CAUSAL REASONING IN MILD MENTAL DISABLED CHILDREN

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Abstract: This study is focused to analyze mild mental retardation children's ability to make causal attributions from sparse data. The research method selected was that of an unifactorial experiment starting from the assumption that children with mild mental retardation should ask for help or explore the environment following the causal attribution they will do according to the statistical data they receive. This study was conducted on a sample of 23 mild mental retardation children (ages between 9 and 12). The participants were randomly divided into two experimental groups and they were asked to complete a specific task (press a button to scroll a set of images). The results obtained using Fisher's Exact Test led to assuming the null assumption and rejecting the experimental assumption ($p=,170$; $p<0,05$). Although the statistical analysis did not highlight significant associations between the dependent and independent variable, the frequency table indicated that children in group one asked for help more frequent, while children in group two rather explored for solutions, as assumed in this study. Taken into account these results, this study emphasizes the need for educational and psychological intervention to reduce the problems that the mild mental retardation children are confronting regarding cognitive development in general.

Keywords: mild mental deficiencies, causal attributions, action strategies

1. Introduction

Mental deficiency is seen as a major inability with medical, psychological, educational and social factors involved in his etiology [8]. The children who are diagnosticated with mild mental deficiency (IQ between 50/55 - 70-75) have the ability to communicate in oral and handwriting ways, but they present a delay of two or three years in school abilities. Moreover, through specialized recovery programs these children may acquire an appropriate social, scholar and professional integration, but they will not be able to totally take charge of their behaviors [3]. Most often, mental deficiencies are followed by other types of disabilities such as behavioral, emotional, speaking or learning ones fact that generates poor school performances [5], antisocial

behaviors that may determine high rates of unemployment or crimes [7], dropout [6], relationship problems, communication difficulties, reactivity to school stimulation [1]. As Piaget emphasized, in the middle childhood children develop specific cognitive abilities making them capable of using inductive reasoning, but not the deductive one. However, more recent studies revealed that these abilities develop before the middle childhood - researches made in this area emphasized that babies of 13-20 months [4] or children of 3-4 years [9] are able of causal reasoning. Regarding mild mental deficiency children, the researches talk about similar patterns of causal understanding compared with the normal children, although the first ones are able to recall fewer details [10] [11].

2. Problem Statement

The researches made until now with regarding the children's ability to use statistical data about one event and to rationally infer causes have concentrated especially on normal children and quite few on mental deficiency children. Thus, we consider it is important to study these abilities in mentally retarded children firstly because it is little information about this area in the specialized literature and, secondly, because of their major personal (cognitive development), educational (the development of learning strategies) and social implications (through action strategies that inherit causal attributions).

3. Purpose of the study

The current study aims to explain the manner in which mild mental retardation children make causal attributions based on the data they receive about one situation.

3.1. Research question

Are mild mental retardation children able to infer causes about the outcomes of an event based on the statistical data they have about that specific situation?

3.2. Hypothesis

This study was designed following the experimental and the null hypothesis.

3.2.1. *The experimental hypothesis* was laid down on the following manner: based on the data received about one situation, mild mental retardation children will adopt one of the two action strategies (ask for help or explore the environment) according to the causal attributions they do (internal/external).

3.2.2. *Operational hypothesis.* We expect that changing the specific of the statistical data we offer to the participants, they will make internal (the agent) or external (the object) inferences and, consequently, they will ask for help or they will explore. More precisely, we predict that by giving to the participants information that suggests that the agent is the one responsible for the failure, they will make internal attributions and, hence, they will ask for help

(experimental group 1). On the other hand, in experimental group 2 we predict that by giving data which suggests that it is a problem with the object, the participants will make external attributions and will adopt exploring behaviors. Also, there is possible that the children adopt retreat behaviors or lose the interest for resolving the task due to some specific developmental characteristics.

3.2.3. *The null hypothesis* suggests that there are no significant statistical differences between the two experimental groups. More precisely, the null hypothesis proposes that the causal attributions and the behavior strategies the participants adopt are not influenced by the specific of the data they receive from the experimenters.

4. Research methods

The research method used in this study was that of an unifactorial laboratory experiment. The tools used in this research were: a computer, a digital images story and a video-camera.

4.1. Experimental variables

In order to achieve the aim of this research we have defined the experimental variables as follow: *the dependent variable* (refers to the behavioral strategies adopted by the participants), *the intermediary variable* (refers to causal attributions - internal or external - the participants made when experienced failures) and *the independent variable* (the statistical data the participants receive from the two experimenters).

4.2. Participants

The study sample included 23 children diagnosticated with mild mental deficiency (12 boys, 11 girls). They were selected from primary special education school (ages between 9 to 12, $M_{age}:10,7$, $st\ dev:1,02$). Except of mental deficiency, the children enrolled in this study were diagnosed with at least one of the following deficiencies: learning deficiencies (like dyslexia, dyscalculia,

dysgraphia), behavioral, emotional or speaking disorders.

4.3. Procedure

First of all, it was selected the children that fulfil all the inclusion criteria and were randomly distributed into the two experimental groups (11 participants - group 1; 12 participants - group 2). Then, the children were one by one invited into the laboratory where it was presented the task: press a specific button to scroll the digital images of a story. Thus, as can be seen in table 1, in experimental group 1 the

first experimenter succeeded twice and the second experimenter failed twice, while in experimental group 2 both experimenters performed one success and one failure. The button never worked for the children. It is important to say that after the experiment was finished each participant had the chance to successfully perform the task. The video-data obtained was analysed by an independent researcher.

Table 1 - The research design for the two experimental groups

Experimental group 1	Experimental group 2
Experimenter 1: success Experimenter 2: failure Experimenter 2: failure Experimenter 1: success	Experimenter 1: success Experimenter 2: failure Experimenter 2: success Experimenter 1: failure
Children: failure	Children: failure

5. Findings

The frequency analyze made regarding the action strategies adopted by the children revealed that the “exploration” behavior was the most frequent (n=11, 47,8%), followed by the “ask for help” one (n=8, 34,8%) and by the “retreat/give up” one (n=4; 17,4%) as can be seen in histogram 1. Related to these data, we sustain that the children in this study made upmost external attributions, fact that can be explained through the theory of fundamental attribution error (formulated by Miller & Ross, 1975 and revised by Brown & Rogers, 1991) which suggests that people tend to assign external causes to failures and internal causes to successes [2]. Thus, it is possible that by doing upmost external attributions, the children in this study may want to be successful and to protect their self-esteem. The implications of doing external attributions are important because according to Rotter’s locus of control theory (1966), children that have an external locus of control tend to be influenced by other’s

and have limited control upon the situational outcomes.

Although 17,4% of the participants have adopted retreat actions, most children presented such behaviors during the implementation of the research when they had to deal with failure outcomes, but they found the strength to overtake the emotional hatch and looked for solutions. Another explanation for this type of behavior adopted by the children in this study refers to learned patterns of behavior that were adopted over time.

Referring to the participants gender, the frequency analyze revealed that boys rather explored the environment for solutions (53,8%), while girls rather asked for help (45,5%) fact that highlights different patterns of causal reasoning in boys and girls. Thus, it is possible that the experience of the repeated school failures (in normal schools from where these children came from because of their poor school outcomes) to have influenced in a different way the development of boys and girls. Moreover, the emotional factor that accompanied the experimental situation could have played an important role in

processing the failure and in generating the behavioral answer.

Histogram 1: The frequency of the three action strategies

To answer to the research question and to test the experimental hypothesis it was performed the Fisher's Exact Test whose results let to confirm the null hypothesis ($p=,170$; $p<0,05$) and, consequently, to reject the experimental one. According to these data we can say that mild mental retardation children are not capable to rationally use sparse data to make causal attributions. In our opinion, there are many possible explanations for the above affirmation. Firstly, it is possible that the generalization of the negative outcomes of some previous experiences to have interfered with the actual situation. More exactly, we believe that the children had reacted in the experimental situation according to some cognitive schema learned before. Secondly, the emotions felt by the children when they were confronting with failure outcomes could have generated helplessness feelings who had negatively affected the solving problem process. Not least, the functional limitations that can appear in general in mentally retarded children, as memory, attention, thinking or motivational dysfunctions can interfere with the process of rationally use the data about one situation to generate accurate causal attributions. Although the Fisher's Exact Test emphasized non-significant associations between the two variables, the

frequency analyzes presented in table 2 suggests that the children in group 1 ask for help more (60,0%), while the children in group 2 rather explored (77,8%) - as we predicted in the experimental hypothesis.

6. Conclusions

Mild mental retardation children's abilities to rationally infer causes of failed actions represent an area that still has many gaps. The reasons why we choose this subject for our research refer firstly to the personal, social and educational implications of these abilities for personal development in general and for cognitive development in particular. This study aims to study mental retardation children's ability to rationally consider the statistical data about one event and to generate specific causal attributions and behavior strategies. The data we have obtained after the statistical analyze leads to the acceptance of the null hypothesis which means that the mild mental retardation children didn't used sparse data to make causal attributions. Moreover, because of the specific way that the participants behave, we considered another behavioral strategy (beside the two that were described at the beginning of this study) called "give-up behavior" which refers to acts like losing the interest for solving the task, back track acts, inhibition, all this

accompanied by inferiority and helplessness feelings. Although there were not statistical evidences to sustain the experimental hypothesis, some frequency

analyses sustained the idea that mild mental deficiencies children rationally use sparse data to make causal attributions.

Table 2 - The frequency of the two types of behavior in the experimental groups

		Types of behaviour		Total
		Ask for help	Explore	
Experiment al group 1	Count	6	4	10
	% within experimental group	60,0%	40,0%	100,0%
	% of Total	31,6%	21,1%	52,2%
Experiment al group 2	Count	2	7	9
	% within experimental group	22,2%	77,8%	100,0%
	% of Total	10,5%	36,8%	47,4%
Total	Count	8	11	19
	% within experimental group	42,1%	57,9%	100,0%

7. Discussions

The data we provided by this study point blank to some problems that mild mental deficiencies children have to face with regard to the process of solving one fundamental problem - distinguish between their influence and the outside influence on event outcomes. Thus, we consider that there is necessary for some intervention programs to be done to reduce these problems and to help mild mental retardation children to successfully develop cognitive abilities.

The results of this research emphasize the way in which mild mental retardation children are doing causal inferences and the way they consequently behave, highlighting the problems that appear in this area. Considering these ideas, we emphasize that the information provided in this study can be useful to special needs education teachers, psychologists and

mental deficiencies children's parents.

8. Directions for future research

Starting from the data we provide in this research we recommend that future research should investigate the causes of the problems that mentally retarded children are confronting regarding the causal reasoning process. Moreover, new studies on the same theme can be designed on another age level or can develop some prophylactic and recovery programs.

9. Limitations

Firstly, the children that have participated in this study were selected only from one school and from one age level fact that trammel the generalization of the results on another population. Secondly, it is possible that some children were acquainted with the computer and thus they adopted specific behaviors based on some technical backgrounds.

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