



VALIDATION OF THE EDUCATIONAL GAME *POSITIVAMENTE* FOR THE PREVENTION OF DRUG ABUSE BY SCHOOL ADOLESCENTS¹

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ABSTRACT

Objective: to perform the validation of the appearance and content of educational technology – board game *PositivaMente* for the prevention of drug abuse by school adolescents. **Method:** methodological study of instrument validation with a sample of nine judges with experience with the theme and method. The selection and recruitment were made through the *Lattes* Curriculum, as well as articles published in the area and “snowball” technique. The collection took place in two cycles, between August and November 2018, through an electronic questionnaire. Content Validity Index (CVI) was used to validate the items. The aspects with agreement less than 0.8 were altered, according to the analysis of the judges' suggestions. **Results:** The judges were of various expertise, such as education, adolescent health, mental health and drugs and digital game design. The CVI was 0.82 in the first cycle. After the game modifications, in the second cycle, the CVI was 0.99. **Final considerations:** *PositivaMente* play is an educational technology validated by judges to be used as an alternative to traditional methods of preventing drug abuse by adolescents.

Keywords: Illicit Drugs. Underage Drinking. Adolescent. School Nursing. Validation Study.

INTRODUCTION

Adolescence is a phase of vulnerability to risky behaviors, because it is a period of identity formation in which the individual usually seeks new experiences, including drug abuse. This period constitutes a field for the production of nursing care, based on emancipatory health education strategies based on the reduction of damages and risks related to drug consumption⁽¹⁾.

In many cultures, it is common to initiate the consumption of psychoactive substances for recreational purposes in adolescence, sometimes as a means of seeking the satisfaction of personal and social needs⁽²⁾. Among the substances consumed by this public, alcohol is the most used drug in the world. In Brazil, the 2015 National School Health Survey (PeNSE, *Pesquisa Nacional de Saúde do Escolar*, in Portuguese) showed that alcohol use by adolescents is the most prevalent, even though it

has suffered a fall, and early initiation. The prevalence of tobacco use has increased in this age group, about 5%. On the other hand, the experimentation of illicit drugs was twice as much as in the previous data, from 2012^(3,4).

Exposure to risk factors such as alcohol abuse, unsafe sex and violent practices and conditions is higher in adolescence, making it important to take public policies and plural intersectoral actions open to singularity to protect the health of adolescents and youth⁽⁴⁾.

Scientific evidence suggests that school interventions were beneficial for reducing tobacco and alcohol use and may also be effective in preventing illicit drug use⁽⁵⁾. Thus, it is opportune to bring health and education services closer together to act in the school environment. However, for the prevention of drug abuse with adolescents, strategies are needed that address the characteristics of this public, such as Educational Technologies (ET). However, it is observed that in Brazil, although

¹Extracted from the dissertation entitled “Development and Validation of an Educational Game for the Prevention of Alcohol Abuse and Other Drugs with School Adolescents”, presented to the Professional Master's Course in Child and Adolescent Health, from the Health Sciences Center of the State University of Ceará, in 2018. Presented at the 71st Brazilian Nursing Congress, 12th Brazilian Conference on Gerontological Nursing and 5th International Seminar on Nursing Work.. Apresentado no 71o Congresso Brasileiro de Enfermagem, 12a Jornada Brasileira de Enfermagem Gerontológica e 5o Seminário Internacional sobre o Trabalho em Enfermagem.

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this theme is widely studied, there is a scarcity of research developed or applied in the school environment, aimed at preventing drug abuse by adolescents.

The approaches with games are relevant for prevention and health promotion⁽⁶⁾, since there is preliminary evidence for the use of board games in improving health knowledge. It is indicated that its development should focus on behaviors related to health outcomes, exploring game design alternatives of the genre "curiosities", with questions and answers, evaluating interventions of board games with the use of rigorous scientific methods⁽⁷⁾.

Board games are important strategies for health education of adolescents and young people, using playful language to mediate information on different topics. Therefore, the characteristics of board games and the need to develop a proposal that provides information on the types of drugs, the effects and modes of prevention should be considered.

From this perspective, one wonders: is the board game *PositivaMente* a valid educational technology appropriate for the prevention of drug use? To answer this question, the objective of this study was to perform the validation of the appearance and content of educational technology – a board game *PositivaMente* for the prevention of drug abuse by school adolescents.

METHOD

Study design

This is a methodological study, of the type of development and validation of an instrument in the educational game modality. Methodological research includes the construction, validation, evaluation and improvement of methodological strategies. This type of route provides the investigation of methods of obtaining and organizing data and conducting research⁽⁸⁾. This method was adopted since the objective of the study was the validation of a new product, an educational game, to prevent drug abuse, aimed at adolescents in the school environment.

In the construction of this ET, the three recommended steps were adopted⁽⁹⁾: identification of the needs regarding drugs of

abuse, elaboration of the educational game on prevention of drug abuse in adolescence and the validation of the educational game with the judges.

The identification of the main issues to be addressed on prevention of drug abuse in adolescence was performed through listening in two focus groups, in March and April 2018, with sixteen high school students from a city in Ceará, between 14 and 18 years old.

The second stage occurred from May to August 2018, when the game was planned with the contribution of the literature and the construction itself. In the planning, the content was organized in frames with different colors for each defined learning objective, which are: discuss risk factors for drug abuse in adolescence; know the classifications of drugs of abuse and their effects; strengthen decision-making and stimulate dialogue on drugs between peers and the family and discuss drug policy in Brazil.

In the construction of the ET, we opted for a model of development of a board game⁽¹⁰⁾. The production of the images of the game was carried out by a graphic designer, who used the software Illustrator, Photoshop and InDesign, Adobe® and the image banks: shutterstock, freepik and dreamstime.

Finally, the last step is the validation of the game, the object of this study.

Study population/sample selection and exclusion criteria

The study population was expert judges in the areas of construction and validation of ET, teaching, research, management or adolescent health care and/or mental health. To this end, the sampling technique took place through the Lattes Curriculum, available on the Lattes Platform of the National Council for Scientific and Technological Development (CNPq). We also sought professionals identified in published articles or by the indication of other judges (snowball strategy).

In the selection of these professionals, some criteria and their respective scores were asked, as indicated in Chart 1: having postdoctoral, doctorate, master's degree, specialization or residence in the area of interest, having

published an article and developing research on the topics of interest and having professional experience in the construction and validation of ET, teaching, research, management or adolescent health care or mental health. These

should have more than five points, according to the defined criteria⁽¹¹⁾. Professionals involved in this research or who did not have the ability to read and write in the world Portuguese.

Chart 1. Criteria and respective scores for the selection of expert judges

Criteria proposed by Fehring (1994)	Adapted criteria
Have a doctorate in nursing, with a thesis in the area of interest (2p)	Possess a postdoctoral degree in one of the research lines of interest* (3p)
MSc in Nursing (4p)	Possess a doctorate in one of the research lines of interest* (3p)
MSc in Nursing, with a dissertation in the area of interest (1p)	Possess a master's degree in one of the areas of interest* (2p)
Have training (specialization) in a clinical area relevant to the diagnosis of interest (2p)	Possess specialization or residency in one of the areas of interest* (1p)
Have an article published on diagnosis in an indexed journal (2p)	Have a published article addressing one of the topics of interest* (2p)
Have published research on diagnosis or relevant content (2p)	Develop or have developed research projects with an approach in one of the areas of interest* (2p)
Have recent clinical practice of at least one year in the topic addressed (2p)	Have professional experience in the construction and validation of educational technologies, teaching, research, management or assistance to adolescent health or mental health. (2p)
Total	15p

Note: *Drugs, adolescents, studies of production or validation of technologies and/or education.

Source: adapted from Fehring (1994)⁽¹¹⁾.

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After the selection, contact was made with 18 professionals, through the Lattes Platform and/or by telephone/e-mail informed in the *Lattes Curriculum*, inviting them to participate in the research. Twelve of them accepted, but the sample was from nine specialists, who answered the questionnaire within the established period of 30 days.

The educational game was enjoyed by nine judges in the first cycle in order to check the content and appearance. The number of judges, despite having divergences in the literature, should vary from nine to 15 and should include the areas of pedagogy, social communication and graphic design⁽¹²⁾. In the second cycle, the same judges were invited, but only seven agreed to continue in the research.

Data collection and collection period

Validation occurred in two cycles, the first between August and September 2018, and the second in November of the same year. It is noteworthy that the second cycle was performed in view of the significant changes made after the results obtained in the first. Thus, it was

considered pertinent to resubmit the game to validation even in order to obtain better scores in the aspects that received negative evaluation.

In both cycles, the judges were instructed to evaluate the technology through an adapted questionnaire⁽⁸⁾, which contains 22 items, divided into three topics, which deal with validation regarding objective, structure, presentation and relevance. The Likert-type questionnaire presented four answer options, in a four-point progressive sequence: 1-fully adequate, 2-adequate, 3-partially adequate, 4-inadequate, according to the criteria to be evaluated. For options 3 and 4, the reasons and suggestions for this evaluation were asked to be described. Of these items, five concerned the appearance of technology and 17 related to content.

For the analysis of the judges, a kit containing the alpha version of the game, a validation questionnaire and the Informed Consent Form (ICF) were posted or delivered personally for the analysis of the judges. The alpha version of the game included a board, 49 cards, and the guide to using the game.

The final version, which contained a board to be printed on canvas, with 50 houses, measuring

3.25m x 3m, 50 cards, a large finger, two pawns and the guide for using the game, was sent only by electronic means. These subjects received by e-mail a digital version of the game in beta and the questionnaire. The judges answered the questionnaire and sent it by e-mail.

Data analysis

For the analysis and presentation of the data, the organization and treatment was carried out in the Microsoft Excel program version 2019 16.0.6742.2048. The analysis of the characterization of the specialists was made by means of absolute and relative frequencies and for numerical variables the standard deviation was also applied.

For the validation of the items, the Content Validity Index (CVI) was used. This one is the proportion of judges who agree on a certain aspect⁽¹²⁾.

The CVI was calculated from the division of the number of favorable responses (1 or 2) by the total number of responses. On the other hand, the calculation of the general CVI and each of the topics (1 - Objective, 2 - Structure and presentation and 3- Relevance) was performed with the simple mean of the CVIs, that is, the sum of the CVIs, calculated separately, divided by the number of items. A minimum index of 0.8 was considered both for

the evaluation of each aspect and for the general evaluation of the instrument⁽⁸⁾. In the case of lower CVI, this aspect was modified according to the judges' suggestions and based on the relevant literature.

Ethical aspects

To carry out the research, Resolutions N. 466/2012 and 510/2016 of the National Health Council were followed, which standardize research involving human beings. The participants of the research were requested to be authorized through the ICF. Confidentiality and anonymity have been ensured. The present study was approved by the REC of the Regional University of Cariri (URCA) with opinion N. 2.452.306.

RESULTS

According to the selection criteria adopted, the judges' average score was 9.3 (SD: 1.9). As shown in Table 1, most subjects were female, most of them nursing graduates and masters. Of these judges, seven work in the Northeast region of the country. The most frequent area of activity was teaching, with six, and the others work in health care. The mean age was 36 years (SD: 11). The average time of formation was about 12 years (SD: 10).

Table 1. Characterization of the judges

Variables	N	%
Sex		
Female	7	78%
Male	2	22%
Mean age in years	36.9	
Graduation course		
Nursing	5	56%
Social Sciences	1	11%
Data processing technology	1	11%
Licentiate in Physics and BSc in Biomedicine	1	11%
Licentiate in mathematics	1	11%
Average training time in years	12.8	
Pot-graduation		
Specialization	1	11%
MSc	5	56%
PhD	3	33%
Work Region		
Northeast	7	78%
South	2	22%
Area of work		
Teaching	6	67%
Assistance	3	33%

Source: Created by the authors.

The professionals evaluated the game for the 22 items of content and appearance. The game was validated with the General CVI of 0.82 in the first cycle and 0.99 in the second.

Five items obtained full agreement of the judges in the first cycle, the coherence of the content with the needs of adolescents, the importance of the content for the prevention of drug abuse by them, the appropriation of school adolescents, the retraction of the most relevant aspects of the themes and the approach of the subjects necessary to the knowledge of adolescents. In the second cycle there was agreement for all aspects.

Regarding the Objective dimension, only the item *Encourages the change of adolescents' behavior and attitude* had a result below 0.8 in the first cycle. This evaluation was overcome in the second cycle, with agreement among the judges, with CVI of 0.86. This result was obtained with the improvement of language, layout and content. There was an increase in CVIs of each dimension in the second cycle. For Topic 1, the objective, the CVI went from 0.91 to 0.97.

Dimension 2, which refers to the structure and presentation, obtained in the first Cycle CVI of 0.74, due to the low indexes in the aspects related to the clarity and objectivity of the information, adequacy of information to the knowledge of adolescents, name of the game and size of the questions and information and expressiveness of the illustrations. The results of all aspects of this topic increased the CVI to 0.98 in the second cycle.

In dimension 3, on relevance, the item that refers to the suitability of the game for use by any adolescent had not reached the desired value in the first cycle. In the second cycle, this question was evaluated positively, reaching CVI of 1, as well as the other items in this item.

From these CVIs, the judges' suggestions and comments were performed for the modification of the game, in order to improve it, through new planning. To meet some suggestions of the judges, the name of the game was modified, the information was reduced, figures and alternatives to the questions were included and the language was modified. The cards of reflection were transformed for

discussion and the name was changed to *Papo reto*. The information texts had the texts reduced and were called *Se liga!*, as shown in Chart 2.

Some of these letters, as well as direct questions, were turned into multiple choice questions and were called Alternative. The *Mito ou verdade*, *Problema* and *Bônus* cards have been retained. The cards of information and reflection were transformed to alternative questions and Straight Chat, which aims to generate discussion.

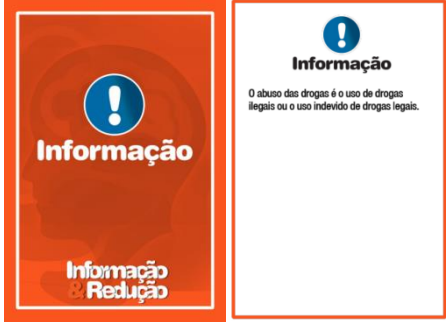



Some rules have been added and others have been clarified. There was also a change in the font color. It was not possible to meet the suggestion of describing the material for replication, since this is not the intention of the study. As for granting benefits to the cards, only the *Se liga* do not meet this suggestion.

As for questioning the use of all cards in the match, this is one of the odds, however, this will hardly occur. On the other hand, the criticism regarding the material that was used in the alpha version, paper A4, we opted for this version since this version was only for validation, and the sending on canvas would outstate the costs.

On the board was reduced the number of squares to adjust them to the number of cards, changed the pink color by purple on the cards and on the board, since the color of the board house refers to that of the card, added the pawns to demarcated the house and facilitate the mobilization of the teams during the game, increased the size of the data, changed the path and included the start and end marks of the track. As for the increase of the board, only the alpha version was in small size, it is considered that the size 3.25m x 3m of the board in the beta version is sufficient.

Some suggestions regarding the letters were not accepted with pragmatic or scientific basis. One of them was dismembered into two letters at the suggestion of the judges. Letter 6 decided not to include names of medicinal products, as it does not directly answer the question and the medicines are better known by this public by brand names. Information was reduced, others were transformed into multiple choice questions and language was improved.

Chart 2. Major changes during the game validation process

	Alpha version	Beta version
Game name	<i>Informação & Redução</i>	<i>PositivaMente</i>
Cards		
Board		
Game composition	Board with 60 squares, one die, the guide with guidelines for using the game and 49 cards.	Board with 50 squares measuring 3.25m x 3m, a large die, two pawns, the guide with guidelines for using the game and 50 cards.
Types of cards	21 Question cards (2 Yes or No, 13 Direct, 6 Myth or Truth), 18 Information, 5 Reflection, 4 Problem Situation and 1 Bonus card.	17 <i>Alternativa</i> cards, 11 <i>Mito ou Verdade</i> , 10 <i>Papo reto</i> , 7 <i>Se liga!</i> , 4 <i>Problema</i> and 1 <i>Bônus</i> card.
CVI	0.82	0.99

Source: Created by the authors.

DISCUSSION

The game was modified and was called *PositivaMente*, with thematic distribution in five colors. Thus, there are 28 orange cards, 11 red, five green, five blue and one yellow. Table 2 shows an example of card and board and the types of cards *Mito ou verdade* and *Alternativa* cards must be answered by those who draw it, according to the color of the house, and if the answer is correct you can play again, limiting the benefit to two consecutive moves. The Ones *Se liga!* will be read, the *Problema* and the *Papo reto* must be discussed between the two teams, each team will have 01 minute to respond and can advance a house. The bonus card predicts the advance to house 33. Per match, the game will allow use by two players or teams with

about 10 people in each and with an average time of 20 minutes. Whoever gets to the end of the game wins first.

ETs have been widely used in health education. But these cannot be seen only as technical instruments, when the goal is to generate changes in behavior. To the detriment of this, one should value the dialogue between subjects and thus their knowledge is constructed and shared⁽¹³⁾.

An interesting suggestion to moderate the participation of expansive people and stimulate the shy ones in the group during the game was partially met, since the time of the game needs to be short and there was no rule that could solve this possible situation. However, the time for response was determined.

Educational games can contribute to the

promotion of sociability and cognition and it is necessary that the school contributes to the exchange of knowledge, breaking prejudices and taboos in the formation of people more aware of their actions⁽¹⁴⁾.

There is a complex interaction between the factors that influence drug abuse by adolescents. Therefore, effective programs will require action in all areas⁽¹⁵⁾.

The educational game is a tool that can be used by the nurse mainly to work on topics that are difficult to discuss in the family or at school, which represent the basis of the individual's education⁽¹⁶⁾. In the nursing work process, the context of the pandemic caused by Covid-19 proved to be possible and necessary to construct new forms and methods from the use of health technologies, aiming at optimizing and qualifying actions⁽¹⁷⁾. One possibility is the adaptation of the educational game to online gambling.

In the case of the research in question, the diversity of experts of the judges was relevant to the validation process and led to the necessary adaptations for the game to achieve the objective of preventing drug abuse by adolescents⁽⁸⁾.

It is also noteworthy that the professionals appreciated the proposed technology and considered the game important for the prevention of drug abuse for school adolescents. The game *PositivaMente* passed validation by a committee of judges, through a process that allowed its adaptation and, therefore, better adequacy of content and appearance⁽¹⁸⁾, which increases the chances of its effectiveness in practice.

The language was modified, mainly regarding the technical terms, to get closer to the target audience and illustrations were included at the suggestion of the judges. Corroborating the subjects, the textual elaboration should be adequate to the educational and cultural level of the client to be benefited by the ET⁽¹⁷⁾. The validation of the instrument guarantees this subject greater reliability for educational practice with adolescents⁽¹⁸⁾. This was the proposal of this study, to build a technology that is used and stimulate stake exchange and dialogue between participants and motivate prevention in relation to drugs of abuse.

There are few productions with ET validation

for this purpose. We highlight the evidence that reveals the need and guides new construction research^(7,15), but also the validation of technologies, in order to guarantee the quality related to the content and appearance of the material elaborated and that will be applied to the adolescent public⁽¹⁹⁾.

An experimental study conducted in Australia, where education on drugs of abuse is mandatory in schools, shows that a mobile game obtained significant results in pre- and post-test knowledge among women, in relation to the group that received another traditional class intervention⁽²⁰⁾.

This product may have implications for the professional practice of nurses in the implementation of adolescent health care, since it responds to a need identified in the school context. Thus, the validated game can contribute to the prevention of alcohol and other drugs abuse by adolescents and consequently the improvement of other health and educational issues of these individuals and the communities in which they are inserted.

A limitation found was the absence of a professional in the area of social communication in the validation and difficulty of collaboration and participation of specialists, having remained at the limit of the amount stipulated by the literature in the first cycle (9 judges) and below, in the second (7 judges). It is recommended that the audience validate to further improve the language, appearance and usability of the game.

FINAL CONSIDERATIONS

The topic of drug abuse by adolescents is of interest to health and education professionals. Early care, based on prevention and the model of harm reduction, has shown more effective results and, with this, The ET have been gaining space in research and as an alternative in care.

The study achieved its objective of validating an educational game for the prevention of drug abuse by adolescents and can be used by this public as ET for the prevention of drug use and abuse. The validation of this technology was essential for it to achieve the intended effects, because it allowed the analysis by professionals with expertise in various areas, such as education, adolescent health, mental health and

game design, and this contributed to the construction of a more reliable product.

However, validation should be a continuous process, considering that knowledge is dynamic.

VALIDAÇÃO DO JOGO EDUCATIVO *POSITIVAMENTE* PARA PREVENÇÃO DO ABUSO DE DROGAS POR ADOLESCENTES ESCOLARES

RESUMO

Objetivo: realizar a validação de aparência e conteúdo da tecnologia educacional – jogo de tabuleiro *PositivaMente* para a prevenção do abuso de drogas por adolescentes escolares. **Método:** estudo metodológico de validação de instrumento com amostra de nove juízes com experiência com o tema e método. A seleção e recrutamento foram feitos por meio do Currículo *Lattes*, bem como de artigos publicados na área e técnica de "bola de neve". A coleta se deu em dois ciclos, entre agosto e novembro de 2018, por meio de questionário em formato eletrônico. Para validação dos itens utilizou-se o Índice de Validade de Conteúdo (IVC). Os aspectos com concordância menor que 0,8 foram alterados, conforme análise das sugestões dos juízes. **Resultados:** Os juízes foram de expertises diversas, como educação, saúde do adolescente, saúde mental e drogas e design de jogos digitais. O IVC foi de 0,82 no primeiro ciclo. Após as modificações no jogo, no segundo ciclo, o IVC foi 0,99. **Considerações finais:** o jogo *PositivaMente* é uma tecnologia educacional validada por juízes a ser utilizada como alternativa aos métodos tradicionais de prevenção ao abuso de drogas pelos adolescentes.

Palavras-chave: Drogas ilícitas. Consumo de álcool por menores. Adolescente. Serviços de enfermagem escolar. Estudo de validação.

VALIDACIÓN POSITIVA DEL JUEGO EDUCATIVO *POSITIVAMENTE* PARA PREVENIR EL ABUSO DE DROGAS POR ADOLESCENTES ESCOLARES

RESUMEN

Objetivo: realizar la validación de apariencia y contenido de la tecnología educativa - juego de mesa *PositivaMente* para la prevención del abuso de drogas por adolescentes escolares. **Método:** estudio metodológico de validación de instrumento con muestra de nueve jueces con experiencia con el tema y método. La selección y reclutamiento se hicieron a través del Currículo *Lattes*, así como de artículos publicados en el área y técnica de "bola de nieve". La recolección ocurrió en dos ciclos, entre agosto y noviembre de 2018, por medio de cuestionario en formato electrónico. Para la validación de los ítems se utilizó el Índice de Validez de Contenido (IVC). Los aspectos con concordancia menor que 0,8 fueron modificados, conforme análisis de las sugerencias de los jueces. **Resultados:** Los jueces fueron de diversos dominios, tales como educación, salud del adolescente, salud mental y drogas y diseño de juegos digitales. El IVC fue de 0,82 en el primer ciclo. Después de las modificaciones en el juego, en el segundo ciclo, el IVC fue 0,99. **Consideraciones finales:** el juego *PositivaMente* es una tecnología educativa validada por jueces a ser utilizada como alternativa a los métodos tradicionales de prevención al abuso de drogas por los adolescentes.

Palabras clave: Drogas ilícitas. Consumo de alcohol por menores. Adolescente. Servicios de enfermería escolar. Estudio de validación.

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Submitted: 10/08/2021

Accepted: 01/05/2022