
Individualized Behavioral Intervention in Preschool Settings: The Case of a Child with Physical Aggression

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Abstract: Children engage in a multitude of problem behaviour and managing such behaviours is an unavoidable responsibility of teachers in today's schools. This study is conducted to assess the impact of an individually tailored behavioural intervention plan to eliminate the physical aggressive behaviour of a child. The intervention plan includes restructuring the environment, physical restraint, verbal reprimand and differential reinforcement of alternative behavior (DRA). The subject of the study is a three year and five months old boy of a nursery program. Following an ABAB withdrawal research design, the intervention is carried out in two settings concurrently, classroom and playground, with the teachers of the child assuming as co-interventionists. The intervention result in elimination of physical aggressive behaviour and follow-up data confirm the maintenance of the intervention gains. As a by-product of the intervention, a few socially desirable behaviours could be strengthened. The implications of the findings are discussed with special emphasis to the ongoing inclusive education move in Ethiopia.

Key words: ABAB design, behavioural intervention, aggressive behaviour, school based intervention.

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Introduction

Children who engage in problem behaviour in school settings demand extra expertise from teachers. Research indicates that a significant number of children in school engage in such difficult behaviour (Kauffman & Landrum, 2009). Aggression is one of the common behavioral problems in children. Overt aggression or physical aggression, commonly found in boys, harms others through physical injury or threat of injury. Teachers find themselves in difficult situation when they are required to support these children to control their physical aggressive behaviour. Teachers in Ethiopian schools resort to punitive methods in their efforts to discipline students who engage in problem behaviour (Seleshi, 2001; Ayalew, 1996). But a more recent large scale survey by Kumar and Seleshi (2010) unveils that primary school teachers in Addis Ababa government schools adopt more of scientifically validated methods such as rewarding desirable behaviour, modifying the physical environment of the classroom, etc. in their efforts to deal with the problem behaviour of students. However, the report further reveals that a sizeable number of unscientific methods such as various forms of corporal punishment are also used by the teachers. Though many approaches to the management of problem behaviour of students have been empirically established, behavioural interventions in general and applied behaviour analysis in particular have been proved to be effective in supporting students with problem behaviour (see Spiegler and Guevremont, 2010).

The modification of problem behavior maintained by positive and negative reinforcement is at the forefront of applied behavioral analysis. A large number of studies, establishing the effectiveness of behavioral interventions in the management of problem behavior have been reported (e.g., Vollmer et al., 1999; Hanley et al., 2003; Roane et al., 2004). But most of these studies were conducted in western countries. There are no similar reports on the issue from Ethiopia.

The development of positive behavioral interventions and plans that are guided by functional behavior assessment (FBA) is the foundation of the positive behavior support approach. In a functional approach to treatment of problem behaviors, a functional assessment is conducted and treatments are developed to alter the reinforcement contingencies maintaining the behavior (Kodak et al., 2003). Other prominent behavioral strategies include antecedent interventions, consequence-based interventions and skill development interventions. Antecedent interventions involve procedures that are implemented before a target behavior occurs. Early intervention services are antecedent interventions that are becoming increasingly important because of their potential for reducing the likelihood that problem behaviors will arise later in life. Altering the specific consequences of behaviour that maintain or strengthen the behaviour is the strategy adopted in consequence-based intervention. Consequence-based interventions are behavioral procedures that are implemented following the initiation or completion of a problem behavior. Consequence-based interventions emphasize reinforcement-based interventions and deemphasized interruption and redirection, extinction, and punishment. Skill development interventions target developing socially acceptable and contextually appropriate behaviour, so as to replace the maladaptive behaviour.

Physical restraint procedures are implemented with children and adults who have developmental disabilities and display seriously challenging behaviors such as aggression, self-injury, and property destruction. When restraint is applied, a person's voluntary movement is immobilized either manually or with the imposition of a mechanical device. Studies indicate that manual and mechanical restraint can be applied noncontingently to prevent the occurrence of challenging behaviors, or can be implemented contingently when the behaviors are demonstrated (e.g., Luiselli, 2008; Luiselli et al., 2000). Although physical restraint is used to manage emergency situations, it can also

be implemented as a planned intervention within a comprehensive behavior support protocol (Luiselli, 2008).

Differential reinforcement procedures are forms of reinforcement-based interventions which are designed to provide reinforcement in some situations, but not in others. To decelerate undesirable behaviors, in this procedure, acceleration of target behaviors that are physically or functionally incompatible with deceleration target behaviours are reinforced (Beare, Severson & Brandt 2004; Spiegler & Guevremont 2010). Those behaviours which are reinforced in this strategy are the behaviors that are impossible for the child to perform at the same time as the behavior targeted for reduction (Webber & Scheuermann 1991). Differential reinforcement strategies are often effective alternatives to punishment for decreasing undesirable behavior. Differential reinforcement of an alternative behavior (DRA), which is defined as reinforcement of an alternative behavior while withholding reinforcement for inappropriate behavior, is one of the three common forms of differential reinforcement procedures. DRA becomes an acceptable alternative to punishment in decreasing problem behavior (Vollmer et al., 1999; Roane et al., 2004; Matson et al., 2005). However, there exist limited research evidences which endorse the effect of DRA, physical restraint and verbal reprimand as a package in eliminating/ reducing the physical aggressive behaviour of children in school as well as classroom settings. Such an intervention package which holistically addresses the physically aggressive behaviour and factors which surround it, if proved effective, can be an effective tool in the hands of teachers for supporting students who engage in physical aggression. Further, its simplicity in its administration makes it handier for teachers. Going by the universality of problem behaviour in schools (see Kumar, 2011) and also from the available studies conducted in Ethiopian schools on various aspects of problem behaviour and its management (cf., Kumar and Seleshi, in press; Fiseha and Kumar, in press; Ayalew, 1996), it can be concluded that the schools of Ethiopia also have a significant number of children engaging in problem behaviour. However, no studies have been reported from Ethiopia

investigating the effectiveness of behavioural interventions in managing the problem behaviour in general and physical aggressive behaviour in particular in school settings. Such inquiries are of tremendous importance as findings from these studies can aid teachers to support students engaging in the multitude of behaviour problems. This is the motivation for this study.

The present study is conducted to examine the impact of a behavioural intervention package with the principal components of restructuring the environment, physical restraint and verbal reprimand paired with DRA in eliminating the physical aggressive behaviour in a three and half years old child in a school based intervention.

Methodology

Participant

Nahom (pseudo name), a 3 year and five month old boy born in Nazareth – a town 100 kilo meters from Addis Ababa - received the intervention so as to eliminate his maladaptive patterns of physical aggressive behaviour. Nahom was attending a nursery program in Gulele sub-city in Addis Ababa, Ethiopia, when the intervention was carried out. This was after Nahom's mother got divorced six months ago and moved to Addis Ababa along with her two children.

Nahom lives with his biological mother, elder brother and his maternal grandfather in Gulele sub city. His mother, aged 26, is a grade 12 complete but unemployed. His father, aged 42, is a diploma holder and a merchant. Nahom was referred for intervention by his teachers due to concerns about his problem behaviors, especially physical aggressive behaviour. No psychiatric or behavioral disorders were reported among the relatives either on maternal or paternal side of the family, according to the mother and grandfather. However, Nahom's elder sibling was reported to be displaying certain problem behaviors during the first

three years. A review of Nahom's developmental and medical history indicates that Nahom has no significant difficulties. Most developmental milestones are achieved at normal ages. Nahom has manifested no history of severe illnesses, psychological or psychiatric evaluations or interventions.

Presenting Problems

Nahom's current pattern of problem behaviour as reported by his teachers, mother and grandfather is that he was aggressive, especially with other children and distractive disregarding the situations in which he is in. The mother further reports that Nahom's problem behaviors began during his first year. As soon as he began walking, Nahom became "difficult tempered". By three, however, his problem behaviors had become more serious. Apparently, his mother, grandfather and teachers alike expressed their deep concerns over his behavioural difficulties and expressed their helplessness in what they could do to support him to behave in a socially acceptable way. They all reported that they tried in vain many methods of child disciplining procedures to control Nahom's problem behaviours. These revelations indicated that Nahom's problem behaviours are serious enough requiring specialized intervention.

Instruments

The study used three instruments; two of them were chart and form developed for this study and the other a checklist developed by other researchers. A brief description on each instrument is presented below.

Social and Behavioral Checklist

Social and behavioral checklist (Sattler, 2002) designed and used to identify various social and behavioral problems in children are used to identify Nahom's problem behaviors in general. This check-list has 93 items to assess both deficit and excess behaviours of children. Of the

93 items, 79 examine the current behavioural difficulties. The remaining 14 items examine their existence within the past 3 months.

Behaviour Recording Chart

The behaviour recording chart is developed for this study following the protocols to be followed in behaviour recording. This chart has provisions in it to record each occurrence of the targeted problem behaviours as and when manifested. This chart is developed to be used in all the stages of the intervention.

Functional Behavioral Assessment Form

Functional behavioural assessment form is developed to record the antecedents, behaviour, consequences and functions of the targeted problem behaviour. The form has ample provisions to record the specific antecedents, the nature of the problem behaviour, the consequences and functions of each recorded frequency of the problem behaviour. Further, provisions for recording the behavioural assets, behavioural deficits and the potent reinforcers are also included in this Form.

Design and Procedures

An A-B-A-B withdrawal design of single subject experimental research method is used to carry out the intervention (see Barlow and Hersen 1984). The initial baseline measurements are made until stable pattern of frequency is established (first A phase). Then the first phase treatment is introduced (first B phase). This phase is followed by the withdrawal of treatment and recording of second baseline (second A phase). The fourth phase is the reintroduction of treatment package (second B phase). This is followed by a follow-up recording phase. The first three phases of the design (A-B-A) last for 10 days each. The fourth phase lasts for nine days as the frequency of the problem

behaviour drops to zero level and maintains at this level consecutively for three days. Follow-up recording is done for five days.

As the first step of this intervention, the mother, grandfather and teacher of Nahom were briefed about the nature, purpose, and the probable outcomes of the intervention. They were also assured of the confidentiality of the information they would be required to share with the researchers. The importance of their cooperation and participation in the intervention was outlined. *Even though Nahom* was a teacher referred case for intervention, to put in place the procedural safeguards prescribed in behavioral intervention researches, oral consent for implementing the intervention was obtained from his mother and teacher since Nahom was too young to give informed consent. Oral consent qualifies for interventions with referred subjects. On obtaining their oral consent and willingness to participate in the study, the teachers were briefed about their roles in the intervention as co-interventionists.

In the second stage of the intervention, detailed interviews were conducted with Nahom's mother, grandfather and teacher to establish the background and current status of the problem behaviors and the target behavior of Nahom. The social and behavioral checklist was completed by Nahom's mother and teacher separately. The most difficult behaviours reported by the mother and teacher in the check-list included physically fighting with other children in the class and neighborhood, hitting others, breaking objects deliberately, making inappropriate noises when expected to remain calm, refusing to share toys with other children, leaving class seat without permission, jumping out of seat, crawling across the floor in the classroom while the classroom activities are on, swinging between seats or desks, and playing with objects that could harm self or other children. Moreover, he blatantly refused to stop undesirable behaviors when told by the adults present. The difficult behaviors identified using this checklist were placed in a hierarchical order from the least to the most serious problems requiring immediate support for both the mother and teacher.

Both the mother and teacher rated physical aggressive behaviour as Nahom's most difficult problem behavior requiring immediate intervention. Thus Nahom's physical aggressive behaviours were selected as the target problem behavior for intervention.

Physical aggressive behaviour of Nahom was behaviorally defined as any observable and measurable behavior which harms or having the potential to harm others or himself and/or aimed at causing harm to others and/or himself. And the specific behaviors coded as physical aggression included pushing, kicking, hitting, biting, throwing objects at others, pinching, and any other such behaviour which, according to the interventionists, meet the criteria set in the behavioural definition of physical aggressive behaviour.

After having agreed on the target problem behaviours and their behavioural definitions, a consensus was reached on as to what should be the behavioural objective for intervention among the mother, teacher and the researchers. Accordingly, eliminating the target problem behaviours towards the end of the intervention period was adopted as the behavioural objective for intervention.

The third stage of the intervention was the stage of behaviour recording. To establish the baseline of the problem behaviour, Nahom's physical aggressive behaviours were recorded for 10 minutes each for 10 consecutive school days in classroom as well as playground settings. The recording was done using event recording procedure. Each instance of a specific physical aggressive behavior was recorded as it occurred during the 10-minute observation period. The data then were graphed to depict in visual representation format. Average frequency of problem behaviour was also computed for comparison with the average frequencies in other stages of intervention.

Parallel to behavior recording a functional behaviour assessment was conducted to identify the antecedents, behaviour, consequences and

the functions of the target behaviours. During the functional analysis, attempts were made to identify the potent reinforcers for Nahom and also his behavioural assets and deficits. Functional analysis was conducted following the procedures similar to those employed by behavioural interventionists (see Hanley et al., 2003). Teacher's instructions to write and say letters and numbers together, and tell tales were the most frequently observed antecedents of Nahom's problem behaviour in the classroom. Free play activities without teachers' or adults' close supervision were the antecedents on the playground. Teachers ignoring the problem behavior and other children taking on similar actions on Nahom (retorting with the same action that Nahom took on other children) were the major consequences of the target behavior in the classroom. Escaping from the assigned playground activity and from the playground itself, teachers ignoring the problem behaviour, and other students complaining about Nahom's problem behaviour to the teacher were the most frequently observed consequences on the playground.

Candy, biscuits and singing songs were the most preferred reinforcers of the child. While singing song was identified as his potential reinforcer through direct observation, candy and biscuits were reported by Nahom's mother. It was quite obvious that Nahom was receiving lot of attention from his peers. Escaping from the assigned task and peer attention were identified to be the functions of his target behaviour on both settings. Obtaining the attention of adults, according to his teacher and mother, was a major function of the child's target problem behavior. However, adult attention was not observed as a function of Nahom's problem behaviour during functional assessment. Responding to teachers' questions very quickly and correctly was identified as Nahom's behavioural asset. The major behavioural deficit was identified to be his inability to engage in socially acceptable and expected behaviours.

In the fourth stage of this study, an intervention package was developed for Nahom. The package included antecedent interventions (those implemented before physical aggression was likely to occur in an effort to avert the problem), consequence interventions (those implemented following the occurrence of physical aggression), and skill development interventions (teaching alternative behaviors). Antecedent interventions chiefly included restructuring the environment. Consequence interventions included physical restraint and verbal reprimand. DRA was used to teach Nahom display appropriate alternative behaviors such as being calm and remain in assigned area unless given permission to leave, waiting for his own turn during free play and raising his hand in need of help or when upset and also to reduce the frequency of his physical aggressive behaviour.

The intervention was implemented by the teachers who were in-charge of classroom and play ground activities (two teachers acted as co-interventionists) under the close supervision of the researchers. This was done with the premise that such exposure would help teachers to design and implement similar programs with other children. Teachers were given adequate orientation and training on the application of the programme before the intervention began. The first author was present during the whole intervention process and behaviour recording during all the stages of intervention was done by him. The intervention was carried out in the following ways: as part of antecedent intervention, Nahom was made to sit close to the teacher and an arm's distance from other children in the classroom. Consequence intervention included the teacher applying physical restraint and verbal reprimand contingent upon Nahom exhibiting the target problem behavior until he was calm and in control or nonresistant. Physical restraint was applied by immobilizing Nahom's arms and/or legs against body or leg as necessitated by the nature of the problem behaviour exhibited. That is, when the arm was used in aggressive behaviour; it was restrained by immobilizing it by holding the arm tightly against the body. Whereas in the instances of leg being used in the aggressive behaviour, the leg

used was restrained by holding it against the other leg so as to immobilize it. Verbal reprimand was effected concurrently by the teacher by telling firmly Nahom "no" contingent upon the occurrence of the targeted problem behaviour. The principle of immediacy was strictly followed while administering the consequence interventions. As intervention progressed, physical restraint was gradually withdrawn by the teacher moving close to the child and introducing only verbal reprimand. However, physical restraint was also applied in an intermittent manner during the initial stages of fading physical restraint. Once physical restraint was completely withdrawn, only verbal reprimand was used as the consequence of Nahom's aggressive behaviour.

DRA was designed to help Nahom reduce the frequency of the target problem behaviours and also help him develop the alternative desirable behaviors. The desirable behaviours to be strengthened were identified before formally helping Nahom to engage in those behaviours. In addition to DRA, individualized sessions, usually at break time, were arranged to teach Nahom alternative desirable behaviors. Positive verbal statements and teacher modeling of the appropriate behaviors along with the administration of reinforcers were the techniques followed to teach Nahom appropriate alternative behaviours in addition to DRA procedure.

Nahom's reinforcer package included primary reinforcers (candy and biscuits), activity reinforcer (singing a song) and social reinforcers (praising). Under DRA procedure, whenever Nahom displayed the alternative desirable behaviors the teacher reinforced his replacement behaviors with primary and social reinforcers instantly. Activity reinforcer was applied towards the end of each intervention session. For instance, the teacher reinforced Nahom's alternative desirable behaviors like raising hand in need of help, staying on task at hand, etc. every time the behaviors were exhibited (continuous schedule of reinforcement [CSR]). Teacher attention which was reported to be an

important function of Nahom's problem behaviour was thus redirected to his appropriate behaviour.

CSR was followed during the initial stage of intervention. As it was found that Nahom understood the contingency of his desirable behaviours and started working for the reinforcers, the schedule of reinforcement was changed to intermittent schedule of reinforcement (ISR). ISR was started with a fixed ratio schedule (FRS) during the initial stages of its introduction and changed to variable ratio schedule (VRS) after Nahom appeared to have significantly reduced the problem behaviour and mastered alternative desirable behaviour. That is, FRS was maintained until the frequency of problem behaviours declined to zero level and also the alternative desirable behaviours reached the desired level. Upon establishing stability of occurrence of desired alternative behaviours and non-occurrence of the targeted problem behaviours, FRS was changed to VRS.

The delivery of reinforcers was designed in such a way that it would make the process of fading efficient. Towards this end primary and activity rewards were always paired with social reinforcers. On recording remarkable reduction in problem behaviour and significant increase in alternative behaviour, intermittently, primary and activity rewards were withheld while social reinforcers alone were administered. Gradually primary and activity reinforcers were steadily withdrawn and social reinforcers alone were made contingent upon the desired alternative behaviours. By gradually shifting from FRS to VRS, the total reinforcement contingency was terminated to make Nahom work in the absence of reinforcers.

Results

Following an ABAB withdrawal design the intervention began with a baseline recording followed by the introduction of the first intervention phase. The treatment was subsequently withdrawn to return to the

second baseline phase and intervention was reintroduced in the second B phase. Table 1 below presents the raw data and its description across different phases of the intervention:

Table 1: *Frequencies and its descriptive statistics of the target behaviour across settings*

Phase	Setting	Frequency by Session										Mean Frequency
		1	2	3	4	5	6	7	8	9	10	
A	Session	1	2	3	4	5	6	7	8	9	10	
	Classroom	3	2	2	1	2	2	3	1	2	1	1.9
	Playground	1	2	3	0	1	2	2	1	1	1	1.4
B	Session	11	12	13	14	15	16	17	18	19	20	
	Classroom	2	1	1	1	1	1	0	0	1	0	0.8
	Playground	1	2	1	1	0	0	0	1	0	0	0.6
A	Session	21	22	23	24	25	26	27	28	29	30	
	Classroom	0	0	1	1	2	2	2	2	2	3	1.5
	Playground	0	0	0	2	1	1	1	2	2	2	1.1
B	Session	31	32	33	34	35	36	37	38	39	40	
	Classroom	2	1	1	0	1	0	0	0	0	0	*
	Playground	1	1	1	0	0	1	0	0	0	0	*

* Mean was not computed as the problem behaviour could be eliminated

The average frequencies of Nahom's physical aggression per session during the initial baseline phase (Sessions 1-10) in the classroom and playground settings were 1.9 and 1.4 respectively. The frequencies during this phase ranged from one to three in classroom setting and zero to three in the playground setting. The average frequencies recorded during the second phase of the intervention (Sessions 11-20) were 0.8 in the classroom setting and 0.6 on the playground setting. The frequencies during this stage ranged from zero to two in both settings. The average frequencies of Nahom's physical aggressive behaviour during the third phase (Sessions 21-30) of the treatment were 1.5 in the classroom setting and 1.1 on the playground setting. During this phase the frequencies ranged from zero to three in the

classroom setting and zero to two on playground. The fourth phase of the intervention which was started on the 31st day with a plan to proceed till the target problem behaviours are eliminated needed to last only till the 36th day in the case of classroom setting and 37th day in the case of playground as the frequencies dropped to zero and maintained at the same level on the consecutive days. However, the frequency recording continued till 45th day as follow up recording. The average frequency calculation was not done for this phase of treatment as the problem behaviour could be eliminated. The visual representation of the data in Figure 1 below vividly depicts the intervention gains and their trend.

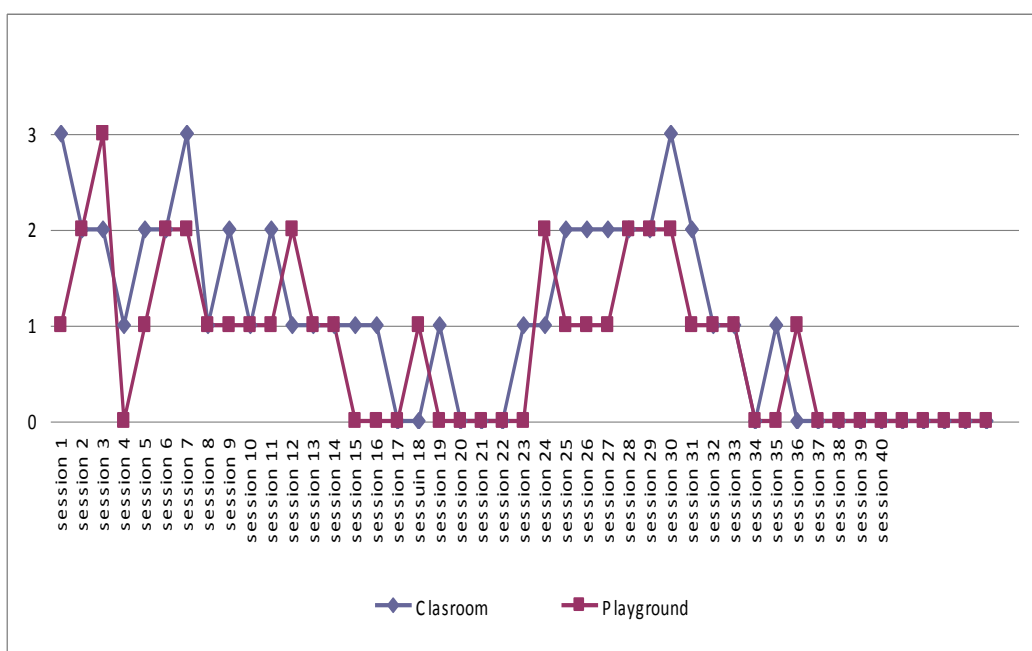


Figure 1: The frequency of Nahom's physical aggressive behaviours during baselines, interventions and follow-up phases in classroom and playground settings, plotted following A-B-A-B design.

Discussion

This study examined the effects of an individually tailored behavioural intervention package with the components of restructuring the environment, physical restraint, verbal reprimand and DRA has in eliminating the physical aggressive behaviours and increasing appropriate alternative behaviors in a three year and five months old child in a preschool setting in Addis Ababa. The outcome of the intervention was so promising that the targeted problem behaviour of Nahom could be eliminated in both classroom and playground settings. Follow-up data confirmed the maintenance of the intervention gains. A close scrutiny of the whole intervention efforts substantiates that the intervention package which was designed after a thorough behaviour recording and functional behaviour assessment was quite effective in eliminating the targeted problem behaviour of Nahom. Concurrently a few desirable alternative behaviour could be strengthened.

The pattern in which the intervention effectiveness showed up in this case is typical of a behaviour modification programme. During the first A phase, the average frequencies of the target behaviour in both the settings were the highest in comparison with the other two phases, that is, B and second A phases. Further, the average frequency of Nahom's problem behaviour in classroom setting was higher than his average frequency on playground, suggestive of Nahom's tendency to act more aggressive in more structured environments than in less structured ones. Not even a single day passed without Nahom engaging in the problem behaviour in the classroom during this period. On the playground setting too, Nahom exhibited the targeted problem behaviour on almost all the days except one day. Further, no trend in frequency was evident in both settings.

While the intervention package was introduced on the 11th day, a remarkable change in the frequency of the problem behaviour in the classroom and playground settings could be observed. The average frequency of 1.9 in the classroom setting during the first A phase has

dropped to 0.8 in the first B phase. And the playground setting too recorded a drastic fall in the frequency, that is, from 1.4 to 0.6. Not only that the average frequency of the targeted problem behaviour has reduced significantly but the reduction was also observed in the range of frequency during this period. The maximum frequencies observed during this period of treatment were two in both the settings. On the fifth day of this phase, the frequency dropped to zero level on the playground setting. In the case of classroom setting, the frequency dropped to zero on the seventh day. Subsequently the frequency remained at zero level on almost all the days in this phase of treatment. Precisely, Nahom did not exhibit the problem behaviour for five days on the playground setting and three days in class room setting. This indicates the vivid impact the intervention package has on decreasing the problem behaviour of Nahom. The reductions in the range and average frequencies, according to the research design adopted, can be attributed to the impact of the intervention package, which is further strengthened by the remaining stages of intervention.

As necessitated by the research design, the whole intervention was withdrawn on the 21st day and continued till the 30th day. Characteristically, the frequencies which were brought down to zero level in both the settings remained at the same level for two days in the case of classroom setting and three days on playground setting. Nahom started exhibiting the problem behaviour thereafter and never came down to zero level in both settings during this period. The average frequency of his problem behaviour rose to 1.5 in the classroom setting and 1.1 on playground. This is a significant increase indicative of the impact that the intervention package had on Nahom's physically aggressive behaviour. Though a significant increase in the average frequency was recorded during this stage in comparison with the first B phase, it may be noted that the average frequency remained lower than the average frequency recorded during the first A phase. The range of frequencies also reported an increase in comparison with the range in the first B phase in the case of classroom setting. The

range recorded during this phase was zero to three in classroom which was greater than the range of the first B phase whereas there was no change in range in the case of playground setting in comparison with the first B phase. The reversal of Nahom's problem behaviour in the absence of the intervention package during this stage of intervention can confidently be attributed to the effect that the intervention package had on his problem behaviour, according to the premises of the research design adopted. The outcome analysis towards the end of this intervention phase vividly indicated that Nahom's problem behaviour could be managed with the same package of treatment and the stabilization phase of the treatment, that is second B, had to be started forthwith.

The last phase of the intervention was started on the 31st day. The decision at this stage was to continue with the intervention till the intervention objectives were met. As the intervention goal was to eliminate the problem behaviour, the researchers targeted to proceed with the intervention till a zero level frequency was established and fairly maintained before proceeding with the follow-up recording.

A gradual decline of the frequency of Nahom's problem behaviour could be observed after resuming the intervention. In just six days the frequency dropped to zero level and maintained at the same level for the remaining days in the classroom setting. In the case of playground setting, the frequency dropped to zero on the 7th day and maintained at the same level for the remaining days during this stage of intervention. The gains of intervention which appeared so classical of a behaviour modification programme emphatically underscore the impact that the intervention package has on eliminating the problem behaviour of the child. Further, the gains reassure the accuracy of the information and inferences made through functional behavioral assessment. It can, however, be inferred that the fast intervention gains may be due to the parallel intervention at two settings.

As Nahom's progress in acquiring alternative desirable behaviour was not recorded using a strict behaviour recording procedure, teacher interviews were used to ascertain it. The major observation of the teachers was that Nahom became a much more disciplined student in the school. He developed alternative behaviors such as following the classroom rules, raising hand when in need of help, waiting for turns, asking for adult support when needed, etc. They further reported that Nahom's alternative behaviours were apparent in both the classroom and playground settings.

The findings of the current study support previous findings indicating that providing DRA and other forms of positive reinforcement produces a decrease in problem behavior in children (Fisher et al., 1998; Vollmer et al., 1999). Although differential reinforcement procedures are often used to reduce problem behaviors, research (e.g., Ringdahl and Falcomata, 2009) indicates that differential reinforcement procedures are also often used for the purpose of shaping new behaviors. A case study by Lucas (2000) also confirmed that interventions of time-out coupled with differential reinforcement of alternative behavior were successful in weakening aggressive behavior in toddlers. This study has succeeded in establishing that DRA combined with restructuring the environment, physical restraint and verbal reprimand was very effective in eliminating the physical aggressive behaviour and increasing alternative desirable behaviors in Nahom.

One limitation of the present study is that the frequency of alternative behaviors was not recorded systematically. However, systematic observation by the first author and ongoing and post intervention interviews with the teachers were used to accurately report the gains in alternative desirable behaviour. It was reported by the teachers of Nahom that he started behaving in more socially acceptable manner ever after the intervention rolled on. This could be observed by the researchers too. In addition to the specific desirable behaviors that Nahom started to engage in more frequently, according to the

teachers, there was a remarkable positive change in Nahom's general conduct in the school. That is, Nahom appeared more sociable and considerate of the school rules and regulations.

Conclusions and Implications

The study which was conducted to test the impact of an individually designed behavioural intervention package with the components of restructuring the environment, physical restraint, verbal reprimand and DRA in eliminating the physically aggressive behaviour of a pre-school child was categorical that the package administered was effective in eliminating the problem behaviour. Concurrently it has succeeded in strengthening a few alternative desirable behaviours in the subject. The physical aggressive behavior patterns of Nahom which were considered as stumbling blocks by his teachers for him to achieve his educational goals and as frustrating by his mother and grandfather were eliminated in a period of less than forty days of effort. This finding has tremendous implications for teacher training in Ethiopia.

Ethiopia is at a juncture where it envisages effective inclusive education. The policy and strategy of the Ministry of Education (1994 and 2006) give no room for doubt that they are determined to effective inclusive education of students with varying special needs. The multitude of behaviour problems are the realities that any teacher would face in schools. This so called aberrant behaviour could be seen in children with disabilities quite often; they are also to be educated by regular teachers in inclusive classroom. These problems are noticeably present in children without any identified disabilities too. Teachers should be prepared to help those children engaging in various forms of behaviour problems. The unquestionable effects of behavioural interventions in dealing with the behavioural problems of school children have been well established in various western as well as eastern countries. Behaviour intervention plans and positive behaviour support still remain as the most modern prescriptions for helping students who engage in problem behaviour across the world.

However, such practices are hardly found in the schools in Ethiopia. Studies of this kind would establish the efficacy of behavioural interventions in the schools in Ethiopia too. And such inputs should find place in the teacher training curricula in Ethiopia. Further, teacher training programme should introduce adequate theoretical and practical components of behavioural management of students who engage in problem behaviour. This should indeed help the schools in Ethiopia to have a work force adequately trained and confident of supporting children who engage in various forms of problem behaviour. This would help in asserting the vision of inclusive education in Ethiopia in a remarkable way.

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