

Original Research Article

Effectiveness of Token Economy on Temper Tantrum among Intellectually Disabled Individuals

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ABSTRACT

Background: In 2008 the prevalence of mental disability in Udupi was found to be 2.3%. The behaviour modification approach like token economy is one of a number of ways to reduce temper tantrum behaviour in which structure can be introduced.

Aim: The purpose of the study is to enable the intellectually disabled to develop the skills of adaptive coping towards tantrum.

Settings and Design: A quasi experimental control group pre-test post-test design was adopted to conduct study in a vocational rehabilitation centre Udupi.

Materials and Methods: Individuals with mild and moderate intellectual disability 12 from division A as experimental group and 12 from division B as control group were enrolled to the study, by simple random selection from primary classes A, B, C, D. Instructions were given followed by a pre-test on both groups by on day zero using temper tantrum check list. The token economy for 21 days was given to experimental group leaving control group received with no intervention. From day 21 to day 42 there was no intervention in order to see for any decline in the results, which was followed by Follow up observation on day 42.

Results: There was no significant improvement in Temper tantrum after intervention in experimental group ($p=0.054$) as compared to control group.

Conclusions: Present study found that token economy was not effective in reducing Temper tantrum among individuals with mild or moderate intellectual disability in 21 days duration.

Keywords: Intellectually Disabled, Temper tantrum, Temper tantrum checklist, Token Economy.

Key messages: Token economy is a positive reinforcement behavior therapy which motivates, reinforces positive behavior change among individuals and is to be systematically planned, and consistently implemented.

INTRODUCTION

Intellectual disability is a developmental disability with an IQ level below average (less than 70) and significant limitations in daily living skills (adaptive functioning). Temper tantrums or acting out behaviours that are natural during early childhood development. Temper tantrums ranges from whining and crying to screaming, kicking, hitting and

breath holding. They are equally common in boys and girls. [1] Temper tantrums are significantly high among intellectually disabled children as compared to their normal counter parts.

Temper tantrums were found to be most common at three to five years (75.3 %), less common at six to eight years (20.8 %) and least common at nine to ten years (3.5 %). Associated behavioral problems,

such as thumb sucking, enuresis, tics, head banging and sleep disturbances were found to be significantly higher among children with tantrums. [2]

Potegal and Davidson reported that temper tantrum is seen across different socio-demographic subgroups, nearly all (83.7%) preschoolers had tantrums sometimes but only 8.6 percent had daily tantrums. Normative misbehaviors occurred more frequently than clinically concerning temper loss behaviours. [3]

An epidemiological study in Karnataka, initiated by ICMR in the year 2005, found that the prevalence of Breath Holding Spells was 5.9 percent among zero to three years age group, behavior disorder 1.8 percent conduct disorder 0.2 percent, thumb sucking 0.2, more common than other developmental disorders. [4]

Severe forms of temper tantrums which can even result as serious behaviour problems. The nurses play an important role in assessing the children's temper tantrum and finding way to manage temper tantrum as well as improving their level of task performance. behaviour therapy especially token economy is found to be an effective way of dealing with the behavioural problems of children.

Token economy is a type of contingency contracting (although there may or may not be a written and signed contract involved) in which the reinforcement for desired behaviours are presented in the form of tokens. [5] In this study token economy was used as a reward giving system in which an object/token (stickers, smiles and colour pens) is given on the occurrence of desired adaptive behaviour and along with the maintenance of a table of issued token to modify the behaviour of each child.

The behaviour modification approach like token economy is one of a number of ways in which structure can be introduced. It defines for the child the aspects of the environment to be attended by applying differential reinforcement, and

clearly specifies the learning task. In 2011 the results of the study by Anderson et al in Michigan confirmed the existence of a greater severity of maladaptive behaviours such as social withdrawal, repetitive behaviors, self-injury and inattention among autistic children and, therefore, more need for treatment and support for individuals with autism. [6]

A study by Filcheck and, 2004 [7] in West Virginia for the purpose of evaluating effectiveness of class token economy to manage disruptive behavior in preschool classroom, randomized controlled trial in Orissa by Sethy and Mokashi, 2012 [8] to compare the effects of conventional therapy and token economy on frequency of drooling among cerebral palsy cases, and Chevalier's 2012 study at Seattle to determine the effectiveness of token economy on reducing disruptive behaviour [5] have proven the positive effect of token economy.

MATERIALS AND METHODS

A total of 24 participants were selected for the study (experimental group n=12, control group n=12) from those who attended primary classes of a selected vocational rehabilitation centre, Pamboor, Karnataka, India after getting informed consent from parents and or caretakers.

Inclusion criteria were: participants, those are diagnosed as having mild or moderate intellectual disability and willing to participate in study. The students diagnosed as severely or profoundly intellectual disabled were excluded from study. Two classes primary A and B were picked up from the slips of papers with name of divisions in primary class without replacement of slips. From A and B one was drawn (primary A) by random pick as experimental group (n=12), other (primary B) slip automatically taken as control group (n=12). Ethical permission was obtained from institutional ethics committee. Voluntary written consent also was obtained from parents and caregivers

after sufficient explanation and clearance of doubts.

Materials: Pictures of vegetables/ vehicles/ animals/ fruits were used as first level tokens; those who reach a number of seven tokens were provided with a colour pen of their choice as next level of token.

Instruments: The instruments used for the study were Socio-demographic proforma and Temper tantrum checklist, developed by the researchers. Socio-demographic proforma included items on age, gender, diagnosis, comorbidity and IQ of participants. Temper tantrum checklist consisted of 18 items from different domains like physical, verbal and others. Both the tools were validated among nine experts from the field of psychiatry, clinical psychology, psychiatric nursing, psychiatric social work.

Pretesting and reliability of the Temper tantrum checklist were conducted in Asare- home for mentally challenged. At an average Temper tantrum checklist required seven hours to complete. The reliability of temper tantrum checklist was determined by Cohen's Kappa and it was 0.83.

Data collection: In December 2013 a trial run was conducted for 21 days on eight individuals fall in inclusion criteria from similar setting in order to check feasibility of study. After pilot study minimal modifications were done in token economy protocol for better implementation.

The main data collection was done in January 2014. An instruction session was taken for caretakers/ parents as well as participants before starting data collection, regarding token economy protocol and expected role throughout the intervention. Pre-test observation was done on day zero by primary author at their residence and in class room for experimental and control group. Temper tantrum Checklist included items in three domains - physical, verbal and others. After 21 days on token economy for experimental group, post-test observation was done on both groups on

day 21. For 21 days token economy was discontinued (day 21 to day 42) for determining the decline in result which was followed by a follow up observation of both groups on day 42.

Token Economy Protocol: Observation was done throughout the day by caregiver and researcher. Tantrum behaviours over 30 seconds were considered as maladaptive and were discouraged by giving feedback. The participants had access to see their progress on individual display boards in the class room. Every participant had a separate display board and each display board included photograph of participant at the centre with tokens stuck around. On improvement from baseline score participant was allowed to choose a token from a number of pictures of animals/ vegetables/ fruits/ vehicles and to stick pictures on display board around their own photograph. Once the participant reached a set of seven tokens he/ she was allowed to have a colour pen of his/ her choice as next level achievement. Thrice a day feedback was given to participants by caregiver/ researcher after assembly 10.30am, before lunch 12.15pm, and before leaving school 3.45pm. by announcing each days total score for individual participant and reminding how many tokens yet to get to reach next level token.

Data analysis: The effectiveness of token economy was determined by comparison of experimental and control group over three point of time using Repeated measures of ANOVA at $p < 0.05$ significance. The SPSS 16.0 was used for statistical analysis.

RESULTS

The data presented in the table 1 show that (50%) of the individuals were in the age group of 7 to 10 years and 50% of individuals were in 11 to 14 years among experimental group. Whereas 4 (33.3%) of the individuals were in the age group of 7 to 10 years, 6 (50%) of individuals were in

11 to 14 years and 2 (16.7%) were in the age group of 15 to 19 years among experimental group.

Further the gender distribution is shown in the table 2 which shows majority 8 (66.7%) of the participants were males and 4 (33.3%) were females in experimental group whereas male and female ratio is equal in control group.

The majority 9 (75%) of the participants were with moderate, 1 (8.3%) were with severe, 2(16.7%) were with mild intellectual disability among experiment group whereas 8 (66.7%) were with moderate, 2(16.7%) were with mild and 2(16.7%) were with severe intellectual disability among control group. Among control group no one had any co morbidity whereas one (8.3%) had ADHD among experimental group.

There was no significant difference found in pre-test mean scores of temper tantrum among the experimental and control group which meant both groups were comparable ($p = 0.78$). (Table: 2).

Table 1: Distribution of sample characteristics of intellectually disabled individuals n = 24

Variables	Experiment Group		Control Group	
	F	%	F	%
Age in years				
7-10	6	50.0	4	33.3
11-14	6	50.0	6	50.0
15-19	0	0.0	2	16.7
Gender				
Male	8	66.7	6	50.0
Female	4	33.3	6	50.0
Diagnosis				
No intellectual disability	0	0.00	1	8.3
Mild	2	16.7	1	8.3
Moderate	9	75.0	8	66.7
Severe	1	8.3	2	16.7
Co morbidity				
Yes	1	8.3	0	0.00
No	11	91.7	12	100

Table 2: Comparison of baseline temper tantrum scores of experiment and control group

Temper tantrum	Experiment group		Control group		t Value	p value
	Mean	SD	Mean	SD		
	6.83	2.22	7.08	2.15	0.28	0.78

*Significant at 0.05 level

Table 3: Mean, SD, df, F value, p value of temper tantrum over three points of time

Temper tantrum	Experiment group		Control group		df	F value	p value
	Mean	SD	Mean	SD			
Day 0	6.83	±2.22	7.08	±2.15	2	3.314	0.054*
Day 21	5.08	±1.44	7.08	±2.78			
Day 42	6.75	±2.09	7.33	±2.10			

*significant at 0.05 level

The observations at three points of time (Pre-test, Post-test, follow up) that of both groups were compared by using repeated measures of ANOVA. The change in temper tantrum is given in Table 3. The data show that the mean ± SD of Temper tantrum among experimental group on day zero, day 21 and day 42 were 6.83 ± 2.22, 5.08 ± 1.44, 6.75 ± 2.09 respectively. The mean ± SD of verbal tantrum among control group on day zero, day 21 and day 42 were 7.08 ± 2.15, 7.08 ± 2.78, 7.33 ± 2.10 respectively. No clinically significant difference in temper tantrum was found among experiment group as compared to control group ($F=3.314$ and $p=0.054$) i.e. null hypothesis was accepted.

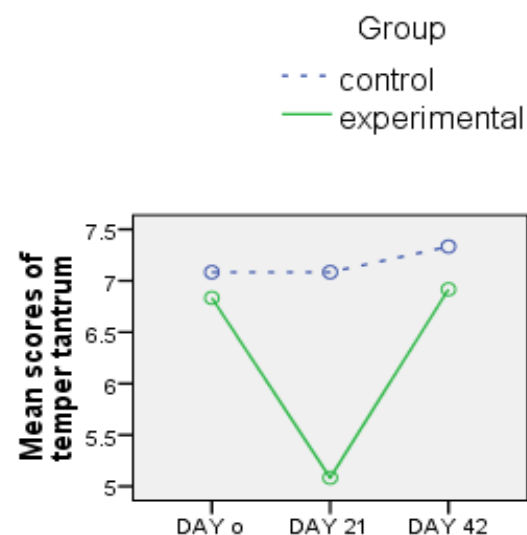


Figure 1: Profile plot showing the effect of token economy on temper tantrum over three points of time

There was a reduction in temper tantrum on post-test and again increase after discontinuation of token economy as shown in the Figure 1. The temper tantrum never reached to the baseline in both groups.

DISCUSSION

The present study found that the token economy is not effective in the reduction of temper tantrum among intellectually disabled ($df=1.72$, $F = 3.314$, $p= 0.054$). This finding is in harmony with the findings of the study by Baker in Scotland which was the implementation of token economy to improve their different aspects of behavior, on long stay inpatients in a psychiatric rehabilitative system. Social withdrawal ($t= 2.28$, $df= 6$), socially embarrassing behavior ($t= 0.65$, $df= 6$), and Speech ($t= 1.27$, $df= 6$).^[9]

The present finding is in contrast with study by Filcheck and Mc Neil in Virginia, where leveled system of token economy was implemented among school children in order to reduce disruptive behavior and the result was 48.3% reduction of disruptive behaviours as a result of leveled system of positive reinforcement.^[7]

The study conducted by Lerman in Louisiana in 1999 i.e. Comparison of positive and negative reinforcement on maladaptive behaviours, where access to favorite toys, edible are used along with not giving opportunity to the same was also used on undesirable behaviours. The results showed a sustained reduction for positive reinforcement than negative reinforcement, which does not supported by present study findings.^[10]

CONCLUSION

The study thus concluded that token economy is not effective in reduction of Temper tantrum among intellectually disabled just in 21 days duration and more rigorous researches are

required to be conducted to prove its usefulness for the same.

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