

# REPORT

## Rainbow United Inc, Autism Project: Spring 2004 – Spring 2005

L. Stiner<sup>1</sup>, K. Pitetti<sup>2</sup>

<sup>1</sup>Department of Physical Therapy, Wichita State University, Wichita, Kansas 67260, U.S.A.

<sup>2</sup>Rainbows United Inc., Wichita, Kansas 67201, USA

### 1. Introduction

The word, "autism" is a common term used interchangeably in describing a spectrum of developmental disorders. Autism affects an estimated one per 500 individuals or 1.5 million Americans.[1] An eclectic method of treatment that combines behavioral modification (BM) and Educational Kinesiology (EK) approaches for addressing the delays and deficits common in autism have been suggested as an effective treatment method for autism. The four methods used in this project are based on the combination of BM and EK approaches in treating autistic children are:

- Discrete Trial Training (DTT)[2] – BM;
- Picture Exchange Communication program (PECS)[3] – EK;
- Brain Gym[4] - EK;
- Balance Auditory, Vision and Exercises program (Bal-A-Vis-X)[5] – EK.

The purpose of the project, conducted by the staff at Rainbows United, was to evaluate if the eclectic approach will improve an autistic child's ability to mimic the physical therapist in performing gross motor skills.

### 2. Experiment, Results, Discussion and Significance

#### 2.1. Methods

##### 2.1.1. Subject

A sample-of-convenience method was used to select seven male children with a diagnosis of autism who were receiving physical therapy based on the behavior modification approaches.

To be eligible to participate in this study, children had to meet the following criteria: between the ages of 36 to 48 months; be diagnosed with autism by a developmental pediatrician.

##### 2.1.2 Therapeutic Treatments

DTT consists of intensive, repetitive training or skill drills, by which correct responses are rewarded and incorrect responses result in aversion therapy.[2] PECS program was designed for early nonverbal symbolic communication training and includes strategies such as prompting/cuing and modeling.[3] Brain Gym is based on the hypothesis that learning disabilities will be improved by performing simple physical movements (e.g., touching head and nose with hands).[4] Bal-A-Vis-X involves exercises using beanbag, racquetballs, and balance boards and is thought to improve brain/body integration.[5] Bal-A-Vis-X uses multiple principles from Educational Kinesiology.[4]

##### 2.1.3. Procedures

The general therapy procedure involved 150 minutes per session, 1-8 times per month. The therapy session was divided into: 1) 60-minutes of combined DTT, PECS; Brain Gym; and Bal-A-Vis-X; and 2) eight, 10-minute sessions of the following occupational therapy, speech therapy, academic skills, work box, structure play, self care, artistic skills, and physical therapy. Evaluation of imitation skills was measured during physical therapy. The 60-minute session was group sessions (3-7) and the eight, 10-minute therapy sessions were 1:1.

##### 2.1.4. Data Collection

Although nine tasks were to be followed, only three tasks were consistently performed. The three tasks consistently performed throughout the study were: imitate gross motor action; play catch and toss a ball; and imitate 2 step actions with objects. Therefore, this report will only address the progress of the children for these three tasks.

**2.2. Results**

Imitate Gross Motor Action (Fig 1). **Number of respondent days.** For the first 6 months, an up-and-down spike occurred ranging from 31% and 88%. From month 7 to 9 the range stabilizes (67% to 81%), ending in month 11 at 100%. *Note: month 11 consisted of only 3 children (participants 1-3) who began at 100%.* **Average completed attempts.** A wide range of completed responses (29% to 100%) occurred.

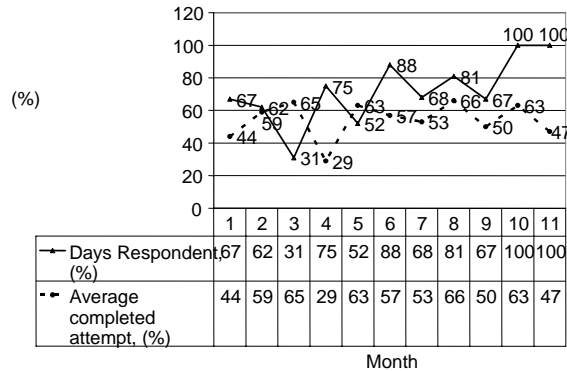


Fig.1. Imitate Gross Motor Action.

Play Catch and Toss a Ball (Fig 2). **Number of respondent days:** From month 1-7, up-and-down spikes occurred from 63% (month 1) to 34% (month 3) then up to 72% (month 5) then declining to 55% (month 7). In months 8 through 11 it remained above 69% and finished at 83%. However, it should be noted that these months (8-11) represent a mean of only four participants and two of the four began at 100%. **Average completed attempts:** From months 1 to 4 there was an increase from 53% to 93% (month 1-4) followed by a decline to 47% (month 6). The percent continued to cycle from a high of 73% (month 7) to a low of 44% (month 9).

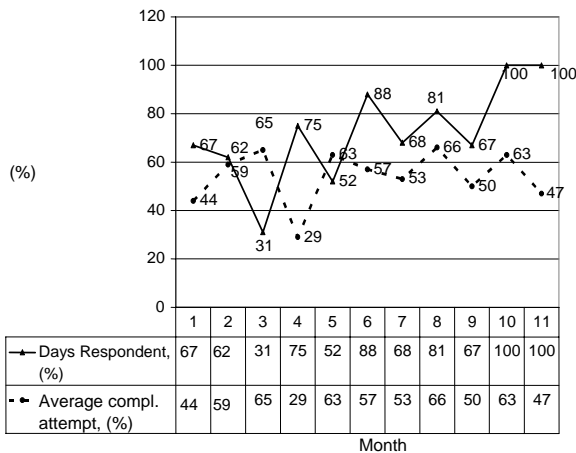


Fig.2. Play Catch and Toss a Ball.

Imitate 2-Step Actions with Objects (Fig 3). **Number of respondent days.** Compared to tasks 1 and 2, task 3 demonstrated less extreme oscillations in respondent days in that: 1) following month 1, percent of respondent days remained above 60%, and 2) months 4, 5, 6, 8, and 11 averaged above 80%. **Average completed attempts:** Although at lower percentiles (ranging from a low of 44% to high of 76%), the average completed attempts reflected that of the number of respondent days.

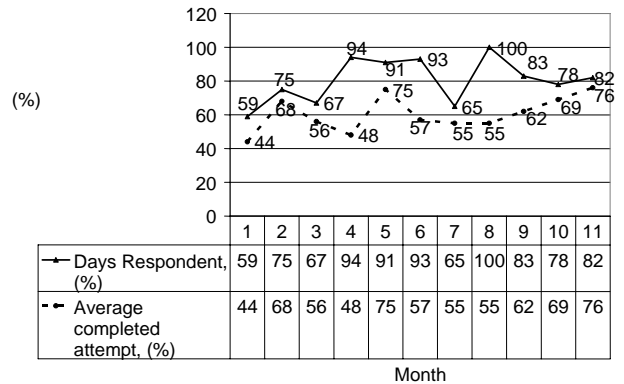


Fig.3. Imitate 2-Step Actions with Objects.

**2.3 Discussion**

Discrete Trial Training requires a staggering investment of time, effort, and financial resources to produce positive results.[3] RUI was unable to invest the time, effort and financial resources. To date, reliability and validity has not been established for PECS, Brain Gym, and Bal-A-Vis-X.

**3. Conclusion**

The following methodological limitations prevented clear outcomes: inconsistency of tasks used, inconsistency in the frequency of monthly therapy, lack of medication and dietary information; no baseline or follow-up evaluations were performed; and no staff training on approaches was provided. These limitations prevented a conclusive statement as to whether or not the treatment approach was successful.

**4. Acknowledgements**

We encourage the staff at RUI to use this report in a constructive manner and to continue their valiant efforts in treating this population of children.

**References**

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