The Use of Economy Token to Reduce Tantrum Among Autistic Students

Mohamad Kassim Mohamed Yaseen, Mohd Mokhtar Tahar

Universiti Kebangsaan Malaysia, Malaysia
E-mail: karsame82@yahoo.com

Abstract: Token economy is one form of behavior modification in addressing the behavior problem among special education students. This study aims to see the effectiveness of using token economy in reducing the behavior of autism students. This study focuses on an autism student that studying in one of the primary school in Sentul District of Kuala Lumpur. The study uses the A-B-A Model design which encompasses three phases, baseline phase (A) observation of the behavior of the subject subject to the predetermined time. The intervention phase (B), the implementation of economic and phase token without intervention (A), is a phase without the application of token economy. Data were collected through observation on frequency of behavior of the study subject. The observation was conducted for 6 weeks involving three timelines of the study ie before, during and after intervention. Data obtained were analyzed by using descriptive statistic. Data then illustrated through frequency tables and line graphs to show the effectiveness of the economic token interventions implemented. The findings show that the use of token economy reduces the behavior of autism students. Future research can use the finding from this study as a guideline for special education teachers in addressing the problem of special needs students. In regard to this study, it will be a source of inspiration to the teacher that negative behavior can be changed when correct methods and technique are implemented.
Keywords: Token economy, Tantrum, Autism

Autism is a disorder in five neuro developments involving some common features (Matson, 2007; Matson & Boisjoli, 2007). Interruptions in social and communication skills and stereotypical behaviours are a major feature of autism disorders (MacDonald *et al.*, 2007). Problems in social interaction lead to the occurrence of unexpected behaviour, fear and destruction of property (Koegel, Freden, Lang & Koegel, 2012). According to Rahmah (2010), this tantrum behaviour requires an immediate solution, as it has a harmful effect on the autistic children and others. The tantrum behaviour often performed by autistic children is like crying, screaming, throwing things and hitting oneself. Attention should be given to the behavioural problems shown by autistic children (Sumrah, Sudirman, & Ahmad, 2008). It aims to prevent the behavioural problem from interfering with the learning process as well as the classroom atmosphere.

Nelson (2003) stated that the use of economic tokens is a source of motivation for children to engage in activities organized by teachers. Tokens will be given by the teacher to the students when they show positive behaviours and the tokens can be converted to gifts or services based on the value of the reward set (Wyka, 2009). It can be used as a motivator by teachers during early learning to encourage positive behavioural change during learning (Jolivette & Steed, 2010). The use of this economic token will create a conducive and effective learning environment. A study conducted by Jahari *et al.* (2016) stated the use of economic tokens could alter the passive behaviour of students which is being too silent to students who respond during learning.

Figure 1 shows Skinner's model theory of operand conditioning behaviourism (Skinner, 1953), which states that operational conditioning is a process of response to environmental stimuli. It focuses on the causes and consequences which create a new response that can be done or stopped. This clearly demonstrates that the operand conditioning theory is a learning process that observes a behaviour can alter previous impacts systematically. This operative conditioning process occurs because the behaviour displayed depends on the rewards and reinforcement. Barton (2013) stated that Skinner's theory could be applied by teachers in the learning process in classrooms where students who demonstrate positive behaviour will be rewarded and students who exhibit negative behaviour will get reinforcements and punishment. Hence, this study focuses on modifying the tantrum behaviour of autistic students in performing activities and completing tasks using economic tokens.

Tantrum

Tantrum is a negative behavioural problem. Tantrum is an explosion of childish rage that occurs when a child shows a negative attitude or rejection. Tantrum acts like crying, screaming, hitting oneself and damaging property (Nelson, 2003).

Figure 1. Operand conditioning behaviourism theory model by Skinner (adapted from Parkay & Hass, 2000)
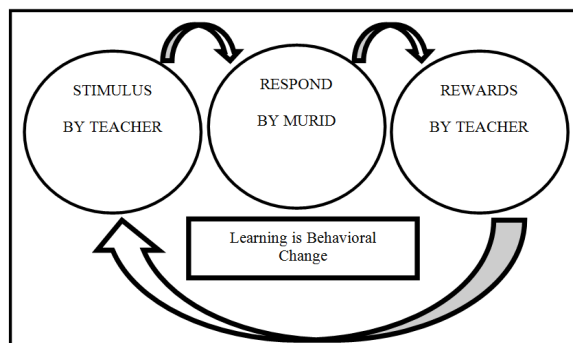
Their tantrum becomes out of control when they failed to get what they wanted (Wing, 1976), and are not able to tell surrounding people about their wants and needs (Everard, 1976), and finally inflict themselves with self-injuries (Sapp, 2007; Koegel *et al.*, 1982). The psychoanalysis literature identifies two types of early anger, namely the first anger as a result of the reaction to discomfort or pain. When the child's autonomic nature begins to develop, the anger that is formed alters the behaviour to assert freedom or express hostility.

A study conducted by Ando & Yoshimura (1978) found that tantrum had no association with age factor and IQ of children who are diagnosed with autism. Clinical experience explains that tantrum occurs in these autistic children when their daily routine changes or the activities and objects they love are restricted.

Economy Tokens

An economic token is an approach that has a positive impact on the implementation of behaviour modification. Matson & Boisjoli (2007) stated that economic token is one of the most innovative technologies that has been used for over 40 years to change behaviours. Study conducted by Fiksdal (2015) proved a change in disruptive behaviour was very effective with the use of economic tokens rather than the punishment approach. The economic token is a planned intervention in which a token or point will be given when the desired behaviour is shown (Adibsereshki *et al.*, 2015; Carnett *et al.*, 2014; Fiksdal, 2015; Hirst *et al.*, 2016; Robacker *et al.*, 2016; Zlomke & Zlomke, 2003). Tokens can be converted to rewards such as items or activities according to the conditions stipulated. There are two types of rewards, namely tangible reinforcement and social reinforcement. Tangible reinforcement is a reward in the form of objects and social reinforcement is like activity or praise (Adibsereshki *et al.*, 2015).

Miltenberger (2008) has listed seven components that need to be present in planning when implementing the economic token: (1) the desired behavior; (2) The tokens used as reinforcement when desired

behavior is shown; (3) the rewards awarded through the conversion of the token; (4) the token acceptance reinforcement schedule; (5) the number of tokens required for redemption of the reward; (6) time and place for reward redemption; (7) token retraction when unwanted behavior is shown.

The objective of this study is to determine the effectiveness of the economic token strategy in changing the tantrum behavior of autistic students. The following are the objectives of this study: (a) To reduce the frequency of tantrum behaviours of autistic students using the economic token method; (b) To identify the effectiveness of the economic token reinforcement technique in altering the negative tantrum behaviour of autistic students.

METHOD

This study uses qualitative methods and is implemented for 6 weeks. Researchers have used the design of A-B-A or Reversal Design. The design of A-B-A is better known as reversal design which involves baseline data followed by intervention and back to baseline data. The A-B-A design has been used by Baer, Wolf, & Risley (1968) to see the effectiveness of intervention on nail biting behaviour.

Sample

This study involved a sample of one 7-year-old female autistic student who had been diagnosed by a medical expert. The study sample is following the Integrated Special Education Program (PPKI) at a primary school in the Sentul zone, Kuala Lumpur.

Study Procedures

This study was conducted for 6 weeks comprising three phases; the baseline phase, the intervention phase and the phase without intervening. Each phase took two weeks for its implementation.

Baseline Phase

The researcher recorded the frequency of tantrum behaviour shown by the study sample in a 10-minute interval for 30 minutes for two weeks. The observation time for the first and second week is the same which was during physical education time (7.40 - 8.10 am), recess time (9.40-10.00 am) and study times of Mathematics (10.00-10.30 am), Bahasa Malaysia (11.30 am -12.00 pm noon) and English (12.30-1.00 noon). The researchers made systematic observations by using frequency or event recording data form, known as "event recording". The observation was recorded by tally counting method. Through the observation, the researchers were able to record the number of tantrum behaviours observed during the planned period.

Table 1. Economy token and rewards table

Activity	Token Count	Reward
Complete tasks	1 task 1 sticker	2 stickers can be exchanged to watch ABC song activity or TV3 for 10 minutes
Following physical education activities and recces time in canteen	1 sticker for every 10 minutes student can follow the activity	3 stickers can be exchanged with crispy chocolate
Behaviour without tantrum for five days (school day)	5 stickers	Can be exchanged for food/Kinder Joy snack

Table 2. Data on frequency of tantrum behaviour of baseline phase

Week	Day	Frequency of Tantrum Behaviour (30 minutes)	Total
	Day 1	///// /	6
	Day 2	////	4
1	Day 3	/////	5
	Day 4	///// ///	8
	Day 5	///	3
	Day 6	////	4
	Day 7	////	4
2	Day 8	////	4
	Day 9	/////	5
	Day 10	///// /	6

Intervention Phase

This phase is the implementation of interventions by researchers. The researchers provided rules for the token acceptance and rewarded redemption to increase the motivation of the study subject to carry out the tasks and follow the activities.

The researchers gave rewards liked by the subject of research, which are watching her favourite shows and meals. The researchers used favourite rewards of the research subject to attract and motivate her to show positive behaviour. This is in line with Premack's principle of linking less-preferred activities to those more preferred to reinforce behaviour towards less-preferred activities (Premack, 1959).

Without Intervention Phase

The award of tokens in this phase was eliminated to evaluate the effectiveness of the economic token implementation in the previous phase in changing tantrum behavior of study subject in carrying out activities and assignments. The behavior frequency of the study subject in this phase was recorded similarly to the time and activity performed in the intervention phase.

Study Instrument, The research instrument used in this study by the researchers was observation. Observation methods are not limited to the process of data recording alone, but it also requires researchers to actively observe, listen to and compile data so that the data obtained is meaningful to the research to be implemented. Structured observation was carried out for this study, in which the behaviour frequency of the study subject data was recorded in the event record form according to the time set by the researchers. The recording form for the frequency of student's behaviours used in the study was adapted from the Miltenberger (2001) study and modified according to this study's suitability.

Data Analysis, The data were analysed using descriptive statistics. The data are explained by frequency tables and line graphs to show the effectiveness of the economic token interventions implemented. Miltenberger (2001) explained that descriptive statistics functions to describe and explain data or circumstances or phenomena.

FINDING AND DISCUSSION

Finding

The findings from the observations and interventions carried out on the study subject were obtained for the objectives of the study, namely (1) reducing the frequency of tantrum by autistic students using the economic token method and (2) to identify the effectiveness of the economic token reinforcement technique in altering the negative behaviour of tantrum of autistic student.
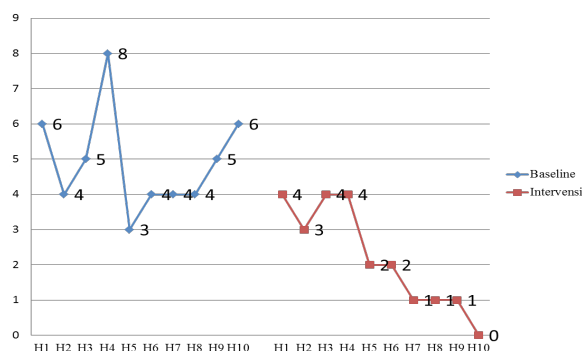
Baseline phase data

Baseline period is the process of collecting all information about the behaviour of the study subject through observation without any intervention. This record will be comparable to the record after the intervention.

Figure 2. Frequency of baseline phase graph
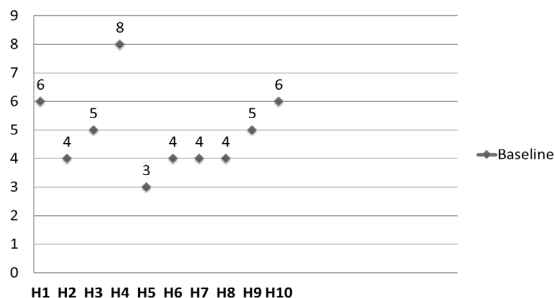
Figure 3. Graph of frequency of tantrum behaviour in baseline and intervention phases

Figure 4. Graph of frequencies of tantrum behaviour in baseline, intervention and without intervention phase

Table 3. Data on frequency of tantrum behaviour of intervention phase

Week	Day	Frequency of Tantrum Behaviour (30 minute)	Total
1	Day 1	////	4
	Day 2	///	3
	Day 3	////	4
	Day 4	////	4
	Day 5	//	2
2	Day 6	//	2
	Day 7	/	1
	Day 8	/	1
	Day 9	/	1
	Day 10	-	0

Table 4. Data frequency of tantrum behaviour in baseline, intervention, and without intervention phases

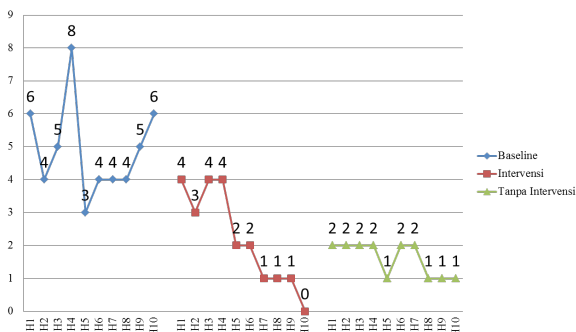| Week	Day	Baseline Phase	Intervention Phase	Without Intervention Phase
1	Day 1	6	4	2
	Day 2	4	3	2
	Day 3	5	4	2
	Day 4	8	4	2
	Day 5	3	2	1
2	Day 6	4	2	2
	Day 7	4	1	2
	Day 8	4	1	1
	Day 9	5	1	1
	Day 10	6	0	1

Figure 2 shows the findings of a two-week observation on the tantrum behavior of the study subject in the baseline phase (before the intervention). The tantrum behavior shown by the study subject in 30 minutes was recorded in 10 minutes interval, showed the highest tantrum frequency pattern of 8 times in the first week of observation. In the second week of observation, the frequency of tantrum shown by the study subject decreased and reached the lowest frequency of 3 times. The results show that this tantrum behavior occurs during the physical education subject and when doing the worksheet provided by the researchers. The study subject will cry, scream and roll on the floor as a sign of protesting the actions and instructions given by the researcher to her.

Intervention phase data

In the intervention phase, the researchers initiated the planned intervention program of economic token. During the intervention period, the behavioral changes shown by the study subject were observed and recorded, table 3.

Figure 3 shows the frequency data of tantrum behaviour shown by the subject in the intervention phase. Observation shows that the number of tantrum frequencies by the subject of the study in the implementation phase of the intervention was decreasing compared to the baseline phase. The first week of intervention showed that the frequency pattern of tantrum in the first 4 days was ascending and descending on the same scale of 3 and 4 times the

tantrum behaviour. This is because the subject still did not understand the implementation procedures of the economic tokens implemented by researchers. The second week showed the frequency of tantrum decreased 2 times to 1 time and until no tantrum behaviour was shown in the last week of the intervention phase. The economic tokens can enhance favoured behaviour (good) and reduce dislike behaviour (Miltenberger, 2001). This data answers the first objective of the study, which is to use the economic token to reduce the tantrum frequency of study subject with a large gap in the overall frequency of the first week of 17 times the behaviour of tantrum to 5 times in the second week.

Comparison of behavioural frequency data throughout the study

Figure 4 shows the frequency data of baseline phase, intervention phase and without intervention phase. The without intervention phase showed a reduction in the tantrum behaviour of the subject after obtaining economic token through the previous baseline phase and the intervention phase. The data shows the frequency of tantrum of the study subject in the same pattern that is 2 times the highest and 1 time the lowest for the first and second week without intervention. This suggests that the subject of the study can understand what is being practiced in the intervention phase she previously went through. The findings of this study are supported by Rachel *et al.* (2009) who stated that the use of economic tokens could increase the attention among autistic students. This finding is in line with the findings of the study conducted which stated the economic token reinforcement techniques is successful in the modifying the behaviour of autistic children as in the second objective targeted in this study. The economic tokens are secondary needs such as appreciation for life in the psychological context towards a happy and positive feeling of doing activities (Nahiappan *et al.*, 2008).

Discussion

The results of the study showed a change in negative behaviour through the use of economic tokens. The subject of the study was less upset during activities and completing tasks. The rewards offered by the researchers were favourite rewards of the subject which indirectly motivated the subject to show positive behaviour. According to Sazali (2014), teaching and learning in the classroom will undergo changes as a result of using and giving rewards.

The success of the teaching and facilitating process in the classroom is closely related to student discipline. Without controlled discipline, the learning environment becomes unconducive and does not achieve the targeted objectives. This is in line with Abu (2009) opinion that disciplinary conduct by teachers in

the classrooms are very important to know students and any action taken against their behaviour is based on their consideration.

CONCLUSION

Systematic planning has to be done to ensure the effectiveness of the modifications, starting with behavioural selection, timeframe, data recording and appropriate intervention. With systematic planning, it will have a positive impact on student behaviour. The success of a behaviour modification requires close cooperation between the school and the parents. This collaboration is the continuation of interventions carried out by schools that are equally practiced by parents at home. This will have a more effective impact in changing the negative behaviour to positive behaviour. The school can organize workshops to give parents an understanding of modifications made thoroughly.

Future research can be implemented on other special needs students such as down syndrome, hyperactive, slow learner and others to change the negative behaviours performed. This can help teachers to carry out learning in a conducive state and in line with the targeted objectives. Hashim *et al.* (2007) pointed out that the effectiveness in classroom management can create a conducive learning environment as the classroom routines run smoothly and the discipline is controlled.

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