Electronic data processing (EDP) diagnostics of language competence in children with language disorders

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Abstract: The electronic data processing diagnostics of language competence is presents special software manufactured for the needs of speech therapy's diagnostics in children with language disorders. The purpose of its creation is to facilitate and precise the diagnostic process in speech therapy practice. The diagnostics test is based on the principle of words' frequency characteristics of child speech for pre-school age.

Key words: diagnostics, differential diagnostics, language disorders, speech therapy practice, terminology problems, language competence, software, diagnostic process, words' frequency

Introduction

Diagnostic method uses data of "Frequency dictionary of lexica in school aids for children of age 2-7", elaborated by D.Botseva (Botseva, 2008). On this basis diagnostic method is divided into three parts: impressive high-frequency, medium- frequency and low-frequency test. Because of this, the software itself and also the diagnostics method are called frequency (diagnostics) tests.

A special software product for multi-variant processing of empiric data was elaborated by authorial project of Velin Kralev, who realizes the idea for electronic data processing diagnostics.

For generating the software product IDE- Integrated Development Environmental – Turbo Delphi is used. Local data base is fit on the machine where the annexation also is.

This software by itself is an information system which allows the user to generate unlimited number of diagnostics tests for different language components.

Results

In this elaboration some of the fundamental functions of the software for electronic diagnostics are presented.

Picture's material, which visualizes the program, is with inscriptions in Bulgarian language, because it is authentic and programmed only for the requirements of Bulgarian diagnostics in the domain of language competence of children with language disorders.

Figure 1 presents the main form of the electronic variant of software program of Bulgarian frequency tests for impressive speech. The program contains 5 forms for setting up material of facts:

- Diagnosis
- Researchers
- Examined children
- Construction

- Testing

Each of them is distinguished by precisely defined construction. All five forms will be presented separately.

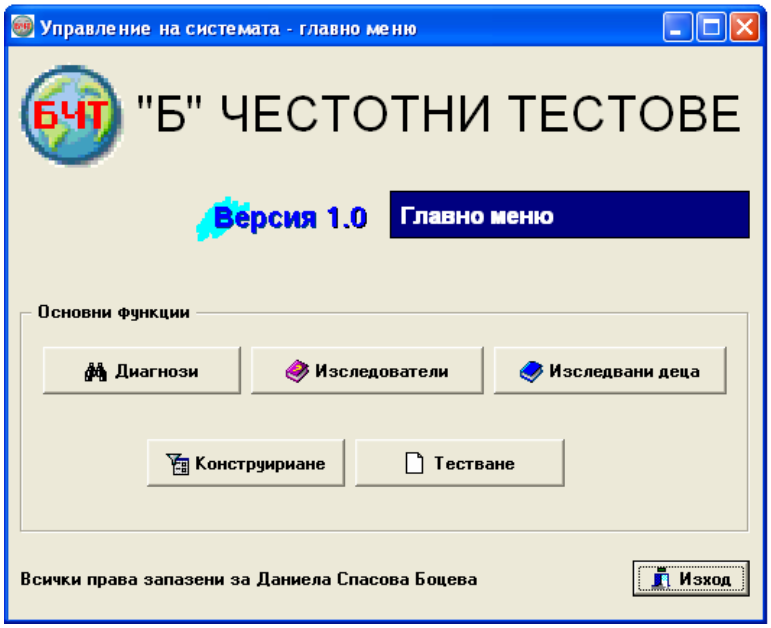

Figure 1: Main menu of electronic variant of Bulgarian frequency tests

Figure 2 presents the form “Management of system- diagnosis”. When it is chosen every single diagnosis of the examined children is entered. For that purpose three buttons are provided:

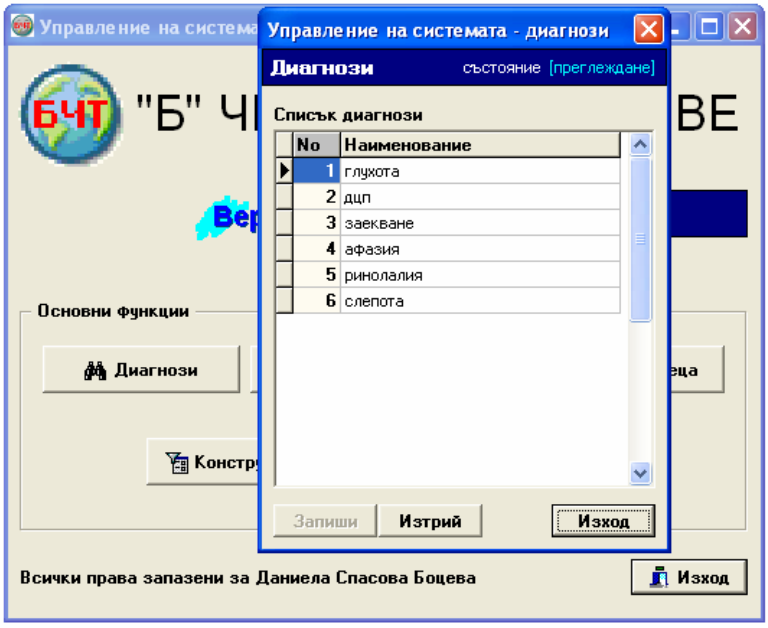

Figure 2: Form “Management of system- diagnosis”

- Delete- deletes already entered group part of the speech
- Save- saves new entered group or edited at the moment
- Exit –exits the form

On Figure 3, consecutive by necessity form "Management of database- researchers" is visualized. As contrasted with the previous, this form is more complex and contains much more information. For facilitation six buttons are provided:

- Add- adds new group part of the speech
- Delete- deletes already entered group part of the speech
- Save- saves new entered group or edited at the moment
- Cancel- cancels last made changes
- Help- when user forgets some of the functions
- Exit- exits the form

The form includes a field with consecutive number, which is saved and actualized automatically by the software.

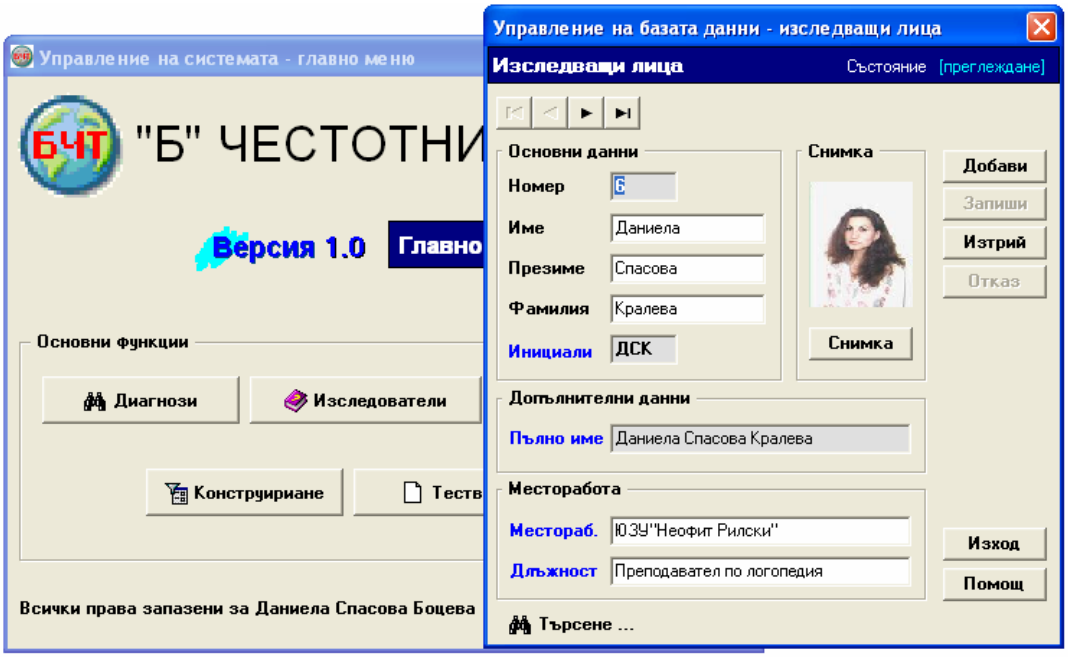

Figure 3: Form: Management of database- researchers"

There are three available fields:

- Name- type the researcher's name
- Second name- place for researcher's second name
- Surname- place for researcher's surname

On the base of this data, the software automatically determines initials, as well as researcher's full name, written in horizontal order to certain person, so person's references can be made later.

Below these fields, a space is provided for data about researcher's place of employment, and duty as well.

At the right side of the data mentioned above there is a place for researcher's photo. Photo should be "bmp" extension.

Form has also navigation buttons (up in the left side), providing the user possibility to switch over between already entered researchers.

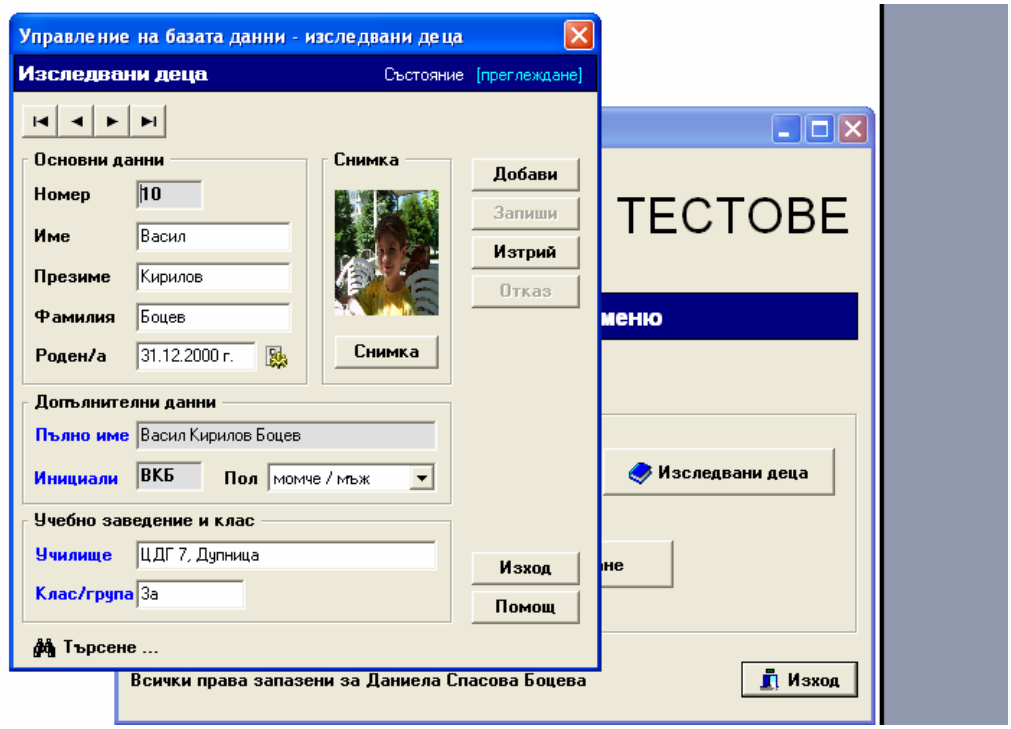

Figure 4: Form" Management of database- examined children"

On figure 4 another form of the software product is presented, namely "Management of database- examined children". It contains analogical manipulation possibilities, as earlier presented on Figure 3.12. It differs only by the included data not for the researchers but for the examined child. Here also, three names should be inserted, on the basis of which child's initials and full names will be automatically defined in horizontal order. Place for a photo is provided, in view of that the program contains diagnostic file of every child. New space presents the place, given for the date of birth. It is necessary so the program can calculate the real child's age in year, month, and day at the time of examination. Choosing one of the given genders is compulsory. At the end data about the education institution and group/ class where child attends to, are asked.

This form also has navigation buttons (up in the left side), providing the user possibility to switch over between already entered children.

The form "Management of database- construction of tests" presented on figure 5, shows the mechanism of electronic construction of tests. In this case, the software program is used for impressive high- frequency, medium- frequency and low- frequency test. Each of the three tests is implemented by identical way. The form is subdivided in two fundamental sub-forms:

- Fundamental
- Tasks.

Sub-form "Fundamental" is presented on Figure 5. All main parts of the test are included in it, in this case, groups parts of the speech. In each group age categories are defined, foe example, if there is training experiment provided. It is provided in the program, also implementing of

frequent or rank's characteristics of separate words-stimuli with several purposes, which will not be described in this presentation, because they are not directly connected with consideration of this problem.

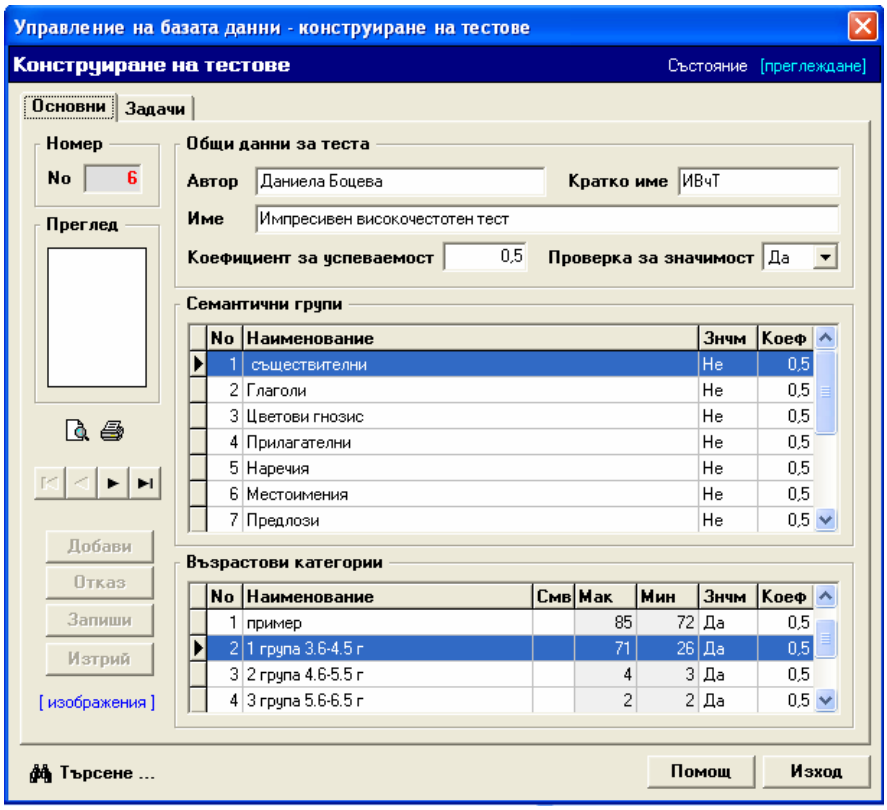

Figure 5: "Management of database- construction of tests". Fundamental.

In the sub-form in field "General data about test" name of the author of the test, full and short name of the test should be entered.

The form disposables with four buttons for adding new information, cancel, save and delete, which will not be described here because their functions are analogical to those described above in Figure 3 and 4.

The form has buttons for navigation, providing the user possibility to switch over between already entered age categories in separate tasks.

Figure 6 visualizes the form "Tasks". In the field "List of tasks "instruction and task for correspondingly age category, are entered. It is necessary to register the control text. If there are certain frequency characteristics they should be also entered.

Bellow, the field "images of tasks" follows. These are so called images stimuli, selected correspondingly to words- stimuli. Image's extension should be "bmp". Size of the images of the form is indicated below the images, as a requirement to the software program. Compulsory condition is to indicate and save the correct image stimulus. Only in this way the program can classify and calculate results of certain child, right after the examination. There is a possibility for changing already entered information or for adding new information, and also possibility of describing some of the stimuli, if it is necessary.

The form disposes with the same mention above in the form “Fundamental” four buttons for adding new information, cancel, save and delete (see Figure 5).

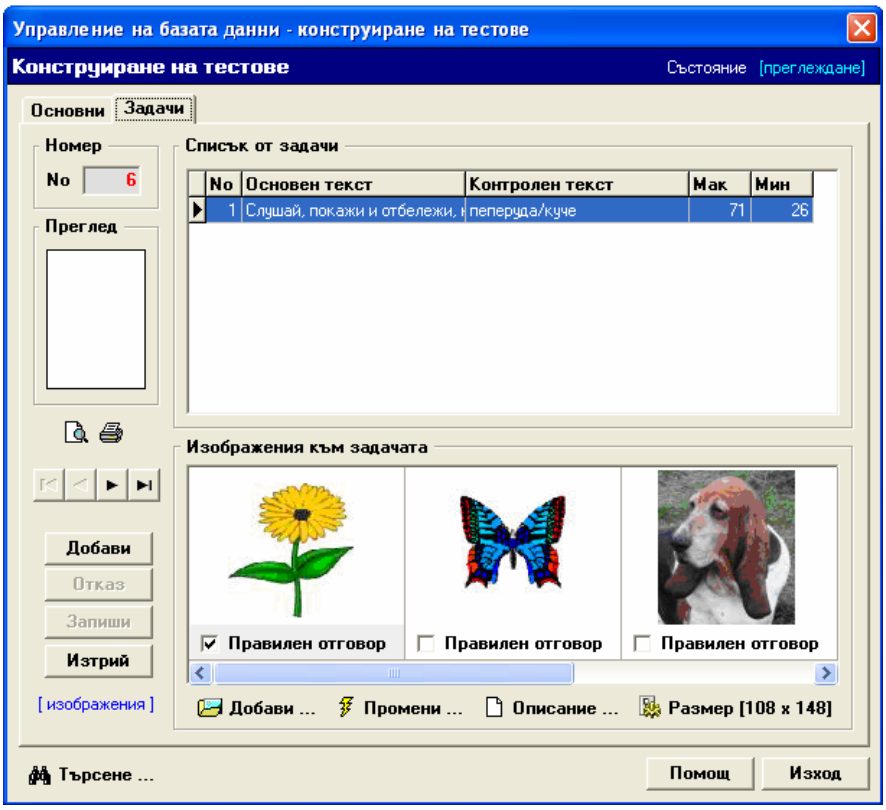

Figure 6: Form “Management of database- construction of tests”. Tasks.

The form has buttons for navigation, providing the user possibility to switch over between already inserted image’s stimuli in separate tasks.

Last fundamental form of the software program is for “Attended tests”. It is visualized on Figure 7. In this form, operating with already inserted information in previous four forms is basic. Basic button here is “Search” in different levels. Name of the researcher as well as data about examined child can be found. There is a possibility for choosing previously entered test. The software program automatically calculates the start and end of the test in date and hour.

When the whole information is designated, the program allows passing to “Start the test”, starting the operation by clicking the button “Start the test”. The tasks for separate groups’ parts of the speech and age categories according to the way of entering are automatically opened. The test is applied for no more then 3-5 minutes. Right after the test ends, the program gives possibility the results of taken diagnostics to be seen.

Mouse positioning at inscription “Click twice here” automatically opens a protocol with all existing data of taken examination. All of the child’s results can be found in general and detailed variant and subsequent therapeutic program can be taken on.

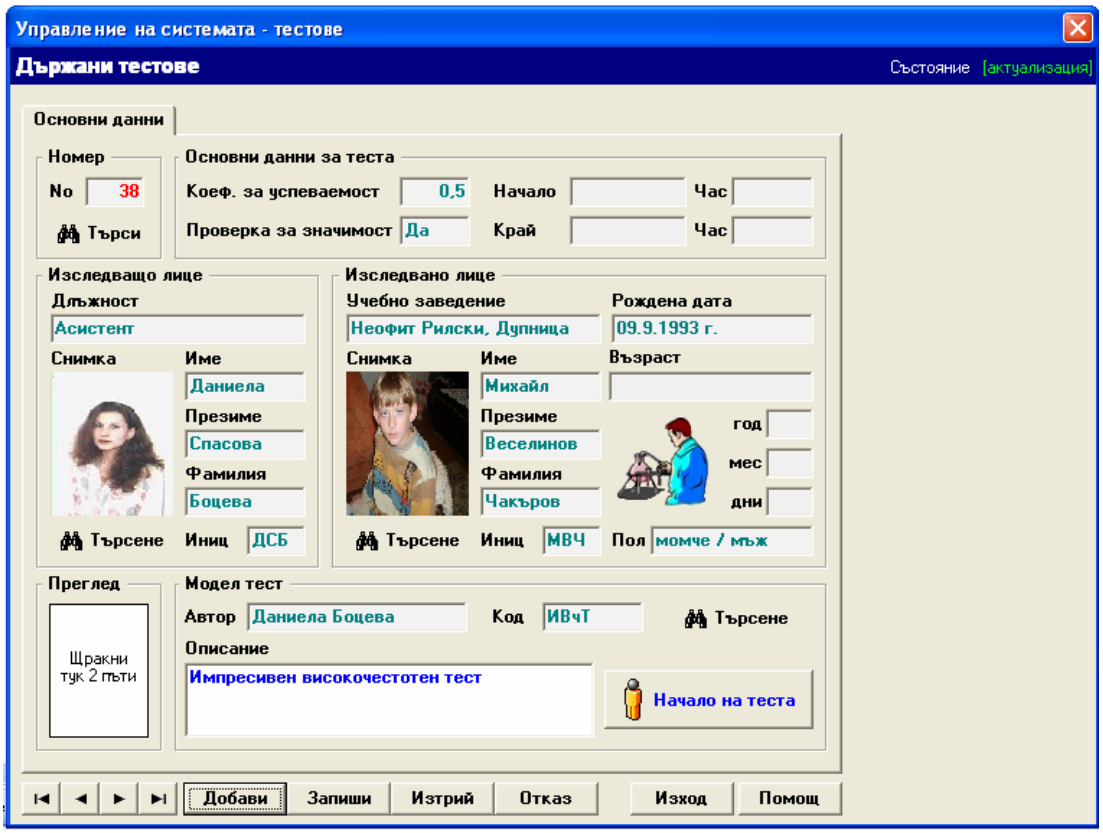

Figure 7: Form "Attended tests".

Application of the test is fast and easy, at children without disorders, as well as at children with disorders, partially with hearing impairment after cochlear implantation.

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