

The RStudio software v. 1.1463, R version 3.6.1, was used to manage the data and run the descriptive and inferential analysis. To test the hypotheses, two logistic regression models were analyzed, with the following dependent variables: sexual debut and condom use frequency in the last year. To analyze the predictors of sexual debut age, a linear multiple regression was run. For the models of sexual debut age and condom use, only the data from those adolescents that reported sexual intercourse was used ( $n = 237$ ).

In the regression model for sexual debut, the first step aggregated age, sex, race/color, life stressors and substance use as predictors. Psychological variables (self-efficacy, self-esteem, religiosity, future expectations, perceived family and community support) were inserted in step 2, simultaneously. The same procedure was

adopted in the analysis for the age of sexual debut, with the exclusion of age as a predictor.

The model for condom use in the last year used age, sex, race/color, substance use, life stressors and age of sexual debut as predictors in the first step. Again, psychological variables were inserted simultaneously in the second step. All analyses used an alpha of .05.

## Results

Table 1 presents descriptive data of the sample and between-group comparisons based on sexual debut and condom use during the previous year. It shows the sample was evenly split between adolescents that have had sex or not and also between those that have used condoms consistently or not during the previous year.

**Table 1** – Descriptive statistics - sample and subgroups by sexual debut and condom use

	Sample	Sexual debut		Condom use last year <sup>a</sup>	
	N = 452	Yes N = 234	No N = 218	Always N = 118	Not always N = 111
Age	15.93	16.44	15.38	16.23	16.59
Sex					
Female	257 (56.9%)	128 (28.5%)	129 (28.3%)	58 (25.3%)	69 (30.1%)
Male	195 (43.1%)	105 (23.2%)	90 (19.9%)	60 (26.2%)	42 (18.3%)
Race/color					
White	310 (68.6%)	164 (36.3%)	146 (32.3%)	76 (33.2%)	84 (36.7%)
Black	31 (6.9%)	18 (4%)	13 (2.9%)	14 (6.1%)	4 (1.7%)
Mixed	98 (21.7%)	46 (10.2%)	52 (11.5%)	25 (10.9%)	20 (8.7%)
Yellow	7 (1.5%)	2 (0.4%)	5 (1.1%)	1 (0.4%)	1 (0.4%)
Indigenous	6 (1.3%)	4 (0.9%)	2 (0.44%)	2 (0.9%)	2 (0.9%)
Relationship status <sup>b</sup>					
Single	400 (88.7%)	192 (42.6%)	208 (46.1%)	101 (44.3%)	86 (37.7%)
Married	3 (0.7%)	3 (0.7%)	0 (0%)	2 (0.9%)	1 (0.4%)
Living together	7 (1.5%)	5 (1.1%)	2 (0.4%)	2 (0.9%)	3 (1.3%)
Others	41 (9.1%)	33 (7.3%)	8 (1.8%)	12 (5.3%)	21 (9.2%)
Age at sexual debut (mean) <sup>c</sup>		14.34		14.45	14.23
Drug use - last month (mean)	1.52	2.20	0.78	1.94	2.49
Lifetime stressors (mean)	2.63	2.95	2.80	2.91	3.05
Sexually transmitted infection <sup>d</sup>					
Yes		7		2	5
No		221		115	102

Notes. <sup>a</sup> Variable contains 5 missing values. <sup>b</sup> Variable contains 1 missing value. <sup>c</sup> Variable contains 4 missing values. <sup>d</sup> Variable contains 6 missing values.

The first step of the logistic regression on condom use behavior showed that age, sex, race/color, and age at first sexual intercourse all had significant effects on condom use during the previous year. Older adolescents were 27% less likely to have always used condoms in the previous year, while girls were more than twice as likely to have not used condoms consistently when compared to boys. When compared to adolescents that self-declared white, self-

declared black adolescents were seven times more likely to not have used condoms consistently in the previous year. In addition, adolescents that were younger in their sexual debut were 88% more likely to have reported inconsistent condom use in the previous year. The addition of psychological predictors in step 2 did not result in meaningful changes to the model. A complete report of the analysis is represented in Table 2.

**Table 2** – Logistic regression on condom use behavior

Predictor (Reference)	Step 1 <sup>a</sup>				Step 2 <sup>b</sup>			
	B	S.E.	Wald	O.R. (95%CI)	B	S.E.	Wald	O.R. (95%CI)
Sex (Male)								
Female	-.91	.31	-2.95*	2.50 (1.36-4.60)	-.85	.33	-2.58*	2.35 (1.23-4.51)
Age (Younger)								
Older	-.45	.13	-3.52*	.633 (.49-.81)	.45	0.13	-3.32*	.64 (.49-.83)
Race/color (White)								
Black	1.96	.66	2.97*	7.10 (1.94-25.93)	2.05	.68	2.99*	7.76 (2.03-29.73)
Mixed	.43	.37	1.16	1.54 (0.74-3.18)	.47	.38	1.23	1.60 (.78-3.36)
Yellow	-.23	1.44	-.16	.80 (.05-13.53)	-.43	1.47	-.30	.65 (.04-11.48)
Indigenous	0.04	1.04	.04	1.04 (.13-7.99)	.09	01.05	.08	1.09 (.14-8.58)
Age at sexual debut (Younger)								
Older	.32	.12	2.72*	1.88 (1.19-2.97)	.32	.12	2.67*	1.92 (1.19-3.09)
Stressors	.003	.07	.05	1.01 (.67-1.52)	.02	.08	.28	1.07 (.68-1.67)
Drug use	-.07	.06	-1.2	.76 (.48-1.20)	-.09	.06	-1.34	.72 (.45-1.16)
Self-efficacy					-.44	.32	-1.36	.68 (.38-1.19)
Self-esteem					.26	.24	1.08	1.35 (.78-2.32)
Perceived community support					.24	.18	1.34	1.40 (.86-2.24)
Perceived family support					-.03	.23	-.15	.96 (.59-1.57)
Future expectations					.08	.26	.30	1.07 (.68-1.68)
Religiosity					-.12	.16	-.74	.85 (.56-1.30)

Notes. N = 226, <sup>a</sup> Nagelkerke R<sup>2</sup> = .161, <sup>b</sup> Nagelkerke R<sup>2</sup> = .186, \* p < .05

The logistic regression analysis of sexual debut showed effects of age and drug use in the first step. Older adolescents were 70% more likely to have had sex, and those that had more instances of drug use in the last month had over three times the chance to have had sex. With the addition of psychological predictors in step 2, age was still

a significant predictor, while drug use ceased to be. Self-efficacy was positively associated with sexually active adolescents, while participants that were more religious were 44% less likely to report having had sexual intercourse. The model is represented in Table 3.

**Table 3** – Logistic regression on sexual debut

Predictor (Reference)	Step 1 <sup>a</sup>				Step 2 <sup>b</sup>			
	B	S.E.	Wald	O.R. (95%CI)	B	S.E.	Wald	O.R. (95%CI)
Sex (Male)								
Female	.04	.22	.17	.96 (0.63-1.47)	.22	.24	.91	.80 (.51-1.28)
Age (Younger)								
Older	.53	.08	6.42*	1.70 (1.44-1.99)	.57	.09	6.56*	1.77 (1.49-2.10)
Race/color (White)								
Black	-.22	.45	-.48	.80 (.33-1.95)	-.24	.46	-.52	.78 (.32-1.94)
Mixed	-.14	.26	-.56	.86 (.52-1.44)	-.16	.27	-.58	.85 (.50-1.46)
Yellow	-.51	.89	-.57	.60 (.10-3.45)	-.54	.90	-.60	.58 (.10-3.38)
Indigenous	.49	.92	.54	1.64 (.27-9.92)	.84	.95	.89	2.33 (.36-14.96)
Stressors	.06	.06	1.14	1.21 (.87-1.70)	.04	.06	.71	1.14 (.80-1.63)
Drug use	.29	.06	4.56*	3.01 (1.87-4.84)	.24	.06	3.77*	2.51 (1.56-4.05)
Self-efficacy					.56	.24	2.34*	1.64 (1.08-2.48)
Self-esteem					-.29	.18	-1.61	.72 (.48-1.07)
Perceived community support					-.05	.14	-.38	.93 (.64-1.34)
Perceived family support					-.29	.17	-1.68	.73 (.51-1.05)
Future expectations					.08	.20	.38	1.07 (.75-1.53)
Religiosity					-.44	.12	-3.57*	.56 (.41-.77)

Notes: N = 452, <sup>a</sup>Nagelkerke R<sup>2</sup> = .274, <sup>b</sup>Nagelkerke R<sup>2</sup> = .329, \* p < .05

The linear regression on age at sexual debut resulted in one significant predictor in the first step. Adolescents that self-declared mixed were more likely to be younger than white adolescents were at sexual debut. This effect continued in

the second step, in addition to an effect from perceived family support. Adolescents that reported better relationships with their families were more likely to be older at sexual debut. This model is represented in Table 4.

**Table 4** – Linear regression on age at sexual debut

Predictor (Reference)	Step 1 <sup>a</sup>				Step 2 <sup>b</sup>			
	B	S.E.	t	p	B	S.E.	t	p
Sex (Male)								
Female	.35	.19	1.80	.073	.33	.21	1.60	.111
Race/color (White)								
Black	-.28	.36	-.78	.434	-.37	.36	-1.02	.307
Mixed	-.50*	.25	-2.06	.040	-.56*	.25	-2.27	.024
Yellow	1.69	1.04	1.62	.106	1.94	1.04	1.87	.063

Predictor (Reference)	Step 1 <sup>a</sup>				Step 2 <sup>b</sup>			
	B	S.E.	t	p	B	S.E.	t	p
Indigenous	-.26	.74	-.35	.726	-.15	.74	-.20	.842
Stressors	-.04	.05	-.96	.337	-.01	.05	-.24	.812
Drug use	-.07	.04	-1.81	.072	-.07	.04	-1.86	.065
Self-efficacy					-.20	.20	-1	.318
Self-esteem					-.09	.15	-.59	.558
Perceived community support					-.20	.12	-1.66	.099
Perceived family support					.38*	.14	2.61	.010
Future expectations					-.06	.16	-.34	.735
Religiosity					-.03	.11	-.25	.800

Notes. N = 230, <sup>a</sup>R<sup>2</sup> (adjusted) = .079 (.050), <sup>b</sup>R<sup>2</sup> (adjusted) = .124 (.071), \* p < .05

## Discussion

The main goal of this study was to investigate the association of psychological and social context variables with condom use behavior in adolescents. The results did not support the main hypothesis that self-efficacy and self-esteem would be associated with adolescent condom use behavior. In fact, none of the psychological predictors were associated with condom use behavior. This was an unexpected finding, given how the literature provides examples for the effects of life stressors, self-esteem, self-efficacy, and religiosity on sexual risk behavior (Bermúdez et al., 2019; Cerqueira-Santos & Koller, 2016; Danielson et al., 2014; Paiva et al., 2020; Palacios, 2019; Xu et al., 2017). The association of younger age at sexual debut and inconsistent condom use supports many other findings that suggest that earlier sexual debut places adolescents at higher sexual risk (Alves et al., 2015; Gräf et al., 2020; Moreira et al., 2018; Paiva et al., 2020). One possible explanation is that Brazilian adolescents experience a culture with prevalent sexist norms that favor performance of sexual risk behaviors as a marker for masculinity or a token of trust and love (Garcia & Souza, 2010). When adolescents have unprotected sex for the first time, they may be less afraid of negative

consequences of unprotected sex if they "get away" with it. An analysis of condom use behavior in adolescents from Canoas-RS showed that sexual experience was correlated with more positive attitudes towards condomless sex (Chinazzo et al., 2014). This would also explain why self-efficacy alone does not prevent risk sexual behavior. If adolescents perceive no benefit in the use of condoms, they will not use them regardless of how well they believe they would be able to.

It is possible that the different ways that studies measure sexual risk behavior influence the effects. For instance, the Risky Behavior Index (Alves et al., 2015; Zappe & Dell'Aglio, 2016b) aggregates condom use behavior, the number of sexual partners in the last year, age at sexual debut, and contraceptive practices into a single measure of sexual risk behavior. This practice assumes that all those variables influence risk exposure in an equivalent manner, which makes it harder to understand what are the associations between certain psychological variables and sexual health behaviors and outcomes. As the present study shows, different behaviors and outcomes (i.e. condom use, age at sexual debut) are associated with different social and psychological characteristics. It is important that future studies are more careful when conflating

different sexual health variables into indices, as to avoid spurious correlations. Bermúdez et al. (2019) are a good example of how one variable interacted differently with several sexual health outcomes. Higher self-esteem was positively associated with condom use at last instance of intercourse and negatively associated with undesirable outcomes such as age-disparate sex while having no evident association with early sexual debut. Should the authors have worked with a composite score of these outcomes, it is possible that results would indicate a link between self-esteem and sexual risk behavior. This would not allow for the observation that self-esteem did not have an association with the age of sexual debut.

The present analysis for sexual debut suggests an effect of self-efficacy on adolescent sexual behavior, although in the opposite direction than anticipated. Adolescents with greater levels of self-efficacy were more likely to have reported having sex. This may have been observed due to the use of a general self-efficacy scale, while most studies concerning self-efficacy and sexual health use specific measures of self-efficacy, such as condom use self-efficacy (Palacios, 2019; Sousa et al., 2017; Xu et al., 2017) or sex-refusal self-efficacy (Danielson et al., 2014). Since causality cannot be inferred from the design of this study, it is not possible to distinguish if adolescents in this sample feel more capable after having their sexual debut, as proposed by Ramiro et al., (2013), or if they have their debut before their peers in part because of their higher self-efficacy. These hypotheses highlight an important caveat of using general self-efficacy as a predictor of preventive behaviors: self-efficacy should only impact on the performance of behaviors that are desirable to an individual. If an adolescent wants to experience sexual intercourse, having high perceived self-efficacy should correlate with success in achieving this goal. It is important not to isolate sexual health-related self-efficacy from the perceived costs and benefits of the behaviors in the analysis (Xu et al., 2017), because it will probably have different effects for behaviors that are valued by participants when compared

to undesirable behaviors. The finding that self-efficacy was correlated with sexual debut but not condom use supports this recommendation. Interventions that aim to delay sexual initiation by increasing self-efficacy should make sure to employ measures of sexually-specific self-efficacy.

The other psychological factor that affected sexual debut was religiosity. Adolescents that reported being more religious were less likely to report sexual intercourse when compared to their less religious counterparts. This finding supports the literature that lists religiosity as a factor associated with delayed sexual debut (Cerqueira-Santos & Koller, 2016; Paiva et al., 2020). Zappe and Dell'Aglio (2016b) found a correlation between religiosity and a sexual risk index. Taken together, these findings suggest that the main link of religiosity and sexual behavior concerns sexual debut. This may occur because religious norms place a larger focus on preventing pre-marital sex than with other sexual behaviors, such as condom use. Given Brazil's diverse religious landscape, future research should investigate how different affiliations and specific norms influence adolescent sexual behavior. Efforts to prevent STIs and unplanned pregnancies should be aware of how different religious norms affect sexual behavior, so as to better promote preventive behaviors for a diverse group of adolescents. More research is needed in this front, as most studies so far compare sexual behavior between different religious affiliations, with little knowledge of how well interventions are received by people of different religions.

As for the age of sexual debut, perceived family support was the only psychological variable to have a significant effect. This finding suggests that having positive relationships with family members is an important aspect for protecting against sexual risk behavior. França and Frio (2018) highlight the role of parents in contributing to delayed sexual activity. On their analysis of National Survey of School Health data, they found that having parents involved in their children's daily life was associated with later sexual initiation for boys and girls. Research comparing adolescents in foster care and in the justice system with adolescents

living with family shows that this association is not limited to sexual risk behavior (Zappe & Dell'Aglio, 2016a), stressing the importance of comprehending adolescent risk behaviors in an aggregated manner. Zappe and Dell'Aglio (2016b) also report an effect of perceived family support on the sexual risk index. Taken together with the present results, it is sensible to advise risk behavior prevention efforts to include family members in their interventions. Future research should also explore if parents and caregivers' knowledge and openness to discuss sexual health has an effect on adolescents' risk behaviors, or if general perceived support is enough to delay sexual initiation.

As for the effects of demographic variables on reported behavior, the present study is in line with previous findings that black and mixed adolescents are at a higher risk for inconsistent condom use behavior. Woolley and Macinko (2019) reported that mixed girls and black and mixed boys had smaller odds of using condoms when compared to their white peers. These findings highlight the pervasiveness of racial inequalities in Brazil. Adolescent girls in the present study were less likely to report consistent condom use, contrary to Cruzeiro et al.'s (2010) findings. Considering other studies that reported no difference in condom use between adolescent girls and boys, the evidence for this effect is weak.

Rates of sexual activity and condom use were similar to those found in other studies with Brazilian samples. The mean age at sexual debut in this study was 14.34 years, inside the range of 14.25 and 15.15 reported by other studies that used the Brazilian Youth Questionnaire with adolescent samples (Cerqueira-Santos & Koller, 2016; Neto & Cerqueira-Santos, 2012; Tronco & Dell'Aglio 2012), albeit slightly above the age of 13.18 years from the National Survey of School Health data (França & Frio, 2018). Consistent condom use in the last year was reported by 51.5% of sexually active participants, a rate on par with what other studies report: 58.5% in the last three instances of intercourse (Cruzeiro et al., 2010), 53% (Tronco & Dell'Aglio, 2012) and 54.3% (Cerqueira-Santos & Koller, 2016) in all instances of intercourse during

the previous year. Considering that these studies cover eight states in all five regions of Brazil, there appears to be room for improvement in condom use rates all over the country.

The use of general measures of self-esteem and self-efficacy was a limitation of this study, as they may not have accessed specific dimensions of these constructs as they relate to sexual behavior. Another limitation is due to the paper and pencil data collection, which produced a large number of missing values in several variables. Despite taking measures to minimize the effect of missing values, it is not possible to affirm that all missing values were missing randomly. Thus, some important data on why adolescents were reluctant to answer some items may have gone unanalyzed. It is also important to exercise caution when interpreting cross-sectional associations, as the data and design do not allow for inferences of causality.

Despite these limitations, the present study has important implications for future research and practice. By using a widely applied questionnaire, results from this study are easily compared with other Brazilian studies and can be replicated more easily. Studies on adolescent sexual behavior should not aggregate different behaviors and outcomes (i.e. condom use, contraceptive use, sexual debut) into single indices so that the distinct associations of each behavior and outcome can be analyzed separately. It is also important that new research efforts incorporate more recent prevention strategies, such as pre- and post-exposure prophylaxes (PrEP and PEP) for HIV and regular testing behavior for STIs, as the adoption of these strategies may influence condom use behavior. People that, for any reason, may not be motivated to use condoms regularly may benefit from using other preventive strategies. However, it is also important to understand which factors may motivate, or impede, the adoption of these alternatives. It also follows that interventions aimed at reducing risk behaviors should be clear on which behavior they plan to work on, as it is likely that different strategies will be required if behaviors are associated with different psychological variables.

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*Os textos deste artigo foram conferidos pela Poá Comunicação.*