

Differential reinforcement of other behaviours with a token economy to reduce disruptive behaviours in a pupil with autism

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ABSTRACT: A differential reinforcement of other behaviours (DRO) protocol was used with an embedded token economy to reduce disruptive behaviours in an autistic pupil. The pupil engaged in high levels of disruptive behaviours, limiting their access to intensive teaching sessions. Use of the DRO combined with a token board led to a reduction in disruptive behaviours observed which allowed the pupil to reengage in intensive teaching settings.

The pupil's targets such as identifying community signs were then able to be run more intensively allowing them to learn new signs. The reduction in disruptive behaviours also led to positive outcomes in other teaching settings, such as the pupil making improvements in their typing ability.

Introduction

This case study looks at a 10-year-old pupil with a diagnosis of autism who attends a special independent school full time with 1:1 support. The pupil was able to talk in single words or short phrases and enjoyed social contact with his tutors. The pupil enjoyed singing and dancing but also physical pressure and engaged in physical resistance, squeezing and pushing towards his tutors. The pupil engaged in other behaviours such as bolting, pinching, scratching, grabbing others and tapping objects together or against the table. These behaviours were disruptive to the level that the pupil was no longer able to engage in Intensive Teaching Trials (ITT) at the table, so all teaching was required to be Natural Environment Teaching (NET).

We introduced a token board that could be utilised for teaching sessions both in ITT and NET, with the aim of reducing the disruptive behaviours to a level whereby effective ITT sessions could be re-introduced. ITT is a key method to allow intensive teaching of new skills (1), so reduction of the disruptive behaviours was important to allow access to these sessions to build on the pupil's current skills. For example, the pupil was working on identifying community signs such as 'Green Man'. We were only able to initially teach this skill in NET, by placing the sign around the school, but the pupil was struggling to learn the name of the sign. By introducing teaching in ITT we would also be able to intensively teach the target before generalising the skill in NET. We also used the token board for NET sessions where we were able to work on skills such as typing, which required the pupil to be able to sit and focus on the computer keyboard.

High levels of disruptive behaviours meant that the pupil found it hard to sit for successive teaching trials making typing progress slow.

Literature Review

Differential reinforcement of other behaviours (DRO) is one of the most common procedures implemented to target a range of different behaviours, as noted by Gongola (2008), while token economies are also regarded as effective interventions. DROs combined with token boards have been used in a number of studies which showed their effectiveness in reducing a number of different disruptive behaviours of children with varying disabilities as noted by Didden et al (1997).

Didden et al. also showed that a DRO with tokens could lead to a decrease in disruptive behaviours in the classroom for five children with behaviours such as leaving their seats, stereotypic mouthing and disrupting the on-task behaviour of other pupils. Didden et al. demonstrated that the DRO with tokens is suitable for use in a classroom setting such as ours and could be used for range of different children and disruptive behaviours, suggesting that it would be appropriate for use with a pupil with autism with the disruptive behaviours we had observed. LeBlanc et al. (2000) also showed the effectiveness of the DRO with tokens to reduce excessive unwanted behaviours such as inappropriate sexual behaviours, alongside common behaviour skills training to increase more appropriate behaviours. Le Blanc et al. were able to reduce multiple unwanted behaviours simultaneously using the DRO and emphasised the benefit of the DRO being easily adaptable to target any new inappropriate behaviours that arise.

As the pupil in our case study also showed a range of disruptive behaviours, the DRO would be appropriate to reduce all the undesirable behaviours simultaneously, as well as any new disruptive behaviours that arose.

Method

We used a fixed whole interval DRO procedure: generalised reinforcement, in the form of tokens – ticks on the token board – was delivered at the end of the fixed duration interval, contingent on the absence of the target behaviours during the whole of each interval. The target behaviours were any off-task behaviours: tapping (banging objects together or against the table), bolting

(running away without permission), physical aggression (pinching, scratching, biting, grabbing others), physical resistance (applied body weight towards another person). The procedure was expected to lead to a decrease of the target behaviours as the behaviours were never followed by reinforcement (Zane, Davis, 2013).

We integrated the DRO with a token economy so the backup reinforcement was delivered after 5 tokens, allowing instructional momentum to be maintained as the timer interval was short and delivery of reinforcement after each interval would be disruptive to the sessions (Gongola, 2008). If the target behaviours were observed, no token was given at the end of the interval and the timer reset. The fixed interval was chosen initially as 30s as baseline suggested this was an achievable initial interval period for the pupil to follow demands with no target behaviours seen. We were able to increase the interval to 45s as the pupil was able to sit for the 30s with minimal disruptive behaviours. Reinforcement was given for 3 minutes when 5 tokens were received. Escape was mostly given as reinforcement as this was the pupil's biggest motivator, but attention in the form of singing, pressure, tickles etc was also available. During this time the pupil was allowed to engage in the target behaviours.

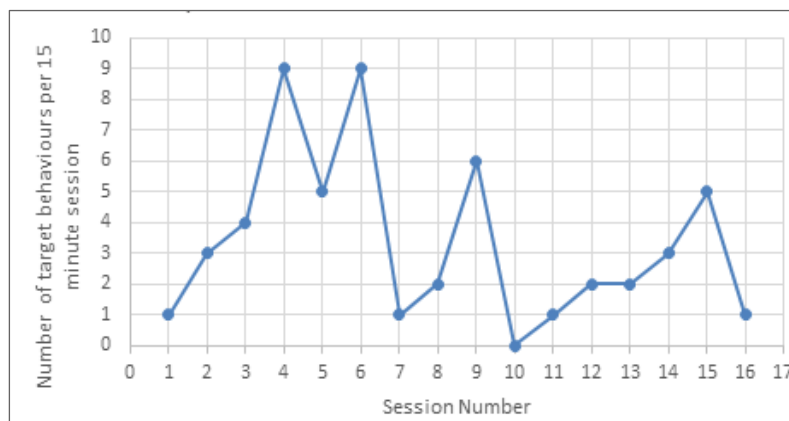
Additionally, the token board was coloured red to give a visual representation to the pupil that it was time for work. When 5 tokens were earned, the board was flipped over to the green side letting the pupil know reinforcement was available and that he was allowed to engage in the target behaviours.

We aimed to run the sessions 2 times a day. Initially sessions were 15 minutes long and the number of times the target behaviours occurred during the session were counted. This was challenging as the number of behaviours increased near the end of the sessions and the pupil wasn't accessing reinforcement. We decided to change data collection method to show how many times the pupil gained reinforcement instead of the number of times they were off task. The procedure was therefore modified so each session the pupil was to earn the 5 tokens 3 times, accessing reinforcement after 5 tokens as before. Data was then recorded on how many times 5 tokens were earned in the session with no target behaviours present.

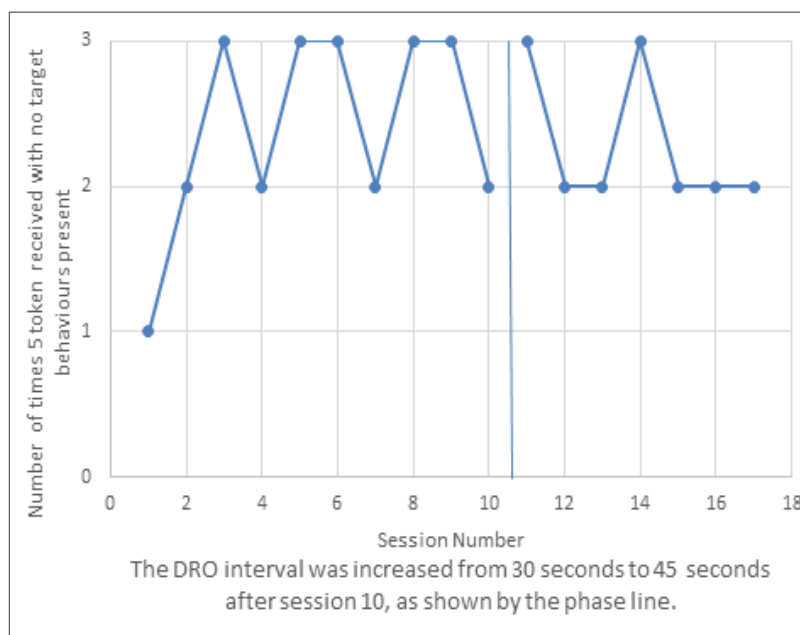
This also gave the sessions a clearer end point and was easier for the tutors to implement.

Results

The number of disruptive behaviours per 15-minute session is shown in the graph (graph 1). During the baseline session, the pupil engaged in minimal disruptive behaviours. As more sessions were introduced, the target behaviours increased initially, showing a possible extinction burst with the number of disruptive behaviours not increasing back to this peak afterwards, and starting to decrease.



Graph 1. Number of target behaviours per 15 minutes session



Graph 2. Number of times 5 token received with no target behaviours present

Graph 2 shows the results for the second data collection method. In the first session of this graph, the pupil was only able to engage in their work for 1 set of 5 tokens without any disruptive behaviours. For each of the next sessions, the pupil was consistently able to engage in work for 2 or 3 sets of 5 tokens without any disruptive behaviours (3 sets of 5 tokens is equivalent to 0 disruptive behaviours for the first data collection method, which was only recorded once in the first 16 sessions).

This consistency was still seen after the time interval was increased from 30 seconds to 45 seconds.

The pupil often initially attends well to new tutors or procedures before exhibiting higher levels of disruptive behaviours. Initially we found that during the sessions we were often recording a high number of disruptive behaviours and the pupil was sometimes not able to access reinforcement as the timer had to be restarted so often. However, as the pupil got used to the token board we found that they were able to sit for whole sessions with no disruptive behaviours, and was even requesting outside the sessions to do work to earn the tokens. During typing sessions, the pupil was able to learn to type 3 new letters (Figure 1). Before the introduction of the token board, we found it difficult to engage the pupil in the sessions, however after its introduction we found they were learning the new letters at a faster rate and requesting to stay at the computer for typing.

Discussion and conclusion

Overall, the DRO combined with a token economy had positive effects for the pupil. The pupil was able to increase the length of time they were able to engage in ITT sessions without disruptive behaviour. ITT sessions were again able to be incorporated into the pupil’s programme, allowing new skills to be taught intensively.

It should also be noted that inconsistencies with staffing may partly account for the fluctuations in the data. However, a definite improvement in the pupil’s ability to sit for ITT sessions was observed.

The future aim for the pupil is to increase the time the token board is used for so that disruptive behaviours can be minimised for the whole day. Finding a suitable way for tutors to continuously take data will be part of the challenge.

We based the idea of having a red token board that could be flipped to a green side during reinforcement on timeout ribbons. Foxx and Shapiro (1978) used timeout ribbons to reduce disruptive behaviours – when the green ribbon was worn the child was able to receive reinforcement. We hope that in the future the token board could be faded out into a timeout ribbon, allowing the pupil to know when it is appropriate to engage in behaviours such as tapping and when it is time to focus.

Target Skill	Date Introduced/known	Date Mastered
p	10/5/2021	5/7/2021
i	10/5/2021	
P	22/09/2021	8/11/2021
C	22/09/2021	23/11/2021
I	22/09/2021	
T	8/11/2021	19/11/2021
H	23/11/2021	

Figure 1. Typing letters using a vocal prompt. The pupil learned to type 3 letters during the course of the DRO and token economy programme. The third letter was acquired much quicker than the first two.

References

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