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Modification of Hyperactive Behaviour of a child with Intellectual Disability

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Abstract: This study reported the effectiveness of behaviour modification strategies in managing hyperactive behaviour of an intellectually disabled child. About 20% of intellectually disabled individuals are affected by ADHD. This behaviour is more common among boys than girls. In the present study the investigator applied ABAB method to modify the identified hyperactive behaviour of an eight year old intellectually disabled girl. Behavioural assessment of the subject was done by using BASIC-MR PART-B. As the reinforcer the researcher has used DRO along with physical restraint and verbal reprimand. Result showed that by using ABAB design hyperactive behaviour of an intellectually disabled subject can be modified. Further in depth studies are recommended.

Keywords: Behaviour Modification, Hyperactive behaviour, Individual with developmental disability.

Introduction:

Children with special needs, especially who are intellectually and developmentally disabled, exhibit different kinds of attention-deficit and hyperactive behaviours (Perera & Courtenay, 2017; Perera, 2018). Attention-deficit hyperactive disorder (ADHD) is a neurodevelopmental disorder where the affected person cannot give attention to a given task for long time and become hyperactive without any valid reason. ADHD can affect both the children and adults. Alexander Crichton described the term ADHD in a medical book as “disorder of distractibility and lack of concentration” (Palmer, 2001). The symptoms of ADHD are-

- Cannot sustain attention on task without reward or high level of stimulation.
- They are easily distractible.
- They are very forgetful and lose things very easily.
- They cannot sit in one place for a long time and show excessive motor activity.
- Talk a lot and is very difficult to engage in tasks (Included in ICD-11).

Though a very small number of studies have been conducted on the children with ADHD and their behaviour modification, it is reported that approximately 20% of children with intellectual disability are affected from ADHD (La Malfa, 2008; Reilly, 2011). In an international study, it was found that the prevalence of ADHD is around 5% among children and adults (Polanczyk, de Lima, Horta, Biederman & Rohde, 2007). In a meta-analysis it is reported that the prevalence was found to be 2.5% among adult participants (Simon, Czobor, Bálint, Mészáros & Bitter, 2009). Schlock, Hölling, Kurth, Huss and Die (2007) found that the prevalence rate of ADHD is higher among child who belongs to lower socioeconomic status compared to economically stable groups. Gender wise analysis showed that boys are more likely to have ADHD symptoms. In their study Scahill and Schwat (2000) reported that the prevalence rate of ADHD among boys was 9% and among girls was 3%. Dopfner (2019) also found that girls are less likely to have ADHD symptoms.

Attention-deficit and hyperactive behaviours are harmful to the child as well as to his classmate. Children with ADHD face various problems and consequences in their daily life, especially in schools (Fletcher & Wolfe, 2009; Barkley, Fischer, Smallish & Fletcher, 2006). Due to hyperactivity and impulsivity, they cannot follow the curriculum and become inactive and absent minded (Dopfner, 2019). As

a result, they get very poor grades compare to their classmates (Wirth, Reinelt, Gawrilow & Rauch, 2015). Therefore, it is very important to manage or modify the hyperactive behaviour of the children with developmental disability.

Present investigator aimed to modify the severe hyperactive behaviours of an eight year old girl with intellectual and developmental disability.

Participant:

Participant (Jui) of this study is an 8 year old girl with mild level intellectual disability. She lives in a nuclear family with her mother and father. She is the only child of her parents. Family members do not know about any family history of disabilities. Therefore, Jui (name changed) is the first and only disabled member of her family. During pregnancy the mother was not affected by any infectious or systemic disease. Under the prescription of gynaecologist parents done ultrasonography for three times, to know the exact position of the baby in the uterus. Parents also did not have any blood group matching problem. Delivery of the baby was done under the supervision of a gynaecologist. Delivery of the baby was done by caesarean. The mother possesses normal delivery pain and bleeding was also in normal range. The baby possesses normal birth cry and his body weight during the delivery was 2.7 kg. During delivery the umbilical cord was not prolapsed. The baby is a pre-term baby and his age in delivery was 8 months and 11 days. During birth his skin colour was normal.

Assessment of skill area:

The present researcher assessed the self-help skills of the baby by using FACP scale. During the assessment her parents and her special educator were also present. Because the child was in pre-primary, her skills were measured according to that academic level. The researcher found that among personal skills the child can chew and swallow solid food when placed in her mouth, hold and drink water or milk or juice from a glass or cup, eat by self with fingers when food is mixed and given, indicate verbally or through gestures the need to go to the toilet, brush teeth either with tooth brush or with a finger using tooth paste or tooth powder, wear undergarments, wash hands before eating snacks or food or after using toilet or when hands are dirty, wear shoes without shoe lace or buckle. When social skills were measured it was noted that she can move head or eyes to see person moving near him or in the room, respond to her name by stopping an activity or looking at the person when called, go to a familiar person when asked to come near him, smile when other person smiles at her, differentiate strangers from familiar people. In academic domain she can point body parts (hands, head, nose, eyes, ears, legs) when requested, hold pencil and scribble, colour with a crayon within a given diagram, join dots to form pictures, point out the objects which are big and small, show long and short objects when asked, point at least 5 pictures of animal when asked and point at least 5 pictures of fruits when asked. In occupational domain the child can dust with a duster the furniture in the classroom and home.

Behavioural assessment:

The present researcher used BASIC-MR (PART-B) to assess the problem behaviours of the child. According to the assessment the present researcher observed that the most frequent problem behaviours the child shows are different types of hyperactive behaviours such as, does not sit at one place for required time, does not pay attention to what is told, does not continue with the task at hand for required time. Therefore hyperactive behaviours are considered for modification.

Selection of behaviour modification strategy:

Differential reinforcement technique was used to modify the hyperactive behaviours of the child. A good number of researchers like Benson and Mason (1968), Mulhern and Baumeister (1969), Repp, Deitz and Speir (1974), Hagopian, Romero, Neidert, and Borrero (2020) used DRO (Differential Reinforcement of Other Behaviours) techniques in modifying ID children's problem behaviours.

Along with DRO, the researcher also used verbal reprimand and physical restraint. Previous studies also reported that those techniques are effective in modifying and managing problem behaviours (Ragav and Varshiey, 2025; Sahoo, 2000)

Selection of Reinforcement:

After going through the systematic procedures the researcher has selected a primary reinforcer (Biscuit) for this subject, because to the present child biscuit is more preferable during the entire daytime and is much economic also. According to the doctor receiving biscuit is not harmful for his health (The parents talked to the concern doctor and reported this information to the present researcher).

Functional Analysis of problem behaviours:

A functional analysis was conducted to identify the probable antecedents and consequences of the problem behaviours showed by the client. After going through the previous literatures, the researcher noted five major types of conditions which can cause problem behaviours. Those conditions are: attention, tangible, demand, play, and alone.

Functional analysis revealed that the child's hyperactive behaviour was maintained by demand condition. The frequency of hyperactive behaviour was high when the child was assigned in academic activities or any other task.

Design of the Experiment

Baseline-1 (A_1) → 5 sessions

Intervention-1 (B_1) → 15 sessions

Baseline-2 (A_2) → 5 sessions

Intervention-2 (B_2) → 15 sessions

Generalization → 5 sessions

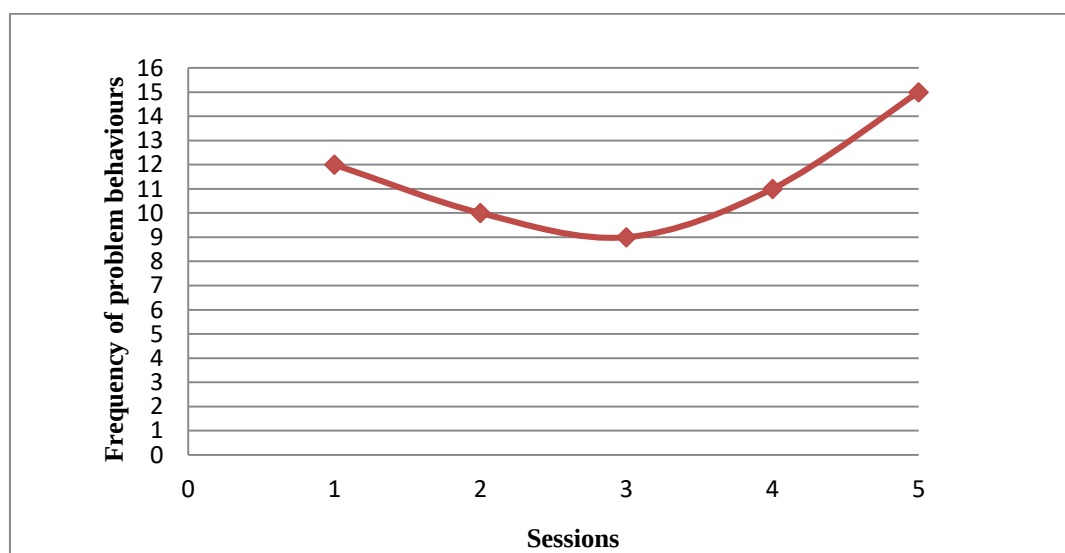
Baseline-1 (Pre-treatment)

During baseline the researcher observed the child for five consecutive sessions without any verbal or nonverbal interaction in the classroom. Each session consisted of 30 minutes. Only one session was conducted in a day. During this observation only hyperactive behaviour was recorded. Here the researcher recorded the frequency of hyperactive behaviours. The collected data were plotted in Table-1 and Figure-1.

Table-1: Frequency of hyperactive behaviours in baseline-1

Session No	Time	Duration of observation	frequency
1	11.00-11.30	30 minutes	12
2	11.00-11.30	30 minutes	10
3	11.00-11.30	30 minutes	9
4	11.00-11.30	30 minutes	11
5	11.00-11.30	30 minutes	15

Figure-1: Frequency graph of hyperactive behaviours in baseline 1



Intervention -1

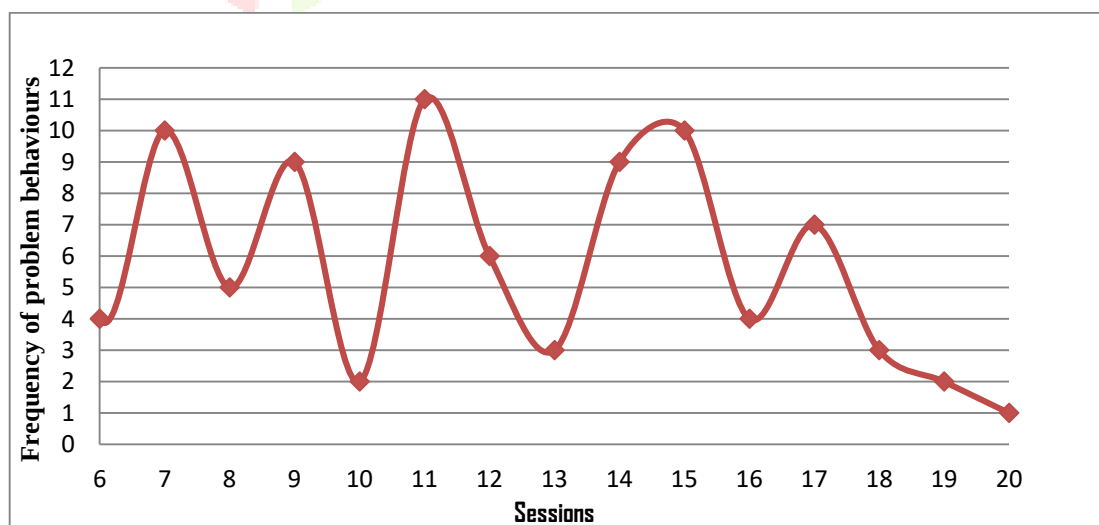
To modify the hyperactive behaviours of the child the researcher used verbal reprimand, physical restrain and DRO. During the intervention period whenever the child displayed any kind of hyperactive behaviours the researcher reprimand him verbally by saying “don’t”, “don’t get up from your seat”. If verbal reprimand does not work, the researcher physically restrained the child. When the child sat on the chair or doing academic activities the researcher used to provide him DRO and explain that this reinforce (Biscuit) was being delivered him, because he is not getting up from his seat or for doing academic task.

A total of fifteen sessions, each lasting 30 minutes, were conducted during this phase. After Intervention 1, a clear decrease in the mean frequency and duration of problem behaviours was observed; therefore, the intervention was subsequently withdrawn, and a second baseline phase was conducted. The collected data are presented in Table-2 and Figure-2.

Table-2: Frequency of hyperactive behaviours in Intervention -1

Session No	Time	Duration of observation	frequency
6	11.00-11.30	30 minutes	4
7	11.00-11.30	30 minutes	10
8	11.00-11.30	30 minutes	5
9	11.00-11.30	30 minutes	9
10	11.00-11.30	30 minutes	2
11	11.00-11.30	30 minutes	11
12	11.00-11.30	30 minutes	6
13	11.00-11.30	30 minutes	3
14	11.00-11.30	30 minutes	9
15	11.00-11.30	30 minutes	10
16	11.00-11.30	30 minutes	4
17	11.00-11.30	30 minutes	7
18	11.00-11.30	30 minutes	3
19	11.00-11.30	30 minutes	2
20	11.00-11.30	30 minutes	1

Figure-2: Frequency graph of hyperactive behaviours in intervention phase 1

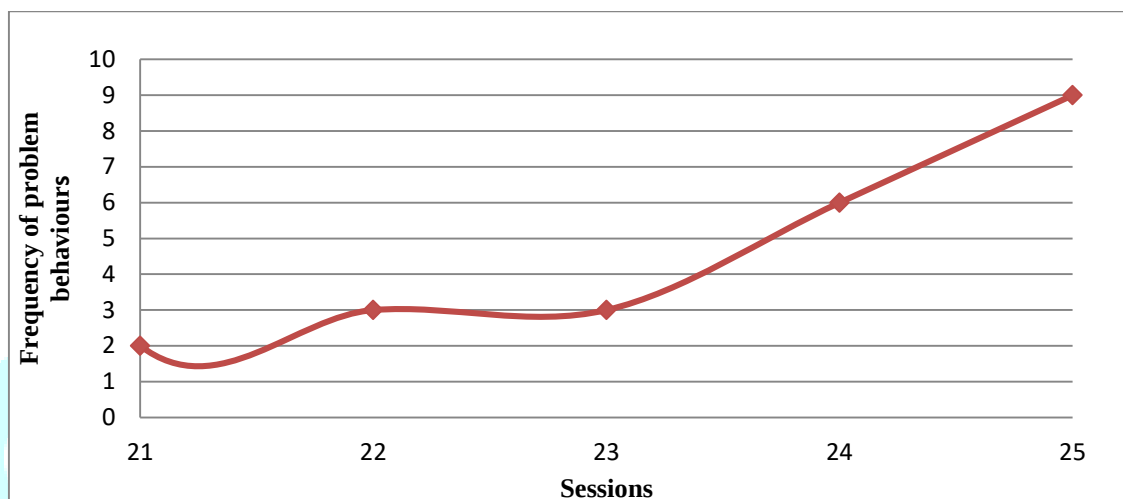


Baseline- 2 (Post-Treatment)

After the withdrawal of Intervention 1, the Baseline-2 phase was initiated. Baseline-2 was identical to Baseline-1, during which the researcher observed the subject in the classroom without any interaction or presentation of stimuli for the five consecutive sessions. The rate of the targeted problem behaviour was recorded and presented in Table-3 and Figure-3.

Table-3: Frequency of hyperactive behaviours in Baseline- 2 (Post-Treatment)

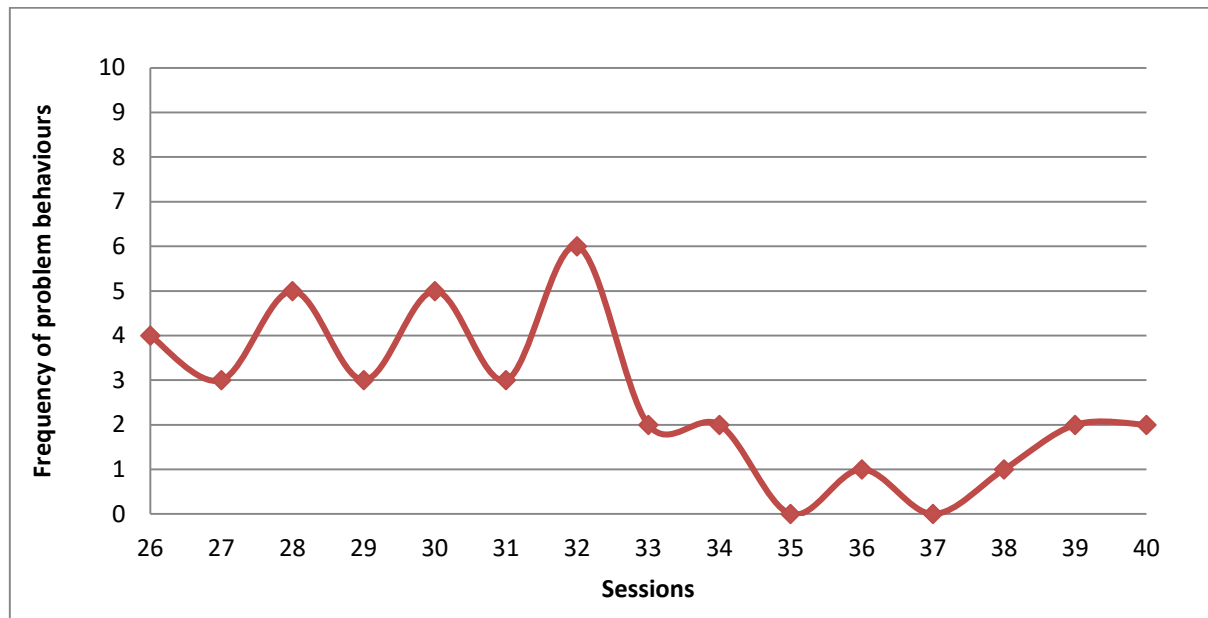
Session No	Time	Duration of observation	frequency
21	11.00-11.30	30 minutes	2
22	11.00-11.30	30 minutes	3
23	11.00-11.30	30 minutes	3
24	11.00-11.30	30 minutes	6
25	11.00-11.30	30 minutes	9

Figure-3: Frequency graph of hyperactive behaviours in baseline-2**Intervention-2**

Following Baseline 2, a second intervention phase consisting of 21 sessions was reintroduced. Each session lasted 30 minutes. In this phase, the researcher followed the same procedures that were implemented during Intervention Phase-1. The data collected during this phase are reported in Table-4 and Figure-4.

Table-4: Frequency of hyperactive behaviours in Intervention-2

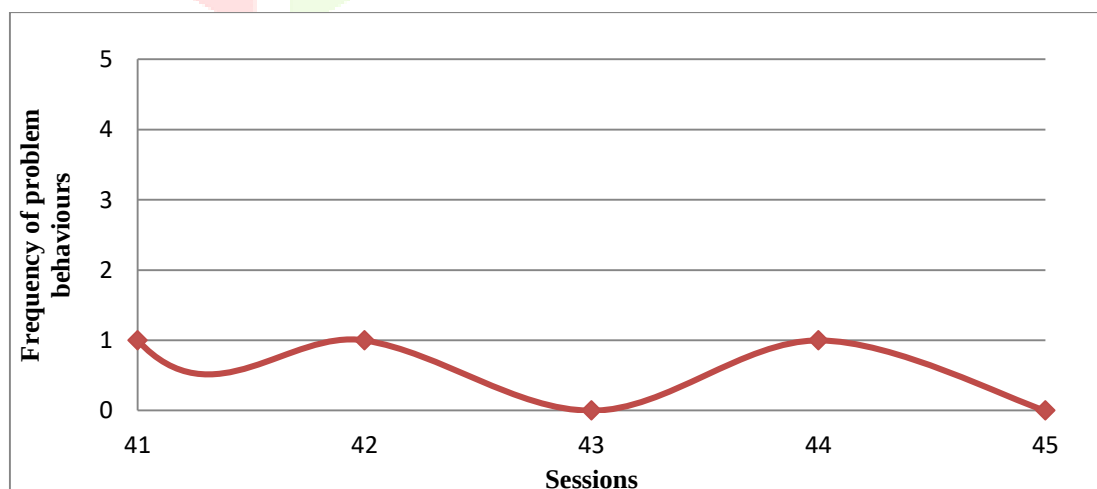
Session No	Time	Duration of observation	frequency
26	11.00-11.30	30 minutes	4
27	11.00-11.30	30 minutes	3
28	11.00-11.30	30 minutes	5
29	11.00-11.30	30 minutes	3
30	11.00-11.30	30 minutes	5
31	11.00-11.30	30 minutes	3
32	11.00-11.30	30 minutes	6
33	11.00-11.30	30 minutes	2
34	11.00-11.30	30 minutes	2
35	11.00-11.30	30 minutes	0
36	11.00-11.30	30 minutes	1
37	11.00-11.30	30 minutes	0
38	11.00-11.30	30 minutes	1
39	11.00-11.30	30 minutes	2
40	11.00-11.30	30 minutes	2

Figure-4: Frequency graph of hyperactive behaviours in intervention phase- 2**Maintenance / Generalization:**

A follow-up session was also conducted after one month of intervention. This session was same as baseline assessment. Following observation was reported (Table-5)

Table-5: Frequency of hyperactive behaviours in follow-up session

Session No	Time	Duration of observation	frequency
41	11.00-11.30	30 minutes	1
42	11.00-11.30	30 minutes	1
43	11.00-11.30	30 minutes	0
44	11.00-11.30	30 minutes	1
45	11.00-11.30	30 minutes	0

Figure-5: Frequency graph of hyperactive behaviours in follow-up session**Result and Discussion:**

Present study reported that the subject is habituated in different type of hyperactive behaviours such as-does not sit at one place for required time, does not pay attention to what is told, does not continue with the task at hand for required time. This findings support the findings of previous studies. Kulla (2002) reported that children with ADHD moves without any purpose in entire classroom, don't sit on their particular seat, scratch their finger and hit objects to produce sound. Meazzini (2013) also found that the children with

ADHD do not follow the instruction and cannot complete the given task in time. Gunesh (2018) also reported that it is very challenging to maintain the attention of those children during repetitive and academic activities.

From the above discussion, it can be concluded that hyperactive behaviour is one of the common type of problem behaviour present among children with developmental disabilities.

Functional analysis of this study revealed that hyperactive behaviour of the child was maintained by escape from demand condition, especially when the child was assigned in academic activities or any other task. This finding also supports the findings of previous study. In their study Cengher, O'Connor and Strohmeier (2021) also conducted functional analysis of problem behaviours of a 13 year old boy with ID and found that children's problem behaviours were maintained by escape condition. Though the subject of present study used to show hyperactive behaviours to escape from academic condition, but in the study of Cengher, O'Connor and Strohmeier (2021) the problem behaviours were maintained by escape from attention condition. In another study (Call & Meveres, 2014) it was also reported that the problem behaviours of a 6 years old boy with developmental disability was associated with demand condition. Sometime problem behaviours can be maintained by escape from food presentation also (Wilder, Normand & Atwell, 2005).

Therefore, based on the results of the present study and a detailed analysis of previous findings, it can be concluded that problem behaviour in individuals with intellectual and developmental disabilities (IDD) can be maintained by escape condition.

ABAB reversal design was used in present study to modify the hyperactive behaviours of the subject. This design is useful to evaluate the effects of intervention on problem behaviours of subject. Cengher, O'Connor and Strohmeier (2021) also used reversal design and successfully reduced problem behaviours of subject. Similarly few other studies also successfully used reversal design to modify different types of problem behaviours of children with ID (Wilder, Normand & Atwell, 2005; Kahng, Abt, colleagues & Sehloechter, 2001).

To modify the hyperactive behaviours of the child the present investigator has used DRO technique along with verbal reprimand and physical restraint. The final result showed that those techniques successfully reduced the hyperactive behaviours of the subject. Bostow and Bailey (1969) also used the DRO technique in their experimental study. They applied DRO along with time-out to modify loud and abusive verbal behaviour in a 58-year-old intellectually challenged woman. In their second experiment, the investigators again successfully used time-out and Differential Reinforcement of Other behaviour (DRO) to reduce aggressive behaviour in a 7-year-old intellectually challenged boy. Hagopian, Romero, Neidert, and Borrero (2020) also successfully used the Differential Reinforcement of Other behaviour (DRO) technique to modify hyperactive, aggressive, disruptive, and self-injurious behaviours. The effectiveness of the DRO technique in reducing problem behaviour has been well established by many studies (Beare, Severson, & Brandt, 2004; Conyers, Miltenberger, Mavis, Banez, Jurgens, Sailer, Haugen, & Hopp, 2004; Kurtz, Chin, Huete, & Tarbox, 2003). Verbal reprimand and physical restraint were also successfully used by Sahoo (2000) to modify the challenging behaviours (biting self) of a 12 year old boy with ID.

Many studies suggested drug treatment for the children with ADHD. Different types of drugs such as, dextroamphetamine (Dexdrine), methylphenidate (Ritalin) can be used to reduce hyperactivity (Srebhicki, Kolakowski & Wolanczyk, 2013). Psychotherapy, social skills training, self-help groups also proven as effective techniques in managing hyperactivity among children with special needs (Kollins, 2009; Nano, 2002; Curatolo, Agati & Moavero, 2010).

Therefore, it can be conclude that there are so many behaviour modification strategies that have been proven effective in managing hyperactive behaviours of children with ID, such as- DRO, verbal reprimand, physical restraint, drug treatment, Psychotherapy, social skills training and self-help groups. Further experimental studies are recommended to explore more effective strategies for managing hyperactive behaviours in children with special needs.

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