AN EVALUATION OF FOOD TYPE AND TEXTURE IN THE TREATMENT OF A FEEDING PROBLEM

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An evaluation of food type and texture indicated that both variables affected the expulsions of a 3-year-old with feeding problems. The results of the evaluation were used to prescribe a treatment (reducing the texture of one food type) that reduced expulsion.

DESCRIPTORS: feeding problems, food selectivity, expulsion, texture assessment

The characteristics of food (e.g., type or texture) may influence its acceptance or rejection (Munk & Repp, 1994); however, little is known about the extent to which alterations of type or texture are effective in treating feeding problems. Munk and Repp manipulated type and texture of food to characterize the relation between the acceptance and refusal behaviors of 5 individuals with feeding problems. Four categories of feeding problems were identified: food selectivity by type, food selectivity by texture, food selectivity by type and texture, and total food refusal. The results of Munk and Repp raised the possibility that manipulation of antecedent variables such as type or texture may be effective in treating feeding problems. However, systematic treatment data were not presented. The purpose of the current study was to extend the work of Munk and Repp by (a) conducting a systematic evaluation of food type and texture, and (b) using the results of the analysis to prescribe treatment for 1 child's feeding problem.

METHOD

Kay was a 3-year-old girl with a medical history including gastroesophageal reflux, failure to thrive, and gastrostomy-tube dependence. She had been admitted to a day treatment program for the assessment and treatment of feeding problems. Kay accepted and swallowed foods at a pureed texture, but expelled foods at higher textures. Anecdotally, it appeared that expulsion was more problematic when meats were presented. Therefore, we evaluated the effects of food type and texture on the level of expulsion.

All sessions were conducted in a room that contained a booster seat and toys and a one-way mirror. The dependent variables were expulsions per bite presentation (any food greater than the size of a pea outside of Kay’s mouth after acceptance and before a swallow response) and grams consumed (premeal minus postmeal food weights). Data on expulsions were collected on laptop computers using an event-recording procedure and were converted to expulsions per
by dividing the number of expulsions by the number of bites accepted. A second observer independently recorded target behaviors in 29% of the sessions. The mean total interobserver agreement was 98.4% (range, 94% to 100%). Interobserver agreement was not assessed for grams consumed.

Prior to this analysis, physical guidance and noncontingent reinforcement were evaluated to increase acceptance. Acceptance was maintained at levels close to 100% in the current study; therefore, physical guidance was rarely used. During the sessions of the current analysis, Kay had continuous access to toys and adult attention (noncontingent reinforcement). Bites of food were presented on a spoon approximately 30 s from the initial acceptance. If Kay did not open her mouth after 5 s of bite presentation, the therapist applied gentle pressure to her mandibular joint (physical guidance) and the spoon remained at her lips until she accepted the bite (Kerwin, Ahearn, Eicher, & Burd, 1995). If Kay did not consume the entire bolus within 30 s, the next bite was presented immediately after the previous bite had been consumed. Expelled bites were represented with a Nuk® massaging brush. Bites of food were presented for the first 10 min of a session, and the session ended when the last bite presented was consumed. Inappropriate behaviors (e.g., head turns) were ignored and remained at low levels throughout the analysis. Four foods, one from each food group (fruits, vegetables, starches, and meats) were presented. In the meats-excluded condition, fruits, vegetables, and starches but not meats were presented. Foods were presented at a 50% puree/50% wet ground (50/50) texture (i.e., we mixed puree and wet ground textures in equal proportions). We evaluated expulsions in the presence of two textures of meat using an ABA’B in which the A phase was the multielement evaluation of meats-included and meats-excluded conditions at the 50/50 texture (baseline texture); the B phase was all foods with meat only at 100% puree texture (reduced texture) and fruits, starches, and vegetables at the 50/50 texture; and the A′ phase was all foods at the 50/50 texture.

RESULTS AND DISCUSSION

Expulsions per bite and grams consumed are depicted in Figure 1. Expulsions were higher ($M = 21.7$) and grams consumed were lower ($M = 12.6$) in the meats-included condition than in the meats-excluded condition ($Ms = 0.1$ expulsions and 41.6 grams). Expulsions occurred primarily with meats only. Expulsions decreased to near-zero levels ($M = 0.45$) and grams increased ($M = 42.5$) when meats were presented at 100% puree and the other foods remained at the 50/50 texture. However, when all foods were again presented at the 50/50 texture, expulsions increased ($M = 8.5$) and grams decreased ($M = 31.3$). Finally, when meats were presented at 100% puree and the other foods remained at the 50/50 texture, expulsions decreased to near-zero levels ($M = 0.01$) and grams increased ($M = 48.5$).

Munk and Repp (1994) showed that evaluations of food type and texture could be used to describe the relation between acceptance and refusal in children with feeding problems. However, the findings from their analysis were not applied to treating feeding problems. The results from the current in-
vestigation extend those of Munk and Repp by demonstrating that evaluations of type and texture can be used to prescribe treatment. The results of the multielement analysis of meats included versus meats excluded suggested that expulsions were more likely in the presence of meat when foods were presented at the same texture. Thus, selectivity by type (meat) seemed to be indicated. However, when the texture of meats, but not other foods, was decreased, expulsions decreased. Taken together, the analyses suggested selectivity by both type and texture. The treatment consisted of decreasing the texture of meats to decrease expulsions and increase intake; thus, the results of the as-
assessment described by Munk and Repp accurately predicted the effectiveness of treatment. The reasons for increased expulsions with meats at the coarser texture were unclear. The finer texture may have functioned as an establishing operation by decreasing the aversive property of the meats, thereby reducing the motivation to avoid (expel) meats. Similarly, Kerwin et al. (1995) showed that manipulations of response effort for eating altered acceptance. The results of Kerwin et al. may be relevant to the current investigation in that different levels of response effort may be required to consume different food types at the same texture. That is, consumption of meats at the 50/50 texture may have been more effortful than consumption of other foods (e.g., fruits) at the same texture and may have made expulsion more likely. However, altering food type and texture may alter the aversive or reinforcing properties of eating in other ways (e.g., flavor, smell, and consistency). Future studies should evaluate the establishing effects of the antecedent characteristics of food that affect consumption. For example, the effects of response effort could be assessed by altering various dimensions of food (e.g., texture, volume) to determine how these manipulations influence expulsion and other behaviors related to food refusal and food selectivity. Such assessments may lead to more refined and specific interventions, such as stimulus fading (Patel, Piazza, Kelly, Ochsner, & Santana, 2001) or differential reinforcement (Kahng, Tarbox, & Wilke, 2001), but along a particular food dimension that is functionally related to the target response (e.g., texture).

REFERENCES

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