

## Effects of Two Non-Intrusive Methods on Ghanaian Pupils' Classroom Disordered Behaviour

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### Abstract

The study sought to determine the impact two non-intrusive methods (modelling and reinforcement) and their combination have on disordered behaviour of pupils who are from either high or low socio-economic background. A total of 142 pupils from three municipalities in three (Greater Accra, Volta & Central) regions were randomly selected for the study. Three instruments (ASEBA TRF/6-18, Rutter's Child Behaviour Rating Scale & Behaviour Count Table for Baseline) in collecting data for analysis done by using ANCOVA and Bonferoni to calculate its pair wise results. The results showed that there is no significant effect of the methods on pupils' inattention behaviour due to socio-economic background. However, there is a significant effect of the methods on aggression due to socio-economic background. Further, there is significant difference in the effects of reinforcement, modelling and multi-techniques in improving behaviour problems of pupils in Ghanaian basic schools.

### Introduction

Heads of institutions and members of staff in some schools in Ghana have had to live as if they were "sitting on time bombs" – in great uncertainty and insecurity – because of the destructive and unpredictable nature of some of the students (Amedahe and Owusu-Banahene, 2007). Thus, behaviour problems can be a serious threat to decent life and safety of property. It is important for any child to develop a balance between academic achievement, self-confidence with adults and peers, and active, curious exploration of the world. Behaviour disordered children especially those who fall into the category of personality problem children have particular difficulty achieving such balance.

Behaviour disordered individuals present such a menace and threaten to break the bonds of family ties, disintegrate the cohesion of the school and destroy the fabric of society. Parents, teachers, researchers, planners and all those, who hold stakes in education, as well as all persons interested in the well-being of society as a whole should not take the challenges these threats pose lightly (Werterin, 2003)

Any casual observer to Ghana may argue that the existence of some Bostal Homes in the country is indicative of some serious and conscious attempt at integrating behaviour-disordered individuals (Godwyll, 1992). Agreeably, these Bostal Homes run by the Department of Social Welfare and Community Development, cater for delinquent children referred to them by the Juvenile Courts, parents, guardians, traditional authorities and some institutions as well as those identified by their own department or personnel. However, the fact remains that, in Ghana established public schools have their own methods of dealing with behavioural problem children who may not be referred to these homes. Meanwhile, these same schools have become a place for exhibiting all forms of undesirable behaviours. Thus this study focused more on how these deviant individuals still in the classrooms are handled and how effective the methods applied thereof to modify behaviour can be in the light of the multiethnic nature of the Ghanaian classrooms, limited resources and personnel in our educational institutions.

It is significant that attention is focused on the teacher and how he can effectively deal with or manage behaviour disorders in the school and classroom. This is so because literature reviewed in the area indicated that the regular classroom teachers are in the best position to identify behaviour-disordered children. Furthermore, behaviour disorders are frequently in-group situations and since teachers work with children five to six hours a day and five days in a week, they are in a very strong position to identify them through interaction and observation of their activities.

Bower(1981) and Walker(1982) have made similar conclusions, that teachers are in a particularly good position to make judgments about the significance of children's behaviour because they can observe behaviour directly and daily in the social context.

The Ghanaian educational institutions lack enough professionals such as school counsellors, school psychologists, special educators and social workers who could aid in the identification and management of behaviour-disordered individuals. Thus, if there can be any systematic and scientific way of helping such individuals the classroom teacher is the ultimate. Considering this state of affairs, it is imperative that the behaviour modification techniques to be employed in this study should be those that can easily be handled and implemented by the classroom teacher. Thus, in this research, the researcher considered the use of reinforcement, modelling, and a blend of aspects of the two and others (Multi-technique) as techniques for modifying behaviour or behaviour disordered individuals in the classroom.

It must be recognized that these approaches are not far removed from the classroom situation and not above the capability of the ordinary classroom teacher. Teachers have used them in different classroom situations at one time or the other. However, for these techniques to be effective in modifying behaviour they must be consciously scheduled and consistently applied.

### **Statement of the Problem**

There have been complaints from teachers, parents, school authorities, educational administrators and the larger society deploring the spate of indiscipline, hooliganism and vandalism in our schools and generally among the youth. Some of the recorded and reported incidences of students' aggression in Ghanaian schools include: six students arrested for possessing weapons in school, Kumasi academy closed down after a violent clash between students and staff, a bloody clash between students of St Thomas Aquinas and Labone secondary school, Cape Coast Technical School students destroying school property, and a student arrested for possessing a Reich Protector Automatic pistol, with one round of ammunition (Amedahe and Owusu-Banahene, 2007).

Authority figures, such as teachers are often at a loss on how best to proceed in coping with such forms of deviant behaviour. Many teachers and school administrators still resort to the use of outdated and psychologically unsound disciplinary measures. These measures often border on physical force and corporal punishments of various forms (Agbenyega, 2006). All these are done to, as it were, maintain so-called disciplined environment. Yet the problem does not seem to be reducing but rather moving from bad to worse. Although several countries, including New Zealand, Australia, United Kingdom and some states in the United States have recognized the deleterious effects of corporal punishment and thus have abolished it, Ghana still adopts the practice (Agbenyega, 2006). In Ghana, corporal punishment has been the main form of punishing students before and after independence. In the late 1970's, Ghana Education Service (G.E.S.) partially banned corporal punishment in schools but allowed head teachers or their deputies to administer it to children because it was identified that the majority of teachers were abusing it and injuring students (Boakye 2001). The punishment in Ghanaian schools is based on the thinking that it facilitates learning among pupils (Boakye 2001; Edumadze 2004). According to Woody (1969), all educators, even those in positions that are only peripherally connected with the classroom, have encountered behaviour problem children in the course of their professional duties. Behaviour problem children are found in any educational programme and they influence it to some degree. Several scholars and researchers have corroborated the counter productivity of punishment as school misbehaviour management method and have therefore called for more positive intervention than the use of punishment. Robinson et al (2005) underline the side effects of corporal punishment and question its effectiveness. If authorities as well as happenings in our school suggest that punishment has deleterious effects on students is counterproductive then seeking alternatives is an absolute necessity.

### **Purpose**

The purpose of the study therefore was to:

- Determine the extent of impact of reinforcement, modelling and multi-technique in transforming pupils with inattention and aggression behaviour disorders.
- To investigate the effects of the treatment on children of different socio economic backgrounds.

### **Hypothesis 1.**

There is no statistically significant difference in inattention behaviour problems due to reinforcement modelling and multi-technique approaches.

### **Hypothesis 2.**

There is no statistically significant difference in aggressive behaviour problems due to reinforcement modelling and multi-technique approaches.

### **Hypothesis 3**

There is no significant difference in the impact of reinforcement and modelling on children with inattention behaviour from different socioeconomic backgrounds.

### **Hypothesis 4**

There is no significant difference in the impact of reinforcement and modelling on children with aggression behaviour from different socioeconomic backgrounds

### **Theoretical Framework**

#### **Social Cognitive Learning Theory**

The main theory used to guide the study was the Social Cognitive Learning Theory as espoused by Albert Bandura. The theory suggests that Children in all cultures learn and develop by observing experienced people

engaged in culturally important activities. In this way, teachers and parents help students to adapt to new situations, aid them in their problem-solving attempts, and guide them to accept responsibility for their behaviour (Rogoff, 1990).

According to Bandura teachers can be a potent force in shaping the behaviour of their pupils with the teaching behaviour they demonstrate in class (Bandura, 1986). The importance of models is seen in Bandura's interpretation of what happens as a result of observing others:

- The observer may acquire new responses.
- Observation of models may strengthen or weaken existing responses.
- Observation of models may cause the reappearance of responses that were apparently forgotten.

If pupils witness undesirable behaviour that either is reinforced or goes unpunished, undesirable pupil behaviour may result; the reverse is also true. Classroom implications are apparent: Positive, consistent teacher behaviour contributes to a healthy classroom atmosphere. Research suggests that prestigious, powerful, competent models are more readily imitated than models who lack these qualities (Bandura, 1986). Based on the pretence influence of modelling in the teaching process, some programmes make heavy use of video modelling (Webster-Stratton, 1996).

Social cognitive learning theory has been applied extensively to the understanding of aggression (Bandura, 1973) and psychological disorders, particularly in the context of behaviour modification (Bandura, 1969). It is also a theoretical foundation of the technique of behaviour modelling which is widely used in training programmes.

## Literature

### The concept of Behaviour Disorder

Attherley (2002) believes a young person is said to have a behaviour disorder when he or she demonstrates behaviour that is noticeably different from that expected in the school or community. According to her, this can also be stated in simpler terms as a child who is not doing what adults want him to do at a particular time. She further states that there are interchangeable terms for behaviour disorders-conduct disorders, emotional disorders, and emotional disturbances. Furthermore, Attherley (2002) contends that, like learning disabilities, behaviour disorders are hard to diagnose. There are no physical symptoms or discrepancies in the body that are observable or measurable. Behaviour disorders are therefore identified by observing behaviour patterns in the child over a period of time. She observes that if a child displays some of the following behaviours he may be labelled with a behaviour disorder:

Aggression to people and animals, destruction of property- defacing school desks, graffiti, vandalism, etc., little empathy and concern for others, shows no feeling when another is in pain or remorse for unkind deeds, takes no responsibility for behaviour, also lies, cheats and steals easily, and disregards rules and regulations as well as being openly defiant. Slavin (1991) defines pupils with behaviour disorders as ones whose educational performance is adversely affected over long period to a marked degree of certain conditions. Quay and Werry (1986) also pointed out that pupils with behaviour disorders are frequently characterized as disobedient, distractible, selfish, jealous, destructive, impenitent, resistive, and disruptive.

Stantrock (2008) explained the concept of behaviour disorder as the child or adolescence way of coping. At one time or another most children and adolescents act out or do things that are destructive or troublesome to themselves or others as coping. Every teenager has a coping method; only some of the methods are troublesome or destructive. It is indicative of conduct disorder only if such behaviour persists. To him, this disorder is much more common among boys than girls. As many as 50% of parents of 4- to 6-year-old children report that their child has exhibited some such behaviour, but most such children show a decrease in antisocial behaviour within the next couple of years. Patterson (2002) in a study, concluded that behaviour disorder is that closely linked to juvenile delinquency. A term that refers to an adolescent's tendency to break the law or to engage in illicit behaviour, a broad concept that ranges from littering to murder.

### Modelling

Nwadinigwe (2006) describes modelling as the process whereby the individual is led to emit a desired behaviour through stimuli inducement and copying. Okoli (2002) on the other hand, sees modelling as the procedure of giving an opportunity for a student to observe a person who is interesting or significant to him initiate and perform the new and desired pattern of behaviour. He however, opines that modelling can only be effective if it is accompanied by verbal instructions.

Eliot, et al. (2000) suggest that four important processes seem to be involved in modelling. According to them, the first is attention. In their opinion, mere exposure to a model does not ensure the acquisition of behaviour. An observer must attend to (pay attention to) and recognise the distinctive features of the model's response. The modelling conditions also must incorporate the features such as attractiveness of the model (for example, gender) and reinforcement of the model's behaviour (for example, praise). Eliot, et al. (2000), continue

that the second process is retention. Reproduction of the behaviour implies that the pupil or the observer symbolically retains the observed behaviour. They believe that “symbolic coding helps to explain lengthy retention of observed behaviour. For example, a pupil codes, classifies, and recognises the model’s responses into personally meaningful units, thus aiding retention. The third process, according to them, is motor reproduction processes. They noted that symbolic coding produces internal models of the environment that guide the observer’s future behaviour. After observation and forming an image of the task’s solution, the teacher should have his students demonstrate the solution as soon as possible.

### **Reinforcement**

Bharijoo, (2008) describes the term reinforcement as anything the individual finds rewarding. It is related to the psychological processes of motivation and is environmentally based. Reinforcers are external environmental events that follow a response. In general terms, according to her, motivation is an internal explanation of behaviour whereas reinforcement is an external explanation of behaviour. Hence, to Bharijoo (2008) reinforcement can be defined as anything that increases the strength of response and tends to induce repetitions of behaviour that preceded the reinforcement. Something reinforcing means it strengthens the response preceding it and induces repetitions of the response. Reinforcement may be positive or negative. But both reinforcements strengthen the response and increase the probability of repetition.

Mather and Goldstein, (2001) postulated, all behaviour is maintained, changed, or shaped by the consequences of that behaviour. Although there are certain limits, such as temperamental or emotional influences related to ADHD or depression, all children function more effectively under the right set of consequences. *Reinforcers* are consequences that strengthen behaviour. They further explained that reinforcement follows a clear set of basic principles:

1. reinforcement always follows behaviour,
2. reinforcement follows the target behaviour as soon as possible,
3. reinforcement fits the target behaviour and must be meaningful to the child, and
4. multiple reinforcers, or are likely more effective than single reinforcers or punishments.

### **Negative Reinforcement as Behaviour Change Technique**

Kazdin, (1989) as cited in Elliot, et al, (2000) describes negative reinforcers as stimulus events removed after a response has been performed, whose removal also increases the behaviour or activity they follow and they operate in many situations. Negative reinforcement requires the child to work for the removal of an in-place unpleasant consequence.

The child's goal is to get rid of something that is unpleasant rather than to earn something that is desirable. In a negative reinforcement model, instead of working to earn a positive consequence, the child works to distance him- or herself from an aversive consequence. Kazdin, (1989) as cited in Elliot, et al, (2000) further reports that, negative reinforcement is often used in the classroom to manage problem behaviours. Teachers inadvertently pay attention to a child who may not be complying and withdraw their attention contingent on the child's compliance. Surprisingly, this strengthens rather than weakens the noncompliant behaviour. The next time a similar situation occurs, the child again will not comply until confronted with the aversive consequence (i.e. the teacher's attention).

### **Positive Reinforcement as Behaviour Change Technique**

Cooper et al, (1987) describe positive reinforcement as the most widely applied principle of behaviour. It is one of the cornerstones upon which applied behaviour analysts have built the technology of behaviour change. Further, they report that positive reinforcement has been used successfully alone or in combination with other procedures in numerous training and development programmes across a wide range of populations, settings, and behaviours. This view has been held by many other researchers (Wilt and Adams, 1980; Matson, 1980; Geller, Winnet and Everett, 1982; Sindelar, Honsaker and Jenkins, 1982; Parker, Cataldo, Bourland, Emurian, Corbin and Page, 1984; Haring, 1985; as cited in Mather and Goldstein, (2001) and Okoli, (2002).

The appropriate application of positive reinforcement has repeatedly been demonstrated to increase both on-task behaviour and work completion (Barkley, 1990; DuPaul & Stoner, 1994; Goldstein, 1995; and Walker & Walker, 1991). According to White, 1975 as cited in Mather and Goldstein, (2001) in the early elementary school grades, teachers exhibit a significant degree of positive reinforcement for desired behaviours. That is, when a desired behaviour is exhibited, teachers frequently respond with a consequence that is likely to increase the reoccurrence of that behaviour. By middle elementary school and through secondary school, however, teachers begin paying increasingly greater attention to undesirable behaviours and less attention to appropriate behaviours. Unfortunately, paying attention to the undesirable behaviour causes it to cease in the short run but occur more frequently in the long run.

The Convention on the Rights of the Child is the first legally binding international instrument to

incorporate the full range of human rights—civil, cultural, economic, political and social rights. The Convention sets out these rights in 54 articles and two optional protocols. It voices the basic human rights that children everywhere have: the right to survival; to develop to the fullest; to protection from harmful influences, abuse and exploitation; and to participate fully in family, cultural and social life. The four core principles of the Convention are non-discrimination; devotion to the best interests of the child; the right to life, survival and development; and respect for the views of the child. Every right stated in the Convention is inherent to the human dignity and harmonious development of every child. The Convention protects children's rights by setting standards in health care; education; and legal, civil and social services (UNICEF, 2009). Ghana acknowledges the right of children to education and has enshrined this right in Article 25 (1) of the 1992 Republican Constitution of Ghana (Republic of Ghana 1992). This Constitution precipitated the launching of the Free Compulsory and Universal Basic Education (FCUBE) policy in 1996.

Agbenyega (2006) reports on the practice of corporal punishment in two basic schools in the Greater Accra Region of Ghana. The findings reveal that an overwhelming majority of the teachers (94 and 98 percent) use corporal punishment to enforce school discipline. The results further indicate that the majority of the teachers in both school sites administer corporal punishment to students who perform poorly in academic work. This implies that students with special learning problems who are not officially identified may be punished often for poor performance. Another surprising aspect of this result is that a large number of teachers from all the schools indicate their unwillingness to discontinue corporal punishment in their schools.

## **Methodology**

### **Population, Sample & Sampling Techniques**

A multi-stage sampling technique was used in this study. The initial step in the sampling procedure was to select four out of the seven regions earmarked for the study. This was randomly done through the lottery method, after which the Greater Accra, the Eastern, the Volta, and the Central regions were selected. Similarly, the names of the various metropolitan, municipal and district assemblies of the selected regions were written on pieces of paper folded and put in four separate boxes representing the four regions. After shuffling and reshuffling the contents of the boxes, one assembly each was randomly picked by the researcher from the four regions; this exercise led to the selection of the Tema West Municipality, Komenda-Edina-Eguafo-Abirem Municipality, West Akim Municipality, and the Ho Municipality for the study.

### **Instrumentation**

This study adopted Rutter Child Behaviour Rating Scale (Rutter 1967). This behaviour rating scale was first designed by Rutter in 1967 and obtained a reliability of 0.87. It was administered to primary 4, 5, and 6 pupils by Godwyll (1992) in Ghana, and obtained a reliability coefficient of 0.83. Professor S.O. Iloeje (1992) used it and obtained a coefficient of 0.66. The second instrument used in this study was adapted from the Achenbach's System of Empirically Based Assessment Teacher's Report Form for Ages 6-18 (ASEBA TRF/6-18). This instrument was developed by T. M. Achenbach a professor of psychiatry and psychology, University of Vermont in 1983. It has since undergone several developments. The current issue widely in use is the 1991 edition, which was co-authored by Achenbach and Rescorla. The third instrument used in this study was the Behaviour Count Table for Baseline. This instrument was adopted from Kozloff (1974), in whose work it was given a strong recommendation.

### **Procedure**

The researcher first introduced himself to the District/Municipal/Metropolitan Directors of Education of the sampled districts to seek permission to enable the research to be carried out in the selected schools. This was followed by an explanation of the objectives for carrying out the study and the wider implication the findings will have for the school and the educational enterprise as a whole to the headmasters of the schools. The next stage was an interaction with the teachers of the year-four classes.

The researcher then explained in detail to each of the four teachers how the experiment was to proceed and the part he or she was expected to play in ensuring its success. The target behaviours were aggressiveness and inattention. After these specific target behaviours of interest to the researcher were selected they were defined.

### **Reinforcement.**

**Session I:** The class teacher rewarded participants for the non-occurrence of undesirable behaviour through the use of tangible reinforcers. The tangible reinforcers were derived from the list prepared from the lists submitted by the participants. The researcher and field assistants ensured that the rewarding of participants was done sparingly. The exercise was always accompanied by verbalization to explain why the reward was done. The researcher and the field assistants recorded the number of times participants received reinforcers on daily basis.



**Session II:** Ostracising offending participants. Here participants who exhibited undesirable behaviour were asked to briefly stay outside the classroom and recalled later, after the teacher had satisfied himself that the pupil had felt the effect of his/her leaving the class briefly.

**Session III:** Repositioning of seating arrangement. The teacher was instructed to change offending participants from where they were seated and returned them only when they behaved appropriately.

**Session IV:** The class teacher used both tangible and non-tangible rewards to reward participants for the non-occurrence of undesirable behaviour and for the occurrence of desirable behaviour of participants. Anytime participants demonstrated desired behaviour they were either rewarded with a tangible reinforcer or praised, clapped for or asked to stand up for recognition. This was done accompanied by verbalization to explain why to pupils.

**Session V:** This saw the teacher using another form of negative reinforcement. Here the teacher used the withdrawal of desired presents or gifts. Anytime an undesirable behaviour was exhibited by participants teacher distributed some tangible materials to the rest of the class and excluded the offenders. This was done accompanied by verbalization to let pupils understand why the action was taken.

**Session VI:** Negative reinforcement technique was used during this session. The class teacher repositioned participants who did not exhibit the desired behaviour. This, he did by changing the seating place of the offending participants. Pupils are fond of their classroom seating place and therefore participants who were changed from where they always loved to sit were compelled to conform to desirable behaviour norms so they would be returned to their regular seats.

**Session VII:** Using Token Economy in rewarding participants for non-occurrence of undesirable behaviour. The Token Economy procedure was applied here. Participants who exhibited desirable behaviour received tokens and after an accepted number, exchanged them for something pleasurable. For example, talkative participants received tokens for every fifteen to twenty minutes they were silent; when had enough tokens; they traded them for extra recreation or other things they liked. Again, this exercise was accompanied by verbalisation for beneficiaries to know why the use of the procedure.

**Session VIII:** Withdrawal of desired presents or gifts. Teacher distributed some tangible materials to the class and excluded participants who exhibited the undesirable behaviour. This was always accompanied by verbalization to explain why those participants were excluded. Field assistants recorded through observation the number of times target behaviour occurred and were negatively reinforced.

## Modelling

The objective of this treatment was to use various modelling techniques to determine the extent to which they would influence change in pupils' disordered behaviour.

**Session I:** The use of video modelling. The class teacher was instructed to show clips of celebrities who rose to stardom as a result of behaving well in class and in school. These video clips were shown at times agreed on by the teacher and the researcher. The clips were accompanied by commentaries by the teacher. This was done because modelling can only be effective if it is accompanied by verbalisation.

**Session II:** The use of live models. Senior pupils who are well behaved and liked by most pupils were brought to the class to advise or share their background with participants. This was done only at times decided on by the teacher and the researcher. The invitation of the pupils was however done by the class teacher. The choice of those to be invited was however done through the sociometric strategies. The presentations by these models were accompanied by verbal instructions from the teacher.

**Session III:** The use of symbolic model (audiotape). Recorded speeches and stories of popular figures that bother on discipline and good behaviour were presented in class. The presentations were done on periods decided on by both researcher and the teacher. The first of these speeches was that made Dr. Kofi Annan (former U.N. Secretary General). This was followed by one delivered by Nelson Mandela. The presentations were accompanied by commentaries by the teacher to spell out their relevance.

**Session IV:** The use of cartoons and sketches. The teacher presented pictures and cartoons of models for pupils to observe. Most of these cartoons were from the Ministry of Education in collaboration with Zingaro (A Child Rights NGO) production. These presentations were accompanied by verbal instructions to enable pupils understand the moral lessons in them.

**Session V:** Using other live models. The class teacher introduced three professionals (a nurse, a security person, and a medical officer) to the class on different occasions to share their experiences with pupils, stressing the need to be disciplined and eschew aggressiveness and other behaviour that would not help them in future. Pupils were allowed by the class teacher to ask questions during the interactions with the professionals.

**Session VI:** The use of video modelling. Teacher once more, showed pupils video clips of celebrities who rose to stardom as a result of behaving well in class and in school. The personalities in the clips were not the same as those in the earlier clip shown. The clips were accompanied by commentaries by the teacher. Here the Video Prompting method which involves showing the participant a video model of one step of the task and then giving

the person the opportunity to complete that step before the next step is shown was used.

**Session VII:** The use of symbolic models. Stories of popular figures that bother on discipline and good behaviour were told by the class teacher in class. There were also traditional Ghanaian folktale stories that were told to them. The stories were told at times decided on by both the researcher and the class teacher. The stories were accompanied by commentaries by the teacher to spell out their relevance.

**Session VIII:** The use of live models. Senior pupils who are well-behaved and liked by most of the pupils were brought to the class to advise and share their backgrounds in terms of good manners in class with participants. This was done only at times decided on by the teacher and the researcher. The invitation of these good mannered pupils was done by the teacher. The choice of such pupils was done through the sociometric strategies with emphasis on the direction the choices of the participants tilted.

### **Multi-technique Approach**

This was the combination of the reinforcement and the modelling techniques. It was used to determine whether these combined techniques would have a different impact on participants from the individual measures (reinforcement and modelling) used.

**Session I.** The class teacher rewarded participants for the non-occurrence of undesirable behaviour through the use of tangible reinforcers. The tangible reinforcers were derived from the list prepared from the lists submitted by the participants. The researcher and field assistants ensured that the rewarding of participants was done sparingly. The exercise was always accompanied by verbalization to explain why the rewarding was done. The researcher and the field assistants recorded the number of times participants received reinforcers on daily basis.

**Session II.** The class teacher used both tangible and non-tangible rewards to reward participants for the non-occurrence of undesirable behaviour and for the occurrence of desirable behaviour of participants. Anytime participants demonstrated desired behaviour they were either rewarded with a tangible reinforcer or praised, clapped for or asked to stand up for recognition. This was done accompanied by verbalization to explain why to pupils.

**Session III.** The class teacher used negative reinforcers during this session. Teacher ostracized participants who displayed undesirable behaviour. This he did by asking the offending participant to stay outside the classroom and recalled him or her later, after thehe/she had satisfied himself/herself that the pupil had felt the effect of his/her leaving the class briefly. Researcher and field assistants recorded the number of times the technique was used by the teacher.

**Session IV.** The class teacher used modelling techniques to elicit good behaviour from the participants. The first strategy used here was the video modelling. Teacher showed some video clips to participants accompanied by verbalization explaining to pupils why they would have to emulate the models in the clips.

**Session V.** The participants were administered with other modelling techniques. Here the teacher invited some senior pupils to the class for participants to observe. These were seniors who were very much respected by the pupils in the schools. Their presence in the class was always accompanied by verbalizations by the teacher explaining the need for participants to emulate them.

**Session VI:** The last form of modelling was used during this session. Here the teacher used symbolic modelling. Symbolic models of audio tapes were used by the class teacher to elicit good behaviour from participants. Periods for the airing of the tape were fixed at times which did not disrupt the normal lesson periods.

**Session VII.** Negative reinforcement technique was used during this session. The class teacher repositioned participants who did not exhibit the desired behaviour. This, he did by changing the seating place of the offending participants. Pupils are fond of their classroom seating places and therefore participants who were changed from where they always loved to sit were compelled to conform to desirable behaviour norms so they would be returned to their regular seats.

**Session VIII:** This session saw the teacher using another form of negative reinforcement. Here the teacher used the withdrawal of desired presents or gifts. Anytime an undesirable behaviour was exhibited by participants teacher distributed some tangible materials to the rest of the class and excluded the offenders. This was done accompanied by verbalization to let pupils understand why the action was taken.

**Control Group** This was the waiting group who were administered the best method that works after the experimental period.

**Hypothesis 1. There is no statistically significant difference in inattention behaviour problems due to reinforcement modelling and multi-technique approaches.**

**Table 1**  
**Pre-test and Post-test scores on inattention across groups**

Experimental Group	N	Pre-test		Post-test	
		Mean	SD	Mean	SD
Reinforcement	16	24.06	4.343	7.19	1.974
Modeling	16	23.44	4.618	10.69	3.877
Multi-technic	16	22.81	3.449	13.56	3.425
Control	16	21.94	5.983	17.25	5.814
<b>Total</b>	<b>64</b>	<b>24.06</b>	<b>6.983</b>	<b>12.17</b>	<b>5.409</b>

The descriptive data presented in table 1 indicates that the four experimental groups did not differ significantly in inattention behaviour before the treatment, with respective mean score ranging from 21.94 for the control group, 23.44 for the modelling group, 24.06 for to the reinforcement group to 22.81 for the multi-technique group.

Table 1 further shows that at post-test, the Reinforcement group recorded the greatest improvement in their inattention scores with a mean of 7.19 (Sd= 1.974), followed by the Modeling group with a mean of 10.69 (Sd = 3.877) and the Multi-technique group with a mean of 13.56 (Sd= 3.425), while the control group did not experience any significant improvement with a mean score of 17.25 (Sd= 5.814). To determine if these differences were statistically significant, the ANCOVA results in table 2 are displayed.

**Table 2: Tests of Between-Subjects Effects**

Source	Sum of Squares	df	Means Squares	F
Corrected Model	1493.312	4	373.328	62.969
Pre-inattention	617.015	1	617.015	104.071
Group	1411.497	3	470.449	79.359
Error	349.798	59	5.929	
Total	11325.000	64		

\*Significant at 0.05; df = 3 & 59; critical F = 4.16

Table 2 shows that a calculated F-value of 79.36 resulted as the difference in inattention behaviour problem due to experimental conditions. This calculated F-value of 79.36 is significant since it is greater than the critical F-value of 4.16 given 3 and 59 degrees of freedom at 0.05 levels of significance. This means that there is a significant difference in inattention behaviour problems among participants in the four experimental groups.

Based on the significant F-value obtained, further analysis of data was done using Fisher's Least Square method to do a Pairwise comparison of the group means to determine which group differs from the other on in attention behaviour and the trend of the difference. The result of the analysis is presented in Table 3.

**Table 3: Fisher's Least Square method on difference in attention behaviour across experimental conditions**

Group	Reinforcement n = 16	Modelling n = 16	Multi-technique n =16	Control n = 16
Reinforcement	7.19a	-4.07*	-7.41*	-11.70*
Modelling	-3.50	10.69a	-3.34*	-7.63*
Multi-technique	-6.37	-2.87	13.56a	-4.29*
Control	-10.06	-6.56	-3.69	17.25a

a = Group means are in the diagonal; difference in group means are below the diagonal while protected t-test are above the diagonal.

\*Significant at 0.05

From Table 3, the pair-wise comparison of group means shows that significant difference on inattention existed between participants exposed to reinforcement and those exposed to modelling ( $t = -4.07$ ;  $df = 30$  ; critical  $t = 2.04$  ;  $p < 0.05$ ). Similarly participants exposed to multi-technique and those exposed to reinforcement exhibited significant difference on inattention ( $t = -7.41$ ;  $df = 30$ ; critical  $t = 2.04$  ;  $p < 0.05$ ). Significant difference was recorded between the modelling and the multi-technique groups. ( $t = -3.34$ ;  $df = 30$ ; critical  $t = 2.04$ ;  $p < 0.05$ ). Further significant difference existed between the reinforcement and the control groups ( $t = -11.70$ ;  $df = 30$ ; critical  $t = 2.04$ ;  $p < 0.05$ ). The null hypothesis was rejected.



**Hypothesis 2. There is no statistically significant difference in aggressive behaviour problems due to reinforcement modelling and multi-technique approaches.**

To test hypothesis 2, a one-way analysis of covariance (ANCOVA) was conducted to compare the effectiveness of the three different interventions designed to reduce or terminate participants' aggressive behaviour. The independent variable was the type of intervention (reinforcement, modelling, multi-technic) and the dependent variable consisted of scores on the ASEBA TRF test administered after the intervention was completed. Participants' scores on pre-intervention administration of the ASEBA TRF test were used as the covariate in this analysis. Preliminary checks were conducted to ensure that all assumptions for ANCOVA had not been violated. Pairwise comparisons were conducted to establish the effect sizes of the groups.

The results are shown in tables 4, 5 and 6 below.

**Table 4: Pre-test Post-test scores on aggression across groups**

Experimental Group	N	Pre-test		Post-test		
		Mean	SD	Mean	SD	MD
Reinforcement	16	17.50	7.528	8.38	2.604	9.12
Modeling	16	14.06	4.878	10.44	3.268	3.62
Multi-technic	16	15.39	5.099	12.00	3.246	3.39
Control	16	14.69	6.085	14.88	6.010	0.19

\*p<.05

Table 4 Shows that participants exposed to reinforcement had the highest post-test mean difference score of 9.12 on aggression, followed by those exposed to modelling with a post-test mean of 3.62 while those exposed to multi-technique had post-test mean difference of 3.39, with the control group coming up with the least post-test mean difference score of 0.19.

To determine if these differences were statistically significant, the one-way ANCOVA results in table 5 are displayed.

**Table 5.**

**Analysis of Covariance on difference in aggression across groups**

**Tests of Between-Subjects Effects**

Source	Sum of Squares	df	Mean Square	F
Model	1761.611	4	440.403	77.796
Intercept	4.801	1	4.801	.848
Group	1235.628	3	411.876	72.757
Error	333.998	59	5.661	
Total	7777.000	64		

\*Significant at 0.05; df = 3 and 59; critical F = 4.16

Table 5 shows that a calculated F-value of 72.76 resulted as the difference in aggression due to experimental conditions. This calculated F-value of 72.76 is significant since it is greater than critical F-value of 4.16 given 3 and 59 degrees of freedom. For this reason the null hypothesis was rejected.

In view of the significant F-value obtained, further analysis of data was done using Fisher's Least Square method to do a pair-wise comparison of the group means to determine which group differs from the other on aggression and the trend of the difference. The result of the analysis is displayed in Table 8.

**Table 6: Fisher's Least Square method on difference in aggression across experimental conditions**

Group	Reinforcement n = 16	Modelling n=16	Multi-technique n= 16	Control n=16
Reinforcement	8.38a	-2.45*	-4.31*	-7.74*
Modelling	-2.06	10.44a	-1.86	-5.29*
Multi-technique	-3.62	-1.56	12.00a	-3.43*
Control	-6.50	-4.44	-2.88	14.88a

a = group means are in the diagonal; difference in group means are below the diagonal while protected t-values are above the diagonal.

\*Significant at 0.05.

In Table 6, the pair wise comparison of group means show that no significant difference in aggression existed between participants exposed to modelling and those exposed to multi-technique (t = -1.86; df=30; critical t = 2.04; p> 0.05). However, participants exposed to reinforcement and those in the modelling group exhibited

difference between them ( $t = -2.45$ ;  $df = 30$ ; critical  $t = 2.04$ ;  $p < 0.05$ ). Similarly, the reinforcement group and the multi-technique group showed significant difference between them ( $t = -4.31$ ;  $df = 30$ ; critical  $t = 2.04$ ;  $p < 0.05$ ). Significant difference also existed between the reinforcement and the control groups ( $t = -7.74$ ;  $df = 30$ ; critical  $t = 2.04$ ;  $p < 0.05$ ). Modelling and control groups exhibited significant difference as well ( $t = -5.29$ ;  $df = 30$ ; critical  $t = 2.04$ ;  $p < 0.05$ ). The multi-technique group participants and those of the control group also showed significant difference between them ( $t = -3.43$ ;  $df = 30$ ; critical  $t = 2.04$ ;  $p < 0.05$ ).

**There is no statistically significant difference in the behaviour change of participants from different socio-economic backgrounds who exhibit inattention behaviour problems who received the treatments.**

To test this hypothesis a 2 by 4 between groups analysis of covariance (ANCOVA) was conducted to assess the effectiveness of three programmes in reducing or terminating inattention behaviour problem for participants of high and low socio-economic backgrounds. The independent variables were the type of programme (reinforcement, modelling, and multi-technique) and socio-econs. The dependent variable was the scores on ASEBA TRF/ 6-18 administered following the completion of the intervention programmes (post- inattention). Scores on the ASEBA TRF/6-18 administered prior to the commencement of the programmes (pre-inattention) were used as covariate to control for individual differences.

Preliminary checks were conducted to ensure that there were no violations of assumptions of normality, linearity, homogeneity of variances, homogeneity of regression slopes, and reliable measurement of covariate. The results of the analysis are shown in Tables 21, 22, and 23 below.

**Table 7**

**Descriptive Statistics on difference in post-test scores on inattention behaviour due to socio-economic background and experimental conditions.**

Experimental Group	Socio-econs	N	Pre-test		Post-test	
			Mean	SD	Mean	SD
Reinforcement	Low	4	21.00	1.826	7.00	1.155
	High	12	25.08	4.502	7.25	2.221
	Total	16	24.06	4.343	7.19	1.974
Modeling	Low	14	23.00	3.783	10.43	3.480
	High	2	26.50	10.607	12.50	7.778
	Total	16	23.44	4.616	10.69	3.877
Multi-technique	Low	10	22.00	3.197	14.30	2.452
	High	6	21.50	4.135	12.33	4.633
	Total	16	21.81	3.449	13.56	3.425
Control	Low	12	16.67	5.499	16.67	5.399
	High	4	17.75	7.632	19.00	7.528
	Total	16	16.94	5.836	17.25	5.814
Total	Low	40	23.15	7.029	12.93	4.937
	High	24	25.58	6.775	10.92	6.014
	Total	64	24.06	6.983	12.17	5.409

The descriptive statistics above indicates that participants from both high socio-economic backgrounds were similar across the four experimental groups before treatment. With low socio-econs, the mean scores ranged from 16.67 for the Control group, 21.00 for the Reinforcement group and 23.00 for the Modeling group to 22.00 for Multi-technique group.

The mean scores for high socio-econs ranged from 17.72 for the Control group, 25.08 for the Reinforcement group and 26.50 for the Modeling group, to 21.81 for the Multi-technique group.

At post-test however, though the reinforcement group received the greatest improvement of 7.19 ( $Sd = 1.974$ ), participants of low socio-economic background received greater improvement with a mean score of 7.00 ( $Sd = 1.155$ ) than those from high socio-economic background with a mean score of 7.25 ( $Sd = 2.221$ ). While the Modeling group followed in terms of improvement after treatment with a mean score of 10.69 ( $Sd = 3.877$ ), participants from the low socio-economic background recorded greater improvement than those from high socio-economic background with a mean scores of 10.43 ( $Sd = 3.480$ ) and 12.50 ( $7.778$ ) for low and high socio-econs respectively. The Multi-technique group followed with a mean score of 13.56 ( $3.425$ ) and also participants of high socio-economic background recorded greater improvement than those from low socio economic background. While low socio –econs recorded 14.30 ( $Sd = 2.452$ ) high socio-econs recorded 12.33 ( $Sd = 4.633$ ). The Control group did not record any improvement with a mean score of 17.25 ( $Sd = 5.814$ ). The mean scores for low and high socio-econs respectively were 16.67 ( $Sd = 5.399$ ) and 19.00 ( $Sd = 7.528$ ).

To determine if these differences were significant the two way ANCOVA results are displayed.

**Table 8**  
**Analysis of Covariance on difference in inattention behaviour due to socio-economic background and experimental conditions.**

Source	Sum of Squares	df	Mean Square	F	Sig.
<b>Model</b>	1531.283	8	191.410	33.761	.000
<b>Intercept</b>	45.374	1	45.374	8.003	.007
<b>Exp. Group</b>	1195.562	3	398.521	70.291	.000
<b>Socio-econs</b>	6.265	1	6.265	1.105	.298
<b>Group * Socio-econs</b>	29.661	3	9.887	1.744	.169
<b>Error</b>	311.826	55	5.670		
<b>Total</b>	11325.000	64			

After adjusting for pre-inattention scores, there was no significant interaction effect. [ $F(3, 55) = 1.744$ ,  $p < .05$ ] with a small effect size (partial eta squared = .09). One of the main effects was statistically significant while the other was not [programme;  $F(3, 55) = 70.29$ ,  $p < .0005$ ; socio-econs  $F(3, 55) = 1.11$ ,  $p = .30$ ]. These results suggest that on inattention participants from low and high socio economic backgrounds responded similarly to the three types of intervention programmes. The null hypothesis which states that there is no statistically significant difference in the behaviour change of participants from different socio-economic backgrounds who exhibit inattention behaviour problems who received the treatments is thus accepted.

### Hypothesis 3

**There is no statistically significant difference in the behaviour change of participants from different socio-economic backgrounds who exhibit aggression behaviour problems who received the treatments.**

Results pertaining to testing of hypothesis 4 are presented in tables 9, 10, and 11.

Table 9 presents the pre-test and post-test means and standard deviations for participants of low and high socio-economic backgrounds the four experimental groups. Table 10 presents the summary data of 2-way Analysis of Covariance on the effects of socio-economics and experimental conditions on the post-test scores ASEBA TRF/6-18 using the pre-test score as covariate.

**Table 9**  
**Descriptive Statistics of Socio-economics and Aggression**

Experimental Group	Socio-econs	Pre-test			Post-test	
		N	Mean	SD	Mean	SD
<b>Reinforcement</b>	Low	4				
	High	12	19.67	7.451	4.83	2.855
	Total	16	17.50	7.528	4.38	2.604
<b>Modeling</b>	Low	14	13.86	4.538	6.00	2.774
	High	2	15.50	9.192	9.50	6.364
	Total	16	14.06	4.878	6.44	3.286
<b>Multi-technique</b>	Low	10	30.80	4.662	11.90	2.726
	High	6	29.83	6.178	12.17	4.262
	Total	16	30.44	5.099	12.00	3.246
<b>Control</b>	Low	12	14.17	6.562	14.25	6.552
	High	4	16.25	4.787	16.75	4.113
	Total	16	14.69	6.085	14.88	6.010
<b>Total</b>	Low	40	17.90	9.060	9.65	5.794
	High	24	21.29	8.322	9.04	5.827
	Total	64	19.17	8.879	9.42	5.767

The results of the descriptive data above indicate that participants from the two backgrounds were similar across the four experimental groups before treatment. With low socio-economics the respective mean scores ranged from 11.00 for the reinforcement group, 13.86 for modelling group, and 14.17 for the control group, to 30.80 for the multi-technique group.

The mean scores for the high socio-economics ranged from 15.50 for modelling group, 16.25 for the control group, and 19.67 for the reinforcement group, to 29.83 for the multi-technique group.

At post-test, the reinforcement group recorded a mean score of 3.00 (Sd=.816), the modelling group recorded 6.00 (Sd=2.774), the multi-technique group recorded a mean score of 11.90 (Sd=2.726), while the control group did not realize any change at all with a mean score of 14.25 (Sd=6.552) all for the low socio-economics. As regards high socio-economics, the reinforcement group recorded the greatest improvement with a mean score of 4.83 (Sd= 2.855), the modelling group followed with a mean score of 9.50 (Sd=6.364), the multi-technique group followed with a mean score of 12.17 (Sd=4.262), and the control group followed with a mean score of 16.75 (Sd=4.113) signifying no change.

To determine if these differences were significant the two way ANCOVA results are displayed.

**Table 10**

**Tests of Between-Subjects Effects**

**Analysis of Covariance on difference in aggression due to socio-economic background and experimental conditions**

Source	Sum of Squares	Df	Mean Square	F	Sig.
Model	1807.919	8	225.990	43.204	.000
Intercept	4.904	1	4.904	.938	.337
Exp. Group	987.611	3	329.204	62.936	.000
Socio-econs	1.538	1	1.538	.294	.590
Group * Socio-econs	45.443	3	15.148	2.896	.043
Error	287.690	55	5.231		
Total	7777.000	64			

After adjusting for pre-aggression scores, there was significant interaction effect. [F(3,55)=2.896, p<.05] with a small effect size (partial eta squared =.14) One of the main effects was statistically significant while the was not [programme: F (3,55) =62.94, p<0005; socio-economics: F (3,55) = .29, p=.60]. These results show that even though participants of the two socio-economic backgrounds differed on their responses across the treatments, these differences were not big

**Table 11. Pairwise Comparisons: Adjustment for multiple comparison: Bonferroni**

(I) Experimental group to which a participant belongs	(J) Experimental group to which a participant belongs	Mean Difference (I-J)	Std. Error	Sig.
<b>reinforcement</b>	Reinforcement			
	Modelling	-4.208(*)	1.088	.000
	multi-technique	.465	1.184	.696
	Control	-11.655(*)	.934	.000
<b>modelling</b>	Reinforcement	4.208(*)	1.088	.000
	Modelling			
	multi-technique	4.674(*)	1.329	.001
	Control	-7.447(*)	1.088	.000
<b>multi-technique</b>	Reinforcement	-.465	1.184	.696
	Modelling	-4.674(*)	1.329	.001
	multi-technique			
	Control	-12.120(*)	1.188	.000
<b>Control</b>	Reinforcement	11.655(*)	.934	.000
	Modelling	7.447(*)	1.088	.000
	multi-technique	12.120(*)	1.188	.000
	Control			

Based on estimated marginal means

\* The mean difference is significant at the .05 level.

Evidence from Table11 shows that significant between group differences exist between the reinforcement group and each of modelling group and control group with respective mean differences of-4.21 and -11.66 each of which was significant at 0.05 level of significance.

Table 11 also indicates significant differences between the modelling group and the multi-technique group (MD= 4.67) and between the modelling group and the control group (MD=-7.45). Significant difference was also found between the multi-technique group and the control group (MD=-12.12).

In summary it was observed that the reinforcement group and multi-technique group were homogeneous group as they were equally effective in improving non-aggression in the participants

**There is no statistically significant difference in the behaviour change of participants from different socio-economic backgrounds who exhibit inattention behaviour problems who received the treatments.**

To test this hypothesis a 2 by 4 between groups analysis of covariance (ANCOVA) was conducted to assess the effectiveness of three programmes in reducing or terminating inattention behaviour problem for participants of high and low socio-economic backgrounds. The independent variables were the type of programme (reinforcement, modelling, and multi-technique) and socio-econs. The dependent variable was the scores on ASEBA TRF/ 6-18 administered following the completion of the intervention programmes (post-inattention). Scores on the ASEBA TRF/6-18 administered prior to the commencement of the programmes (pre-inattention) were used as covariate to control for individual differences.

Preliminary checks were conducted to ensure that there were no violations of assumptions of normality, linearity, homogeneity of variances, homogeneity of regression slopes, and reliable measurement of covariate. The results of the analysis are shown in Tables 12, 13 and 14 below

**Table 12**

**Descriptive Statistics on difference in post-test scores on inattention behaviour due to socio-economic background and experimental conditions.**

Experimental Group	Socio-econs	N	Pre-test		Post-test	
			Mean	SD	Mean	SD
<b>Reinforcement</b>	Low	4	21.00	1.826	7.00	1.155
	High	12	25.08	4.502	7.25	2.221
	Total	16	24.06	4.343	7.19	1.974
<b>Modeling</b>	Low	14	23.00	3.783	10.43	3.480
	High	2	26.50	10.607	12.50	7.778
	Total	16	23.44	4.616	10.69	3.877
<b>Multi-technique</b>	Low	10	22.00	3.197	14.30	2.452
	High	6	21.50	4.135	12.33	4.633
	Total	16	21.81	3.449	13.56	3.425
<b>Control</b>	Low	12	16.67	5.499	16.67	5.399
	High	4	17.75	7.632	19.00	7.528
	Total	16	16.94	5.836	17.25	5.814
<b>Total</b>	Low	40	23.15	7.029	12.93	4.937
	High	24	25.58	6.775	10.92	6.014
	Total	64	24.06	6.983	12.17	5.409

The descriptive statistics above indicate that participants from both high socio-economic backgrounds were similar across the four experimental groups before treatment. With low socio-econs, the mean scores ranged from 16.67 for the Control group, 21.00 for the Reinforcement group and 23.00 for the Modeling group to 22.00 for Multi-technique group.

The mean scores for high socio-econs ranged from 17.72 for the Control group, 25.08 for the Reinforcement group and 26.50 for the Modeling group, to 21.81 for the Multi-technique group.

At post-test however, though the reinforcement group received the greatest improvement of 7.19 (Sd= 1.974), participants of low socio-economic background received greater improvement with a mean score of 7.00 (Sd=1.155) than those from high socio-economic background with a mean score of 7.25 (Sd=2.221). While the Modeling group followed in terms of improvement after treatment with a mean score of 10.69 (Sd=3.877), participants from the low socio-economic background recorded greater improvement than those from high socio-economic background with a mean scores of 10.43 (Sd=3.480) and 12.50 (7.778) for low and high socio-econs respectively. The Multi-technique group followed with a mean score of 13.56 (3.425) and also participants of high socio-economic background recorded greater improvement than those from low socio economic background. While low socio –econs recorded 14.30 (Sd=2.452) high socio-econs recorded 12.33 (Sd=4.633).The Control group did not record any improvement with a mean score of 17.25 (Sd=5.814). The mean scores for low and high socio-econs respectively were 16.67 (Sd=5.399) and 19.00 (Sd=7.528).

To determine if these differences were significant the two way ANCOVA results are displayed.



**Table 13**  
**Analysis of Covariance on difference in inattention behaviour due to socio-economic background and experimental conditions.**

Source	Sum of Squares	df	Mean Square	F	Sig.
<b>Model</b>	1531.283	8	191.410	33.761	.000
<b>Intercept</b>	45.374	1	45.374	8.003	.007
<b>Exp. Group</b>	1195.562	3	398.521	70.291	.000
<b>Socio-econs</b>	6.265	1	6.265	1.105	.298
<b>Group * Socio-econs</b>	29.661	3	9.887	1.744	.169
<b>Error</b>	311.826	55	5.670		
<b>Total</b>	11325.000	64			

After adjusting for pre-inattention scores, there was no significant interaction effect. [F (3, 55) =1.744, p<.05] with a small effect size (partial eta squared =.09). One of the main effects was statistically significant while the other was not [programme; F (3,55) =70.29, p<.0005; socio-econs F (3,55)=1.11, p= .30]. These results suggest that on inattention participants from low and high socio economic backgrounds responded similarly to the three types of intervention programmes. The null hypothesis which states that there is no statistically significant difference in the behaviour change of participants from different socio-economic backgrounds who exhibit inattention behaviour problems who received the treatments is thus accepted

#### Hypothesis 4

**There is no statistically significant difference in the behaviour change of participants from different socio-economic backgrounds who exhibit aggression behaviour problems who received the treatments.**

Results pertaining to testing of hypothesis eight are presented in tables 24, 25, and 26.

Table 24 presents the pre-test and post-test means and standard deviations for participants of low and high socio-economic backgrounds the four experimental groups. Table 25 presents the summary data of 2-way Analysis of Covariance on the effects of socio-economics and experimental conditions on the post-test scores ASEBA TRF/ 6-18 using the pre-test score as covariate.

**Table 14**  
**Descriptive Statistics of Socio-economics and Aggression**

Experimental Group	Socio-econs	Pre-test			Post-test	
		N	Mean	SD	Mean	SD
<b>Reinforcement</b>	Low	4				
	High	12	19.67	7.451	4.83	2.855
	Total	16	17.50	7.528	4.38	2.604
<b>Modeling</b>	Low	14	13.86	4.538	6.00	2.774
	High	2	15.50	9.192	9.50	6.364
	Total	16	14.06	4.878	6.44	3.286
<b>Multi-technique</b>	Low	10	30.80	4.662	11.90	2.726
	High	6	29.83	6.178	12.17	4.262
	Total	16	30.44	5.099	12.00	3.246
<b>Control</b>	Low	12	14.17	6.562	14.25	6.552
	High	4	16.25	4.787	16.75	4.113
	Total	16	14.69	6.085	14.88	6.010
	Low	40	17.90	9.060	9.65	5.794
<b>Total</b>						
	High	24	21.29	8.322	9.04	5.827
	Total	64	19.17	8.879	9.42	5.767

The results of the descriptive data above indicate that participants from the two backgrounds were similar across the four experimental groups before treatment. With low socio-economics the respective mean scores ranged from 11.00 for the reinforcement group, 13.86 for modelling group, and 14.17 for the control group, to 30.80 for the multi-technique group.

The mean scores for the high socio-economics ranged from 15.50 for modelling group, 16.25 for the control group, and 19.67 for the reinforcement group, to 29.83 for the multi-technique group.

At post-test, the reinforcement group recorded a mean score of 3.00 (Sd=.816), the modelling group recorded 6.00 (Sd=2.774), the multi-technique group recorded a mean score of 11.90 (Sd=2.726), while the control group did not realize any change at all with a mean score of 14.25 (Sd=6.552) all for the low socio-economics. As regards high socio-economics, the reinforcement group recorded the greatest improvement with a mean score of 4.83 (Sd= 2.855), the modelling group followed with a mean score of 9.50 (Sd=6.364), the multi-technique group followed with a mean score of 12.17 (Sd=4.262), and the control group followed with a mean score of 16.75 (Sd=4.113) signifying no change.

To determine if these differences were significant the two way ANCOVA results are displayed.

**Table 15**

**Tests of Between-Subjects Effects**

**Analysis of Covariance on difference in aggression due to socio-economic background and experimental conditions**

Source	Sum Squares	Df	Mean Square	F	Sig.
Model	1807.919	8	225.990	43.204	.000
Intercept	4.904	1	4.904	.938	.337
Exp. Group	987.611	3	329.204	62.936	.000
Socio-econs	1.538	1	1.538	.294	.590
Group * Socio-econs	45.443	3	15.148	2.896	.043
Error	287.690	55	5.231		
Total	7777.000	64			

After adjusting for pre-aggression scores, there was significant interaction effect. [F(3,55)=2.896, p<.05] with a small effect size (partial eta squared =.14) One of the main effects was statistically significant while the other was not [programme: F (3,55) =62.94, p<0005; socio-economics: F (3,55) = .29, p=.60]. These results show that even though participants of the two socio-economic backgrounds differed on their responses across the treatments, these differences were not big.

**Table 15 Pairwise Comparisons: Adjustment for multiple comparison: Bonferroni**

(I) Experimental group to which a participant belongs	(J) Experimental group to which a participant belongs	Mean Difference (I-J)	Std. Error	Sig.
<b>reinforcement</b>	Reinforcement			
	Modelling	-4.208(*)	1.088	.000
	multi-technique	.465	1.184	.696
	Control	-11.655(*)	.934	.000
<b>modelling</b>	Reinforcement	4.208(*)	1.088	.000
	Modelling			
	multi-technique	4.674(*)	1.329	.001
<b>multi-technique</b>	Reinforcement	-7.447(*)	1.088	.000
	Modelling	-4.674(*)	1.329	.001
	multi-technique			
<b>Control</b>	Control	-12.120(*)	1.188	.000
	Reinforcement	11.655(*)	.934	.000
	Modelling	7.447(*)	1.088	.000
	multi-technique	12.120(*)	1.188	.000
	Control			

Based on estimated marginal means

\* The mean difference is significant at the .05 level.

Evidence from Table 15 shows that significant between group differences exist between the reinforcement group and each of modelling group and control group with respective mean differences of -4.21 and -11.66 each of which was significant at 0.05 level of significance.

Table 15 also indicates significant differences between the modelling group and the multi-technique group (MD= 4.67) and between the modelling group and the control group (MD=-7.45). Significant difference was also found between the multi-technique group and the control group (MD=-12.12).

In summary it was observed that the reinforcement group and multi-technique group were homogeneous group as they were equally effective in improving non-aggression in the participants

### Contributions to Knowledge

1. This study has in its little way helped to expose the hollowness in the opinion held by some individuals that school children of high socioeconomic background respond differently on measures of discipline as compared to those from the low socio-economic background. The study highlighted the strength in the multi-ethnic classroom unity.
2. The study has also shown that when classroom teachers adopt strategies which are non-intrusive in mitigating classroom indiscipline among pupils it will in turn help reduce to barest minimum, if not to eliminate completely the application of corporal punishment in Ghanaian classrooms which has been largely ineffective in managing behaviour disorder.

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