Intervention Program to Reduce the Level of Test Anxiety in a Primary School Class. A Pilot Study

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Abstract: The aim of study is to evaluate the effectiveness of an intervention program to reduce the level of test anxiety in a primary school class in the urban environment (N = 25, 2nd class). The level of test anxiety was evaluated using the Test Anxiety in Children, developed by Wren and Benson in 2004. The intervention program took place over a period of six weeks with a frequency of three times a week, consisting of six activities implemented in school in the personal development discipline with the help of the formative stories created for the purpose of the program, six activities based on independent work in solving some assessment task of the Language and Communication and Mathematics disciplines of didactic auxiliaries in order to prepare pupils for the Second Class National Assessment and six self-employed activities in homework completion after school classes. The program's effectiveness was performed by analyzing the two-stage results of the test using the intragroup comparison test. The results obtained lead to the conclusion that the level of test anxiety in second-class students in the experimental group is lower in the posttest ($t = 2,328$, $p = 0,029$), and the magnitude of the effect obtained indicates a moderate value. The results on subscales indicate statistically significant differences in the thought subscale ($t = 2.54$, $p = 0.027$) with lower posttest scores, and the effect size is moderate too.

Keywords: *test anxiety; primary school; intervention program.*

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1. Introduction

Testing is a central but debated tool in formal education that is used to determine whether a pupil has successfully understood the taught material (Nyroos, Korhonen, Linnanmäki, & Svens-Liavåg, 2012). The evaluation in the education system of the Romanian educational institutions is an essential component of the educational process, which in the formal curriculum is prefigured to be achieved at the end of each unit of learning, in each discipline, plus other forms of the evaluation used for diagnostic and ameliorative purposes (eg, individual classroom task, homework) or balance sheet (eg initial and final evaluations, National Evaluation, starting with the second grade). But testing may trigger intense emotions (Pekrun et al., 2004) and one of these with debilitating effects on academic performance is test anxiety (Eum & Rice, 2010). However, there are no explicit specifications in the curriculum on how teachers can prevent or intervene in situations where school performance is influenced by high levels of anxiety toward testing in classroom students. In addition, teachers may not easily mark the anxiety about testing as long as in the primary cycle the notation based on a four-rating system (very good, well, sufficient, insufficient) does not indicate poor results at students with anxiety towards testing. In this way, students continue to develop coping mechanisms individually to cope with the situation in school assessment. Test anxiety is being met in recent research concerns of researchers and has been extensively studied since 1970. Anxiety test refers to the set of phenomenological, physiological, and behavioral responses that accompany concern about possible negative consequences or failure on an examination or similar evaluative situation (Zeidner & Matthews, 2003). This involves excessive fear, negative cognitions of one's own ability to deal with the evaluative situation, thoughts with regard to failure, and apprehension before, during and / or after the test situation (Robu, 2011: 32). The test of anxious students tends to react with extensive worry, mental disorganization, tension, and physiological arousal when exposed to evaluative situations (Zeidner & Matthews, 2003). Most authors view the test of anxiety as being composed of two dimensions known as emotionality, an affective-physiological dimension, and worry, and a cognitive dimension (Cassady & Johnson, 2002) involves negative thoughts, self-criticism or concerns about the negative consequences of failure occur during test situations (Zeidner, 2007). The emotionality component involves body reactions to the test situation (Morris & Liebert, 1970). Emotionality describes a person's appraisal of his or her physiological state such as tension, tight muscles, accelerated heart rate or nervousness (Zeidner, 2007).

On the other hand, Musch & Bröder (1999) considers that Anxiety Test is "an emotional reaction that is inadequately prepared for a test" (Musch & Bröder: 106). High test anxious students have been found to have less effective study habits than those low test anxious students (Culler & Holahan, 1980). With this mind, it is reasonable to assume that practicing more effective learning habits could improve academic performance. Taking this into account, the study is designed to evaluate the effectiveness of an intervention program consisting of eighteen activities in which pupils with grade II pupils aged between 8 and 9 years in order to reduce the level of anxiety toward testing. Activities aimed at providing students with independent work skills in achieving school tasks, and at the same time providing ways to address the concern in school assessment situations, starting from the message out of formative stories. In this study, we used a three-factor model of anxiety test (Wren & Benson, 2004), consisting of a cognitive component (an autonomous reaction) and a behavioral component (off-task behaviours).

2. Method

2.1. The objective of the study

The objective of the study is to evaluate the effectiveness of an intervention program implemented in the primary cycle in class II students in order to reduce anxiety towards testing.

Specific objectives:

- Investigation of the level of performance anxiety in Second grade students at the *Octavian Goga* Secondary School, Oradea
- Implementation of an intervention program in order to reduce the performance anxiety in the students from the experimental group and comparative evaluation of the pretest - posttest results of the students from the experimental group

2.2. Study hypothesis

The implementation of the intervention program, based on the use of formative stories in personal development activities and the creation of independent working conditions outside the school curriculum, leads to the reduction of the level of testing anxiety in the students in the experimental group.

2.3. Participants

A consortium of 25 children from Secondary School *Octavian Goga*, Oradea, of which 11 (44%) boys and 14 (56%) girls participated in the research.

2.4. Working tools

To evaluate the level of anxiety towards testing, we use Children Test Anxiety Scale, developed by Wren and Benson in 2004. The scale includes 30 items grouped into three subscale: *thoughts* (eg I think I will get a lower score), *distracting behavior* (eg I move my legs under the bench) and *automatic reactions* (eg My hands are shaking). The response variants are arranged on a likert type, each question having 4 variants of response. The CTAS assesses an individual's level of apprehension or anxiety about testing on a 1-4 Likert scale, asking for participants' response about how anxious they would feel in response to various settings and experiences. The response variants are arranged on a likert type, each question having 4 variants of response. The internal consistency of the responses was assessed by calculating Cronbach's alpha value, which was 0.891.

2.5. Sample content

The set of activities has been pooled into a program that leads to lower test anxiety. Implementation has been done over six weeks, with a frequency of three times a week. Six of the activities were run in personal development classes and twelve outside the school hours, two hours a week, in two different days.

The activities developed during the personal development classes used the author's formative story designed to educate students about positive thinking about the evaluation and school success, relaxation exercises and role-playing games.

The formative stories have as protagonists an Explorer and a Child. The Explorer will provide the Child with directions on how they approach an expedition to other territories. Similarly, the child will find solutions that can be applied in situations where he or she worries about an evaluation test. Thus, stories include sketches of addressing school assessment situations with: trust, perseverance, accepting mistakes and the ability to learn from mistakes, encouragement to colleagues, and peer itself.

The activities carried out after the regular school curriculum focused on the training of students in the independent working skills in the classroom, by realizing homework under the supervision of the teacher (six

hours) and solving evaluation tests in the subject of Communication in Romanian and Mathematics and exploration the environment from a teaching assistant, which uses the structure of the tests used in the National Evaluation.

3. Results

For the validation of the study hypothesis, SPSS statistical version 17 was used in data processing. After verifying the distribution of data using the Kolmogorov-Smirnov test, these were analyzed using parametric comparison tests on pairs and are presented in Table 1.

Table 1. Comparative results on parental samples at the *Child Test Anxiety Scale*

Dependent Variable	Evaluation stage	Mean	Standard deviation	t	df	Sig. (2-tailed)
Anxiety test (global score)	Pretest	2,177	.5444	2,328	24	.029
	Posttest	1,947	.4350			
<i>Thoughts</i>	Pretest	2,429	.6841	2,354	24	.027
	Posttest	2,139	.5395			
<i>Distracting behavior</i>	Pretest	1,702	.5328	.326	24	.747
	Posttest	1,674	.4601			
<i>Automatic reactions</i>	Pretest	2,200	.7377	1,512	24	.144
	Posttest	1,947	.6490			

The results obtained in the overall scale score illustrate that the level of test anxiety in the second-grade pupils undergoing the study differs from one stage to the next ($t=2,328$, $p<.05$), showing a mean decreased posttest compared to pretest ($m_{\text{pretest}}=2,177$, $m_{\text{posttest}}=1,947$). The magnitude of the effect obtained indicates a value close to the mean ($d=0.456$), according to Cohen's criteria.

The results on subscales indicate statistically significant differences in the thought subscale ($t=2.54$, $p<.05$), with lower posttest scores ($m_{\text{pretest}}=2,429$, $m_{\text{posttest}}=2,139$). The magnitude of the effect indicates an average influence ($d=0.480$) of the classroom activity program in reducing the level of concern in assessment situations.

No statistically significant results were obtained at the other scale of the instrument. To analyze aspects of the level of anxiety towards testing in the students participating in the study, we performed the frequency and percentage analysis, as shown in Table 2. The five-grade benchmark on test anxiety, was presented in article *School assessment and test anxiety at primary school pupils* (article being published), by Popa, Bochiș & Clipa,

Table 2. Levels of test anxiety. Frequencies and percentages

Evaluation stage	Levels of test anxiety	Frequency	Percent
pretest	low level	1	3,8%
	below average	8	30,7%
	medium level	6	23%
	above average	9	34,7%
	high level	2	7,8%
	Total	25	100%
posttest	low level	3	11,5%
	below average	7	26,9%
	medium level	10	38,5%
	above average	5	19,3%
	high level	1	3,85%
	Total	25	100%

Table 2 shows that the number of students with an average level of anxiety versus testing increased in posttest from 23% of pupils to 38,5% of them, decreasing the number of pupils above average from 34,7% to 19,3%. At the same time, the number of pupils with low levels of anxiety versus testing increased from 3,8% to 11,5% in the posttest. The number of pupils with elevated levels of anxiety versus testing was reduced to 1 (3,8%). From the analysis of item to item responses, using descriptive indices, it appears that at the stage of pretest the high levels of concern were due to external variables (*I worry about what my parents will say* $m=2,807$, $sd=1,132$), distrust of effort (*I think that I should have learned more* $m=2,615$, $sd=1,098$) plus the emotional component (*I have emotions* $m=2,653$, $sd=1,056$). In the posttest stage the main source of concern is the result obtained (*I think what qualifier (grade) I will get*, $m=2,769$, $sd=1,031$, *I am worried about doing something wrong* $m=2,692$, $sd=0,928$) and the effort invested (*I should have learned more* $m=2,653$, $sd=0,935$). The smallest environments (around 1,4) both in the pretest and the posttest are obtained from the indicators included in the subscale distracted behavior: *I look around me through the classroom*, *I play with the pen*.

Conclusions

The results of the study confirm, first and foremost, the need to pay greater attention to testing anxiety for students in primary school. Although the post-test results show a decrease in anxiety versus testing and the level of concern through the results of the subscale thought, the anticipatory conditions related to the obtained results, the pupils' doubt about the level at which they are prepared continue to persist. In this case, it is necessary to continue the activities in order to achieve the objective pursued. Although, at the declarative level, students were able to identify the personal attributes they should have in school assessment situations, at the practical level, the program had an average influence in lowering concern as a component of testing anxiety. The program did not lead to statistically significant changes in terms of automatic reactions and distracting behavior. Although the concern of others (parents) has diminished in the post-test, concern about the outcome remains persistent. Putwain & Best (2011) emphasizes that fear appeals used prior to tests and examinations tend to emphasize the educational value of performance outcomes rather than the knowledge and skills developed at school. Although the impact of a result below expectations may vary from one pupil to another depending on various factors, it is easy to understand that in school groups in which performance orientation is cultivated by both teachers and parents, levels of anxiety towards testing will tend to be higher. Synthesizing empirical data from specialist publications, Robu (2008) notes that scores on the concern component remain fairly stable over time, while emotive component scores rise immediately before confronting test situations, and then drop rapidly. One of the possible sources of error in the study could be represented by the timing of the scale, which is chosen in such a way that it does not coincide with the day when the school assessment is carried out. The recommendations we offer to teachers are related to ensuring a favorable climate for school assessments, not to be afraid, the use of positive feedback on the results obtained, emphasis on emphasizing the learning effort more than on the obtained result. Wine (1982, as cited in Robu, 2008) states that scores on the worry component can be improved by giving feedback on good performance, while emotive component scores seem not to be influenced by cognitive variables, such as feedback. Zeidner (2007, p. 178) notes that: *Furthermore, despite the earnest efforts of practitioners to individualize treatments to the particular needs and problems of test-anxious students, we still do not have clear evidence to indicate which of the various intervention approaches most effective for particular types of test-anxious students or for treating different manifestations of test*

anxiety. Follow-up research may increase the number of participants to enable, use a control group, and use state measures of test anxiety.

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