



Broadening a Gluten-Free Diet Using a Token Economy

Sarah Heathcote, Lauren Troy, and Frances Perrin | Bancroft

Introduction

Caregivers frequently encounter the problem of food refusal among children with autism spectrum disorders and other developmental disabilities (Schreck & Williams, 2006). Refusal behavior can be further complicated by the comorbid diagnosis of food allergies. Reinforcement-based interventions have been effective in improving the feeding habits of selective eaters (Kahng et al., 2003), and may similarly enrich the habits of individuals with special dietary restrictions. The purpose of this study was to increase the variety of gluten-free foods accepted by a 15-year-old girl with Celiac Disease. Expansion of diet is imperative as inadequate maintenance of a gluten-free diet in individuals with Celiac Disease will damage the small intestine and can lead to a variety of problematic symptoms, including malnourishment and abdominal pain (Percy & Propst, 2008). In the present study, a forced-choice preference assessment (Fisher et al., 1992) was used to determine foods that may serve as reinforcers, and a changing criterion research design tested the effectiveness of a token economy in increasing novel food acceptance.

METHOD

Participants

The participant was a 15-year-old female diagnosed with PDD, ADHD, MR, and Celiac Disease. She consumed a limited variety of foods by preference and had a history of refusing gluten-free foods. She resided at campus-based residential facility and attended the adjacent special education school.

Setting and Materials

Preference assessment and treatment sessions were conducted at the dining room table of the participant's residence.

Dependent Measures

I. Data were collected on which item the participant selected for consumption during each pairing.

II. Data were collected on bite acceptance, which was operationally defined as ingesting a bite of novel food with out without prompting. Also, throughout the study data were collected on verbal and gestural refusals (saying "No", "In the garbage", requesting or gesturing to an alternate food item, pushing away bowl, throwing food out, leaving the table.) and the level of prompting required for each acceptance (Independent, Verbal, Gestural, or Physical).

Inter-Observer Agreement Data

IOA data were collected for 67% of baseline sessions and 30% of treatment sessions. The IOA for bite acceptance was 100%. Occurrence agreement was used to calculate IOA.

PROCEDURE

I. A forced choice preference assessment was used to rank preference of ten food items. The food items chosen were from anecdotal reports from staff of foods the participant enjoyed.

II. Throughout all sessions, a plate containing three novel foods (an entrée and two sides) was put on the table in front of the participant. If no motion to eat was made within 15 seconds, a least to most prompting sequence (Verbal-Gestural-Partial Physical) was initiated. Staff repeated the prompting sequence until a bite was accepted or 5 minutes passed. If 5 minutes passed without a bite, the plate was removed and the session was ended.

During baseline sessions, verbal praise was provided immediately following each acceptance of novel food.

Collateral Behavior	Baseline	1st 10 Treatment Trials	2nd 10 Treatment Trials
Verbal or Gestural Refusals	4.3	2.6	0.3
Independent Bites	NA	1.2	5.2
Physically Prompted Bites	NA	3.5	1.7

During treatment sessions, verbal praise and a token were delivered immediately following each bite acceptance. After the required number of tokens had been earned, the participant was given access to a preferred edible. Once the edible was consumed, the participant had the option to continue eating any remaining food on her plate or to end the meal. The number of tokens (and thus bite acceptances) required for access to the preferred edible was modified throughout treatment in a changing criterion

RESULTS AND DISCUSSION

I. Preferences were ranked based on the percentage of trials that each item was selected. The top three ranking foods (ice cream, nutritional shake, gluten-free macaroni and cheese) were used in the second phase of this study.

II. During baseline, the average bite acceptances per meal was 6.7 bites. In the initial treatment sessions, 6 bites were required to access the preferred edible. Subsequent trials increased the number of bites. As the graph depicts, the token economy effectively increased the number of bites accepted to 19 bites over the course of 20 sessions. In addition to bite acceptance, improvements were seen in other meal time behaviors. The participant required fewer prompts to accept bites as the study progressed and exhibited fewer verbal and gestural refusals. Future research could address the application of the token economy to additional gluten-free foods as well as the maintenance of bite acceptances with an intermittent schedule of reinforcement.

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