Reducing escape maintained challenging behaviour in children with ASD by offering choice of task.

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ABSTRACT

Children with autism tend to engage in challenging behavior, which impacts their ability to engage appropriately with tasks. Offering children with autism spectrum disorders (ASD) choices reduce challenging behaviour maintained by escape from task demand. Provision of choice in tasks is one of the several antecedent based behaviour change strategies, which uses abolishing operations to reduce the value of escape as a reinforcer maintaining the challenging behaviour. The purpose of this study was to reduce the challenging behaviour of a 6-year-old boy diagnosed with Autism Spectrum Disorder. Direct and indirect assessments identified the function of challenging behaviour as escape from tasks and an ABAB reversal design was used to assess the effectiveness of an antecedent based intervention, in which the participant was provided an opportunity to choose among tasks. Results showed that there was a substantial reduction in the participant's challenging behaviour when he was allowed to choose among tasks as compared to when he wasn't offered any choice. The conclusion was that offering choices is an effective antecedent based behaviour change strategy for reducing challenging behaviours that are maintained by escape from instructional demands.

Keywords: *Autism Spectrum Disorder (ASD); offering choices; challenging behaviour; antecedent interventions; motivating operations.*

INTRODUCTION

Practitioners have used several antecedent based behaviour change strategies, singularly or in treatment packages, to reduce the effectiveness of reinforcers maintaining the challenging behaviours (i.e. abolishing operations) and a corresponding reduction of those behaviours (Cooper et al., 2007). Offering choice is one of these antecedent based behaviours change strategies, which uses abolishing operations to reduce the reinforcing effectiveness of escape from instructional demands. Michael (2000) concluded in his study that, in most cases, the EO to engage in disruptive behaviours can be abolished by altering the instructional practices so that "instructions result in less failure, more frequent social and other forms of reinforcement, and other general improvements in the demand situation to the point at which it may not function as a demand but rather as an opportunity".

Applied behaviour analysts have used several behaviour change strategies based on MO (e.g. offering choices) that change contingency-independent antecedent events (i.e. an antecedent event that is not dependent on the consequences of behaviour for developing abative and evocative effects; and the antecedent event itself affects behaviour-consequence relations) to reduce the value of task removal as reinforcer, which results in substantial reductions in challenging behaviours that are maintained by escape. Therefore, the use of antecedent interventions that change contingency-dependent antecedent events (i.e., antecedent events that are dependent on consequences to develop abative and evocative effects) to reduce challenging behaviour may not be an effective solution (Cooper et al., 2007). For example, removal of instructional demands contingent on occurrence of appropriate behaviour (e.g., using break card), is not sufficient, as that would still leave the aversive nature of demand situation unresolved. McGill (1999) stated that only teaching a functionally equivalent behaviour using FCT may not be sufficient to reduce challenging behaviour without abolishing the value of the reinforcer (i.e., making the reinforcer ineffective) maintaining the challenging behaviour.

Offering choice has been proven to be an effective antecedent intervention to reduce challenging behaviours maintained by escape from instructional demands in a study done by Romaniuk et al. (2002). The results of the study demonstrated that individuals display low rates of escape-maintained disruptive behaviours when they are provided with opportunities to make choices among tasks. The study also demonstrated that individuals who display disruptive behaviour that has been maintained by escape will benefit more from choice making among tasks than individuals whose behaviours are maintained by attention or access to tangible items.

Offering choice likely functions as an abolishing operation for escape-maintained disruptive behaviour when the individuals could choose among tasks as compared to when the tasks are therapist nominated. Some researchers suggest that when individuals are provided with opportunity to choose, they will always choose the option that is preferable to them or least aversive. Therefore, providing the opportunity to select is directly related to the reinforcing value of the chosen tasks (Lerman et al., 1997). Other researchers suggest that the

opportunity to choose most likely exceeds the reinforcing value of the selection made, even though the learner's preference for the selected tasks is same and none of the tasks are preferable (e.g., Fisher et al., 1997; Bambara et al., 1995).

Several research studies have successfully demonstrated the effects of offering choice on the reduction of disruptive behaviours maintained by escape from tasks and have attempted to ascertain whether choice making in as of itself may be reinforcing for children with developmental disabilities. Kern et al. (2001) demonstrated a decrease in challenging behaviours and increase in desirable behaviours such as task completion of students diagnosed with ADHD and/or mental retardation when they were provided with a choice of sequence of task completion as compared to when choice was not provided. The study also demonstrated that the act of choosing may be reinforcing in itself. Dyer et al. (1990) evaluated the effects of provision of the opportunity to choose among tasks and reinforcers on the disruptive behaviour of 3 students with severe autism and/or mental retardation and emotional disorders. The results showed consistently reduced levels of challenging behaviour (aggression) displayed by the students. Another possible explanation for the results is that the opportunity to choose both tasks and reinforcers may have been a reinforcer in itself, because the tasks and reinforcers for each student were the same in both conditions.

The authors suggested that the opportunity to choose may have been as important to the participants, as the reinforcers they were provided. Likewise, Dunlap et al. (1994), found that choice-making increased task engagement and reduced disruptive behaviour for two participants with emotional and behavioural challenges. A third yoked condition was implemented for the third participant who was severely emotionally disturbed; in this condition, he wasn't given a choice in story selection. Even though the story selections made by the teacher matched his selections in the previous choice condition, the results indicated that the challenging behaviours continued to occur during this condition, demonstrating that choice making may have a reinforcing value of its own.

OBJECTIVES

The purpose of the current study was to reduce the challenging behaviour of a 6-year-old boy with ASD by offering choices as an antecedent based behaviour change strategy. The experimental design used in the current single-subject study was the ABAB reversal design, in order to demonstrate that there was a substantial reduction in participant's challenging behaviour when he was offered choice among tasks (in condition B) as compared to when he wasn't offered any choice (in condition A). The study was conducted in a centre-based environment (i.e. at centre) and was conducted in response to explicit concerns of the therapist/parents regarding participant's challenging behaviour.

METHODS AND MATERIALS

Participants

The participant is a 6-year-old boy who has been diagnosed with autism spectrum disorder by a paediatrician and a psychologist. The participant is vocal-verbal, and his vocalizations has mean length of 1-2

words per utterance. The participant can follow instructions. He does not respond appropriately to tasks. He displays challenging behaviours like bolting, crying, and flopping during task and exhibits non-compliance behaviour to escape from work. He responds receptively to familiar names, objects, pictures, and activities. He also responds to his name and demonstrates appropriate eye contact. The therapist has been teaching the participant peg boards, intraverbal- social questions, expressive actions, categories, filling in missing words in rhymes, expressive identification of colours, common items (fruits, vegetables, kitchen items, clothes, etc.), and body parts, etc.

The challenging behaviour was most commonly preceded by presentation of instructional demands which were less-preferred or required greater response effort from the participant, often resulting in escape from performing or completion of tasks. Prior to intervention, the participant was engaging in challenging behaviour for most part of the therapy session. Therefore, there was an immediate need of an effective intervention to reduce the participant's challenging behaviour. The challenging behaviour was deemed socially significant as reduction in challenging behaviour will result in more time spent in learning and task completion, which will then contribute towards achieving the participant's goal.

Setting

Sessions were conducted individually in a therapy room. He received a 30-minutes session which was conducted five days in a week that he attended at the Centre. All sessions were conducted in a Centre based setting in a small therapy room which contains a child size table and chair and relevant session material (e.g., instruction material and highly preferred tangible & edible items). The child and experimenter were seated facing each other at a table and one observer recorded data from behind.

Materials

The tasks were written on a data sheet. The timer in the clock application of the therapist phone was used to collect data through partial interval recording. A data sheet was designed to record data through partial interval recording. The data table on the data sheet represented sixty 30-second intervals (columns) each session (see Appendix D).

Reinforcement procedure

Child reinforcer preference assessment was conducted to determine the reinforcing effectiveness of the top-ranked items identified by therapist relative to the top-ranked stimuli based on the direct assessments of preference. We implemented two frequently used preference assessment procedures: parents interview similar to that described by Fisher et al. (1996), and a paired-stimulus preference assessment (Fisher et al., 1992). The purposes were to determine these methods would be effective in identifying reinforcers and which would identify more potent reinforcers (see Appendix C).

Dependent variable: operational definition and measurement

The dependent variable for the current study was challenging behaviour. Challenging behaviour was operationally defined as crying (which could be heard from 10 meters away, continue for at least 5 seconds and

should not be accompanied by laughter), bolting (participant leaving the task uncompleted and running more than 2 feet away from the work table), or flopping (participant falling to the ground within 1 feet of the work table). Challenging behaviour was recorded using a 30-second partial interval recording procedure for 60 consecutive intervals. The data for the dependent variable was summarized as percentage of intervals with challenging behaviour. This was computed by dividing the number of intervals in which challenging behaviour occurred by 60, multiplied by 100. The data on the occurrence of challenging behaviour was taken by the therapist. A timer of 30 seconds was setup on the therapist's phone. The completion of the 30-second interval was cued by the timer's beep. The therapist was asked to reset the timer for another 30 seconds once heard the beep and continue to perform resets until the 30-minute session concluded for the day. She was asked to mark the 30-second interval as positive on the data table, if challenging behaviour occurred at any point of time during that interval. It is important to note, at this point, that the current study does not include an inter-observer agreement because the participant's mother refused the request for video-recording of any of the sessions in the study, which would have helped the author to record data on challenging behaviour at a later time for reliability.

Experimental design and Procedure

An ABAB reversal design (e.g., Romaniuk, et al., 2002; Cooper et al., 2007, Figure 3) was used to compare the level of challenging behaviour across two conditions (choice and no-choice). A list (see Table 1) of seven tasks, which had been observed to be associated with the challenging behaviour, was written on a piece of paper (see Appendix B). The tasks could easily be performed while being seated at the work table.

Table 1. Sample list of tasks and activities.

1. Picture to picture matching. Array-(10)
2. Putting-in/taking-out 5 pegs on a peg board
3. Tact- actions (5)
4. Select 1-2 objects from larger set.
5. Intraverbal- social questions (4)
6. Filling in rhyme.
7. Category sorting.

During the Choice condition, the participant was provided the opportunity to choose among tasks (e.g. Dyer et al., 1990; Dunlap et al., 1994; Romaniuk et al., 2002). At the start of the session, the therapist prompted the participant to select at least four tasks he wanted to perform during the session from among the seven tasks listed on the list, while placing the list in front of the participant. Prior to selection, the participant was allowed to review the materials of each task on the list. In this condition, the participant was also told that he could switch tasks at any point, only one time during the session, provided he made the required to perform tasks, which had been selected in a random order from the list (see Table 1). At the start of each session, the therapist reviewed the tasks with the participant. He was expected to perform during that session. Any expressions of choice by the participant were ignored and therapist would prompt the participant by saying, "it is time to work on ____ now"; while presenting the task to him.

In all experimental conditions (choice and no-choice), crying was ignored whenever possible and any attempts to bolt or flop were blocked. However, in the event that the participant did manage to flop on the floor from the work table, the participant was physically guided back to the work table and physically assisted to sit back in the chair. Once the child was seated at the table, the therapist continued to present the request until the participant complied with the request and started performing the task. After completing each task, the participant was verbally praised and delivered the piece of chips (high value reinforcer). The participant was provided both physical and verbal prompts. If he failed to begin working within 10 seconds after the initial request was presented, he was given another verbal prompt. If he did not comply with the request within 5 seconds after the verbal prompt, his hand was gently grasped and he was physically guided to perform the task.

RESULTS

Indirect Assessment (QABF)

The Questionnaire about Behavioural Functions (QABF) is a rating system that rates various situations in which the behaviour might occur. Given a rating to each scenario, a potential function or reason a behaviour is occurring can be found. The participant's therapist fills out the QABF form, as challenging behaviour mostly occurred during the session provided by the therapist (see Appendix A).

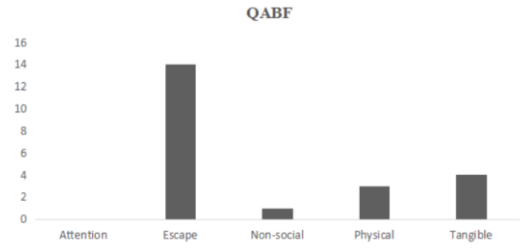

Figure 1. Results of the QABF questionnaire

The results of this assessment yield that one factor contributed to the increase of behaviours over all the others, Escape. The scoring summary indicated that Escape contributed the most towards the onset of challenging behaviour, with the highest scores of fourteen. Other factors like tangible and physical were found to some extent, to be the contributing factors for occurrence of challenging behaviour, with scores of 4 and 3 respectively. Score 2 and 0 indicated little contribution from the factors non-social and attention respectively. The high scores associated with Escape indicated that the most probable function of challenging behaviour was Escape.

Direct Assessment (ABC Narrative Recording)

In this form of direct assessment, data are collected only when behaviours of interest are observed and the recording is open-ended (i.e., any events that immediately precede or follow the target behaviour are noted). The direct assessment was conducted for 30 minutes by the therapist and 100% of the occurrences of challenging behaviour with their respective antecedents and consequences were noted. The duration of the challenging behaviour was recorded with the help of a stop watch in phone. The challenging behaviours occurred for 70% of the observation time (see Appendix B). A request to perform task constituted 100% of

the antecedent of challenging behaviour. Note, most of these tasks were language tasks and fine motor and visual performance activities (see Appendix B). These tasks were identified as less-preferred or requiring greater response effort by the participant. The occurrence of challenging behaviour often resulted in either removal of low-preferred task or a time-out that often caused a delay in performance/completion of the task; both of these consequences mediated reinforcement in form of escape.

Intervention Evaluation

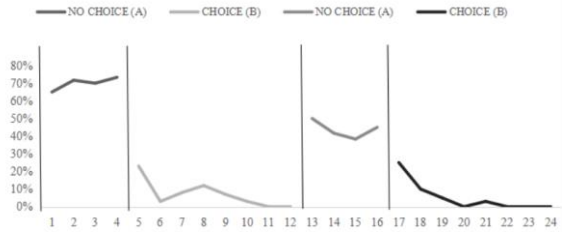

Figure 2. An A-B-A-B reversal design. Demonstrates the effectiveness of offering choice on reducing challenging behaviour maintained by escape.

The data points in Figure 2 show the percentage of intervals with challenging behaviour during each session for each experimental condition in the reversal analysis. The initial baseline was conducted for four sessions. During the no-choice condition (i.e., initial baseline), the average percentage of occurrence of challenging behaviour was 70% per session.

The choice-condition (intervention) was implemented on the fifth session of the study i.e., the independent variable/intervention (choice making) was implemented. When the choice to select among tasks was first offered to the participant, his percentage of occurrence of challenging behaviour per session decreased to 23%. On the sixth session, the percentage of occurrence of challenging behaviours per session dropped to 3%. An increase in the percentage of occurrence of challenging behaviour per session was recorded i.e., 8% on the seventh session and 12% on the 8th session. The percentage of occurrence of challenging behaviour decreased 5% in the following session i.e., challenging behaviour occurred for 7% of the total intervals during the 9th session. The percentage of occurrence of challenging behaviour per session further decreased by 4% i.e., 3% on the 10th session. The participant did not engage in challenging behaviour during the 11th and 12th session (i.e., in the last two sessions of the choice condition). The participant opted to change a chosen task prior to its completion during three different sessions in this condition.

A reversal to the no-choice condition (i.e., removal of the independent variable) on the 13th session resulted in an immediate increase in percentage of occurrence of challenging behaviour per session, with an average of 44% across sessions during the no-choice condition.

The choice-condition was re-introduced on the 17th session i.e., the independent variable (choice making) was re-implemented and resulted in a decrease of 20% i.e., challenging behaviour occurred for 25% of the total intervals during the 17th session. The percentage of occurrence of challenging behaviour per session continued to decrease over the next two sessions i.e., 10% on the 18th session and 5% on the 19th session. challenging behaviour did not occur in any of the intervals during the 20th session. The percentage of occurrence of challenging behaviour per session slightly increased to

3% during the 21st session, which dropped back to 0% during the next session and remained at zero across the last two sessions i.e., challenging behaviour did not occur in any of the intervals during the 22nd, 23rd and 24th session of the study. The participant opted to change a chosen activity prior to its completion in only one session during this condition.

DISCUSSION

Offering choice was selected as an antecedent based behaviour change strategy to reduce the challenging behaviour by utilizing abolishing operations to reduce the effectiveness of escape as a reinforcer i.e. when allowed to choose, the participant would most likely select tasks that are preferable or less aversive to them; resulting in a reduced value of reinforcement (i.e. escape from instructional demands) and a corresponding reduction in challenging behaviours maintained by the reinforcer (escape).

The results of the current study are consistent with previous investigations (e.g., Dyer et al., 1990; Dunlap et al., 1994; Kern et al., 2001; Romaniuk et al., 2002). The present study successfully demonstrated that offering choices is an effective intervention in reducing challenging behaviours that are maintained by escape from instructional demands. Participant showed substantial reductions in levels of challenging behaviour when he was given opportunities to make choices among tasks during the choice condition. When choices were first offered to the participant, his challenging behaviour decreased to a low of 0% during the last session in the condition. A reversal to the no-choice condition resulted in an immediate increase in challenging behaviour, with an average of 44% across the condition. During the subsequent choice condition, the participant's challenging behaviour once more decreased to a low of 0%.

The results of ABAB reversal design clearly demonstrate that the choice condition always produced lower levels of challenging behaviour than did the no-choice condition. It may also be important to note that even though all the tasks presented as choice options in the list were less-preferred by the participant, the results showed substantial reductions in challenging behaviour during choice condition. This observation – that behaviour differed substantially across conditions even when the tasks had the same preference value for the participant – suggests that the act of choice making itself may have been reinforcing in itself (e.g., Kern et al., 2001; Dyer et al., 1990; Dunlap et al., 1994; Romaniuk et al., 2002). Also, response blocking and extinction procedures were implemented contingent on occurrence of challenging behaviour during all experimental conditions (choice and no-choice), which may have contributed towards reduction in challenging behaviour across Choice conditions. However, it is important to note that, despite the presumed influence of response blocking and extinction procedures, an increasing trend in challenging behaviour was still observed across No Choice conditions. These findings add to a growing body of literature that demonstrates that providing learners, with challenging behaviours, opportunities to make choices regarding events in their environment, is an effective solution for reducing such challenging behaviours.

CONCLUSION AND LIMITATIONS

One limitation of this current study is that systematic evaluation was not conducted on the consequence-based strategies, response blocking and extinction. A further evaluation into these behaviour strategies would depict their impact on the challenging behaviour. A second limitation is the effects of offering choices on multiple subjects could not be evaluated as the current study was a single-subject study. A third limitation is that it would have been desirable if the influence of offering choice on task engagement and task performance of the subject could have been evaluated, but the context of this study did not allow for systematic evaluation of these variables. The final limitation of the current study includes the future maintenance and generalization of offering choice. As time permitting, this study did not include the overall long-term effects of the intervention.

Considerations for future research include a) demonstration of reductive effects of 'offering choices' on the challenging behaviours of multiple participants diagnosed with different disabilities like Asperger's and Down syndrome, b) the replication of these findings and probing of their generality to other settings, and c) exploring limits of the effectiveness of offering choices and its practical application in regards to different societal contexts, as well as the ideal parameters for offering choices in various circumstances.

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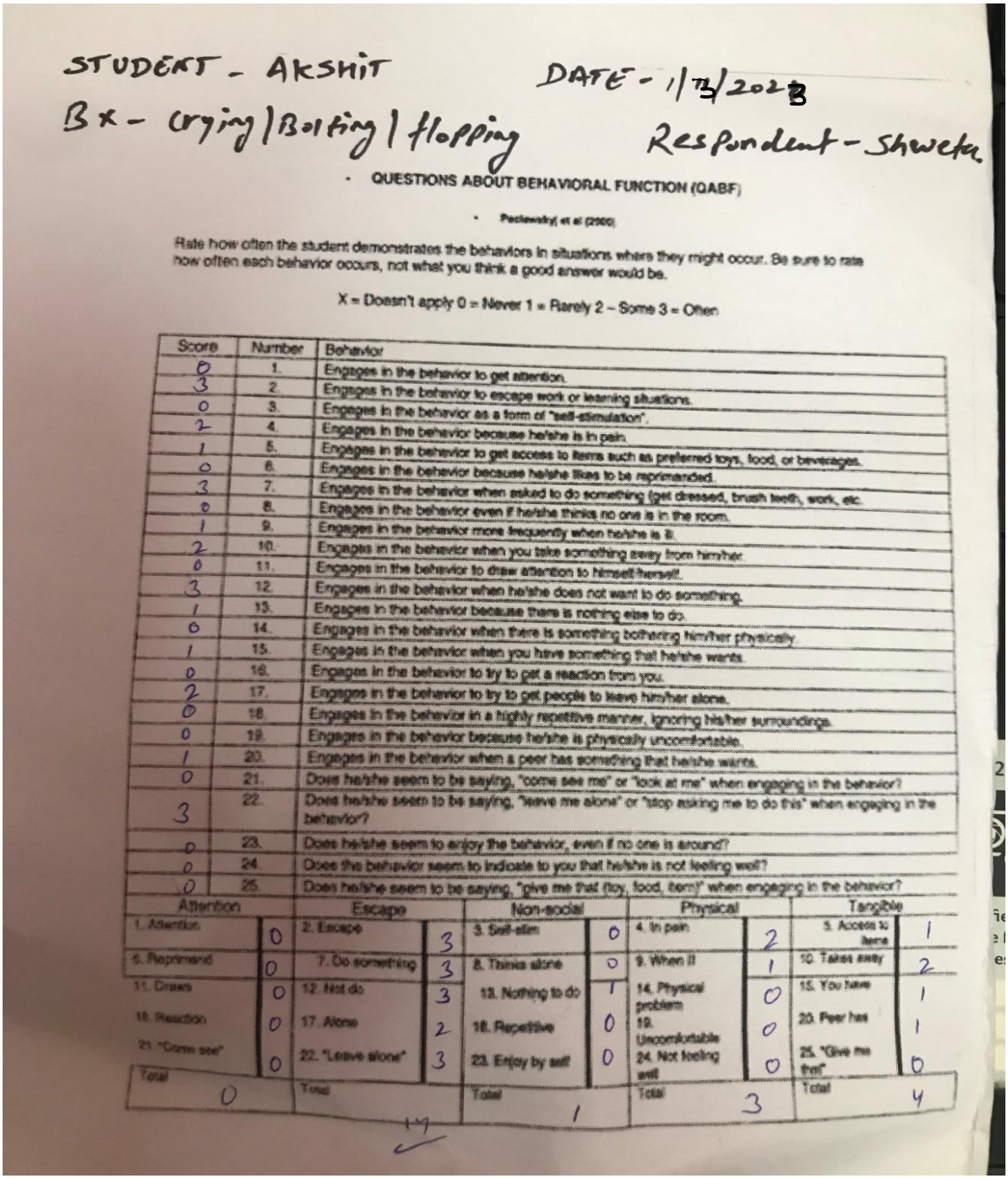
APPENDIX

(A) QABF



STUDENT - AKSHIT DATE - 1/3/2023

Bx - crying | Bolting | flopping Respondent - Shweta

QUESTIONS ABOUT BEHAVIORAL FUNCTION (QABF)

Paclawskyj et al (2000)

Rate how often the student demonstrates the behaviors in situations where they might occur. Be sure to rate how often each behavior occurs, not what you think a good answer would be.

X = Doesn't apply 0 = Never 1 = Rarely 2 = Some 3 = Often

Score	Number	Behavior
0	1.	Engages in the behavior to get attention.
3	2.	Engages in the behavior to escape work or learning situations.
0	3.	Engages in the behavior as a form of "self-stimulation".
2	4.	Engages in the behavior because he/she is in pain.
1	5.	Engages in the behavior to get access to items such as preferred toys, food, or beverages.
0	6.	Engages in the behavior because he/she likes to be reprimanded.
3	7.	Engages in the behavior when asked to do something (get dressed, brush teeth, work, etc.
0	8.	Engages in the behavior even if he/she thinks no one is in the room.
1	9.	Engages in the behavior more frequently when he/she is ill.
2	10.	Engages in the behavior when you take something away from him/her.
0	11.	Engages in the behavior to draw attention to himself/herself.
3	12.	Engages in the behavior when he/she does not want to do something.
1	13.	Engages in the behavior because there is nothing else to do.
0	14.	Engages in the behavior when there is something bothering him/her physically.
1	15.	Engages in the behavior when you have something that he/she wants.
0	16.	Engages in the behavior to try to get a reaction from you.
2	17.	Engages in the behavior to try to get people to leave him/her alone.
0	18.	Engages in the behavior in a highly repetitive manner, ignoring his/her surroundings.
0	19.	Engages in the behavior because he/she is physically uncomfortable.
1	20.	Engages in the behavior when a peer has something that he/she wants.
0	21.	Does he/she seem to be saying, "come see me" or "look at me" when engaging in the behavior?
3	22.	Does he/she seem to be saying, "leave me alone" or "stop asking me to do this" when engaging in the behavior?
0	23.	Does he/she seem to enjoy the behavior, even if no one is around?
0	24.	Does the behavior seem to indicate to you that he/she is not feeling well?
0	25.	Does he/she seem to be saying, "give me that (toy, food, item)" when engaging in the behavior?

Attention		Escape		Non-social		Physical		Tangible	
1. Attention	0	2. Escape	3	3. Self-stim	0	4. In pain	2	5. Access to items	1
6. Reprimand	0	7. Do something	3	8. Thinks alone	0	9. When ill	1	10. Takes away	2
11. Draws	0	12. Not do	3	13. Nothing to do	1	14. Physical problem	0	15. You have	1
16. Reaction	0	17. Alone	2	18. Repetitive	0	19. Uncomfortable	0	20. Peer has	1
21. "Come see"	0	22. "Leave alone"	3	23. Enjoy by self	0	24. Not feeling well	0	25. "Give me this"	0
Total	0	Total		Total	1	Total	3	Total	4

(B) ABC NARRATIVE RECORDING

Participant Name: Akshit **Duration of Observation:** 30 minutes

Date of Observation: 1ST May 2023 **Name of observer:** Farha

Target behaviors: crying (which could be heard from 10 meters away, continue for at least 3 seconds and should not be accompanied by laughter), bolting (participant leaving the task uncompleted and running more than 2 feet away from the work table, or flopping (participant falling to the ground within 1 feet of the work table).

Duration	Activity	Antecedent	Behavior	Consequence	Possible Function
5 minutes	Picture to picture matching array-10	The participant was asked to matching picture (less preferred task)	Flopping	The participant was physically guided to sit back on the seat.	Escape
1 minute	Putting in / taking out 5 pegs on a peg board	The participant was asked to take out the 3 remaining pegs from the pegboard.	Bolting	The participant was physically guided back to the table and the activity was removed.	Escape
4 minutes	Category sorting vegetables and transport.	A request was asked to sort the pictures of categories.	Flopping	The participant was physically guided to sit back on the seat and activity done by physical guidance.	Escape
2 minutes	Select 2 objects from larger set.	The objects were placed in front of the participant.	Crying	The participant was asked to be quiet and was physically assisted to complete the task.	Attention
5 minutes	Putting away the task materials in the box.	The participant was asked to put away the tasks material after the activity was completed.	Flopping accompanied by crying	The participant was physically guided to away the task materials in the box.	Escape
2 minutes	Fill in rhyme.	The participant was asked to fill in rhymes.	Bolting	The participant was physically guided back to the table. .	Escape
2 minutes	Tact by action.	The participant was asked to respond to the presented picture. What is he/she doing?	Crying	The participant was asked to be quiet and was verbally assisted to complete the task.	Escape.

(C) REINFORCER PREFERENCE ASSESMENT

Item A: CHIPS
Item B: COOKIE
Item C: CAR
Item D: KURKURE
Item E: CANDY
Item F: TOY
Item G: GEMS

DATE-	03-05-2023
CHILD NAME-	Akshit
THERAPIST-	Farha
TRIALS	ITEM AVAILABLE (SELECTED highlighted red)
1.	Chips car cookie
2.	Chips candy toy
3.	Kurkure toy gems
4.	Candy car gems
5.	Kurkure chips cookie
6.	Kurkure gems car
7.	Car Kurkure chips.
8.	Kurkure candy chips
9.	Cookie gems candy
10.	Chips Kurkure cookie

Item A selected: 6 times
Item B selected: 1 time.
Item C selected: 0 times.

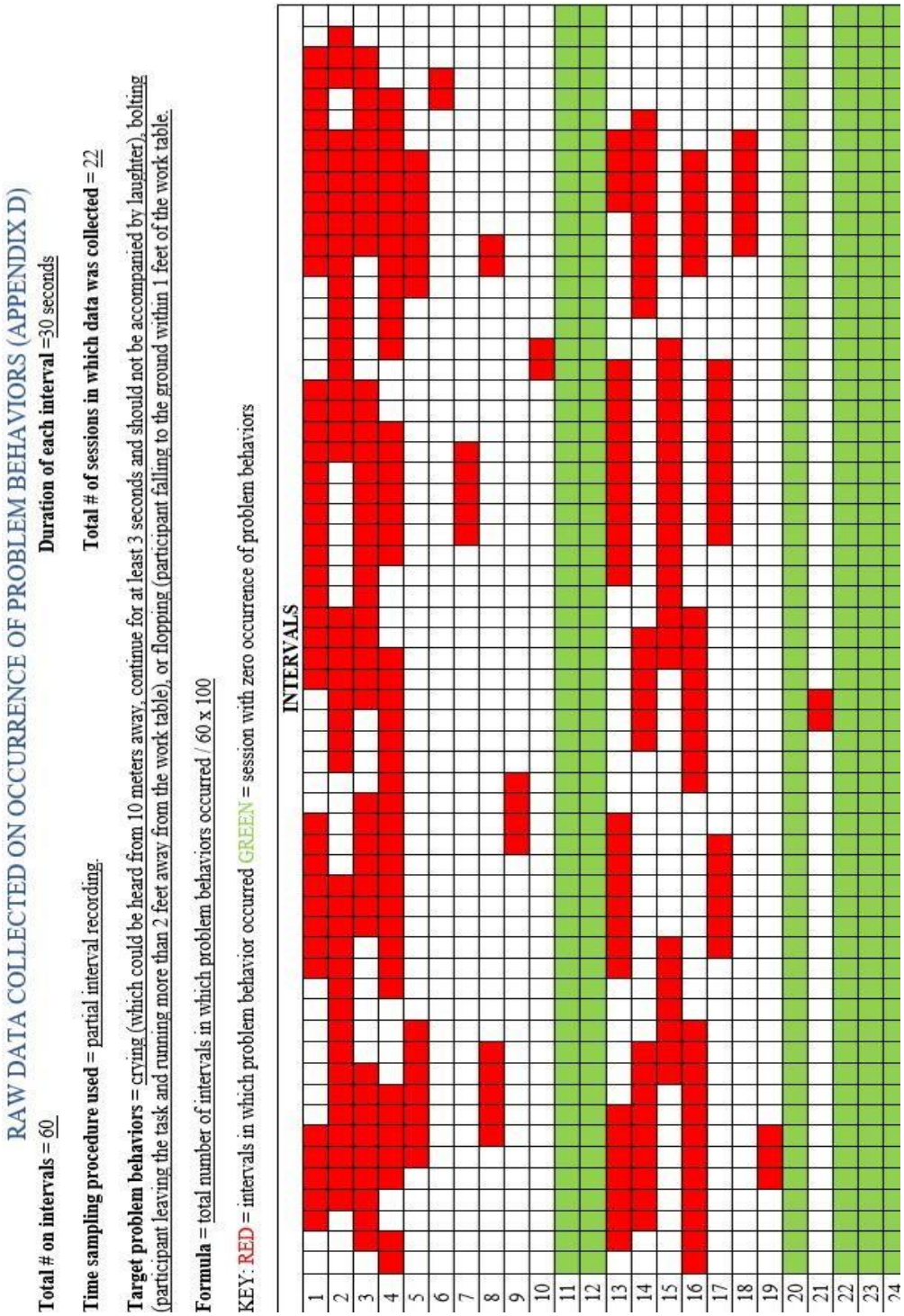
Item D selected: 2 times

Item E selected: 0 times
Item F selected: 0 times.
Item G selected: 0 times

Highest preferred item: chips

Moderately preferred item: Kurkure
Lowest preferred item: cookie

DATA TABLE FOR FIGURE (1) BASED ON RAW DATA COLLECTED



SESSIONS (APPENDIX E)

SESSIONS	TOTAL # OF INTERVALS IN WHICH CHALLENGING BEHAVIOR OCCURRED	PERCENTAGE OF INTERVALS WITH CHALLENGING BEHAVIORS*
1	39	65%
2	43	71.67%
3	42	70%
4	44	73.33%
5	14	23.33%
6	2	3.33%
7	5	8.33%
8	7	11.67%
9	4	6.67%
10	2	3.33%
11	0	0%
12	0	0%
13	30	50%
14	25	41.67%
15	23	38.33%
16	27	45%
17	15	25%
18	6	10%
19	3	5%
20	0	0%
21	2	3.33%
22	0	0%
23	0	0%
24	0	0%

Formula:

Percentage of intervals with challenging behavior = total number of intervals in which challenging behavior occurred / 60 x 100