

## The introduction of a desensitisation programme to teach teeth brushing toleration

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### Executive summary

Previous studies have found that oral health of children with autism can be lower than that of their peers (Diab et al., 2016) or require more invasive treatments such as anaesthesia to undergo treatment (Loo et al., 2008). There are several reasons as to why this may be and ways to overcome this. This case study will discuss how, with the introduction of a programme to desensitise a pupil to tooth brushing, he can now tolerate having his teeth brushed for a certain amount of time. Reinforcement procedures were used to increase the range of teeth the pupil would tolerate being brushed, starting with the front teeth only and increasing this to include the back teeth, with an overall aim of the pupil being able to independently brush his own teeth in the future.

### Introduction

E is an 8-year-old boy currently based at Park House School. He is non-verbal with limited Makaton signs. He is a very happy boy who loves social interaction and playing outside in the sensory garden. When devising a new Individual Education Plan (IEP), discussions were had with parents to ensure that the programme would focus on functional skills and areas that E currently struggles with. After these discussions, we found that an area we could support them with at home is tooth brushing. When this was explored at school, it was found that E was resistant to a toothbrush even being near his face. Background literature shows similar findings, that children with Autism Spectrum Disorder (ASD) struggle with tooth brushing due to sensory processing difficulties (Stein et al., 2011), and that an intervention to increase this skill should be individualised to the pupil (Lewis et al., 2015). Previous research has suggested that graded exposure (Carter et al., 2019) and differential reinforcement procedures (Shabani & Fischer, 2006) can be effective

in increasing an individual's tolerance to medical or self-help procedures.

### Method

A baseline was taken of what tooth brushing E could tolerate before moving away. It was found that as soon as the tooth brush was presented and moved towards his mouth he would move himself away. Therefore, the skill needed to be broken down into small steps, the first of which formed the initial target, which was for him to tolerate the toothbrush touching the lips for 5 seconds for 90% of trials. To teach this skill, reinforcement would be assessed to see what E was motivated for. Once this had been established, his Tutor would touch the toothbrush on E's lips for 5 seconds. If successful, E would be handed his highest reinforcer and given lots of social praise. If unsuccessful, E would be handed a toy that he liked but wasn't as reinforcing to him. This would be run 20 times a day and a percentage taken of the data. A trial was counted as successful if E displayed no resistance in the form of moving his head away, pulling his chair back or running away. Once the data showed that E was successful (tolerated the tooth brush for 90% of trials over 2 days), the target would be handed in and reassessed for the next target.

### Results

E has made fantastic progress with this over the Autumn and Spring term so far. After beginning with the target 'toothbrush touching lips for 5 seconds, successful at 90% over 2 days', E achieved this within a week and achieved it to 100%. As shown in Figure 1, once this target was achieved, the target was moved up to touching front top teeth for 5 seconds and then to brushing front teeth for 5 seconds. This was repeated with the bottom teeth once the achievement criteria had been met. The previous discussions with parents had revealed that the particular difficulty they were having at home was brushing the back teeth as this was where E displayed more resistance. Once the front top and bottom teeth could be brushed for 5 seconds successfully, the back teeth on the left side were then targeted with the same procedure. As seen in Figure 1, once the initial desensitisation of the tooth brush was achieved, E achieved targets within around 1 week. Consequently, new targets could be introduced quickly with some being 'known' rather than achieved, meaning that when the target was introduced, E achieved 90% or more with no teaching.

These results show initial similarities with Bishop et al. (2013), who demonstrated that increased compliance with tooth

brushing was achieved by graded exposure and desensitisation procedures, slowly increasing the presentation of the toothbrush and for longer periods of time.

## Discussion

From the data shown, E has made lots of progress over the last two terms in tolerating his teeth being brushed. Once E can tolerate his Tutor brushing all his teeth, further targets can then be introduced in terms of duration of brushing. This can be further extended in the future to E learning to independently brush his teeth, enabling him to lead a more independent life and be less reliant on other people to support him.

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