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Prevention of violence against children and adolescents: development and validation of an educational game

Prevenção da violência em crianças e adolescentes: desenvolvimento e validação de um jogo educativo

Prevención de la violencia en niños y adolescentes: desarrollo y validación de un juego educativo

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ABSTRACT

Objective: To develop and validate an educational game aimed at preventing violence against children and adolescents.

Method: This is an applied methodological research conducted between April and August 2023. To develop the game, two workshops were initially held with 19 children and adolescents aged 10 to 14, participants in a social project within a community in a medium-sized city in the Midwest region of São Paulo state, Brazil. The workshops began with a screening of the short film LOU (Disney Pixar®), followed by expressive activities such as drawing and writing, as well as group discussions on the topic addressed. The game was developed by a research team comprising undergraduate and post-graduation students, based on data collected during the workshops with the target audience and a review of the relevant literature. This process highlighted different types of violence, reflections, and experiences shared by the participants, which directly contributed to defining the rules, characters, narrative, dynamics, and content of the game. Validation involved the participation of 12 expert judges, and a content validation index was used to measure agreement among evaluators.

Results: A card game titled "Peacing: for a World without Violence" was developed and validated, achieving a Content Validation Index of 0.99 in the second validation round, indicating significant agreement among the judges.

Conclusion: The educational game was considered validated by expert judges and proved to be an interactive and engaging tool with the potential to prevent violence among children and adolescents.

Descriptors: Violence; Health Education; Child; Adolescent; Games and Toys; Comprehensive Child and Adolescent Health Care.

RESUMO

Objetivo: Desenvolver e validar um jogo educativo direcionado para a prevenção da violência em crianças e adolescentes.

Método: Trata-se de uma pesquisa metodológica aplicada, realizada entre abril e agosto de 2023. Para o desenvolvimento do jogo, inicialmente, foram realizadas duas oficinas com 19 crianças e adolescentes, com idades entre dez e 14 anos, participantes de um projeto social em uma comunidade de uma cidade de médio porte do Centro-Oeste paulista. As oficinas iniciaram-se com a exibição do curta-metragem *LOU* (Disney Pixar®), seguidas de atividades expressivas, como desenhos e escrita, além de uma discussão em grupo sobre o tema abordado. O jogo foi desenvolvido por um grupo de pesquisa composto por estudantes de graduação e pós-graduação, com base nos dados coletados em oficinas realizadas com o público-alvo e na revisão da literatura da área. Esse processo destacou os diferentes tipos de violência, reflexões e experiências compartilhadas pelos participantes, que contribuíram diretamente para a definição das regras, personagens, narrativa, dinâmica e conteúdo do jogo. A validação ocorreu com a participação de 12 juízes especialistas, e o índice de validação de conteúdo foi utilizado para medir a concordância entre os avaliadores.

Resultados: O jogo de cartas intitulado "Pazear: por um mundo sem violência" foi desenvolvido e validado, alcançando Índice de Validação de Conteúdo de 0,99 na segunda rodada de validação, indicando significativa concordância entre os juízes.

Conclusão: O jogo educativo foi considerado validado por juízes *experts* e mostrou-se uma ferramenta interativa e envolvente, com potencial para prevenir a violência em crianças e adolescentes.

Descritores: Violência; Educação em Saúde; Criança; Adolescente; Jogos e Brinquedos; Atenção Integral à Saúde da Criança e do Adolescente.

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RESUMEN

Objetivo: Desarrollar y validar un juego educativo orientado a la prevención de la violencia en niños y adolescentes.

Método: Se trata de una investigación metodológica aplicada, realizada entre abril y agosto de 2023. Para el desarrollo del juego, inicialmente se llevaron a cabo dos talleres con 19 niños y adolescentes de entre 10 y 14 años, participantes de un proyecto social en una comunidad de una ciudad de tamaño mediano en la región del Centro-Oeste del estado de São Paulo, Brasil. Los talleres comenzaron con la proyección del cortometraje LOU (Disney Pixar®), seguida de actividades expresivas, como dibujos y escritura, además de una discusión en grupo sobre el tema tratado. El juego fue desarrollado por un grupo de investigación compuesto por estudiantes de grado y posgrado, basado en datos recolectados durante los talleres con el público objetivo y en una revisión de la literatura relevante. Este proceso destacó diferentes tipos de violencia, reflexiones y experiencias compartidas por los participantes, lo que contribuyó directamente a la definición de las reglas, los personajes, la narrativa, la dinámica y el contenido del juego. La validación se realizó con la participación de 12 jueces expertos, y se utilizó el índice de validación de contenido para medir el nivel de acuerdo entre los evaluadores.

Resultados: Se desarrolló y validó un juego de cartas titulado "Pazear: por un Mundo sin Violencia", alcanzando un Índice de Validación de Contenido de 0,99 en la segunda ronda de validación, lo que indica un acuerdo significativo entre los jueces.

Conclusión: El juego educativo fue considerado validado por los jueces expertos y demostró ser una herramienta interactiva y atractiva, con potencial para prevenir la violencia en niños y adolescentes.

Descriptores: Violencia; Educación en Salud; Niño; Adolescente; Juegos y Juguetes; Atención Integral a la Salud del Niño y del Adolescente.

INTRODUCTION

Brazilian law recognizes childhood and adolescence as unique stages of development, determining that this population must receive integral protection and have their freedom and dignity guaranteed. Despite significant advances enshrined in law, there is still much to be done to ensure that the rights of children and adolescents are fully respected[1].

One of the main challenges of current society is the increase in the cases of violence against children and adolescents, especially in the scope of family. This issue represents big challenges to public health, highlighting the importance of more efficient follow up on the part of health authorities and workers, since this issue destabilizes family structure as a whole[2].

Considering the relevance of a safe childhood, free from harm, the Statute of Children and Adolescents (SCA) states that no child or adolescent should be the target of negligence, discrimination, exploitation, violence, cruelty, or oppression, and that any violation of their fundamental rights, be it due to action or omission, shall be punished. Additionally, integral access to child and adolescence health care networks in the Single Health System is ensured, as is their access to the different services used to promote, protect, and recover health[1].

In Brazil, family, community, institutional, and social environments are often impacted by several types of violence, which have an impact on individual and collective health, reducing the potential a child has to grow and develop healthily[3]. From domestic violence to bullying in schools, and including the abuse of power in several parts of society, the presence of these forms of violence generates a toxic environment that undermines the foundations of wellbeing and prosperity.

Violence against children and adolescents includes all types of aggression targeted at individuals under 18 years old, whether it is perpetrated by parents, caregivers, colleagues, romantic partners, or strangers. This serious social issue is multifaceted, based on a complex interaction of individual factors, dynamics of close relationships, community contexts, and broader social influences[4].

Data shows that nearly 50% of children from 2 to 17 years old are the victims of violence every year, worldwide; approximately 300 million children from 2 to 4 years old are victims of violent disciplinary actions; and nearly 120 million girls fall victim of sexual violence before completing 20 years of age[5]. These practices represent a risk for the life and wellbeing of a child, causing physical and psychological damage[6]. Violence against children and adolescents is frequently silenced, and the lack of statistics about the topic makes it difficult to develop efficient public policies, perpetuating violence in its many forms. Moreover, in several fields, especially in health and education, professionals are not well-trained to identify violence and address it[1,7].

Thus, broader strategies must be developed and coordinated to deal with the several types of violence that affect children and adolescents. The knowledge that children acquire about themselves, their bodies and rights, as well as about the different manifestations of violence, has a crucial role in prevention. When

conscious, they learn to recognize dangerous situations, defending themselves and searching for health when necessary[4].

In this context, educational strategies must be implemented that promote individual and collective awareness about responsibilities in health, encouraging and supporting people so they can take control over their own lives, in order to create a healthy environment, reducing vulnerability and strengthening citizenship[8].

To reach these goals, learning must be made more practical and effective. Integrating games into health can provide important educational experiences, encouraging the active participation of those involved in this process[9]. Educational games or *serious games* have been shown to be valuable tools in the field of health, favoring teaching and learning as they lead to an expansion in the awareness and knowledge of their players, while also leading to long-lasting behavioral changes[10].

The choice of a playful and interactive way to carry out an educational intervention is supported by a premise according to which games can provide an engaging way to teach complex concepts, such as intergenerational respect and abuse prevention.[7]

The idea of using educational games in child education has been suggested for decades. Piaget, for example, considered the game to be a mechanism of self-construction, contributing to moral and social development[11]. This reiterates the importance of educational practices that use games as an effective tool to promote health and wellbeing.

Considering the above, the authors of this study carried out a literature review in August 2023, on the databases Web of Science, Scopus, Latin American and Caribbean Literature in Health Sciences, Educational Resources Information Centre, and Medical Literature Analysis and Retrieval System Online, searching for studies in English, Portuguese, and Spanish, without a specific time frame, and aiming to find scientific evidence about educational games about violence made for children and adolescents. In our search, it became clear that these studies mainly address the prevention of sexual violence[12–15]. Furthermore, games stand out as promising tools to raise awareness, promote empathy, and teach strategies to deal with violence.

Nonetheless, their potential, especially in regard to preventing and including different types of violence, is still scarcely explored. A broader approach, therefore, is relevant for the contemporary education of children and adolescents, as it provides them with innovative and effective alternatives to confront violence[16].

Thus, it became clear that researchers seldom use innovative educational strategies to prevent violence against children and adolescents, showing the need to carry out initiatives that use interactive tools to promote awareness and efficient behavioral changes.

Considering the above, we formulated the following research question: how to develop and validate an effective educational game to prevent violence against children and adolescents? Based on this question, this study aims to develop and validate an educational game to prevent violence against children and adolescents.

METHOD

Conducted from April to August 2023, this study is an applied methodological research, an approach broadly used in the elaboration of Care-Educational Technologies (CER)[17,18] focused on developing educational actions about the prevention of violence against children and adolescents. The study had three steps: surveying the needs of the target population; elaborating the game content, form, and rules; and validating the content and appearance of the game.

This study was developed using a social project maintained by a non-governmental organization, in the peripheral region of a medium-sized city in the midwest of São Paulo, presenting 237,627 residents according to the 2022 census by the Brazilian Institute of Geography and Statistics (IBGE).

The region is home to about 200 families, most of whom depend on informal work, such as bricklayers, day laborers, and maintenance workers. For some residents, drug trafficking is also a source of income. The region includes a Family Health Unit (FHU), a specialized social assistance center (CRAS), one child education school, one elementary education school, and one high school. The project in question aims to insert children and adolescent activities in the daily lives of those who live in the community. These activities include school tutoring and soccer, in addition to providing them with breakfast, lunch, and dinner, cinema sessions and

religious instruction. In their own headquarters, they attend approximately 70 children and adolescents, through donations mostly made by individuals, as opposed to companies.

In the first stage of the study, aimed at surveying the needs of the target population, we carried out two workshops. Inclusion criteria were: being from 10 to 18 years old, literate, and going to the tutoring sessions provided by the social project. To recruit participants into the workshop, a meeting was held in the social project with these children and adolescents, 10-year-old or above, accompanied by their legal guardians. They were invited to participate by the person responsible for this social project. Of the 29 families with children and adolescents in this age group, 19 were present at the meeting.

During the meeting, the goals of the study were presented, as well as the manner in which the activities would be carried out. The importance of the participation of children and adolescents was reiterated, so this educational game for the prevention of violence could be developed. After the research procedure was explained in detail, all those responsible, as well as their children and adolescents, agreed to participate, signing their respective consent forms. At the time, we also chose the best time and day to carry out the workshops and asked the WhatsApp® number of the guardians, so we could reiterate on the invitation and remind them of the activity one day before it took place.

The workshops happened in the facilities of the social project, during different shifts, enabling the participation of 10 children and adolescents in the first workshop, and 9 in the second.

Lasting for approximately one hour, workshops began with a screening of the short film "LOU", by Disney Pixar®. The plot, which addresses issues of living together and dealing with conflict, was used to trigger the reflections of participants. Then, sheets of paper, pencils, and colored pens were provided for the children and adolescents present to express their perceptions by drawing and writing about situations of violence they experienced or witnessed. After this activity, a group discussion was held, enabling participants to share their reflections and suggest ways in which violent situations can be presented or dealt with. Workshops were mediated by a nurse and a psychologist, ensuring that the topic was addressed in a sensible, interdisciplinary manner.

The discussions and materials produced in the workshops were recorded in audio and complemented by notes in a field journal. Then, the content of the material collected was analyzed, enabling us to group the data according to standards and topics. However, it is worth noting that, though we made attempts to provide a welcoming environment based on interactive activities, the statements of adolescents provided only piecemeal pieces of information. The statements of the children and adolescents were coded as WP (Workshop Participants), followed by a number.

The second stage of the study, involving the elaboration of the content, appearance, and rules of the game, followed the ten steps proposed by Jaffe[19]: **1. To describe the goals of the game**, clearly stating its goals and content; **2. Check whether the game is adequate considering the context of violence**, ensuring that concepts are relevant and improve the understanding of the topic, in addition to verifying whether there is space for their implementation; **3. Encourage competition**, that is, the game must be a challenge that feels interesting and motivating (although it is common to have winners, in educational games, all participants must feel that the experience is stimulating); **4. Define the game rules**, establishing the role of the participants, the setting, and how the game will be played, ensuring that players will have an active role; **5. Prioritizing fun**, that is, the game must be fun, providing intelligent and reflective learning experiences; **6. Providing an immediate feedback to the participants**, in order to help them adjust their knowledge and improve their performance; **7. Considering the needs of participants**, adapting the game to the target population, considering factors such as age, gender, culture, ethnicity, socioeconomic context, and others; **8. Conducting field tests to check for mistakes and make necessary adjustments**; **9. Implement an evaluation mechanism, using** the game to evaluate its usability and playability; **10. Disseminating the game**, promoting it to enable further research and establish the consistency of its reliability and validity by applying it repeatedly.

Data collected during the workshops was discussed and analyzed by a research group formed by nursing and medicine students, including master's and doctorate students, in order to develop the game. At the time, the main statements of the participants were grouped, with special attention to the types of violence addressed. Furthermore, the reflections and experiences shared by the participants were translated directly into game elements, such as plots, characters, and challenges. The drawings of the children, for example, inspired the creation of the characters and settings of the game, while suggestions of group discussions guided the elaboration of educational messages and strategies that reiterated cooperation and mutual respect.

The game was developed using the design and visual communication platform *Canva*, and the images used were found in the Freepik® platform, which provides royalty-free content. The content of the game was based on both the contributions of participants and literature evidence, ensuring its pedagogical and cultural relevance.

In the third stage, the validation counted on the help of judges specialized in child and adolescent health: professionals from the field of health (one psychopedagogue, two social assistants, two nurses, two physicians, two psychologists), one legal professional (a police chief), and professionals from the field of health (two professors), to a total of 12 judges. The judges were selected by convenience, considering the need to have professionals from different fields of work, both from the academic setting and from direct care, also considering the knowledge of the team responsible for building the game. Thus, we included professionals that, in their work, attend or have attended, for at least one year, children and/or adolescents who were victims of violence, in order to ensure evidence-based, contextualized evaluations, making the game validation process more credible.

The instrument used to validate the game was adapted from a questionnaire previously validated to this end, with the following dimensions: **content**, that is, an evaluation of whether the educational resource is adequate to evaluate a certain topic; and **appearance**, related to the presentation and clarity of the game[20]. The instrument also includes information followed by a Likert type scale, scored from one to four, with the following possible answers: one - does not apply; two - unsatisfactory; three - satisfactory, needs corrections; four - satisfactory. There was also a field where they could add comments. The evaluation was digital, meaning that the quality of the physical aspects of the game could not be evaluated. After each item of the questionnaire, one question to gather suggestions from the judges was included, allowing them to contribute to the content and appearance of the educational game.

The specialized judges were contacted via WhatsApp®. The goal of the activity was explained to them, and they were asked whether they were interested in participating in the validation. All those invited agreed to participate. After the specialists accepted participating, they received an online copy of the game, together with a letter of presentation, the validation instrument, and the consent form. The form was signed, scanned, and sent back through WhatsApp®. After the material was delivered, they were given ten days to give feedback.

All 12 judges who accepted participating sent the instrument back, via WhatsApp®. Although some of them gave their feedback after the deadline established, this did not compromise the development of this work. To ensure their anonymity, judges were identified using the letter "J", followed by an ordinal number (J1, J2, J3…J12).

The instruments filled in by the specialized judges were inserted in a Microsoft Excel® spreadsheet. To determine inter-rater agreement in the validation of the game, we used the content validity index (CVI), which measures the proportion of judges that agreed with certain aspects of the instrument and its items. At first, each item is analyzed individually; then, the instrument is evaluated as a whole. Minimum agreement must be 0.80[20]. After the first stage of validation, the alterations suggested were implemented, and the study underwent a second validation stage.

To evaluate the relevance/representativeness, we used a Likert with a score from 1 to 4 that read as follows: = not applicable (NA); 2 = unsatisfactory (U); 3 = satisfactory with changes (SC); 4 = satisfactory (S). The index score is calculated by adding up the items that were given a score of "3" or "4" by the judges, divided

by the total number of responses[21]. In this proposal, items scored "1" and "2". must be reviewed or eliminated, which did not take place in the present evaluation.

This study respected Resolution No. 510/2016, by the National Health Council, and was approved by the Ethics Council for Research Involving Human Beings (CEP) of the proposing institution, under Opinion No. 4.679.507, CAAE 67384723.4.0000.5413.

RESULTS

At first, to develop the study, we carried out two workshops, the first of which counted on 10 participants aged from 11 to 14, of whom 8 (80%) were female and 2 (20%) were male. In the second workshop, nine children and adolescents from 10 to 11 years old participated, six (66.6%) females and 3 (33.3%) males.

An analysis of the statements of workshop participants showed recurring themes involving several types of violence, including school violence, verbal violence, psychological violence, discrimination and racism, sexual violence, violence against animals, violence against properties, community violence, and domestic violence. These forms of violence highlight that there is a high variety of situations that have a negative impact on the wellbeing of their victims.

Here are some excerpts from the statements, texts, and drawings produced by the participants, specifying the type of violence and the perceptions addressed: "When a friend threatens beating me after school" (PO12) / "When a friend swears at football" (PO15) / "Sometimes there are fights at school" (PO8) / "Giving nicknames to colleagues, even if they don't like it" (PO10) /"Bullying" (PO4) / "Racism against the teacher" (PO14) / "The teacher is the worst in school, she screams and argues with students" (PO6) / "An acquaintance from the neighborhood abused a horse" (PO11) / "An acquaintance was abused by her stepfather" (PO2) / "Violence is when the man wants to put his hand on your leg, send a kiss, take a photo, do something the other doesn't like" (PO7) / "Take someone else's things without asking" (PO9) / "People who steal and kill" (PO5) / "They tried to rob the niece of a friend" (PO13) / "Harming animals" (PO16) / "Doing things the other doesn't want you to do" (PO3) / "An uncle who locks the aunt at home and doesn't let her get out." (PO1)

Figure 1 shows a visual manifestation of the exprienc-es and observations of these children and adolescents, exemplified by a situation of racism.

Figure 1 – Drawing made in the workshop. Marília, SP, Brazil, 2023
Source: Elaborated by a workshop participant, 2023

Using the data from the workshops and supported by the literature about the causes, consequences, and forms of prevention, the members of the research group gathered under the coordination of the main researcher to elaborate a motivating game that could guide and stimulate the creativity of these children and adolescents. At first, meetings were held to decide what content should be addressed, so we could reflect and reach a consensus in order to refine the materials. Then, we discussed the elements necessary to elaborate the game, including target audience, scenarios, characters, narrative, dynamics, and content. Some initial concepts were created in brainstorming sessions with the team, in addition to content related to the prevention of violence, based on the data collected from the workshops carried out with these children and adolescents.

With these definitions in mind, we started considering which type of game would be the most appropriate to attend to the needs identified. This led the group to propose a card game, as it is practical and easy to access. The title of the game is "Peacing: for a World without Violence". The title was chosen due to the meaning of this verb and its proximity with the topic at hand: "Peacing" comes from the Portuguese word "Pazear", which means

establishing peace or harmony[22]. Then, we elaborated an instruction manual, including the content, the goals, and the instructions of the game. Later, we defined a design that was appropriate to the target population. Online and in-person meetings were held to elaborate it.

The educational game "Peacing" is a tool produced to develop competences such as autonomy and decision making in daily situations related to violence. The winner is the player with the highest score. The game can be played by four to six players, with a minimum age of 10 years old. It includes a manual (Figure 2) and 131 cards: 63 attack cards (black), 48 defense cards (blue), 10 wrong cards (red), and 10 right cards (black), in addition to 40 score markers (yellow, Figure 2). The attack cards (Figure 3) describe violent situations faced by children and adolescents, while defense cards (Figure 3) show actions that confront this violence. During the game, the participants select the best defensive card to confront the attack card being played. There are also confounding defense cards (blue, Figure 3), which are not adequate attitudes, although the players can choose them during the match. These cards are in the same group as the other defense cards, which are more assertive and non-discriminatory responses.

At the beginning of the game, the attack and defense cards are shuffled separately, and each player gets three cards of each type, in addition to one wrong card, one right card, and three buttons. The player that deals the cards starts the match choosing an attack card, while the others, in a clockwise direction, chose the best defense card to deal with this attack. Alternatively, they can draw one defense card from the pile, by discarding another one. After all players have their turns, the first player uses right and wrong cards to vote on the best and worse defenses, and the other players do the same, voting in all cards except their own. The card with the most "right" votes gets a point, while the one with the least votes loses a point. In the case of a tie, the initial player has the deciding vote. When a player gets a point, they grab another button from the pile, and when they lose a point, they give one button back. The rounds repeat as much as participants desire, changing the dealer each round, until there are no more cards or participants decide to stop. The mediator has an essential role as they play a role in raising questions about violent situations, promoting dialog and education about prevention, transforming the game into a valuable pedagogical tool for children and adolescents.

Figure 2 – Manual. Marília, SP, Brazil, 2023
Source: The authors, 2023

Figure 3 – Attack, defense, and confounding defense cards, Marília, SP, Brazil, 2023.
Source: The authors, 2023

In the validation of the game, the professionals who worked as evaluators of the card game were aged from 38.6 ± 7 years old (mean ± standard deviation) and had an experience of 14.3 ± 7 years in their fields. Regarding their profession, there were two teachers, two physicians, three psychologists, one legal professional, two social workers, and two nurses. These professionals are specialized in areas such as behavioral neuroscience, psychopedagogy, innovative education, pediatrics, mental health, strategic management, domestic violence, neuropsychology, cognitive and family therapy, and others. They included two specialists, eight MS, and two PhDs, showing different types of knowledge and being highly qualified to help validate the game.

Table 1 shows the results of the first and second stages of validation carried out by the expert judges, including the percentage of agreement and the content validity index of the card game.

Although the game reached a mean of 0.97 in the CVI calculation according to the questionnaire validated in the first stage, the game was reviewed according to the suggestions made by the judges.

A comparison between the 1st and 2nd stage of the validation of the game shows a positive evolution in almost all criteria. Although the evaluation was really positive in the first stage (with scores above 0.9), the second stage presented significant improvements, especially in regard to the clarity of the images, vocabulary adaptation, and relevance of the content. The general index increased from 0.97 to 0.99, suggesting the game became even more adequate throughout the process, both in terms of content and of presentation. In general, the game reached high standards of quality and relevance, with only a small, necessary adjustment in the evaluation of the physical aspect of the materials, which had not been previously analyzed. Therefore, some answers given were "1" (NA - Does not apply), since the game was only printed after the final version was finished.

Furthermore, the suggestions from the judges in each item of the questionnaire contributed to improving the material, adjusting it according to the pedagogical goals and the needs of its target audience. Chart 1 summarizes the main recommendations from the judges.

Based on the suggestions received and aiming at improving the understanding of the game, changes were made in its writing and content. Also, the role of mediator was added to the manual. Whenever possible, the texts in the cards was reviewed to avoid identifying the gender of the aggressor, so children and adolescents are alert to anyone that may threaten them with violence.

Suggestions related to the appearance and images of the game were accepted. Other types of prejudice were added to the cards, and suggestions were accepted so the situations can represent parts of the daily life of these children and adolescents, referring to someone close in order to promote autonomy in decision making.

Orthographic corrections were carried out and some suggestions were considered, such as replacing some words and the colors in the texts. Some judges mentioned that the game is ideal for children and adolescents, being broad and clear, easy to understand and dynamic; it is relevant, and encourages the construction of knowledge.

Table 1 – Content validation index of the card game in the 1st and 2nd validation stages. Marília, São Paulo, Brazil. 2024.

CONTENT VALIDATION		
Game objectives	**CVI (1st stage)**	**CVI (2nd stage)**
1. The information is in accordance with the experiences of children and adolescents	1	1
2. It is coherent from an educational standpoint	1	1
3. The information encourages changes in attitude	0.92	0.98
4. It can be disseminated in a scientific environment	0.98	1
5. It is in accordance with the goals of the professionals involved in the work with children and adolescents.	0.98	1
Relevance of the game	**CVI (1st stage)**	**CVI (2nd stage)**
6. The items illustrate important aspects, which contribute for the prevention of violence.	1	1
7. The game proposes and stimulates the construction of knowledge	0.92	1
8. The game has key aspects that must be emphasized with the children and adolescents.	0.96	1
Content addressed in the game	**CVI (1st stage)**	**CVI (2nd stage)**
9. The content precisely discusses its topic and approaches.	0.94	1
10. The content is laid out in a complete and comprehensive manner	0.96	1
11. The information presented is correct and updated	0.98	1
12. The information is compatible with reality	0.98	1
13. The content presented is appropriate to raise the awareness of children and adolescents regarding the topic	0.94	1
APPEARANCE EVALUATION		
Game organization	**CVI (1st stage)**	**CVI (2nd stage)**
14. The art is appealing and in line with the content of the material	0.96	0.96
15 The size of the titles of the content is adequate	1.00	1.00
16. The paper used and the printing are appropriate	0.92	0.75
Game illustrations	**CVI (1st stage)**	**CVI (2nd stage)**
17. The illustrations can capture the attention of children and adolescents	0.96	1.00

Table 1 – Cont.

18. The illustrations exemplify the information necessary	0.98	1.00
19. The images are simple and easy to understand	1.00	1.00
20. The images complement the game information	0.98	1.00
21. The figures are sufficiently clear	0.96	1.00
Style of the writing of the game	**CVI**	**CVI**
22. The font and letter style are appropriate	0.98	1.00
23. The text is appealing and informative	1.00	1.00
24. Vocabulary is accessible	0.96	1.00
25. The writing style and vocabulary are compatible with the level of knowledge of children and adolescents.	0.96	1.00
General Index	**General (1st stage)**	**General (2nd stage)**
	0.97	0.99

Source: Adapted from Sousa, 2018
Captions: (S) Satisfactory, (SA) Satisfactory with alterations, (U) Unsatisfactory, (NA) Does not apply, (CVI) content validation index.

Chart 1 – Main suggestions of judges regarding the content and appearance of the game. Marília, São Paulo, Brazil. 2024

Content (objective, relevance, and approach)	Appearance (organization/lettering/images)
Clarify that the game needs the mediation of an adult (J2) *Replace "sexual option" with "sexual orientation" (J5)* *Avoid exposing the gender of the aggressor (J9)* *Change the term "control" anger to "regulate" anger. (J1)* *The game encourages the construction of knowledge. (J2)* *The game will help sensitize children and adolescents. (J11)* *Playful tool that favors conversation and learning. It will contribute for conversations. (J5)* **Use the term "black", as it is broader. (J4)* *Include prejudice with mental and physical deficiency, in addition to other minorities, such as albinos and those with large ears or foreheads (J8)* *Clarify that children and adolescents can also have violent attitudes regarding other people. (J12)*	*It is important to ascertain whether images have author rights before using them. (J5)* *In the card "There is a man no one knows in the neighborhood, he said he'll give me a gift if I go to his house alone", I think it is interesting to replace the drawing, showing an adult and a child as opposed to two adults. (J4)* *Some children may need help understanding some words (such as empathy) (J2).* *The letters in some cards are too white. (J4)* *The images are great, clear and colorful, and call the attention of the children and adolescents(J8)* *The game is ideal for children and adolescents, being broad and clear, with an understandable writing and a dynamic proposal (J5)*

*In Brazilian Portuguese, there is more than one term to refer to black people. The term used in the original version was specific to dark-skinned black people, while the judge suggestion recommended that a broader term, that also includes black people with lighter skin, should be used instead.

The calculation of the CVI of the questionnaire validated in the second stage reached a mean of 0.99, showing that the game was validated.

The judges had an essential role in elaborating the educational game, providing valuable suggestions based on their experiences and specialized knowledge. Their contributions helped improve the content and appearance of the game, ensuring that the cards and manual were relevant, clear, and in line with the pedagogical objectives. Furthermore, their analyses ensured that the game was not only educational, but accessible and appropriate to the target audience, precisely reflecting the topics addressed and encouraging the participants to reflect and learn.

The game, developed and validated, is available for the public through the platform ZENODO ®, including its cards and manual. To access it, users can access the repository via the link: https://zenodo.org/records/13150828.

DISCUSSION

This study presented an educational technology that facilitates the learning process about preventing violence against children and adolescents. This technology enables reflections and interactions in groups, measured by professionals in the field of health and education, enriching their understanding and the application of the content discussed. Thus, as observed by other authors, educational games are essential resources in the educational process in health, as they play a fundamental role in the growth and integral development of an individual[10,11].

During the workshops carried out with children and adolescents, we found information related to the previous knowledge they had about the topic of violence. The children were heard in order to elaborate an educational game based on their previous knowledge about the topic, in the fields that need to be addressed and transformed. This is close to the principles of significant learning, that is, new knowledge is acquired from the cognitive interaction between previous knowledge and new information (game), in a non-arbitrary and non-linear way[23].

Developing games from the reality and previous knowledge of children allows the product to be more easily understood. Additionally, it enables broader discussions, bringing elements that allow further learning in a dynamic and fun way, in accordance to the need of providing useful information to daily life[24].

The importance of significant learning is undeniable, as it involves a profound understanding of the content and the ability to apply it to real situations. In this context, gamification can be an additional stimulus for players, since searching for rewards fosters the development of relevant skills for one's life[9].

As an active learning strategy, games made it possible to bring students closer to the situations being addressed, allowing integration between theory and practice and using practical experiences as triggers for reflections deeper thought. Moreover, the structure of working in small groups also encourages developing interpersonal communication and the ability to evaluate one's own learning, as well as that of the group, which fosters critical thought and brings reflections about the content learned[25].

As teaching tools, games motivate and engage students in their activities, allowing them to explore aspects such as problem solving, decision making, and critical thought. Furthermore, they enable dialogic education, stimulate the exchange of ideas, debates, and the collective construction of knowledge, improving the educational process. Thus, they also convey values and influence the worldview of their participants[9].

The use of play and playful things can be an effective strategy to promote, prevent, treat, and recover health, being applicable to children and adolescents in several health services. These games improve the cognitive functioning of children and are helpful when training their memories and developing analytical and strategic abilities. Health workers that use play as a therapeutic resource facilitate the work of dealing with child suffering[26].

Developing educational games is a challenge, as it requires the collaboration of professionals from several fields to address a wide range of game perspectives, from design principles to the aspects of behavioral change psychology[10]. It is essential to consider the importance of player involvement in the development of the game. A study that addressed a game to promote critical reflection and free thought about gender violence, integrating playfulness, education, and communication, considered the particularities of adolescence and chose to use a participative approach when producing the game[27].

Regarding the topics in the game elaborated, which was based on the statements of children and adolescents who participated in the workshop, racism and bullying stood out, as these are urgent challenges in schools due to how common they are, and how unprepared educators are to deal with them. This is especially true for race discrimination, as it is often confused with regular bullying, leading to the perpetuation of institutional racism. Regarding racism, while black students are excluded and victimized by psychological violence, white students may develop a false sense of superiority. This highlights the crucial need to implement effective anti-racist educational strategies, in accordance with legislation, in order to create an egalitarian school environment that values diversity and actively fights discrimination[28].

The card game "Peacing: for a world without violence" can be used in different settings where there are children and adolescents, especially in schools and health services. It aims to foster the ability of players to make decisions autonomously when confronted with situations of violence. The use of card games is common in educational contexts. Although they involve luck, as they depend on the cards in the hands of each player, during the round they are also defined by the strategy and ability of the player to observe and handle the cards in their hand[29].

The game was validated by 12 expert judges from the fields of health, law, and education. A review study highlighted the importance of multidisciplinary teams in continuous collaboration when conceiving games for education in health, in order to address the several aspects of the design and development. This approach not only improves the educational experience of users, but also may expand the impact of educational games in health[10].

This study highlights important aspects, pointed out by the evaluators, which helped improve the quality and effectiveness of the game. An example is the need for a mediator, whose role is essential to guide and aid players in critical moments, helping promote essential social behaviors, such as listening when it is time for another person to speak and following the rules established. For the authors, the game encourages constructing arguments and hypotheses, especially through the discussions triggered within the group. Therefore, these are efficient educational tools to promote social interaction and incorporate cognitive skills[30].

Like this construct, other studies that validated educational materials for children and adolescents emphasized the active participation of the target audience when surveying their needs, their collaboration to determine content and design, and the validation by specialists. These processes ensure the quality of both content and appearance of the games. Furthermore, the studies showed that games promote autonomy, critical reflection, and decision making, working as playful and interactive strategies that integrate education and practical experience and consolidating as effective tools to promote health and education[20,24].

From this perspective, games play an important role in learning and its evaluation, promoting the integral development of the individual. In the educational context, one must understand how games lead to experiences related to learning. They must generate meanings and interpretations, reflecting the perception of the player about their experience, and have a political dimension that involves analyzing, reflecting, and transforming the world through action and discourse[11]. This study developed and validated an educational game.

It has limitations that prevent its results from being generalized. The workshops were carried out with children and adolescents from a single community, in a medium sized city, meaning its findings cannot be applied to other geographical contexts and populations. Furthermore, the fact that there was no analysis comparing it with other types of educational intervention makes it difficult to ascertain what is the relative effectiveness of this approach. Additionally, the evaluation here was carried out in the short term, and did not consider long term impacts or external factors, such as family and socio-economic variables that could have influenced results.

CONCLUSION

The educational game "Peacing: for a World without Violence", whose objective was helping prevent violence in children and adolescents, was built according to the experiences of the target population and validated by judges who were specialists in the field, who highlighted its effectiveness as an interactive and appealing tool. This construction is a significant advance in the training of children and adolescents to prevent and confront violence in daily life.

We believe that, by promoting autonomy and decision making, the game developed can help construct a safer and fairer future for the next generations.

As a next step, we recommend evaluating the usability and playability of the game to ascertain how effective the technology created is for the learning of the target audience about the prevention of violence in children and adolescents. It is essential to ensure access to the game and disseminate it, so professionals, especially those in the field of health and education, can apply it in their practices with children and adolescents, increasing its positive impact.

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Availability of Data and Materials

The dataset may be accessed upon request to the corresponding author.

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