How Can Computer Science Help Cancer Survivors Children?

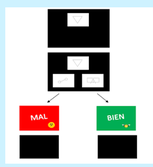
Institution: University of Seville
Authors: Dr. Rocio Garcia-Robles, Dr. Daniel Cagigas-Muñiz, Dr. Mª Carmen Romero-Ternero, Dr. Octavio Rivera-Romero

THOT
"Training and Help after Oncology Treatments"

Software supporting psychopedagogues to configure children' study exercises

Objetive: Helping the child to improve their academic performance

Natural process:

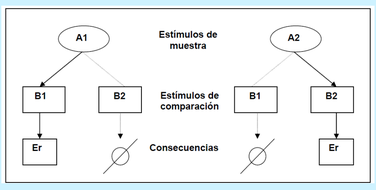



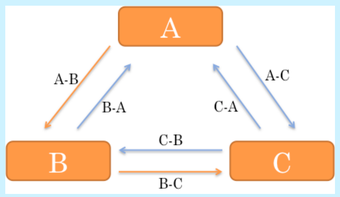
THOT software:

- Basic features:
  - Trials
  - Cognitive simplification of tests
  - Trials associating term-definition-concept
- Advanced features:
  - Predict text and simplify text
  - Collection and presentation of data (graphs)
  - Arrangement of samples and comparisons
  - Gamification and prize
  - Generate randomized trials and display in table

Methodology of tests:

- Conditional discrimination (samples and comparisons)
- Trainings and tests





- Equivalence classes
- Trainings: linear (A-B / B-C) or many-to-one (A-B / C-B)
- Tests: symmetry, transitivity or equivalence

User Interface Design

Psychopedagogue

Child

CONTEXT:

Survival of childhood cancer has grown thanks to more effective but more aggressive treatments. As their life expectancy has increased, they have discovered important long-term side effects that significantly limit their quality of life: cognitive, linguistic, physical, and social effects.

The most significant problems are related to language and communication, which prevent the child from expressing himself properly, having difficulty finding the right word.

Some possible computer applications to develop:

1. **HERO "4U": Thinned application that provides guidelines to encourage the return to the daily life of children cancer survivors.**
   Objectives: Guiding families + Raising awareness of teachers and students + Avoiding bullying in school
2. **HERO "WeDo": Minigames for the neurolinguistic development of the child.** The design of these games would be done in a collaborative way with the affected children themselves and others in their family and school environment.
   Objectives: To involve children in cooperative didactic practices, developing video games advised by psychopedagogues.
3. **HERO "AvatAR": "Virtual Avatar" that will be listening to the child's oral explanation of a subject, will detect their mistakes, and will suggest new alternative terms related to the subject.** This could do so immediately, or at the end of the child's utterance.
   Objectives: To gauge error detection, and to support homework in disadvantaged family settings.
4. **HERO "playMusic": An application that, through songs, helps the child to develop his / her memory and linguistic abilities**
   Objectives: To help younger children recover their cognitive abilities through multimodal didactic practices.
5. **HERO "Passport": Cancer passport taken from the patient's medical history.** It would reflect the medical treatments received by the patient.?
   Objectives: Support the clinical follow-up of the patient before, during and after the oncological treatments.
6. **HERO "Evaluate": Application to support the psychopedagogical evaluation of the child**
   Objectives: To support the psychological monitoring of the patient before, during and after the oncological treatments.

Imagen central: www.cancervic.org.au/images/CISS/cancer-children/cancer-children-sibling.jpg