



The Effectiveness of Total task presentation in enhancing Daily Living Skills in adolescent with Moderate Intellectual Disability with autism

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ABSTRACT

The present study is an attempt to study the effectiveness of constant time delay procedures in teaching activities of daily living to child with intellectual disabilities with autism. An activity of daily living of preparation of tea was selected for training after assessing current level functioning of the child. A 5 seconds delay was inserted between the presentation of target stimulus and providing the controlling prompt. The study included one subject having moderate intellectual disability with autism aged between 14 to 18 years.

Single- subject research design was used to closely examine the effects of intervention. All experimental sessions were carried out in a classroom of special school based at Lucknow. Generalization sessions were conducted at Teacher training centre of the institute. The dependent variable of the study was teaching preparation of tea and independent variable was constant time delay. Training was evaluated with a multiple probe design across conditions. Results indicated subject reach criterion of preparation of tea. The skill maintained with at 100% accuracy over two month period.

Key words: Constant Time Delay, Activities of Daily Living, Intellectual Disability, Autism.

Introduction

To lead an independent life it is essential that individual with intellectual disability need to learn daily living skills. Recent changes in policies and practices presents challenging task for teachers and caregivers for including children with high support needs to learn functional skills. Individuals with Intellectual disability with autism experience difficulties with learning age appropriate daily living skills. It include several skills such as bathing, brushing, buttoning, brushing teeth, washing own hands etc. Some research studies have shown children with Intellectual Disability can be trained in activities of daily living. One of the most widely used behaviour analytic instructional method is total task presentation. When using total task presentation, all steps within the chain are trained and completed each time the activity is presented (Cooper et al., 2020). Reinforcement is provided for the correct completion of the entire chain. A study by Bojana et al (2021) successfully trained a child with autism to tie shoelace by using total task presentation

There is substantial body of research in relation to effective teaching such as prompting, shaping, modelling, video modelling etc. One method is errorless teaching (Schuster & Griffen, 1990, Schuster et.al, 1998). Time delay is one of the errorless teaching methods, which were first described by Touchette in 1971. It is systematic response prompting procedure where in stimulus control is transferred by systematically varying the delay interval between natural cue and a controlling stimulus. Several studies have reported that constant time delay is effective procedure (McDonell, 1987, Schooen & Sivil, 1989,) the present study will give insight into effectiveness of total task presentation in improving activities of daily living in adolescents with intellectual disability with autism using constant time delay procedure.

Objectives

The main objectives of the study are

- To find out the effect of constant time delay on teaching activities of daily living using total task presentation to the adolescent with intellectual disability
- To find out the effect of constant time delay procedures on maintenance and generalization of acquired skills after the training.

Operational Definitions of the key terms used:

- Constant Time delay: In the present study constant time delay is the 5 seconds delay inserted between the presentation of target stimulus and the controlling prompt over sessions.
- Activities of Daily Living Skills: In the present study activity of daily living refers to specific skill of preparation of tea which was selected as target goal for training after their baseline assessment.
- Adolescent: In this study, the term refers to individuals with age range of 14 to 18 years.
- Intellectual Disability: In the present study intellectual disability refers to individuals having an IQ of 35-50 with deficits in adaptive behaviour.

Method

Subjects: The participant was 14 year old adolescent with moderate intellectual disability with autism who met the inclusion criteria of (a) following verbal instructions, (b) using both hands in cooperation, (c) has ability to imitate prompts, (d) has ability to attend to the task for 20 minutes and (e) has ability to wait for 5 seconds.

Setting:

The training program was provided within one of class room containing kitchen fitted with gas stove, cabinets, sink, counter space and utensils. The gas stove and cabinets were at the perfect height for the subject to use. Similarly the sink used had a manual water tap and was the perfect height for the subject. The area around the kitchen was about 20 square feet, which provides enough space for the trainer to help the children with training. The room had one table in the corner with four chairs. These space and materials were used for training in preparation of tea. The investigator lighted gas stove and provided all ingredients to prepare tea. The study was conducted between 8.15AM to 9.30 AM. All sessions were conducted in a one to one basis. The investigator picked up and dropped the subject off to the classroom before and after instruction.

Materials:

The investigator used following materials/tools for the study:

- A task analysis for preparation of tea was developed and was validated by concerned experts.
- Laminated picture flashcards was developed for selected skill. Picture flash cards consisted of the pictures depicting the steps in the task analysis along with written instructions. Picture flash cards were given for validation to experts and necessary modifications were done accordingly.

For all the training sessions two sets of materials were required. One set was used by the student and another set for the trainer. In probe sessions only one set of materials were used. For giving training in preparation of tea subject was taken to the

kitchen each day. Kitchen had all necessary ingredients and other materials for preparation of tea. A stopwatch, data collection forms, and reinforcers were also used as needed throughout training sessions.

Dependent Variable:

Preparation of tea was the dependent variable. The task analysis of preparing tea has 7 steps.

Independent Variable:

The independent variable for the study was to examine the effect of constant time delay procedure in achieving the goals selected.

Design:

The design of the study was single-subject research design. A multiple probe design across setting was used to ascertain the effectiveness of 5 seconds constant time delay procedure in teaching the chained task of preparation of tea.

Instructional sessions took place over all days of week. A total of 25 sessions were carried out for each subject. Each session was of 30 to 35 minute duration. Three instructional probe sessions was conducted prior to the training of each session. Instructional sessions consisted of two types of trials: 0- and 5 seconds trials. During first two training sessions a 0 second delay was used. During all subsequent training sessions a 5 seconds delay was used. Initially the trainer gave general attentional cue (e.g., “are you ready to prepare tea?”) once affirmative response was obtained, the trainer hand over flash card to the student and was provided the task request “cook----”. Trainer then waited for 5 seconds for student to initiate the response. If the student did not initiate the desired response within 5 seconds or performed the response incorrectly or completing a step out of sequence in the task analysis, trainer provided the pre-determined prompt. Students were praised following successful completion of each step. This procedure was continued until subject completed the task analysis for each skill with 100% correct anticipation

Maintenance sessions were conducted after 2, 4 weeks after each student reach criterion on each skill. Programming for generalization was built into the study by training sufficient examples (Stokes & Baer, 1977). In order to change the settings, performance was assessed in each student’s home after all maintenance sessions had been completed. These sessions were identical to maintenance session.

Reliability:

Reliability observers included one of the class room special educators and a faculty member of special education (Intellectual Disability). Inter-observer agreement was gathered on student performance during 20% of probe sessions across all tasks and phases. The observers were trained to criterion on all definitions prior to observing in the school. Inter-observer agreement was calculated for the percentage of steps correctly completed in proper sequence. An agreement was recorded for a sequence of errors only if both the trainer and observer recorded the student’s performance as correct or incorrect on each of the task analysis steps. An agreement was recorded for a sequence of errors only if both trainer and observer recorded the same error sequence. Inter-observer agreement was calculated by dividing the number of agreements by the number of agreement and disagreements then multiplying by 100.

‘ Inter-observer agreement for task analyses steps during probes was 100%. Inter-observer agreement during instruction for the skill was 100%. Inter- observer agreement on errors across all subjects during probe session for preparation of tea was from 95% to 100% with mean of 98%. Similarly inter-observer agreement of errors during instruction ranged from 70% to 100%, with a mean of 93%.

Social Validation procedures

Social validity involved determining the acceptability of the intervention's use by teachers and students and is highly relevant to an intervention study. If teachers and students do not perceive the intervention as useful, then it is likely that the intervention will not be continued after study. Social validity refers to the extent to which the behaviors being addressed, treatment procedures, and the effects of the intervention are considered socially important. (Finn & Sladeczek, 2001).

Social validity

In order to calculate social validity five point Likert scale was used in this study. The respondents were three special educators, three parents and three experts having experience in teaching/research in special education. The scale and its corresponding point values were as follows: strongly agree (+2), agree (+1), undecided (0), disagree (-1), strongly disagree (-2).

Result indicated that all participants strongly agreed that the targeted task was appropriate and important for the subject. The study helped subject to learn the task of preparation of tea and that it was likely to be used in the future. Results of the study will be useful to parents and special educators so that they can design other tasks to enhance life skills.

Results:

During the baseline (session 1 through 3) for preparation of tea, subject could not complete any sub-tasks independently hence scored 0% success. Subject's criterion was set at 100% correct anticipation, which was achieved in the 28th session. He took all together 20-intervention sessions to achieve 100% criterion. Details of subject's session to criteria are displayed in the table 1.

Table: 1**Details of session to criteria of subject**

S.No.	Subtasks	Sessions to criteria
1	2 nd Subtask	5 th
2	1 st and 2 nd Subtasks	9 th
3	1 st , 2 nd , and 3 rd Subtasks	13 th
4	1 st , 2 nd , 3 rd and 6 th subtasks	14 th
5	1 st , 2 nd , 3 rd 6 th and 7 th subtasks	19 th
6	1 st , 2 nd 3 rd 5 th 6 th and 7 th subtasks	21 st
7	All subtasks	28 th

Thus, subject learnt the sub-task of putting saucepan on gas stove (2nd sub-task) in the fifth session, two sub-tasks (1st & 2nd) filling saucepan with a cup of water and putting saucepan on gas stove in 9th session.

By the end 13th session he was performing three sub-tasks (1st, 2nd & 3rd) filling saucepan with a cup of water, putting saucepan on gas stove and wait for water to boil.

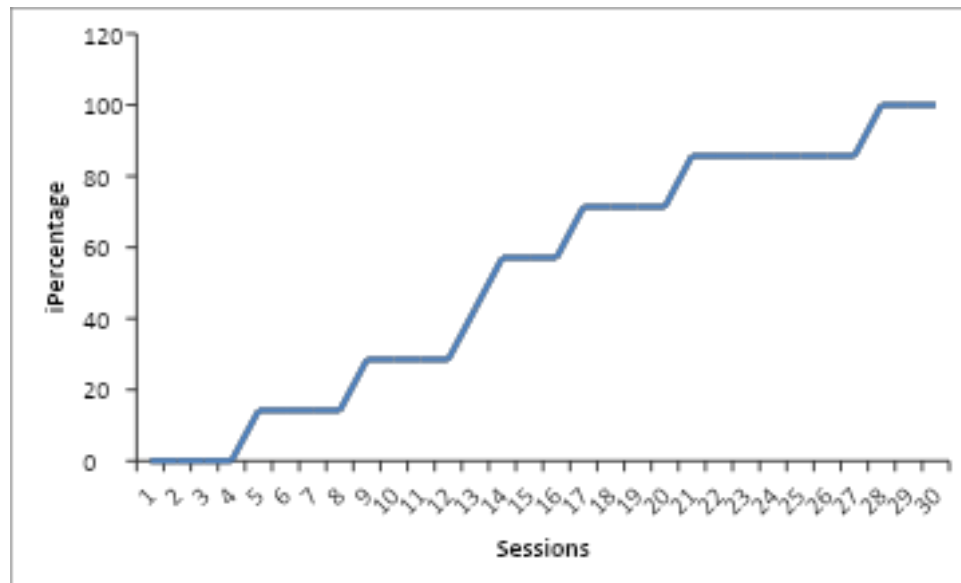
In the 14th session he learnt to perform four sub-tasks of tea preparation (1st, 2nd, 3rd & 6th) filling saucepan with a cup of water, putting saucepan on gas stove, wait for water to boil and wait for tea to boil.

In the 19th session, she learnt to perform 5 out of 7 sub-tasks ((1st, 2nd 3rd ,6th & 7th) filling saucepan with a cup of water, putting saucepan on gas stove, wait for water to boil, wait for tea to boil and pouring tea in a cup using tea strainer.

By 21st session he learnt to perform 6 out of 7 sub-tasks (1st, 2nd 3rd, 5th, 6th & 7th) and finally by the 28th session he learnt to perform all sub-tasks of preparation of tea. Visual inspection of subject's sessions to criteria is displayed in figure1.

Figure 1

Number of steps performed with unprompted correct by the subject



Thus, when mean of baseline scores (before intervention) and intervention score of 30th session was compared subject gained score of 100%. It indicated that constant time delay with total task presentation was effective in acquisition of learning performance of preparation of tea. Total instructional time for preparing tea was 138 minutes (2 Hour and 2 minutes) a mean of 6.5 minute per session (range =5to 7 minutes). He made 57 non-wait errors. Of the 57 non-wait errors, 47 were topographical error, 8 sequential and 2 duration errors. He had error percentage of 2.57. Intervention data path demonstrated performance with stable levels with accelerating trends indicating effectiveness of intervention

This study also examined the impact of constant time delay procedure on maintenance of acquired skill of preparation of tea after training. The maintenance session were conducted two and four weeks after the end of intervention sessions in order to determine to what extent the subject retained their skills. Subject had retained 71.4% of the task.

The generalization sessions were carried out one week after maintenance sessions. It was conducted in kitchen located in the teacher-training centre with different materials through one-to-one instruction. Performance was assessed for the subject and these sessions were identical to intervention sessions. Generalization probe sessions of the subject revealed that he was unable to perform two of sub-task such as putting one tea spoonful of tea and sugar in saucepan and pouring tea in a cup using tea strainer. His mean of generalization probe score was 71.4%.

Conclusion

These results reveal that total task presentation technique with constant time delay procedure was effective at improving activity of preparation of tea to a moderate adolescence having Intellectual disability with autism. Measures of efficiency suggest that that the procedure resulted in low percentage of errors during training and generalization.. In addition, the data collected for sessions to criteria, instructional time to criteria indicate positive results Furthermore, future research needs to replicate with other children with similar and different conditions.

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