



# **Effectiveness of Response Cost and Time out in Decreasing Lateness Among Senior Secondary School Students in Jigawa State, Nigeria**

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Received 30 March 2017, Revised 16 June 2017, Accepted 29 June 2017, Published 01 July 2017

**Abstract:** Disturbed by incessant display of school lateness among senior secondary school students in Jigawa state, and in response to the failure of conventional punitive punishment procedures of whipping and hard labour in stopping this unhealthy behaviour and in an effort to provide and test the efficacy of alternative behaviour modification methods. This research investigates effectiveness of response cost and time-out in decreasing lateness. The study adopts pre-test post-test procedure using 32 randomly selected public secondary schools. Four weeks' average percentage of lateness in relation to total school enrolment was checked and recorded using school lateness checklist. Thereafter treatment of response cost was administered in 12 schools and time-out was administered in another set of 12 schools. In both instances results analysed using t-test for related samples revealed a p-value of 0.00 at 0.05 level of significance suggesting rejection of null hypotheses for the emergence of significant difference (decrease in lateness) instrumented by treatment with response cost and time-out respectively. The third hypothesis predicting significant difference in the effectiveness of response cost and time-out was retained as p.value was found to be 0.89, LS 0.05. Among other things, use of response cost and time-out behaviour modification strategies in senior secondary school schools was recommended.

**Keywords:** Response cost, Time out, Lateness

## **INTRODUCTION**

Over the years, one of the major challenges facing teachers and to a larger degree, school administrators is persistent coming late to schools by a large proportion of students. In a recent fact finding mission consisting of 10 secondary schools in one of the major towns in Jigawa State, an unprecedented number of students were found to have arrived schools by 8:30 am. It is also very common to see students on their way to schools even by 9:00 am in almost all the eight local governments that made up of Kano metropolitan area. Literally, the term "lateness" implies a situation where an individual arrives after the proper, scheduled or usual time (Oxford Advanced Learners' Dictionary, 5th ed., 1995). Furthermore, Lauby (2009) puts it as a term used to describe "people not showing up on time". Breezes, Markey and Woll(2010) contributed by saying that lateness is synonymous with "tardiness", which implies being slow to act or slow to respond, thus not meeting up with proper or usual timing. Weade (2004) defines lateness as being late for any

measurable length of time past the stated or scheduled start time for work or school.

Thomson (2006) opines that one of the most frustrating problems in today's classroom is lateness to school that suggests that school is not important and valuable to them. He also stresses that school lateness is a form of behaviour where students are late, slow and inactive in whatever they are doing. It brings about many problems like getting lower grades which lead to failure, it increases the chances of drop out, suspension and other disciplinary charges, affects their job performance as they will always be fired from work and also has greater negative effects to teachers and fellow students (Scott and Potter, 2007).

This unhealthy behaviour of coming late to schools does not only inhibit the process of achieving the goals of the school, it courses distraction to the individual and the whole school system as well as leading to absenteeism and general failure in life: (Dafaghoh, 2001). In order to remedy the attitudinal behaviour of lateness some schools provide measures.



As rightly observed by Ugwuembulam and Ibrahim (2015) Schools check lateness from 7:50am when the morning assembly is on. All learners coming to school at that time through the school gate are stopped. In some schools, their names and time of arriving school are recorded. Late-comers are usually punished. The punishment may include kneeling them down for some time, asking them to pick papers around the school buildings, giving them some portion of land/field to cut grasses or even some strokes of the cane on their palms or buttocks. It is expected that with the punishment given out to latecomers, lateness to school behaviour should be non-existent or at worst drastically reduced. Most of these measures appear to be punitive and with the boring continues usage, their efficacy in diminishing targeted behaviour (lateness) is being gradually exhausted and pooped. Despite these measures however, it now seems to be that the lateness to school behaviour defies remediation (Ugwuegbulam & Ibrahim 2015.). Although extensively used with humans, there have been relatively few evaluative studies of time-out and response cost and little has been done to determine what aspects of these procedures are responsible for any subsequent response suppression. In addition, there appear to be no studies that involve a comparison of both techniques. Therefore, the purpose of the present study is to analyze the effectiveness of time-out and response cost and, additionally, to compare their relative effectiveness in suppressing undesirable behaviour.

It is in an effort to provide lasting solution to school lateness, that this paper investigated the efficacy of some behavioural negative reinforcement strategies in drastically reducing the level of this somewhat very contagious behaviour, hence response cost and time-out were employed. The former is the term used for removing reinforcement for an undesirable or disruptive behaviour. In terms of Applied Behaviour Analysis, it is a form of negative punishment. By removing something (a preferred item, access to reinforcement) you decrease the likelihood that the target behaviour will appear again. The latter suggests - temporary withdrawal of love or affection. The study is expected to assist teachers and school administrators as well as parents in selection of most appropriate and result oriented behaviour modification strategies. The study though involved all senior secondary schools is limited to day senior secondary schools. Specifically, the objectives of the investigation include:

1. To determine the effectiveness of response cost in decreasing lateness among senior school students in Jigawa State

2. To determine the effectiveness of time-out in decreasing lateness among senior school students in Jigawa State
3. To determine the differences in effectiveness of response cost and time-out in decreasing lateness among senior secondary school students in Jigawa State

Accordingly, the following hypotheses were formulated

1. There is no significant difference in incidences of lateness among senior school students in Jigawa State before and after exposure to response cost.
2. There is no significant difference in incidences of lateness among senior school students in Jigawa State before and after exposure to time-out.
3. There is no significant difference in effectiveness of response cost and time-out in decreasing lateness among senior secondary school students in Jigawa State.

## LITERATURE REVIEW

The focal points of this study are time-out and response cost. Time-out is a negative reinforcement procedure that reduces problem behaviour by removing access to all sources of positive reinforcement because of a specified behavior. It is also used to maintain safety by preventing a student from causing physical harm to himself/herself, peers, or adults, or serious damage to property. Overall, time-out is meant to provide a consistent form of discipline that is delivered in a calm, controlled manner. Time-outs are only administered for a pre-specified period of time (Quetsch, Wallace, Herschell & McNeil, 2015).

Time-out procedures are reportedly used in schools in response to such behaviours as verbal aggression, physical aggression, and refusal to work, failure to follow directions, inappropriate language, property damage, and failure to complete work. The term "time-out" is often used in a variety of ways. However, the proper use of the term refers to a procedure more accurately called "time-out from positive reinforcement". In behavioural terms, it is a punishment procedure, a procedure in which a consequence is applied immediately following a behaviour and the result is a decrease in that behaviour in the future (Cooper, Heron, & Heward, 2007). The purpose of time-out is to remove access to the reinforcement that may be maintaining undesirable or challenging behaviours, thereby reducing or stopping the behaviour(s). Time-out is considered an intrusive behaviour reduction procedure because it interrupts a student's instructional program (Nelson, 1997).



Non-exclusion time-out does not involve removal of the student from the learning environment. This strategy can be applied in a variety of ways. It may involve an approach as simple as a member of staff turning away from a student for a few seconds and not providing attention when the student is engaging in an undesirable behaviour in order to avoid reinforcing the behaviour. This strategy is referred to as "planned ignoring" (Nelson & Rutherford, 1983; Ryan, Peterson & Rozalski, 2007). Non-exclusion time-out is when the problem behaviour occurs, access to reinforcement is removed for a period of time, but the individual remains within the setting; results in a reduction in the problem behaviour. Planned ignoring: involves withholding any attention, verbal interaction, or physical contact for a period of time following the occurrence of problem behaviour. Contingent observation: the individual is placed in an area where he/she can see the activity that is happening but cannot participate for a period of time after engaging in problem behaviour. Time-out ribbon: Kostewicz, (2010) each learner is given an item (ribbon, wristband, sticker, etc.) that indicates that the learner is eligible to receive reinforcement. If the learner engages in a specified undesirable behaviour, the item signaling eligibility for reinforcement is removed briefly, and the learner cannot earn reinforcers during that period.

Exclusion time-out procedure suggests that a student is removed from the reinforcing activity and is not allowed to participate in or watch the activity. This might mean that the student is placed in a location in the same room or area, but around a corner or on the other side of a partition where he cannot see his classmates participating in the activity. In most cases, the physical setup of a classroom does not allow for an exclusion time-out to be carried out in the same area where the activity is happening. In the majority of cases, the student is removed to another supervised location within the school. Furthermore, exclusion time-out occurs when the individual exhibiting problem behaviour is removed from the setting for a period of time and cannot participate in or watch the reinforcing activity. Seclusion is one type of exclusion time-out where an individual is placed alone in a separate area often as an emergency procedure to maintain safety, under adult supervision; may or may not result in a reduction of specific problem behaviour.

The use of time-out procedures as an effective method of reducing a wide variety of disruptive behaviours in children, when implemented correctly is well documented in the professional literature (Turner & Watson, 1999). In research studies conducted over the past several years, the use of time-out procedures has been demonstrated to be effective in reducing aggression and disruptive behaviour in preschool-aged

children; reducing disruptive behaviour of typically developing children and children with diverse learning needs in elementary school classrooms. It also helps in reducing problem behaviour in children with autism; reducing aggressive behaviour in elementary-aged students with significant delays; and reducing aggression, self-injury, tantrum behaviour, and running away in children, youth, and young adults with learning and developmental delays (Donaldson & Vollmer, 2013; Vegas, Jenson, & Kircher, 2007).

Concisely, the time-out procedure as it emanates from general behaviourists learning theorists and specifically through Skinner's operant conditioning is a response-contingent event that involves time-out from positive reinforcement. In applied human settings this has typically taken one of two forms; either the experimenter discontinues the administration of reinforcement (Barton, Guess, Garcia, and Baer, 1970) or the subject is placed in a restricted, allegedly less reinforcing environment (Burchard, 1967). In both instances, the administration of the time-out consequence is contingent upon the occurrence of the undesirable behaviour and usually lasts for a prescribed period.

The critics of time-out however see it as a delusionary reprehensible procedure. Solter (2000) was of the opinion that, this non-threatening terminology has deluded parents (and teachers) into thinking that the approach is harmless. It is no wonder that the use of time-out is included in a list of harmful disciplinary measures, along with physical punishment, criticizing, blaming, and shaming by United States' National Association for the Education of Young Children (2000). Solter (2000) further added that it is not necessary to isolate children and withdraw our love to teach them how to "behave". In fact, it is entirely possible to help children learn to be cooperative and decent members of society without ever issuing punishments, rewards, or artificial consequences of any kind. Furthermore, some time-out opponents support the perspective that time-out hurts children's emotional development, arguing that parents (and teachers) need to provide love, attention, and reasoning to help children regulate their anger during episodes of misbehavior (Siegel & Bryson, 2014).

Response cost, on the other hand, generally refers to the removal of reinforcers (e.g., points, tokens, money, etc.) from the subject, and is likewise contingent upon the emission of pre-specified, undesirable behaviours (Burchard, 1967). Response cost is a form of token reinforcement strategy that involves removal of token(s) contingent upon inappropriate behavior. This is in order to reduce the possibility that the behaviour will happen in future



(Martin & Pear 2016). Response cost is a punishing technique that translates to the equivalent of losing what you possess or have earned. The child places in jeopardy what he or she has earned as the result of inappropriate behaviour. In many situations, response cost in the form of a penalty or fine is combined with positive reinforcement. To be effective, more reinforcers must be earned than lost. Response cost is often used to reduce off-task behaviour and improve compliance with directions. (Mather & Goldstein 2016), Snowman, Mccown and Biehler (2009) while reviewing Skinnners's operant conditioning described response cost as the removal of specified amount of reinforcement contingent on the occurrence of problem behaviour; this can be in terms of fine, levy etc. Thus it is a technical term use to describe a removal of "good things" i.e. losing privilege, points, marks/scores, money, opportunities to earn good things (Child, 1986).

The concepts of response cost and time out emanate from Behaviorists approach to learning. Specifically, the duo brought in to limelight through B.F. Skinnners's operant conditioning learning theory. Central to behaviorists' ideology is the Skinner's operant conditioning. This is a theory of learning that hinges on the believe that learning best occurs when reward is provided after an organism makes appropriate or desired response has dominated the educational curriculum, instructional strategies as well as assessment procedures for long time in Nigeria. The rallying point for Skinner's theory is the concept of reinforcement- a consequence that has the capacity to strengthen future behavior whenever that behavior is preceded by specific antecedent stimulus (Dandapani, 2004). Thus, teachers aligned to this theory of learning are more interested in stimulus-response-reinforcement triangle. Behaviorist approach to learning and general behavior modification include the use of contingency contracting, token economy in line with positive reinforcement procedure as well as punishment, extinction, time out and response cost as per negative reinforcement.

A substantial body of research documents the effectiveness of response cost in the classroom (Kazdin, 1982). One of the earliest studies (Rapport, Murphy, & Bailey, 1982) compared response cost and stimulant medication for task-related behaviour in a group of hyperactive boys. The response cost procedure resulted in significant increases in on-task behaviour and academic performance. Stimulant medication was notably less effective. Pfiffner and colleagues (1985) found that response cost in the form of lost recess was more effective than reprimands in maintaining on-task behaviour. Response cost has also

been compared with reward alone. Both conditions resulted in a twofold increase in academic output or reduction in inappropriate classroom behaviour and a corresponding increase in on-task behaviour. Children often do not show a differential preference for either reward or response cost procedures (Riley, 2003; Iwata & Bailey, 1974) but they appear to maintain treatment gains better during fading and withdrawal of response cost than they do in response to traditional rewards (Sullivan & O'Leary, 1990).

Therefore, the data collection instrument employed was school lateness checklist as made by the researcher after which validated using face validity protocol. In yet another research using 'ADHD Symptoms Checklist' Dungurawa (2014) conducted 12 weeks' study in which 9 children were treated with the positive reinforcement technique, 9 received the response cost intervention and 18 ADHD pupils constituted the control group. Data were analyzed using mean scores and one-way analysis of variance (ANOVA). Among other things, researchers found that that response cost counselling technique significantly reduced the symptoms of inattentiveness, hyperactivity and impulsivity among primary school pupils. In yet another study Lee, Becky Penrod, Jenifer and Price (2016) evaluated the effectiveness of two variations of a token economy for reducing disruptive behaviour within a general education classroom. One variation involved a group contingency in which tokens were removed contingent on disruptive behaviour (response cost), and the other variation involved a group contingency in which tokens were gained according to a differential reinforcement of other behaviour schedule. Two elementary school teachers and their students participated. Results indicated that both procedures were effective in reducing the overall number of students disrupting; however, both teachers and students indicated a greater preference for the response cost condition. Implications for the use of these behaviour management strategies in the classroom are discussed in terms of effectiveness and ease of implementation.

## RESEARCH METHODOLOGY

The research follows quasi-experimental approach using a test-re-test. This procedure was employed to gather and cumulate data based on the average percentage of students coming late to school for 4 weeks. From a number of two education zones that were randomly selected from Jigawa State's 10 Education zones, all the day senior secondary schools within the two zones totaling 35 were selected and monitored by the researchers, research assistants and various senior masters of the involved schools.



Percentage of students coming late to each of the schools as compared to the total enrolment was sought for each working day for four weeks; thereafter four weeks' average lateness was calculated and used as pretest score. Consent of school management and executive committees of Parents Teachers Association was sought and granted before starting the treatment. After three weeks' treatment of response cost in 16 schools and time-out in 16 schools, (exclusionary time-out procedure was used thereby stopping the late students from entering or joining their colleagues in the class for as long as 15 minutes. As for response cost, late comers were asked to pay a token "fine" like providing brooms, Izal, chalk, white board markers etc.) each school's average lateness was recalculated and the values used as post test scores, these two set of scores were analyzed using t. test for dependent sample. In looking for differences in effectiveness of the two variables, the post test scores of the response cost and time-out schools was compared and analyzed using t. test for independent sample.

## DATA ANALYSIS

**Ho1.** There is no significant difference in lateness before and after exposure to time-out among senior secondary school students in Jigawa State.

VARIABLES	df	mean	t	P value	LS
LABTOT	15	26.31	8.35	0.00	0.05
LAATOT	15	13.81			

At p. value 0.00, Level of significance 0.05, the hypothesis is hereby rejected. The analysis indicates significant difference in incidences of lateness before and after exposure to time-out.

**Ho.2** There is no significant difference in lateness before and after exposure to response cost among senior secondary school students in Jigawa State

VARIABLES	df	mean	t	P value	LS
LABREC	15	27.06	8.02	0.00	0.05
LAAREC	15	14.12			

At p. value 0.00, Level of significance 0.05, the hypothesis is hereby rejected. The analysis indicates significant difference in incidences of lateness before and after exposure to time-out.

**HO3** There is no significant difference in effectiveness of time-out and response cost in decreasing lateness among senior secondary school students in Jigawa State.

VARIABLES	df	mean	t	P value	LS
AORC	31	14.12	0.129	0.898	0.05
AOTO	31	13.81			

Result indicates no significant difference between response cost and time-out in their effectiveness in decreasing incidences of lateness. Thus as the p. value 0.898 is greater than LS at 0.05, the hypothesis is hereby retained.

## DISCUSSIONS OF THE FINDINGS

Despite the chanting of critics of these behaviour modification techniques, time-out and response cost where found to significantly decrease level of lateness in our secondary schools. This is contrary to the submission of Solter (2000) who thought the use of time-out is delusionary and harmful. The findings also found the arguments of Siegel and Bryson (2014) that only love and affection provide necessary behaviour modification as counterproductive. On the other hand, though the research is conducted in a different environment, it is consistent and an agreement with many other well acknowledged studies.

Result of response cost for example is consistent with the findings of Rapport, Murphy, and Bailey, (1982) who compared response cost and stimulant medication for task-related behaviour in a group of hyperactive boys and found that response cost procedure resulted in significant increases in on-task behaviour and academic performance. Results on Time-out also agree with many other notable findings including that of Vegas, Jenson, and Kircher (2007) and that of Donaldson and Vollmer (2013). Both researchers found that time-out helps in reducing problem behaviour in children with autism; reducing aggressive behaviour in elementary-aged students with significant delays; and reducing aggression, self-injury, tantrum behaviour, and running away in children, youth, and young adults with learning and developmental delays.

From the foregoing, one may infer that the study was a smooth ride all the through, on the contrary, few challenges were encountered; in few instances some students in one of the schools, protested against timeout by sneaking back home thereby missing that day's lessons. Schools management used to corporal punishment kicked against the introduction of response cost and timeout during the early stages of the study citing stubborn nature of senior students as an excuse. Despite these challenges, several theoretical and practical implications of the study can be deduced; that the submission of behaviorists on the effectiveness of negative reinforcement remains valid for almost a



century. That even where other measures of curbing undesirable behavior are found to be deficient, response cost and timeout proof effective. For the fact that it diminishes the level of lateness among most notorious laggards, response cost and timeout can be used to conveniently replace other negative reinforcement procedure considered punitive. It can also be used in modifying other forms of undesirable behavior. Although response cost and time out remain two different effective strategies for behavior modification, using one method at time appear to be more result oriented. However, because no difference in effectiveness found between the duo, this creates a room of dilemma of alignment, teachers and school managers may be unable to swiftly apply one strategy against the other.

## CONCLUSIONS

This study effectiveness of response cost and timeout in decreasing lateness, based on the findings the following conclusions are hereby made:

- a. That response cost is effective behavior modification method in drastically decreasing level of lateness among senior secondary school students in Jigawa State.
- b. That time-out is effective behavior modification method in drastically decreasing level of lateness among senior secondary school students in Jigawa State
- c. That that no significant difference in effectiveness between the duos of response cost and a time-out as such any one can be utilized and they can be used interchangeably

## RECOMMENDATIONS

In respect of the experiences gained during the research process and the findings thereof presented, it is hereby recommended as follows:

- a. That teachers should be using response cost and time-out instead of punitive methods such as fatigue, whipping, expulsion and hard labour
- b. That the two response cost and time-out can be used interchangeably to prevent easy prediction of a disciplinary measure by erring students.
- c. Further research may be needed in a quest to investigate gender differences in response to timeout and response cost as well as to investigate the efficacy of other behavior modification methods in relation to lateness. Such procedures may include contingency contracting, extinction.

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