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Effectiveness of Differential Reinforcement of Incompatible Behavior (Dri) in Managing Problem Behavior of Adolescents with Intellectual Disability with Autism: A Single Subject Design

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Abstract

Persons with intellectual disability with autism exhibit problem behaviours in various domains such as violent and destructive behavior, self-injurious behavior, repetitive behavior, odd behavior etc. Training them to overcome the limitations is the primary aim of any rehabilitation professional. The research aims to investigate effectiveness of differential reinforcement of incompatible behavior (DRI) to manage problem behavior of flapping of fingers. The research uses quantitative approach with single subject design. The result show there was a decrease rate of flapping of fingers and an increase of acquisition of incompatible behavior of scribbling with crayons.

Key-words: *Problem Behaviour, DRI, Intellectual Disability, Autism etc.*

Introduction

Intellectual disability (ID) is defined by the AAIDD (2021) as a disability characterized by significant limitations both intellectual and adaptive behavior as expressed in conceptual, social and practical skills. This disability originates during developmental periods up to the age of 22 years. Autism spectrum disorders (ASD) have been reported as common comorbidities associated with intellectual disability (Tonnsen et al. 2016)

Children with intellectual disabilities with autism often have problem behaviours such as self-injury, self-stimulating, stereotypical behaviour (Lowe et. al 2007). Professional working in the field of special education and rehabilitation are expected to be knowledgeable about these problems and how to manage these problem behaviours. These behaviours are major impediment to their learning process, dangerous and interfere with independent living.

Sometimes children with intellectual disability with autism learn to indulge in repetitive behavior such as rocking his body, finger flicking. Usually all these self-stimulating behaviours increases when these children are left alone, not cared for or underestimated. This behavior is common with people with intellectual

disability with autism (Weiss, 2003). For these children, antecedents of the behavior are waiting, or when they are ignored.

A variety of applied behavior analysis techniques have been used to manage problem behavior of such population. Alberto & Troutman (2009) suggested that differential reinforcement is most often used non-punishment techniques, which can be used for reduction of problem behavior and occurrence of a desirable behavior. Differential Reinforcement of Incompatible behavior (DRI) is one of type of differential reinforcement that involves reinforcing an incompatible behavior with the behavior targeted for reduction (Alberto & Troutman, 2009).

Objective

The primary goal of the research is to determine the effectiveness of differential reinforcement of incompatible behavior in managing the problem behaviors of kids with intellectual disability with autism

Research Design

In the present study, the effectiveness of DRI in managing self-stimulating behavior was examined

using single subject research design. Baseline – intervention- baseline design was used for the research.

Variable

Independent variable

The independent variable for the study was to examine the effect of DRI in reducing the problem behavior selected.

Dependent variable

Management/reduction of target problem behavior was dependent variable.

Method

Sample

The subject of the study was ten year old male child having severe intellectual disability with Autism. The subject was student of primary class of special school located at Lucknow. The subject selected had problem behaviours in form of self-stimulating behaviours including rocking, flapping fingers and smelling objects.

Setting

The subject was in the classroom with seven other intellectual disabled students, ranging in age from 7 to 10 years. The intervention was conducted when the teaching –learning session was going on between 9.15 to 10 AM.

Tools & materials used

The investigator used following tools and materials for the study

- (a) General Data sheet: it was prepared to collect data related to subject name, age, severity, class, name of parents and their address.
- (b) Data sheets for enlisting and prioritization of problem behavior, observation of selected problem behavior for intervention and functional analysis sheet.
- (c) Behavioural Assessment scale of Indian children with Mental Retardation (BASIC-MR), Part- B. This tool was developed Peshawaria & Venkatesan in 1992 for assessment of skill behavior and problem behavior in persons with intellectual disability.

Procedure

Target behaviour

The subject was assessed for identification of problem behavior using BASIC-MR, Part- B. The subject had problem in repetitive behavior domain such as rocking of body, shakes parts of the body repeatedly. Similarly, he had problem behavior in odd behavior domain like smelling objects and hitting others under violent and destructive behavior domain. All the above problem behaviours were occurring frequently, except to hitting others, which was reported to occur occasionally.

Among the above four problem behaviours, flapping fingers was selected as target behavior for intervention as it was occurring at high rate and was interfering with the ability to learn. The target behavior was

selected after consultation with the subject's parents and his class-teacher.

Procedure

The study used quantitative approach with A-B-A design. A represents a series of baseline measurements and B represents a series of measurements occurring during intervention.

A. Baseline- 1

All sessions were video recorded. Investigator also utilized naturalistic observation. The investigator was observing the subject from outside of the class room. Interval recording technique was used to collect data between 9.15 to 9.45 with specific interval of 5 minutes. Baseline session continued until 6th session in order to have stable data.

B. Intervention phase

After baseline observation of the subject's flapping fingers behavior, researcher decided that the best incompatible behavior to reinforce would be one that kept his hands on the table. Therefore, scribbling on piece of paper using crayons was selected. In order to engage the child task analysis of the chosen task was made. The task analysis has following steps

1. Sits in a suitable position
2. Keeps the paper in front
3. Holds the crayons between thumb and finger appropriately
4. scribble

During the sessions, investigator sat beside the subject, guiding subject's left hand to the paper and his right hand in a scribbling motion. Social reinforcement in the form of pat on the back with verbal praise was provided each time. Subject was able to perform one of the sub-task (sits in a suitable position) independently and needed prompt to complete rest of the sub-tasks.

A. Baseline -2 phase

Baseline -2 is a repeating of baseline -1 after intervention

Treatment Fidelity

As suggested in the literature (Duda, Dunlop, Fox, & Lentini, 2004), steps needed to implement the intervention were measured to assess treatment fidelity. Therapeutic interventions were video recorded for later scoring to assess the treatment fidelity. Fidelity was assessed during the first three sessions in each phase. The implementation fidelity was 100%.

Social Validity

Social validity was measured using a 5- point Likert type scale in which 1= strongly disagree and 5= strongly agree. The questionnaire assessed the likeability, willingness to implement and ability to decrease behavior.

Data analysis:

Descriptive statistics along with visual analysis were used to analyze the data. The occurrence of target

behavior that appears on baseline data and post intervention, baseline -2 was compared.

Results and Discussion

Baseline -1

Baseline observation was conducted using the interval recording method. Six sessions lasting 30 minutes, a day made up the baseline data for finger flapping. Six intervals of five minutes were used to observe the target problem behavior. The baseline information is displayed below:

**Table -1
 Details of frequency of flapping of fingers during baseline**

Subject	Sessi on 1	Sessi on 2	Sessi on 3	Sessi on 4	Sessi on 5	Sessi on 6
Subject-1	4/6 intervals	3/6 intervals	5/6 intervals	4/6 Intervals	4/6 Intervals	4/6 Intervals

Data from the above table revealed that subject was engaged with flapping of fingers 4 times in his first session, 3 times in second session, 5 times in 3rd session, 4 times in fourth, fifth and sixth session

On an average, subject target behavior of flapping of fingers occurred four time each session.

Intervention

Intervention for managing problem behavior of flapping fingers were provided for 15 sessions. Each session was of 30 minutes. The intervention data of the subject is presented below in table -2.

**Table-2
 Details of frequency of flapping of fingers during intervention**

Subject	Session 7	Session 8	Session 9	Session 10	Session 11	Session 12	Session 13	Session 14	Session 15
1	4	4	5	5	4	4	3	3	2

Subject	Sessi on 16	Sessi on 17	Sessi on 18	Sessi on 19	Sessi on 20	Sessi on 21
1	2	2	1	2	1	1

The data of above Table revealed that subject had behavior of flapping fingers 4 times in the 7th and 8th sessions, 5 times in 9th and 10th sessions and subject gradually decreased flapping behavior to 1 time in 20th and 21st session. The decrease of flapping of fingers was due to his hands were engaged with scribbling with crayons.

Baseline-2

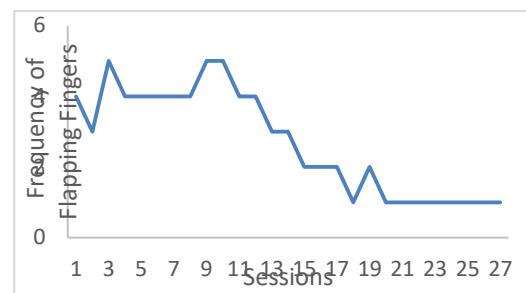
Data was collected through 6 sessions as it was conducted during baseline -1.

**Table 3
 Details of frequency of flapping fingers during baseline-2**

Subject	Sessi on 22	Sessi on 23	Sessi on 24	Sessi on 25	Sessi on 26	Sessi on 27
1	1	1	1	1	1	1

Table 3 shows that subject have reduced the behavior of flapping fingers and maintained to the minimum level of doing it once during baseline 2. Visual inspection of subject's baseline and intervention data is presented in the Figure 1.

**Figure: 1
 Frequency of problem behavior of flapping fingers during baseline 1, intervention & baseline 2(all sessions).**



Thus, when mean of baseline 1 scores (before intervention) intervention score of 21st session and baseline 2 was compared, subject had reduced the frequency of finger flapping 4 times to 1 time and stabilized the behavior during baseline 2. It showed that differential reinforcement of incompatible behavior was effective in reducing the target behavior of flapping fingers.

The effectiveness of DRI is based on selection of incompatible behavior and appropriate use of reinforcement. Subject learnt the task of scribbling with crayons. He learnt to hold crayons between thumb and fingers independently and was able to carry out the task with 50% achievement. When baseline score and after intervention score was compared subject had gained score of 25%.

The results showed that the frequency of flapping fingers of the subject decrease and incompatible behavior selected for training was enhanced. Findings of the study replicate previous research studies of Wardany, O & Choiry, A. 2017, Enemor, M, Farnan, B. & Kim,Y2022) which demonstrated effectiveness of DRI in reducing problem behavior and increase in selected incomputable behaviour of children with intellectual disability with autism.

Reference:

- Alberto, P.A., & Troutman, A.C. (2009). Applied behavior analysis for teachers (8th ed.). Pearson.
- Duda, M.A., Dunlop, G., Fox, L, Lentini, R. (2004). An experimental evaluation of positive behavior support in community preschool program. *Topics in Early Childhood Special Education*, 24(3), 143-155.
- Enemor, M., Farnan, B., Kim, Y. (2022). A study to investigate whether differential reinforcement of incompatible behaviour and extinction burst reduces self-injurious behavior. *Beyond Autism Impact Series*.
- Lowe, K., Allen, D., Jones, E., Brophy, S., Moore, R., & James, W., (2009). Challenging behaviours: prevalence & topographies. *Journal of Intellectual Disability Research*. 51, 625-636.
- Peshawaeia, R & Venkatesan, S (1992) Behavioural assessment scales for Indian children with mental retardation. NIMH.
- Tonnsen, B., Boan, A., Bradely, C., Charles, J, Cohen, A & Carpenter, L. (2016). Prevalence of autism spectrum disorders among children with intellectual disability. *American Journal on Intellectual and Developmental Disabilities*, 121, 487-566.
- Wardany, O., &Choiry, Y., (2017). The effectiveness of differential reinforcement of incompatible behaviour (DRI) to overcome disruptive behaviour of intellectual disabled students. *European Journal of Special Education*. 2, 1, 23-36.
- Weiss. (2002). self -injurious behaviour in autism: a literature review. *Journal of Developmental Disability*. 9 (2). 129-143.