



# Increasing Acceptance of Fruit using Texture Fading and Escape Extinction

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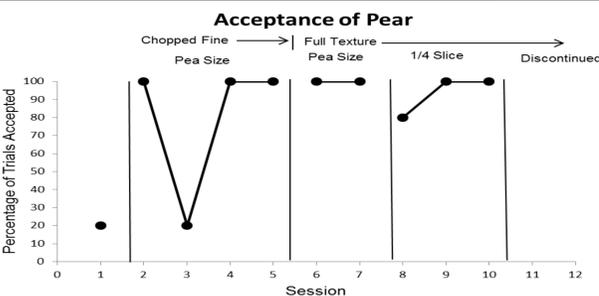
Monarch House

## Abstract

A treatment package consisting of stimulus fading procedures, escape extinction, and reinforcement was used to increase the acceptance of fruit in a child with autism spectrum disorder (ASD). Results showed an increase in acceptance of both banana and pear following the introduction of treatment as compared to that observed in baseline. Results are discussed with reference to the limitations of the study including the need for a component analysis to determine the dependent variable(s) responsible for effective behaviour change.

## Introduction

Children with developmental disabilities often present with food selectivity (Palmer, Thompson, & Linshield, 1975). Consequently, food selectivity may lead to nutrition deficiencies that can affect a child's development (Palmer & Horn, 1978). Some children may find the textures of certain foods to be aversive if they have not been exposed to them. Stimulus fading procedures have been successfully studied and found to be effective in teaching children with texture sensitivities to accept previously refused foods (Johnson & Babbitt, 1993; Shore, Babbitt, Williams, Coe, & Snyder, 1998). Additionally, although such antecedent strategies have been largely effective in treating such texture-based selectivities, they are most often accompanied by the use of escape extinction. In fact, escape extinction has been shown to be the component with the most empirical evidence to date when analyzing treatment packages (Piazza, Patel, Gulotta, Sevin, & Layer, 2003). The current clinical case study uses texture fading, escape extinction, and reinforcement to teach a child with autism to accept a variety of fruits.



**Figure 2.** Percentage of trials accepted for pear throughout all texture fading phases. Note that pear was discontinued due to parent request for child non-preference.

## Method

### Participants & Setting

The participant was a 7 year old child diagnosed with ASD. Dexter attended a private centre providing applied behaviour analysis (ABA) therapy ten hours per week while attending school in a regular grade two classroom with minimal support. He communicated verbally and engaged in conversations with others, functioned largely independently, but was behind his typically developing peers academically. Dexter refused many foods but specifically did not accept any fruit. Although he consumed some fruits in a puree form (i.e., a smoothie), he would refuse all fruits presented to him in typical table food texture. His parents wanted to ensure he continue to intake the nutritional elements of the fruits he would consume in puree texture but were concerned with the response effort and feasibility of a puree on a regular basis. Sessions were conducted in a therapy room with ABA program materials present, and were conducted by his scheduled therapist between one and five times per day once a week.

### Dependent Measures

- 1) *Fruit acceptance* was defined as the placement of fruit past the lips within 5 seconds of its presentation (i.e., acceptance), followed by mouth clean (i.e., food swallowed) within 30 seconds of acceptance all in the absence of problem behaviour (defined below).
- 2) *Problem behaviour* was defined as head turns, refusal to open mouth, screaming, pushing food away, elopement from the current setting, banging, covering mouth, expulsion, and hitting.

### Procedure

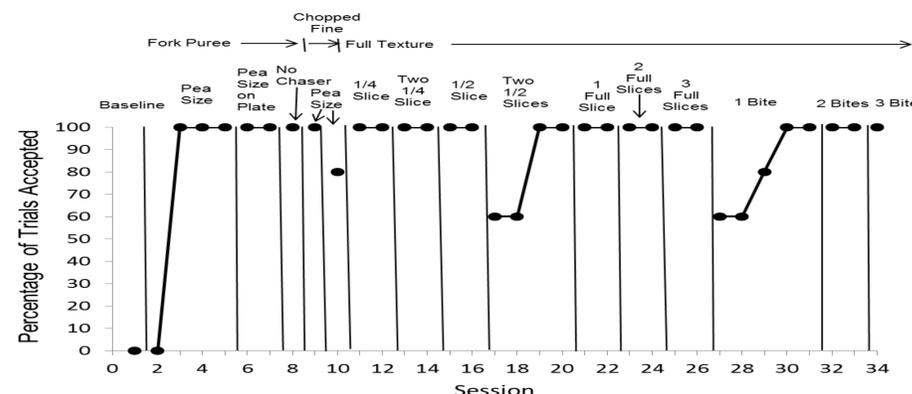
**Baseline.** Each fruit was presented to the participant in bite size pieces on a plate. If Dexter accepted the bite, the plate was removed and there were no other consequences presented. If Dexter engaged in any problem behaviour, the plate was removed and there were no other consequences presented. Data were recorded on the dependent variables and descriptive data were recorded for problem behaviours observed. Five trials were completed in this way throughout a typical therapy session.

**Teaching.** Each feeding session consisted of 5 presentations of the target fruit and ended once all 5 presentations were consumed. Once portions became larger, the number of presentations were decreased. Textures presented ranged from a fork puree (i.e., fruit mashed up with a fork to a puree consistency) to table food (i.e., full texture). The sequence of texture fading occurred in the following order: fork puree, chopped fine, and table food. Once full texture was reached, portion sizes were also increased. Dexter was presented with the target texture on a spoon placed on a plate and had access to a juice box at any time to start with. If he accepted the fruit, he was provided with 1 minute of access to Youtube™ (a pre-determined isolated reinforcer). If Dexter did not accept the fruit, escape extinction was used until the bite was accepted. Bites were presented using the same texture until Dexter met the criteria for success at 2 consecutive feeding sessions with 100% acceptance.

## Results

Figure 1 shows the results for Dexter's first target fruit, banana. Following non-acceptance in baseline, treatment began with a fork puree texture presented in a pea size bite. The first session only consisted of one trial in which the bite was finally accepted after extensive use of escape extinction. Thereafter, acceptance remained high as texture moved closer to table food. Acceptance also remained high as portion size increased.

Figure 2 shows the results for pear (second fruit presented). Although acceptance was low in baseline for pear, the introduction of treatment immediately led to increased acceptance. However, following several sessions of acceptance, the participant indicated that this was a less preferred fruit and parents requested that its presentation be discontinued.



**Figure 1.** Percentage of trials accepted for banana throughout all texture changes.

## Discussion

The results indicate that a treatment package consisting of texture fading, reinforcement of acceptance, and escape extinction of problem behaviour was effective in increasing consumption of previously refused fruits (banana and pear) at table food texture.

One limitation of this case study was the failure to complete a functional analysis. A functional analysis was not completed because fruit was already accepted in a smoothie form indicating that there may have been a texture avoidance. However, future studies should consider completing a functional analysis to determine the need for such components in a treatment procedure. Additionally, baseline was completed across one session only. Although this was an experimental limit, it was a clinically relevant decision based on a 5-trial baseline and parent report that these fruits were never consumed in table food texture.

Another important limitation was the failure to complete a component analysis to determine the independent variables within the treatment package responsible for change. It is recommended that the components within this treatment package be re-evaluated should a similar treatment package be used to treat food refusal.

Finally, during the beginning phases of treatment, implementation errors occurred in which criteria to move on were overlooked. Clarification and training on implementation and phase change criteria later improved reliability.

## References

Johnson, C. R., & Babbitt, R. L. (1993). Antecedent manipulation in the treatment of primary solid food refusal. *Behavior Modification, 17*, 510-521.

Palmer, S., Thompson, R. J., & Linscheid, T. R. (1975). Applied behavior analysis in the treatment of childhood feeding problems. *Developmental Medicine and Child Neurology, 17*, 333-339.

Piazza, C. C., Patel, M. R., Gulotta, C. S., Sevin, B. M., & Layer, S. A. (2003). On the relative contributions of positive reinforcement and escape extinction in the treatment of food refusal. *Journal of Applied Behavior Analysis, 36*, 309-324.

Shore, B. A., Babbitt, R. L., Williams, K. E., Coe, D. A., & Snyder, A. (1998). Use of texture fading in the treatment of food selectivity. *Journal of Applied Behavior Analysis, 31*, 621-633.