

Changes in the Perception of School Climate among Brazilian High School Students Between 2001 and 2011

Sofia Wolker Manta,^{1*} Kelly Samara da Silva,² Cassiano Ricardo Rech,² Bruno Goncalves Galdino da Costa,¹ Tayna Iha,³ Adair da Silva Lopes,² and Markus Vinicius Nahas²

¹Master of Science, Federal University of Santa Catarina, Florianopolis, Brazil

²PhD. in Physical Education, Federal University of Santa Catarina, Florianopolis, Brazil

³Academic Degree in Physical Education, Federal University of Santa Catarina, Florianopolis, Brazil

*Corresponding author: Sofia Wolker Manta, Master of Science, Federal University of Santa Catarina, Zip Code: 88025-000, Florianopolis, Brazil. Tel: +55-4891768719, E-mail: sofia Wolker@gmail.com

Received 2016 October 03; Revised 2016 November 04; Accepted 2016 December 03.

Abstract

Background: Perception school climate has been investigated for contributing to health promotion policies and education in the school environment. In low- and middle-incomes countries, tracking information with respect to these perceptions are still scarce.

Objectives: To analyze the changes in the perception of adolescents on the school climate during the course of a decade in the state of Santa Catarina, in southern Brazil.

Methods: Two cross-sectional surveys were conducted in 2001 (n = 5.028) and 2011 (n = 6.529) among public high school students (15 to 19 years old). Factors related to the negative perception of the school climate were evaluated using a structured questionnaire.

Results: After ten years, there were significant differences in the proportion of adolescents who had a negative perception of the time spent in school (from 3.1% to 16.3%), of their relationship with peers (from 3.0% to 13.5%), and their relationship with teachers and staff (from 2.9% to 7.2%).

Conclusions: Students reported having a worse perception of the school social environment. Interventions that encourage the adoption and maintenance of positive social relationships and healthy habits are needed in the school community.

Keywords: Social Environment, Perception, Adolescents, High School

1. Background

The construction and maintenance of healthy social relationships in the school setting has been linked to a safer environment (1), higher academic achievement (2), reduction of school avoidance (2), and the adoption of healthy habits (3). On the other hand, negative relations at school are associated with the adoption of unhealthy habits (4), with the consequences of these behaviors being felt in adulthood (5).

The ecological model proposes that different levels of the environment interact with the elements that form and resides in them, affecting the adoption of habits and behaviors. The influence of a negative school climate on the health of students is consistent with the theory of the ecological model (6). For instance, the impact of negative social relationships in the school setting could compromise the social and psychological well being of the school communities, with this being a public health issue (7). Most evidence linking the school climate with health behaviors are from high-income countries, with few researches having been conducted on middle- and low-income countries, with different schooling systems.

A study conducted on the United States observed a decline in the perception of peer and teacher support among middle school adolescents (8). The same study also showed that the decline in the quality of the school climate was associated with depressive symptoms and bad behavior (violence and illicit drug use) among adolescents (9). Similar findings were observed in another study with American adolescents (9), where positive social relations among middle school adolescents also decreased after three years. The organizational complexity of the school system, lack of clarity in the rules of coexistence and lack of safety in the school environment, may result in an increased negative perception of the school climate (2).

Health education in the school environment and in other settings requires a diagnosis of adolescents' needs, and, therefore, the evaluation and monitoring of their perceptions can be used in planning school health educational programs aiming at contributing to health promotion goals (10) and the maintenance of healthy behaviors (3). Considering the lack of evidence regarding temporal trends in the schools climate, especially in low- and middle-income countries, we expect that this discussion

can be the starting point for testing future hypotheses about the impact of perceived social relations by adolescents on adopted behaviors and habits. In addition, the results of this study may support the development of educational policies, projects, programs and other initiatives aimed at improving the school environment. Thus, the current study aimed to analyze changes in the perception of Brazilian adolescents of the school climate over the course of a decade (from 2001 to 2011) in different subgroups (sex, age, residential area, work, school year, and school period).

2. Methods

Data were obtained from two school-based cross-sectional epidemiological surveys entitled “Behavior of Adolescents from Santa Catarina (Comportamento de Adolescentes Catarinenses - CompAC)” conducted in 2001 ($n = 5.028$) and 2011 ($n = 6.529$), in Santa Catarina state, in Southern Brazil. Adolescents aged 15 to 19 years who are enrolled at state public schools participated in the surveys. The same sampling and methodological procedures were adopted in 2001 and 2011. The proceedings of both surveys (2001 and 2011) were approved by the Ethics Committee for Research of the Federal University of Santa Catarina (process 064/2000 and 1029/2010).

To determine sample were use census data of the 2000 and 2010 (205.543 and 205.572 adolescents enrolled in state public schools, respectively) (11). To determine sample size, the prevalence parameters adopted were unknown (50%, related to the outcomes) and confidence interval of 95%, with maximum error of two percent. The minimum sample size for these parameters was 2,373 participants. The sampling was conducted by conglomerates, and for that, the minimum sample size was doubled ($n = 4.746$) and added 25.0% for possible loses, with a final sample of 5,932 participants. The sample selection was stratified by geographic region ($n = 6$) and carried out in two stages: a) schools were stratified according to size (large: ≥ 500 students; average: 200 - 499 students; small: ≤ 199 students); b) classes were selected according to period (morning/afternoon or evening) and year of study. The number of schools and classes in each strata was calculated by proportionality (11). In 2001, a total of 211 out of 598 schools were investigated (240 classes out of 2.223), whereas in 2011, 90 were selected from 725 schools (344 classes out of 1.171). Data was collected by trained evaluators, in classrooms. Additional information about the design and sampling procedure are available elsewhere (11). The proceedings of both surveys (2001 and 2011) were approved by the Ethics Committee for Research of the Federal University of Santa Catarina (process 064/2000 and 1029/2010).

A questionnaire was designed for data collection based on several international instruments developed for the adolescent population. The instrument showed adequate validity and reproducibility values between 0.69 and 0.99 in 2001 and between 0.51 and 0.96 in 2011 (11). Three questions verified the perception of time spent in school, perception towards peer's e perception towards teachers and staff, respectively. Firstly, teenagers were asked if they enjoyed time spent at school; secondly, they were asked if they considered their fellow students to be friendly and helpful; after that, adolescents were asked how they perceived and evaluated the teachers and school staff. For comparison purposes, the category “no” was considered for those who reported a negative perception and “yes” (the reference) for those who reported a positive perception. The independent variables were sex, age, area of residence, employment status, year, and school period, all of which were assessed using the same questionnaire.

For the data analysis, the prevalence (and 95% confidence intervals) of the negative perception of time spent in school, relationship with peers and with teachers and school staff was estimated for the whole sample and for subgroups according to the independent variables. The delta percentage, based on the percentage difference of the negative perception of 2001 and 2011, was also estimated. Additionally, the prevalence of the combination of negative perception of all three indicators was estimated based on the number of subjects that perceived the time they spent at school, their relationship with peers, and their relationship with teachers and staff as negative.

In all analysis procedures for studies with complex sampling were used. The analysis was conducted on the software STATA version 13 (Stata Corp., College Station, Texas, USA). Comparisons between periods and between subgroups were investigated based on prevalence and its 95% confidence intervals (95% CI).

3. Results

The study included 5,028 adolescents in 2001 and 6,529 in 2011. Only those with complete data were included in this analysis ($n = 4.992$ in 2001 and $n = 6.487$ in 2011). There was a greater proportion of girls in both surveys (59.6% in 2001 and 57.8% in 2011) and a higher proportion of those living in urban areas (82.4% in 2001 and 80.4% in 2011). There were no differences in the proportion of adolescents according to age groups and working status at both data collection time points. A more detailed description of the sample characteristics is available elsewhere (11).

There was an increase in the negative perception of time spent in school during the study period (from 3.1% in

2001 to 16.3% in 2011). The negative perception of relationships with peers increased from 3.0% in 2001 to 13.5% in 2011, while the negative perception of teachers and school staff increased from 2.9% in 2001 to 7.2% in 2011 (Figure 1).

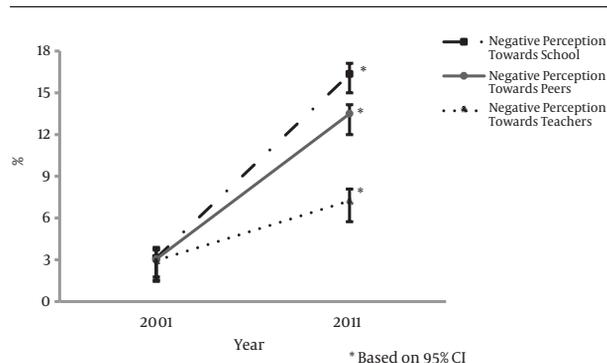


Figure 1. Change in negative perception of school climate among adolescents in public high schools from Santa Catarina, Brazil, 2001 - 2011.

Differences in negative perception for the three analyzed outcomes were higher among girls, younger adolescents (15 - 16 years) and those who did not work. Regarding the increase in negative perception towards peers, the highest estimates were observed among first year students and those studying at night. However, the negative perception of teachers and school staff did not increase among adolescents in the 3rd year of high school (Table 1).

The combination of the proportion of adolescents with a negative perception of the school climate for the three indicators increased from 2.0% to 8.7% in the period analyzed (data not shown in Table 1).

4. Discussion

The negative perception of the school climate among adolescents in southern Brazil worsened between 2001 and 2011, in all analyzed subgroups. The largest magnitudes of change were observed in the negative perception of time spent at school and in the relationship with peers. In the context of low- and middle-income countries these findings are interesting and may alert us to the possible consequences of highly and increasingly negative relations in the school setting on public health systems (3).

In the United States the increase in the indicators of a negative perception of the school climate have also been observed, with a significant decline in the perception of autonomy and of social norms during the middle school years (8). Another study found that the relationship between adolescent social support and behavioral problems were moderated by the perception of the school climate, and when changes over the course of a number of school

years were negative, the behavioral problems increased (9). On the other hand, Australian high school students that perceived that there was more academic support and who had a good feeling with respect to the school environment saw fewer reports of victimization and bullying (12).

In the present study, the negative perception of time spent at school increased more than the other indicators of school climate. When analyzed simultaneously the self-report of the three negative perceptions, the proportion of adolescents also increased during the decade (2.0% in 2001 to 8.7% in 2011), but the relative difference was smaller than observed for each variable individually. Possible factors that could influence the changes in the perception of the school climate are the individual characteristics of adolescents (e.g.: intrinsic motivation, subjective valuation of learning, and school identification) and changes in politics and the social aspects of the schools (e.g.: compliance with school rules, order, discipline, and participation in extracurricular activities) (13). The absence of effective educational policies, reducing the engagement of the schools' communities for a participative curricular planning, and the lack of attractive activities being provided for the students could be possible events that had an impact and led to the change in the perception of the school climate (14). Additionally, cultural (15), ethnic (16), gender, and socioeconomic differences (8) can also shape the way students perceive the school environment.

In relation to sociodemographic variables, girls' negative perception of time spent in school increased more than boys', but boys still perceived the time in school more negatively at both points in time. Another study suggested that negative perceptions of the school climate are associated with a higher exposure to verbal and physical violence from peers, with this association being stronger among girls (8). Additionally, boys' higher negative perception of the school climate could be attributable to different behavioral expectations from teachers, as they favor girls over boys (8), since boys often present behavioral problems (9). However, differences between boys and girls' perception of the school climate could be minimized when collaborative, non-sexist and participative activities are proposed during and between classes (17).

Among young people, increases in the negative perception of the school climate may be related to the stage of life, since adolescence tends to be marked by biological, cognitive and psychological maturational changes that affect the way young people perceive the surrounding environment (8). These data should be taken into account in future school interventions aiming at behavioral changes among younger adolescents, so that subsequent school years may bring a more positive and healthy social environment (9).

The greatest increase in negative perception of the

Table 1. Changes in the Perception of School Climate by Adolescents from Santa Catarina and Associated Factors, Brazil, 2001 (n = 4.992) and 2011 (n = 6.487)

Variables	Sample		Negative Perception of Time Spent in School			Negative Perception Towards Peers			Negative Perception Towards Teachers and Staff		
	2001 n	2011 n	2001 % (95% CI)	2011 % (95% CI)	▲ ^a (%)	2001 % (95% CI)	2011 % (95% CI)	▲ (%)	2001 % (95% CI)	2011 % (95% CI)	▲ (%)
Sex											
Males	2.044	2.903	5.2 (0.4; 06.5)	21.1 (19.3; 23.0)	307	3.3 (0.2; 04.3)	12.8 (10.9; 15.0)	293	4.0 (0.2; 05.5)	9.6 (0.7; 11.8)	138
Females	2.984	3.626	1.8 (0.1; 02.7)	12.9 (11.2; 14.8)	636	2.9 (0.2; 03.8)	14.0 (12.4; 15.7)	379	2.2 (0.1; 03.0)	5.5 (0.4; 07.5)	149
Age group											
15-16	2.454	3.839	2.4 (0.1; 03.3)	15.3 (14.0; 16.6)	528	2.4 (0.1; 03.3)	12.9 (11.0; 15.0)	436	2.3 (0.1; 03.2)	6.7 (0.5; 08.1)	194
17-19	2.574	2.690	3.8 (0.2; 04.9)	18.0 (16.1; 20.2)	380	3.6 (0.2; 04.7)	14.5 (12.7; 16.8)	298	3.5 (0.2; 04.8)	8.1 (0.6; 10.2)	129
Area											
Urban	3.981	4.946	3.4 (0.2; 04.2)	17.2 (15.9; 18.6)	409	3.1 (0.2; 03.8)	14.1 (12.7; 15.7)	358	3.1 (0.2; 04.1)	7.6 (0.6; 09.3)	145
Rural	1.019	1.537	2.0 (0.1; 03.3)	12.7 (10.9; 14.8)	532	3.0 (0.2; 04.4)	11.0 (0.9; 13.3)	271	2.1 (0.1; 03.4)	5.5 (0.4; 07.3)	155
Work											
No	2.242	2.870	2.1 (0.1; 02.9)	15.1 (13.6; 16.8)	631	2.9 (0.2; 04.0)	13.4 (11.9; 15.1)	356	2.7 (0.1; 03.9)	6.9 (0.5; 08.5)	151
Yes	2.733	3.656	4.0 (0.3; 05.1)	17.5 (16.0; 19.1)	337	3.2 (0.2; 04.1)	13.6 (12.0; 15.4)	333	3.2 (0.2; 04.1)	7.6 (0.5; 09.8)	141
School year											
1st	1.664	2.025	3.5 (0.2; 04.8)	18.0 (16.0; 20.3)	420	2.5 (0.1; 03.5)	14.5 (12.1; 17.4)	484	2.8 (0.1; 04.2)	6.8 (0.5; 08.4)	142
2nd	1.942	2.341	2.3 (0.1; 03.3)	16.8 (14.6; 19.3)	622	2.2 (0.1; 03.0)	12.5 (10.0; 15.5)	456	2.4 (0.1; 03.7)	8.4 (0.5; 11.7)	251
3rd	1.389	2.163	4.0 (0.2; 05.6)	14.2 (12.6; 16.0)	251	4.9 (0.3; 06.6)	13.6 (11.6; 16.0)	179	4.0 (0.2; 05.7)	6.4 (0.5; 07.9)	62
School period											
Day	2.196	3.945	2.7 (0.2; 03.7)	15.5 (13.9; 17.2)	475	3.1 (0.2; 04.1)	13.5 (11.9; 15.3)	334	2.1 (0.1; 03.3)	7.5 (0.6; 09.4)	262
Night	2.832	2.832	3.5 (0.2; 04.5)	18.9 (16.9; 21.0)	437	3.0 (0.2; 04.0)	13.5 (11.6; 15.7)	349	3.7 (0.2; 04.8)	6.5 (0.5; 08.2)	76

^a ▲: Delta percentage value (▲ = [(% 2011 - % 2001) / % 2001] * 100).

school climate occurred among those adolescents who did not work. In another study, adolescents who reported having a job had fewer chances of a simultaneous exposure to health risk behaviors, when compared to those who did not have a job (18). In part, it can be assumed that adolescents who do not work are more likely to remain in the school environment (19), which justifies the investment in health promotion programs to minimize the effects of a negative perception of the school climate on unhealthy behaviors.

The study has as its strengths its representative analysis of the school population of a state in southern Brazil, the use of similar instruments in the periods of analysis, and its contribution to the scarce literature on the perception of school climate among adolescents in Latin America. However, this study also has some limitations, such as the absence of students at private schools, whose perceptions might be different from our sample. Other limitations are the lack of inclusion of information on policies and changes to the administration of the public schools over the course of the decade, which might have influenced the physical and social structure of schools.

The results of present study showed that the negative perception of the school climate (individual and cluster factors) increased over a decade among high school students. A greater change was observed among girls and

younger adolescents. The findings of this study point to the need for investments in public policies and interventions able to make the school environment a more enjoyable place for teenagers, reducing possibly troubled relationships among members of the school community and inappropriate behavior for good acquaintanceship.

Footnote

Authors' Contribution: Concept and design: Sofia Wolker Manta, Kelly Samara da Silva, Cassiano Ricardo Rech, Bruno Goncalves Galdino da Costa, and TaynA Iha; Analysis and interpretation of data: Sofia Wolker Manta and Bruno Goncalves Galdino da Costa; Manuscript Preparation: Sofia Wolker Manta; Critical revision of the manuscript for important intellectual content: Kelly Samara da Silva, Cassiano Ricardo Rech, Adair da Silva Lopes, and Markus Vinicius Nahas; Statistical analysis: Bruno Goncalves Galdino da Costa.

References

1. Bradshaw CP, Waasdorp TE, Debnam KJ, Johnson SL. Measuring school climate in high schools: a focus on safety, engagement, and the environment. *J Sch Health.* 2014;84(9):593-604. doi: 10.1111/josh.12186. [PubMed: 25117894].

2. Astor RA, Benbenishty R, Zeira A, Vinokur A. School climate, observed risky behaviors, and victimization as predictors of high school students' fear and judgments of school violence as a problem. *Health Educ Behav.* 2002;**29**(6):716–36. [PubMed: [12456131](#)].
3. Langford R, Bonell C, Jones H, Pouliau T, Murphy S, Waters E, et al. The World Health Organization's Health Promoting Schools framework: a Cochrane systematic review and meta-analysis. *BMC Public Health.* 2015;**15**:130. doi: [10.1186/s12889-015-1360-y](#). [PubMed: [25886385](#)].
4. Crosnoe R, Erickson KG, Dornbusch SM. Protective Functions of Family Relationships and School Factors on the Deviant Behavior of Adolescent Boys and Girls: Reducing the Impact of Risky Friendships. *Youth & Society.* 2002;**33**(4):515–44. doi: [10.1177/0044118x02033004002](#).
5. Tomczyk S, Isensee B, Hanewinkel R. Moderation, mediation - or even both? School climate and the association between peer and adolescent alcohol use. *Addict Behav.* 2015;**51**:120–6. doi: [10.1016/j.addbeh.2015.07.026](#). [PubMed: [26255636](#)].
6. Bronfenbrenner U. Ecological models of human development. Oxford Elsevier; 1994.
7. Kohoulat N, Dehghani MR, Kohoulat N. Perceived School Climate and Students' Mental Health. *Int J School Health.* 2015;**2**(4):7–12. doi: [10.17795/intjsh27939](#).
8. Way N, Reddy R, Rhodes J. Students' perceptions of school climate during the middle school years: associations with trajectories of psychological and behavioral adjustment. *Am J Community Psychol.* 2007;**40**(3-4):194–213. doi: [10.1007/s10464-007-9143-y](#). [PubMed: [17968655](#)].
9. Wang MT, Dishion TJ. The Trajectories of Adolescents' Perceptions of School Climate, Deviant Peer Affiliation, and Behavioral Problems During the Middle School Years. *J Res Adolesc.* 2012;**22**(1):40–53. doi: [10.1111/j.1532-7795.2011.00763.x](#). [PubMed: [22822296](#)].
10. Ippolito-Shepherd J. Escolas Promotoras de Saúde Fortalecimento da Iniciativa Regional Estratégias e Linhas de Ação 2003-2012.. Washington, D.C: OPAS; 2003.
11. Silva K, Lopes ADS, Hoefelmann LP, Cabral L, De Bem MFL, Barros M, et al. Health risk behaviors Project (COMPAC) in youth of the Santa Catarina State, Brazil: ethics and methodological aspects.. *Revista Brasileira de Cineantropometria e Desempenho Humano.* 2013;**15**(1):1–15.
12. Turner I, Reynolds KJ, Lee E, Subasic E, Bromhead D. Well-being, school climate, and the social identity process: a latent growth model study of bullying perpetration and peer victimization. *Sch Psychol Q.* 2014;**29**(3):320–35. doi: [10.1037/spq0000074](#). [PubMed: [24933217](#)].
13. Wang MT, Eccles JS. Social support matters: longitudinal effects of social support on three dimensions of school engagement from middle to high school. *Child Dev.* 2012;**83**(3):877–95. doi: [10.1111/j.1467-8624.2012.01745.x](#). [PubMed: [22506836](#)].
14. Thapa A, Cohen J, Guffey S, Higgins-D'Alessandro A. A Review of School Climate Research. *Rev Edu Res.* 2013;**83**(3):357–85. doi: [10.3102/0034654313483907](#).
15. Jia Y, Way N, Ling G, Yoshikawa H, Chen X, Hughes D, et al. The influence of student perceptions of school climate on socioemotional and academic adjustment: a comparison of chinese and american adolescents. *Child Dev.* 2009;**80**(5):1514–30. doi: [10.1111/j.1467-8624.2009.01348.x](#). [PubMed: [19765015](#)].
16. Benner AD, Graham S. Latino adolescents' experiences of discrimination across the first 2 years of high school: correlates and influences on educational outcomes. *Child Dev.* 2011;**82**(2):508–19. doi: [10.1111/j.1467-8624.2010.01524.x](#). [PubMed: [21410910](#)].
17. Morton KL, Atkin AJ, Corder K, Suhrcke M, van Sluijs EM. The school environment and adolescent physical activity and sedentary behaviour: a mixed-studies systematic review. *Obes Rev.* 2016;**17**(2):142–58. doi: [10.1111/obr.12352](#). [PubMed: [26680609](#)].
18. da Silva Brito AL, Hardman CM, de Barros MV. [Prevalence and factors associated with the co-occurrence of health risk behaviors in adolescents]. *Rev Paul Pediatr.* 2015;**33**(4):423–30. doi: [10.1016/j.rpped.2015.02.002](#). [PubMed: [26298656](#)].
19. Sarriera JC, Tatim DC, Coelho RPS, Bucker J. Uso do tempo livre por adolescentes de classe popular. *Psicologia: Reflexão e Crítica.* 2007;**20**(3):361–7. doi: [10.1590/s0102-79722007000300003](#).