A Quantitative Approach to Understanding the Mind of Children with Special Needs

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ABSTRACT

This paper uses data acquired from a visit to ASHA (Academy for Severe Handicaps and Autism), a charitable trust in Bengaluru. The response of the students at ASHA to three different games was obtained for statistical analysis. They were assessed on three different parameters namely time, accuracy and difficulty. A comparison was done between the response of the children at ASHA and the response of children without special needs to the same. It was quantitatively realised that children with special needs exhibited lower levels of accuracy and alertness, apart from taking a large amount of time to complete a certain task.

KEYWORDS

Activity-Based Statistical Analysis, Autism

INTRODUCTION

Autism is a neurobiological disorder. It causes differences and disparity in the ways in which a brain processes information. It affects the ability of an individual to communicate and interact with others and with the environment. Those affected with autism think and learn in ways far different from their neuro-typical peers (Jansen, 1999). Autism presents differently in different individuals. To ‘know’ one or more persons with autism certainly would not mean that one ‘knows’ autism (Dodd, 2005).

Most people with autism often seem to be living in a world of their own showing little or no interest in others. They may avoid eye contact or look through people as if they are absent. Some avoid physical contact while others are affectionate and enjoy it, though usually only if they initiate it or on their terms. Also, they find it extremely difficult to understand and express emotions and their facial expressions are often blank (Dodd, 2005). Autism is a pervasive developmental disorder characterized by severe impairments in communication, language and social skills, as well as behavioural disturbances. As rates of this disorder thought to be rising, there is growing public awareness on autism (Newschaffer and Curran, 2003).

Autistic children exhibit highly unattractive behaviours and usually turn into adults who can be difficult to care for (Frith, 2008). The purpose of assessment of autistic children is for individualized education. This can be particularly difficult because of high activity levels, short attention span and the unwillingness among children to complete a task (Dawson, 1989). Research is needed to improve the lives of these people (Frith, 2008).

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DATA ACQUISITION

The Process of Data Acquisition

In the data acquisition phase of our research project, children with and without Autism of ages four through twenty years were assessed meticulously on different parameters based on their responses to three different games. 19 children were part of this study of which 12 subjects were from regular school settings and 07 subjects were from special school. The three key parameters which have a higher order of precedence among others are time, accuracy and difficulty. It was initially decided to test them in a computer environment. Children with special needs, that include Autism among others, exhibit a higher degree of unfamiliarity in working on a computer. Hence games that are not played on a computer were chosen for the analysis. For a fixed number of trials, readings of time, error and accuracy were recorded for each of the games. The tests were conducted in the presence of trainers at special school.

The Game Description

- **Game 1: Separation Anxiety**
  In this game, the children were given several rubber bands of three different colours. They were asked to segregate these into three different cups. Each cup was to have a total of ten rubber bands. The children were given two trials each. The readings of time taken and the number of errors made while accomplishing the task were recorded.

- **Game 2: Knock down**
  In this game, ten paper cups were arranged in the form of a pyramid and the children were asked to knock down these cups with a plastic ball. They were given ten trials each. They were assessed based on the number of cups they could knock down.

- **Game 3: Rapid Fire**
  In this game, the children were given a bunch of rubber bands and a paper cup. They were based on the number of rubber bands they could pass over the cup in a minute. Each child was given two trials.

All through the Data Acquisition phase, the mannerisms of the special children were observed. The children lacked focus, were restless and extremely hyperactive. Some of them got distracted easily and would intermittently grunt and make noise while others were dreamy and unusually quiet. They needed constant verbal and non-verbal prompts to complete the tasks. Some of them fidgeted and squirmed and wouldn’t sit still for a longer time. Notwithstanding the above, the children did play all the games and seemed quite happy and excited.

DATA CONVERSION

The immediate stage that follows the process of Data Acquisition is the process of Data conversion. For effective Data Analysis, the data acquired should we represented as simple as possible but no simpler. The collected data was converted to a simple form and represented on excel spreadsheets. The spreadsheets contained the name and age of the students against the three key parameters we were assessing them on.
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