Brazilian teacher training for bullying prevention through the "Violência Nota Zero" program

Formación de maestros brasileños para la prevención del acoso escolar a través del programa "Violência Nota Zero"

Formação de docentes brasileiros por meio do programa Violência Nota Zero

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ABSTRACT

This study examined the impact of a training program on elementary school teachers regarding reported incidents of school violence by both teachers and students, as well as teachers' beliefs about bullying and their strategies for addressing it. The intervention involved 46 teachers and 181 students from the 4th and 5th grades in Brazil. Among the teachers, 26 were assigned to an experimental group while 20 formed a control group. Data collection utilized two scales focused on school violence, completed by students, alongside three surveys regarding teachers' beliefs about bullying and their self-efficacy, completed by the teachers themselves. Post-intervention results indicated that the experimental group of teachers experienced a significant decrease in their perception of student victimization (r = -0.548) and an improvement in their self-efficacy concerning bullying intervention (r = 0.44). Additionally, there was an increase in the use of monitoring strategies (r = 0.349) and a reduction in punitive approaches (r = -0.378). Among the experimental group of students, a notable decline in the frequency of bullying victimization was also recorded (r = -0.126). The program yielded promising outcomes; however, further research is necessary to determine whether these effects are sustained across different educational contexts and over the long term.
Keywords: Bullying; Teacher education; Teachers.

RESUMEN

Este estudio examinó el impacto de un programa de capacitación en los profesores de escuela primaria respecto a los incidentes de violencia escolar reportados por los profesores y los estudiantes, así como las creencias de los profesores sobre el bullying y sus estrategias para abordarlo. La intervención involucró a 46 profesores y 181 estudiantes de 4º y 5º grados en Brasil. Entre los profesores, 26 fueron asignados a un grupo experimental y 20 formaron un grupo de control. La recopilación de datos utilizó dos escalas centradas en la violencia escolar, completadas por los estudiantes, junto con tres encuestas sobre las creencias de los profesores sobre el bullying y su autoeficacia, completadas por los propios profesores. Los resultados post-intervención indicaron que el grupo experimental de profesores experimentó una disminución significativa en su percepción de victimización de estudiantes (r = -0.548) y una mejora en su autoeficacia en relación con la intervención en casos de bullying (r = 0.44). Además, hubo un aumento en el uso de estrategias de monitoreo (r = 0.349) y una reducción en los enfoques punitivos (r = -0.378). Entre el grupo experimental de estudiantes, también se registró una notable disminución en la frecuencia de victimización por bullying (r = -0.126). El programa logró resultados prometedores; sin embargo, se requiere investigación adicional para determinar si estos efectos se mantienen en diferentes contextos educativos y a largo plazo.

RESUMO

Este estudo examinou o impacto de um programa de capacitação a professores de escola fundamental em relação aos incidentes de violência escolar reportados tanto por professores quanto por alunos, assim como as crenças dos professores sobre bullying e suas estratégias para abordá-lo. A intervenção envolveu 46 professores e 181 alunos dos 4º e 5º anos no Brasil. Entre os professores, 26 foram designados para um grupo experimental e 20 formaram um grupo de controle. A coleta de dados utilizou duas escalas focadas em violência escolar, respondidas pelos alunos, juntamente com três questionários sobre as crenças dos professores sobre bullying e sua autoeficácia, respondidos pelos próprios professores. Os resultados pós-intervenção indicaram que o grupo experimental de professores experimentou uma diminuição significativa em sua percepção de vitimização de alunos (r = -0,548) e uma melhora em sua autoeficácia em relação à intervenção em casos de bullying (r= 0,44). Além disso, houve um aumento na utilização de estratégias de monitoramento (r = 0,349) e uma redução em abordagens punitivas (r = -0,378). Entre o grupo experimental de alunos, também foi registrada uma notável diminuição na frequência de vitimização por bullying (r = -0,126). O programa obteve resultados promissores; no entanto, são necessárias pesquisas adicionais para determinar se esses efeitos se mantêm em diferentes contextos educacionais e a longo prazo.

Palavras-chave: Bullying; Formação de professores; Professores.

Introduction

Teachers are fundamental to the school context since they facilitate the learning process and the acquisition of academic, social, and emotional skills. When interpersonal relationships among students are abusive and based on bullying, learning is jeopardized at every level, affecting their performance (Fry et al., 2018; Samara et al., 2021). Therefore, teacher training courses must be comprehensive, covering the fight against bullying.

While the definition of bullying is a topic of extensive discussion in the academic field (Finkelhor; Turner; Hamby, 2012; Volk; Veenstra; Espelage, 2017), the most commonly understood concept refers to situations where students are repeatedly subjected to intentional negative actions by their peers, resulting in an imbalance of power between the aggressor and the victim (Olweus, 2013). A study conducted in 33 countries involving individuals aged 11, 13, and 15 revealed that school bullying is a frequent phenomenon during childhood and adolescence on a global scale, with approximately one-third reporting occasional victimization and one in eight experiencing chronic victimization (Chester et al., 2015). This study found the highest

rates of chronic victimization among boys in French Belgium (27.8%) and girls in Lithuania (23.4%) (Chester et al., 2015).

In Brazil, the latest National School Health Survey (IBGE, 2021), conducted in 2019, revealed a significant number of students involved in bullying situations. Specifically, 23% of students reported feeling humiliated by their peers' taunts at least two or more times in the 30 days preceding the survey. Additionally, 12% of students admitted to engaging in some form of bullying against their classmates. This research focused solely on students in the final year of elementary and high school, underscoring the need for a national survey that includes other grades in elementary school. However, given the considerable international prevalence of bullying among 11-year-olds (Chester et al., 2015) and insights from local studies, such as those by Oliboni et al. (2019), we believe that a similar prevalence can be expected among 4th and 5th-grade students in the Brazilian context.

Bullying events are associated with the development of depression, low self-esteem, post-traumatic stress disorder, psychosomatic disorders, low engagement in school, and ideation of and attempted suicide, among other social and health issues (Fei et al., 2022; Moore et al., 2017; Samara et al., 2021). Cohort studies show that victimization by bullying is associated with increased use of psychotropic medication and psychiatric hospitalization during early adulthood (Sourander et al., 2016), as well as the use of mental health services through around five decades in the life of those individuals (Evans-Lacko et al., 2017). As such, aside from the fact that the impacts of bullying reflect on the individual as an adult, it also causes high costs to public policy.

In the face of the severity of this issue, studies of school interventions that seek to reduce or prevent bullying have taken place ever since the 1980s. As of the 2000s, several meta-analyses were published regarding the effectiveness of school preventive programs. The most recent meta-analyses indicate that half of the programs highlight a significant decrease in victimization (Evans; Fraser; Cotter, 2014). This change, most of the time, is small or moderate (Jiménez-Barbero et al., 2016; Lee; Kim; Kim, 2015), showing 15% to 16% of the decrease in victimization (Gaffney; Farrington; Ttofi, 2019), and does not sustain in the long term (Cantone et al., 2015). The effects are more significant when issues are more severe and when the group of participants shows homogeneous characteristics, such as ethnicity or socioeconomic status (Evans; Fraser; Cotter, 2014).

Regarding the research methodology of school anti-bullying interventions, Chalamandaris and Piette (2015) observed that most studies utilize an experimental group alongside a comparison group, which either receives a less intensive intervention or waits to receive the intervention later. The authors argue that, in light of the known consequences of bullying, none of the comparison groups can be considered a "pure" control group, as it would be unethical to withhold intervention for research purposes (Chalamandaris & Piette, 2015).

Furthermore, when forming the groups, most studies randomize by class or school, as it is practically challenging to implement more intensive (with multiple meetings) and comprehensive (involving various components such as strategies for teachers and parents during breaks) interventions through random selection of students. Placing students into different groups outside their established school routine would inherently introduce a variable that could affect bullying rates, thereby compromising the methodological quality of the study (Chalamandaris & Piette, 2015). In most cases, students complete questionnaires administered by teachers to facilitate the research process (Chalamandaris & Piette, 2015).

Interventions with teachers to address bullying have shown promise. A meta-analysis investigating the effectiveness of teacher-focused anti-bullying programs found that these programs had a moderate effect on determinants of teacher intervention and a small to moderate effect on teacher intervention in bullying situations (Van Verseveld et al., 2019). However, the effectiveness of these programs may increase if researchers include components to reinforce teachers' positive attitudes toward bullying, question subjective rules about this problem, and promote self-efficacy and the learning of knowledge and skills to intervene in bullying (Van Verseveld et al., 2019).

In Brazil, the volume of studies on anti-bullying interventions published in journals is still small. Literature reviews included in the LILACS database and the SciELO library did not find any studies on interventions in the face of bullying that had experimental or comparison groups (Silva et al., 2018; Silva; Gomes; Lima, 2019) or in the face of school violence (Stelko-Pereira; Williams, 2017). Seen in these terms, given the severe consequences to healthcare systems caused by bullying, the lack of genuinely effective programs, and the shortage of Brazilian interventions that had used trial or quasi-experimental design, it becomes necessary to develop and assess new strategies, including them in what has been considered promising by the scientific literature.

Stelko-Pereira and Williams (2016) implemented a teacher training program titled "Violência Nota Zero," which comprised 12 sessions, each lasting 90 minutes, focused on the issue of school violence. The program included discussions on definitions, consequences, and strategies for addressing the needs of both victimized and perpetrator students, as well as the wider school community. When compared to the control group, the training resulted in a decrease in the reports of student-perpetrated violence at school and improved the mental health of educators. The program was further enhanced by incorporating new components, such as targeted activities detailed in a booklet for implementation in student groups and during class breaks. These activities were tested and found to be engaging for students and easy for teachers to apply (Stelko-Pereira & Amâncio, 2016), alongside the inclusion of board games.

Considering what was presented, this paper aimed to analyze the effects of training with elementary school teachers on the occurrence of school violence reported

by teachers and students, the teachers' beliefs about bullying, and the strategies used by these teachers to face bullying

Methods

According to Figures 1 and 2, this research had a quasi-experimental design regarding the data collected from teachers and a pre-experimental design regarding the data collected from students. Furthermore, it has a descriptive and analytical approach. This study occurred in Guaiúba, Ceará, Brazil, between July 2017 and March 2018. The project for this research was approved by the Ethics Council of the State University of Ceará for studies involving human participants.
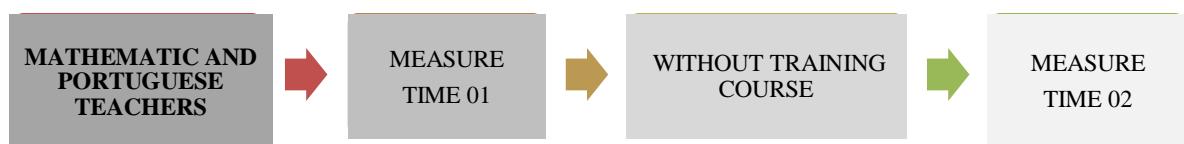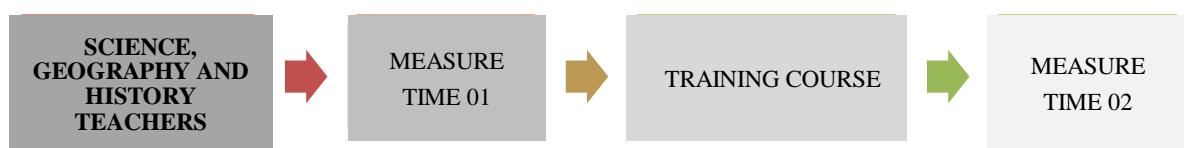

Figure 1 – Design of the quasi-experimental research with teachers
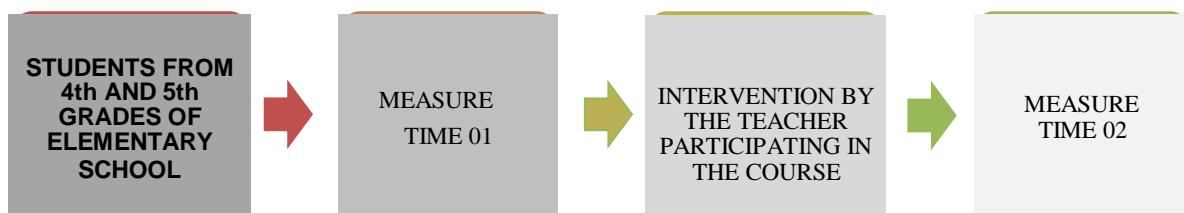
Figure 2 – Design of the pre-experimental research with students

Participants

Every teacher from the 4th grade classes and the 5th grade classes from the 14 public schools in Guaiúba were invited, totaling 74 teachers. Forty-six teachers participated in this research since the other 28 were either on leave or did not accept the invitation.

Among the participants, 20 comprised the control group (Portuguese and/or Mathematics teachers), and 26 formed the experimental group (Science, Geography, and History teachers). Such a division was established for convenience since the Portuguese and/or Mathematics teachers took another training course.

In addition to the teachers, 181 students from the 4th and 5th grades participated in the intervention, drawn from a total of 823 enrolled students who were in classes with the participating teachers. It is important to note that this participation occurred solely within the experimental group.

Teachers' training

The training was based on the Brazilian program "Violência Nota Zero," created and tested by Stelko-Pereira and Williams (2016). This program comprises two components: teacher training, with a workload of 60 hours, and implementation of activities with students by teachers, with a workload of 40 hours. The theoretical basis of the program is based on the basic principles of behavior analysis and Bandura's social learning theory. After training, teachers are expected to improve their beliefs about self-efficacy in the face of bullying and reduce normative, avoidance, and learning beliefs about this problem.

Furthermore, these teachers are also expected to reduce the perception of using punitive strategies and increase this perception of monitoring strategies, involving another adult and empowering students. Therefore, based on these changes associated with direct interventions with students, it is assumed that there is a reduction in reports from students and teachers about bullying.

The first component comprised five sessions, each lasting eight hours, totaling 40 hours of face-to-face activities, which involved expository-dialogue classes, group dynamics, and debates. In addition, there were 20 hours of distance activities, referring to the reading of chapters from the book "Violência Nota Zero: como aprimorar as relações na escola" (Williams; Stelko-Pereira, 2014). In general, the sessions addressed teacher awareness of the problem, the assessment of bullying, and universal and indicated intervention strategies. Most sessions had the same structure: they started with the sharing of experiences about the application of interventions with students, highlighting the strengths and difficulties; after that, a new theme was introduced, contextualized with what was presented through presentations or group dynamics; finally, teachers were challenged to apply new interventions with students. The sessions started with background music to motivate the teachers for teacher

training, and relaxation activities were carried out to strengthen the bonds between the participants. In the last session, prevention goals were established, and the teachers' autonomy was stimulated to continue to apply the theoretical-practical knowledge learned.

The second component was implemented in parallel with the first and was centered around the activities outlined in the booklet "E aí, tá ligado? Bate-papo sobre bullying" (Stelko-Pereira & Amâncio, 2016). This supervised application of anti-bullying interventions by teachers, emphasized in programs such as The Bully Busters (Bell, Raczynski & Horne, 2010) and The Bernese Program (Alsaker & Valkanover, 2012), serves as a crucial training strategy. It aims to foster the development of meaningful, contextualized, and reflective knowledge grounded in practical experience. Moreover, this component anticipates the execution of direct interventions with students, which would likely take place only after the completion of the training.

The training also used the WhatsApp cell phone app, which sent notices regarding the days and times of face-to-face meetings, reminders about the distance activities to be carried out between meetings, and doubts about interventions with students.

The objectives of each session, pedagogical strategies, and programmed distance activities are described in Chart 1.

Chart 1 – Bullying training for elementary school teachers

SESSION	OBJECTIVES	PEDAGOGICAL STRATEGIES
1	a) To present the research project and training schedule. b) To sign a pact of face-to-face and virtual coexistence. c) To sign the consent form for the research. d) To collect pre-intervention data with teachers. e) To discuss the concepts of school violence and bullying. f) To train the application of instruments with students. g) To point out ways to teach appropriate behaviors to students.	a) Presentation of the research and its objectives. b) Dynamics of presentation and coexistence agreement. c) Delivery and signatures of the term of commitment to the research and completion of the study questionnaires. d) Group activity on concepts of violence and bullying. e) Presentation of the instruments to be applied to students and how to apply them. f) Dialogue expository activity on how to define and encourage appropriate behaviors on the part of students. g) Distance activities: reading chapters 1 and 2 of the book "Violência Nota Zero"

		(Williams; Stelko-Pereira, 2014). h) Interventions with students: application of meetings 1 and 2 of the booklet "E aí, tá ligado? Bate-papo sobre bullying" (Stelko-Pereira; Amâncio, 2016).
2	a) To exchange experiences on how the booklet was applied. b) To discuss ways of involvement and consequences of bullying. c) To know strategies to mediate conflicts between students. d) To exchange experiences about the reality in the classroom regarding dealing with conflicts between students.	a) Create a conversation circle about how the booklet was applied to students. b) Debate in small groups on the contents of chapters 01 and 02, followed by an expository dialogue presentation on the consequences of bullying. c) Dialogued class on good practices and punitive practices in the classroom and how they relate to bullying; d) Screening of the animated short "The Lighthouse" by Taiwanese director Po Chou Chi, followed by a discussion on the teacher's role as a facilitator of learning. The session will conclude with activities centered around sharing wishes or messages for my colleagues in the training program. e) Distance activities: reading chapters 10 and 11 of the book "Violência Nota Zero" (Williams; Stelko-Pereira, 2014). f) Interventions with students: application of meeting 3 of the booklet "E aí, tá ligado? Bate-papo sobre bullying" (Stelko-Pereira; Amâncio, 2016).
3	a) To exchange experiences on how the booklet was applied. b) To know the levels of bullying prevention. c) To reinforce the role of the teacher with the	a) Conversation circle about weaknesses and facilities in applying the booklet. b) Reflection on the use of punitive practices as the primary approach to education, informed by a discussion of the music video

	characters involved in bullying situations. d) To discuss how to empower students to deal with conflict situations.	for "Another Brick in the Wall" from Pink Floyd's album *The Wall*. This was complemented by a reading of Chapter 9 from the book *Violência Nota Zero* (Williams & Stelko-Pereira, 2014). The session concluded with a group activity in which each group developed at least two bullying prevention strategies in accordance with the different levels of the prevention pyramid. c) Staging and debate on the teacher's role in bullying situations. In small groups, problem situations involving the aggressor, victim, and witness of bullying cases were discussed, focusing on the teacher's role in handling each case. d) Conversation about the question: How can the teacher help students deal with conflict situations? e) Distance activities: reading chapters 13 and 14 of the book "Violência Nota Zero" (Williams; Stelko-Pereira, 2014). f) Interventions with students: application of meetings 4 and 5 of the booklet "E aí, tá ligado? Bate-papo sobre bullying" (Stelko-Pereira; Amâncio, 2016).
4	a) To exchange experiences on how the booklet was applied. b) To discuss previously read chapters. c) To discuss appropriate and specific forms of teacher intervention for characters involved in bullying situations. d) To promote reflections on teachers' self-care and health.	a) Conversation circle about weaknesses and facilities in applying the booklet. b) Dynamic "Recalling Chapters 10 and 11", in which participants wrote a key sentence about what they learned on paper. After that, one of these phrases was drawn for group discussion. c) Dramatization by the facilitators of three bullying

	e) To emphasize the importance of the role of the family in dealing with school bullying.	situations where the teacher had an "ideal" performance. d) Conversation circle about teachers' self-care, based on an evaluation proposed on page 188 of the book "Violência Nota Zero" (Williams; Stelko-Pereira, 2014). e) Discussion of a real or imaginary case about bullying in small groups, seeking to answer: "What can be done about this situation with the family?", "What can the school do?" and "What are the various intervention strategies?"; expository-dialogue presentation of chapters 13 and 14 of "Violência Nota Zero" (Williams; Stelko-Pereira, 2014). f) Distance activities: reading chapter 16 of the book "Violência Nota Zero" (Williams; Stelko-Pereira, 2014). g) Interventions with students: application of meetings 6, 7, and 8 of the booklet "E aí, tá ligado? Bate-papo sobre bullying" (Stelko-Pereira; Amâncio, 2016).

Measures

The sociodemographic and socioeconomic variables were age (in years), sex (male; female), education level, family income (in Brazilian reais), and weekly working hours (hours/week).

The variables tested before and after the intervention were related to school violence, the teacher's beliefs on bullying, and the strategies used in the face of bullying. The variables related to school violence were victimization between students, perpetration between students, and victimization of teachers by students. The variables of the teachers' beliefs on bullying were avoidant, normative, learning, and self-efficacy. Finally, the variables related to the strategies used in the face of bullying were to punish, monitor, involve another adult, and empower students.

Instruments

Two scales, the Victimization among Students Scale and the Perpetration among Students Scale were applied to collect student data.

- Victimization among Students Scale – VSS. A self-report instrument developed by Stelko-Pereira and Williams (Stelko-Pereira, 2012), with 18 items and a five-point Likert-type response scale (1 = "never" to 5 = "seven times or more"). It consists of two factors: face-to-face victimization, which contains 11 items that assess the occurrence of traditional bullying, and virtual victimization, which includes seven items on cyberbullying. These dimensions have an internal consistency index of 0.85, and the total test-retest precision score, within a 30-day interval, is 0.64. The VSS still has convergent validity with the Child Stress Scale (ESI), with significant positive correlations greater than 0.65 between the VSS and ESI scores (Stelko-Pereira et al., 2019).
- Perpetration among Students Scale — PSS. A self-report instrument developed by Stelko-Pereira and Williams (Stelko-Pereira, 2012), with 18 items and a five-point Likert-type response scale (1 = "never" to 5 = "seven times or more"). It presents 11 items that investigate face-to-face violence perpetration among students and seven that investigate perpetration through virtual means. All PSS items showed internal consistency, with a Cronbach's alpha of 0.91, face-to-face perpetration of 0.87, and virtual perpetration of 0.79. As for the test-retest precision, in 30 days, this instrument presents reasonable precision about face-to-face ($R=0.65$, $p<0.001$) and total ($R=0.64$) perpetration but insufficient precision in the virtual authorship item ($R=0.09$) (Stelko-Pereira, 2012).

Three scales were applied to the educators: the instrument to investigate teachers' practice against peer victimization, the instrument to investigate teachers' beliefs and perceptions of self-efficacy regarding victimization and bullying, and the School Violence Scales—the teacher's version.

- Instrument to investigate practice used by teachers against peer victimization. This instrument is a survey by Cunha and Bergamo (Bérgamo, 2016), which aims to examine action strategies used by teachers in the face of bullying. The questionnaire is divided into three parts. The first part involves sociodemographic aspects and asks whether teachers have already participated in situations of victimization as students. The second part features two illustrated vignettes depicting incidents of direct and indirect aggression among students. After each vignette, teachers are invited to answer two closed-ended questions. The first item deals with the teacher's perception of the need for intervention in the situation, the severity of the incident, the frequency of similar episodes in their schools, and self-efficacy to deal with similar situations—the second deals with teachers' possible intervention strategies, given the illustrations presented in the vignettes. Response options are arranged on a four-point scale (1 = "strongly agree" to 4 = "strongly disagree"). In this study, the answers employed were related to strategies for dealing with a bullying scenario in a classroom. After analyzing the internal consistency of

the instrument's items, using the teacher's answers from this research, a grouping of the items was proposed through Exploratory Factor Analysis in the categories of enforcing discipline (5 items, alpha of 0.72), monitoring (3 items, alpha of 0.78), involving another adult (3 items, alpha of 0.77), and empowering students (4 items, alpha 0.66) (Luna, 2019).

- Instrument to investigate the teachers' beliefs and perception of self-efficacy regarding victimization and bullying. This instrument is a survey by Cunha and Lima (Lima, 2017). It was adapted for this study, including nine new questions, totaling 27 beliefs about bullying and victimization. The items referring to beliefs were divided into three factors: Assertive beliefs (07 items), Avoidance beliefs (09 items), and Normative beliefs (11 items). The instrument contains eight items about teachers' self-efficacy perception of the phenomenon. Items are frequently evaluated on a four-point Likert scale: 1 = "strongly disagree" to 4 = "totally agree." Psychometric studies indicated that for each type of belief, internal consistency rates greater than 0.70 (Luna, 2019).
- The School Violence Scales – teacher's version. Regarding this instrument (Stelko-Pereira; Williams, 2016), the following scales were employed: a) frequency of staff victimization by students, answered by this study's participants, which indicated an internal consistency of 0.64, and b) knowledge of victimization between students, which obtained a Cronbach's alpha of 0.91, from the analysis of the teachers' answers (Luna, 2019).

Procedure

The intervention consisted of five meetings, each with five hours of duration, totaling 40 hours of face-to-face activities, which involved expository dialogue lessons, group dynamics, and debates. Besides the face-to-face activities, there were remote activities that amounted to nearly 60 hours, which consisted of reading chapters from the book "Violência Nota Zero: como aprimorar as relações na escola" (Williams; Stelko-Pereira, 2014) and application of the first eight meetings from the "E aí, tá ligado? Bate-papo sobre bullying" primer with students (Stelko-Pereira; Amâncio, 2016).

The structured surveys were applied with the experimental group's teachers during the first and last training meetings, corresponding to the period before and after the intervention. The control group's teachers answered the surveys (handed out in sealed envelopes) in the schools where they teach in their free time. The students answered the surveys in the classroom on a school day, which were applied by the teachers from the experimental group.

Data Analysis

We utilized the Statistical Package for the Social Sciences (SPSS) software, version 20.0, for our statistical analyses. Prior to the intervention, we compared the

sociodemographic characteristics and scores from the administered instruments between the control and experimental groups. Following the training, we compared the scores from the pre- and post-intervention phases for both groups.

To assess the association between the cases and controls with respect to the teachers' sociodemographic variables (sex, education level, and pay scale group), Pearson's chi-squared test was employed. The Mann-Whitney test was utilized to compare the experimental and control groups prior to training with regard to the variables of age and scores from the instruments. In contrast, the paired Wilcoxon test was used to evaluate score changes before and after the training.

When significant statistical differences were observed between the groups and the scores, as well as before and after the training, effect size calculations were performed using the variances. The effect sizes were classified as follows: small (less than 0.30), medium or moderate (from 0.31 to 0.70), and large (greater than 0.80) (Kelley & Preacher, 2012).

Results

The majority of the experimental and control groups were women, 13 (76.5%) and 16 (61.5%). There was no statistical significance related to gender ($p = 0.30$). Further, no significant differences between the experimental and control groups' teachers regarding sociodemographic and occupational characteristics ($p > 0.05$) were verified. The average age of the teachers was 39.5 years, with a standard deviation of 8.87, and there were no significant differences between the groups ($p>0,05$).

Among the participant teachers, the majority (n=25; 55%) had a postgraduate degree (specialization/master's), while 12% (n=6) had only finished high school. No statistically significant differences were observed between groups regarding education level ($p = 0.17$). 88% (n=40) of the teachers declared having a family income from two to three Brazilian minimum wages, and 12% (n=6) declared one minimum wage or less. No statistically significant income differences were identified between the groups ($p = 0.31$). The majority was teaching from 20 to 40 hours a week (n=39; 86%), with 12% (n=6) working less than 20 hours a week, and there was no significant difference found between the groups ($p = 0.25$).

Table 1 – Comparison between the control and experimental groups before the training. Guaiúba, Ceará, Brazil, 2018.

		Comparison between the groups before the training		
	Groups	Average rank	Z	*p**
PVS – teacher's version				
Victimization by students	C	16.92	-2.69	**0.007**
	E	26.09		
Victimization between students	C	21.52	-0.95	0.341
	E	18.03		

Beliefs				
Avoidant	C	23.50	0.00	1.0
	E	23.50		
Normative	C	21.71	-0.12	0.90
	E	22.19		
Learning experience	C	25.93	-1.63	0.10
	E	19.65		
Self-efficacy	C	28.53	-2.78	**0.005**
	E	17.92		
Strategies				
Punishing	C	23.53	-0.85	0.39
	E	20.06		
Monitoring	C	20.50	-0.23	0.81
	E	21.29		
Involving another adult	C	24.84	-1.74	0.08
	E	18.54		
Empowering students	C	19.97	-0.01	0.98
	E	20.02		

*Mann-Whitney

No statistical significance between bullying situations was observed regarding beliefs ($p > 0.05$) and strategies ($p > 0.05$) in either group (Table 1). Moreover, there was no significant statistical difference between the experimental and control groups concerning the teachers' perception of violence between students ($p = 0.34$). However, the experimental group had a higher average rank than the control group regarding experiencing violence from students ($p < 0.05$, $r = 0.41$) and a lower feeling of self-efficacy in solving bullying situations ($p < 0.05$, $r = 0.42$).

After the intervention, the teachers from the experimental group indicated a decrease in violence between students, making the size of such difference moderate ($r = -0.548$). They started feeling more self-efficient in dealing with bullying ($r = 0.44$). The variables "violence experienced by the teacher from the student" and normative, avoidant, and learning experience beliefs in the face of bullying did not present significant differences after the intervention in the experimental group ($p > 0.05$) (Table 1). In the control group, there was a statistical significance ($p < 0.05$) regarding normative beliefs; in other words, the teachers started to agree more with beliefs that naturalize the occurrence of bullying ($r = 0.49$) (Table 2).

Table 2 – Comparison between the control and experimental groups' victimization, beliefs, and perception of self-efficacy scores. Guaiúba, Ceará, Brazil, 2018.

	Classes	Better (B) Worse (W) Same (S)	Average rank	Z	*p**
Victimization					
of teachers	C	(B) = 1	2.00	-0.57	0.564

	Group	Count	Score	Statistic	p
		(W) = 2	2.00		
		(S) = 6			
	E	(B) = 5	4.40	-1.40	0.161
		(W) = 2	3.00		
		(S) = 10			
between students	C	(B) = 4	3.75	-0.17	0.865
		(W) = 3	4.33		
		(S) = 2			
	E	(B) = 10	7.30	-2.68	**0.007**
		(W) = 2	2.50		
		(S) = 0			
Beliefs					
Avoidant	C	(B) = 3	2.50	-1.11	-0.263
		(W) = 4	5.30		
		(S) = 3			
	E	(B) = 8	5.75	-1.91	0.056
		(W) = 2	4.50		
		(S) = 7			
Normative	C	(B) =1	2.50	-1.98	**0.047**
		(W) = 6	4.25		
		(S) = 1			
	E	(B) = 8	9.13	-0.74	0.459
		(W) = 7	6.71		
		(S) = 1			
Learning experience	C	(B) = 4	4.88	-0.21	0.833
		(W) = 4	4.13		
		(S) = 2			
	E	(B) = 4	5.88	-1.22	0.222
		(W) = 8	6.81		
		(S) = 3			
Self-efficacy	C	(B) = 4	2.50	-0.106	0.916
		(W) = 2	5.50		
		(S) = 2	2		
	E	(B) = 13	7.96	-2.480	**0.013**
		(W) = 2	8.25		
		(S) = 1			

*Paired Wilcoxon

Concerning the strategies used by the teachers in the face of bullying, it could be noticed that, after the intervention, the experimental group started to agree more with employing monitoring strategies (following up on the situation, observing the student the following day(s), and monitoring the students) (p = 0.02), with an effect size of 0.349. However, there were less punitive actions (calling out, cutting recess and/ or physical education, making a written warning, making clear that aggressive behavior is not tolerated, calling the parents or legal guardians for a conversation, and punishing the people involved) against bullying (p = 0.02), with an effect size of -0.378 (Table 3).

Tabela 3 – Comparison between the scores of strategies to deal with peer violence situations in the control and experimental groups before and after the intervention. Guaiúba, Ceará, Brazil, 2018.

	Classes	Better (B) Worse (W) Same (S)	Average rank	Z	*p**
Strategies					
Punishing	C	(B) = 6 (W) = 3 (S) = 3	4.58 5.83	-0.60	0.549
	E	(B) = 11 (W) = 5 (S) = 3	10.23 4.70	-2.32	**0.020**
Monitoring	C	(B) = 3 (W) = 4 (S) = 4	3.17 4.63	-0.76	0.442
	E	(B) = 7 (W) = 1 (S) = 12	4.79 2.50	-2.20	**0.027**
Involving another adult	C	(B) = 6 (W) = 5 (S) = 1	6.83 5.00	-0.71	0.474
	E	(B) = 5 (W) = 6 (S) = 8	4.60 7.17	-0.90	0.365
Empowering	C	(B) = 5 (W) = 5 (S) = 2	4.60 6.40	-0.46	0.641
	E	(B) = 6 (W) = 2 (S) = 3	4.58 4.25	-1.33	0.182

*Paired Wilcoxon

The participant students were mostly males (n=96; 52.9%), with 53.8% (n=97) enrolled in 5th grade and 46.2% (n=84) in 4th grade, with an average age of 10.7 ± 0.93 years. Comparing the victimization and perpetration scores before and after the intervention, a significant decrease in the victimization rate was noticed, varying from 4.22 (standard deviation = 5.79) to 3.39 (standard deviation = 5.80) (p = 0.03), with a d-cohen size effect of -0.126. Concerning the perpetration scores, there were no significant changes, with a mean score of 2.05 (standard deviation = 3.63) before the training and a mean score of 2.14 (standard deviation = 3.61) after the training (p = 0.75).

Discussion

Most of the teachers from the sample were women who reported having higher education degrees and working 40 hours a week. Such findings are similar to the profile of primary education teachers in Brazil. Furthermore, the average age of the participants in this research is comparable to that of Brazilian teachers, which is 41 years (Carvalho, 2018). The fact that some teachers from the sample had only finished

high school is something to point out. Such a scenario is related to the fact that Brazilian legislation still allows teachers without a higher education degree to teach in classes up to the 4th grade of elementary school.

Moreover, most participating teachers declared having a family income of two to three minimum wages, supported by data from the Brazilian Ministry of Education (Carvalho, 2018). Despite conquests related to labor rights, the teaching profession still suffers from social and wage devaluation in Brazil, impacting education quality. The profile of the participant students was similar to what was found in other intervention studies (Gaffney; Farrington; Ttofi, 2019).

Following a methodology common to studies on interventions against bullying (Babarro et al., 2020), the training achieved significant changes in victimization rates, according to the teachers and students from the experimental group. According to the teachers' answers, the change was moderate, and according to the students' answers, it was small. The fact that there were no changes in the victimization rates in the control group calls for attention. Such findings are based on the literature, which also points out that half of the prevention programs show significant decreases in victimization, from small to moderate (Chalamandaris; Piette, 2015; Evans; Fraser; Cotter, 2014). We believe that the changes in the victimization rates happened due to the activities being applied in the classroom by the teachers with the students. Such activities follow what the literature indicates to be effective, i.e., including this theme in the curriculum, the training of social skills, and emotional control strategies (Cantone et al., 2015; Lee; Kim; Kim, 2015).

Although the program did achieve good results regarding victimization, it would be interesting to make improvements, including strategies oriented toward people who witness bullying since it is a group phenomenon (Swift et al., 2017) and towards parents, enhancing the training effects. In addition, we believe that comprehensive training involving the school community could also affect the perpetration rates, which remained unchanged. Supporting this view, Farley (2018) shows that the way witnesses react to bullying affects how teachers directly intervene in aggression between peers, besides the fact that it is significantly related to the professional's self-efficacy. Another relevant point is the further need to investigate the relationships between the teachers and their peers, as well as their management, since they influence whether the teacher will have a passive or active attitude in the face of bullying (Song; Lee; Park, 2018).

The experimental group had a moderate and significant increase in self-efficacy in dealing with bullying situations; this did not happen with the control group, in which self-efficacy was stable. According to this result, the literature points out that the belief in self-efficacy is related to the teacher having more attitude in front of bullying (Fischer; John; Bilz, 2021; Van Verseveld et al., 2019). A recent meta-analysis demonstrated that teachers generally feel confident in managing bullying and that more confident teachers intervene more often (Fischer; John; Bilz, 2021). Furthermore, Chalamandaris and Piette (2015) show less peer victimization in classrooms with teachers who realize they can deal with bullying. Thus, in this study, the improvement

found in self-efficacy might be related to the decrease in the victimization rates between students. We believe that the increase in self-efficacy after the intervention was achieved due to how the training worked with acquiring knowledge, skills, and attitudes regarding confrontation against bullying.

Moreover, normative beliefs increased in the intervention period in the control group. Such beliefs are related to the conviction that bullying is a natural phenomenon in child and youth development and, therefore, it has no relevant negative consequences in the student's life (Burger et al., 2015). Teachers who believe that bullying is a natural part of childhood or that it promotes a learning experience are more prone to advise victimized children to avoid intimidation or to deal with such situations independently. Those teachers are also less prone to discipline the perpetrators (Burger et al., 2015; Santos; Perkoski; Kienen, 2015).

There were also changes in the strategies that teachers use in front of the problem since there was a significant and moderate increase in the agreement with the strategy "monitoring students involved with bullying" and a significant and moderate decrease in the agreement with the strategy "agreeing with punitive strategies," which was not noticed in the control group. Teachers usually prefer interventions based on obedience to authority and remedying or punishing bullying incidents instead of preventing them (Burger et al., 2015; Santos; Perkoski; Kienen, 2015). The use of punitive strategies may be useful in the short term, but they are not effective for changes in the long term and can also increase the general levels of school violence over time (Burger et al., 2015). Therefore, educational approaches, such as the restorative justice model, are preferable to punitive ones.

Due to the shortage of preventive programs against bullying in Brazil and the world, which has entailed significant or, at least, moderate changes, this program seems promising. However, this study has limitations, such as a) the control and experimental groups of teachers having been composed by convenience; b) having no students control group; c) having no long-term measures, and thus no way of knowing if the changes remained; and d) the samples of participants being small.

Conclusion

In conclusion, the training program "Violência Nota Zero" demonstrated significant positive outcomes in addressing bullying among elementary school students in Brazil. Specifically, the intervention resulted in a notable decrease in teachers' perceptions of student victimization, an increase in their self-efficacy regarding bullying management, and a shift towards more constructive strategies such as monitoring students rather than relying on punitive measures. Conversely, the control group exhibited an increase in normative beliefs that may undermine efforts to combat bullying, highlighting the critical need for consistent training and support for educators.

The findings of this study are particularly important given that it is one of the few research efforts focused on anti-bullying interventions in Brazil. Considering the severe

consequences of bullying on the affected students, even small to moderate effects in reducing this issue can be seen as promising. This underscores the necessity for more research and initiatives in this area, as effective interventions, regardless of their magnitude, can lead to improved social and academic outcomes for students experiencing bullying.

The promising results of this study underscore the importance of comprehensive teacher training programs aimed at creating a safe and supportive school environment. By fostering educators' understanding of bullying dynamics and empowering them with effective intervention strategies, schools can better mitigate the detrimental effects of bullying on students' mental health and academic performance. However, it is essential to acknowledge the limitations of this study, including the small sample size and the lack of long-term follow-up. Future research should focus on larger, more diverse samples and longitudinal assessments to validate and expand upon these findings, ultimately contributing to the development of effective, evidence-based anti-bullying strategies within educational contexts.

In summary, addressing bullying requires collective effort and commitment, and equipping teachers with the right tools and knowledge is a crucial step in fostering a healthier school climate for all students.

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