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BEHAVIORAL TREATMENT OF CHOKING PHOBIA IN AN ADOLESCENT: AN EXPERIMENTAL ANALYSIS*

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Summary — A multiple baseline approach across foods was used to evaluate an exposure-based treatment for choking phobia in a 13-year-old girl. Following 14 sessions, the patient demonstrated substantially reduced self-reported, observer-rated, and parent-reported anxiety, increased eating rate and bite size, and increased variety of food intake. Clinical diagnoses present at pretreatment were not present at posttreatment at a clinical level. These gains were maintained at a 9-month follow-up assessment. © 1997 Elsevier Science Ltd. All rights reserved

Choking phobia is characterized by the fear and avoidance of swallowing food, fluids, or pills. It is recognized in the DSM-IV as a specific phobia in the residual category (i.e., "other"), along with phobias of vomiting or contracting an illness. Effects of choking phobia can include weight loss, avoidance of eating in public, and malnutrition. McNally (1994) proposed that choking phobia is most often the result of a direct conditioning experience (e.g., choking on food or pills). The prevalence of choking phobia is as yet unknown (McNally, 1994).

No controlled trials have been conducted to evaluate treatments for choking phobia. However, a variety of case studies offers preliminary support for a diversity of treatment approaches (for a review, see McNally, 1994). Although pharmacotherapy has been used (e.g., Kaplan, 1987), evaluations of patients with choking phobia have more commonly involved psychosocial treatments. For example, Ball & Otto (1994) used a treatment protocol consisting of psychoeducation, cognitive restructuring, aversion/distraction (i.e., pinching one's hand while chewing food) and in vivo exposure. The authors reported positive gains in all three patients following 11 to 13 sessions, and reported positive follow-up observations (2 months and 3 months) for two of the three patients. Unfortunately, with the exception of weight gain, no quantitative or diagnostic data were presented to describe patient status at pretreatment, posttreatment, or follow-up.

The most common evaluations of treatment for choking phobia have consisted exclusively of in vivo exposure (e.g., Kaplan & Evans, 1978; Lukach & Bruce, 1988). For example, McNally (1986) used in vivo exposure to treat choking phobia in a 30-year-old male and reported good outcome following 6 sessions. In this case, scores on a number of self-report measures of fear

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and anxiety evidenced a noticeable decline at posttreatment and 6-month follow-up. In general, the collective literature on the treatment of choking phobia is characterized by uncontrolled and qualitative case studies, and specifically, the evidence for the efficacy of such treatments in children and adolescents is relatively lacking. To address this issue, we evaluated an exposure-based treatment of choking phobia in an adolescent girl. The design represented an improvement over previous psychosocial treatment studies in that it involved a multiple baseline to allow for controlled tracking of treatment effects. Moreover, posttreatment and follow-up data incorporated self-report and parent-report questionnaires, independent diagnostic assessments, and behavior tests.

Method

Patient Description

The patient was a 13-year old girl with extreme difficulty eating solid foods for fear that she would choke and die. She stated that at the age of five, she choked on food and needed the assistance of her father to clear her throat to allow breathing. According to the parents, she had been a slow and cautious eater since that time, although her difficulties did not create substantial distress or impairment until adolescence. Over the six months prior to assessment, she had a pronounced increase in her fear of choking. At that time, she was unable to eat most solid foods or drink beverages with ice. Moreover, she reported that she was embarrassed about her dietary restrictions and was unable to enjoy common social activities involving food. In addition, she reported checking her mouth in the mirror frequently to look for food and chewing excessively while eating even the limited soft foods that remained in her diet (e.g., yogurt, ice cream). Associated symptoms included clamminess, tachycardia, constriction in the throat, chest pain, smothering sensations, paresthesias, and dizziness. In addition to these specific symptoms, the patient reported that she felt generally anxious and dysphoric much of the time because of her impaired ability to eat. She was tearful often during the day, and stated that the principal focus of her distress was her fear of choking. Despite these difficulties, she maintained her normal weight through a high intake of ice cream, yogurt and fruit drinks. In addition to the problems with food, the patient also reported frequent panic attacks during which she experienced such symptoms as palpitations, tachycardia, sweating, dyspnea, choking, paresthesias, and fear of dying. Although these panic attacks had initially been cued by eating and the associated fear of choking, these attacks eventually became uncued and unexpected, and occurred in the absence of thoughts or stimuli related to eating. At the time of intake and throughout treatment and follow-up, the patient was not on any medication.

Diagnostic assessment. At pretreatment, posttreatment, and follow-up, the patient was assessed by an independent evaluator using the Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-C/P; Silverman & Albano, 1994), a structured clinical interview for children and parents designed for diagnosis of childhood anxiety, mood, and other disorders. This interview is a revision of the ADIS-C/P for DSM-III-R (Silverman & Nelles, 1988), which has been shown to possess satisfactory reliability across a range of parameters and ages (Silverman & Eisen, 1992). Although reliability data are not yet available, the new version most likely represents an improvement in reliability, in that general revisions to the DSM diagnostic criteria were intended to provide more reliably identifiable features.

Clinicians also rated the severity of the disorders on a 9-point scale (Clinical Severity

Ratings; CSRs) ranging from 0 to 8, with higher scores reflecting greater severity. Anchors for the scale were: 0 = "no features;" 4 = "definitely disturbing, disabling;" 8 = "very severely disturbing, disabling." Conventionally, CSRs of 4 through 8 represent diagnoses above the clinical threshold (warranting formal diagnosis), whereas CSRs of 0 through 3 merely indicate the presence of subclinical features of the disorder. Using the full range of the scale allows the clinician to report more conservatively even subclinical diagnostic information. On the basis of the initial assessment, a principal diagnosis of specific phobia, other type (choking) was assigned (CSR = 6). Additional diagnoses of panic disorder (CSR = 5) and specific phobia, situational type (elevators) (CSR = 4) were also assigned. A subclinical fear of flying (CSR = 2) was also noted.

Additional Assessment

Behavior test. Prior to treatment the patient engaged in a behavior test to assess the level of her anxiety. She was asked to attempt to eat a specified amount of two feared foods, crunchy cheese curls and bread sticks, each within a prescribed 2-minute time period. She was also asked to place a tongue depressor on her tongue, hold hard candy and ice cubes in her mouth, and drink water with crushed ice in it. Before and after each task, the patient was asked to rate her anxiety (subjective units of distress; SUDs) on a 0 to 8 point scale (0 = "no anxiety;" 8 = "as much anxiety as could be experienced"). This test was administered again at posttreatment and at a 9-month follow-up assessment. All tests were videotaped and later coded by independent and blind raters for observed anxiety level (0–8) for each task (reliability = .96). The two foods (cheese curls and bread sticks) were also rated for time to finish and number of bites taken.

Questionnaires. The patient completed the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978) and the Children's Depression Inventory (CDI; Kovacs, 1981). These are self-report measures designed to assess the presence of cognitive, behavioral, or affective symptoms of anxiety and depression. Both parents completed the Child Behavior Checklist (CBCL) to provide a parent index of anxiety and fear.

Fear hierarchy. A hierarchy of fourteen feared foods was constructed during the initial treatment session. During each treatment session, the patient was asked to rate her anxiety (0–8) for each of these fourteen feared foods. The fourteen food items on the hierarchy were divided into four general groups, listed here from easiest to hardest: (1) "crackers and cereal" group (nutri-grain bar, crackers, cereal); (2) "soft vegetables, pasta, cheese, and dairy" group (yogurt with fruit, pasta, hardboiled egg, sandwich); (3) "meats" group (chicken, hamburger); and (4) "raw vegetables, salad, hard fruit" group (corn on the cob, apple slices with skin, raw carrots, celery, salad).

Treatment

A multiple baseline treatment design was implemented over the course of 14 sessions. The patient kept a diary of her food intake, recording each serving of food (i.e., 0.5 cup) eaten in each of the four food groups. The groupings of foods recorded on the diary corresponded with the classification on the hierarchy. Foods eaten could only be recorded under one group (e.g., a

cheeseburger would be recorded under "meats," not under "soft vegetables, pasta, cheese, and dairy").

In-session treatment focused primarily on exposures to the feared foods; the patient practiced repeated, timed trials of 4 minute duration of eating or swallowing challenging foods. These trials were separated by approximately 1 minute. The patient knew that if she could not begin the next trial, she was to wait until her anxiety had subsided a bit. Practice with the challenging foods progressed from the easiest foods on the hierarchy (i.e., those in the "cracker and cereals" group) in the early sessions to the most difficult (i.e., "raw vegetables") in the later sessions. She was also asked before each trial to predict whether she would choke and to report after each trial whether she had choked. Exercises conducted in session were assigned as daily homework throughout treatment and were monitored by the child's parents.

Results

Multiple Baseline

Data tracking the effects of treatment for the 14 sessions of treatment are presented in Figure 1. The first two weeks involved baseline monitoring of all food consumption in the daily diary and weekly monitoring of SUDs ratings. SUDs were averaged within food groups to provide an index of fear for each of the four food groups. Overall, fear levels were high and remained so throughout baseline, and were highest for the fourth group. Following two weeks, exposure treatment was initiated using crackers and cereals only. The patient was instructed to eat crackers in session for three 4-minute trials, separated by 1-minute breaks. Within-trial habituation was not noted, but good habituation occurred across the three trials.

Similar exercises were assigned for daily homework. Following one week of exposure, there was no change noted in SUDs for the target food group, and food consumption actually decreased. Observations and information from the child and her parents was reviewed during the session and revealed that the patient was doing the exposure practices (which did not count toward the multiple baseline data) but was not eating much more of the target food when the exposure practice was over. For this reason, a reinforcement contract was established that required a minimum of three servings of the target food per day to earn a reinforcer (the patient chose to have ice cream at the end of the day as her reinforcer). Parents were instructed to ensure that the child did not receive her reinforcer without first meeting her dietary criterion.

The following week (week 3) involved continuation of the exposure exercises with the additional reinforcement component. There was an increase in the consumption of the target foods, and a corresponding decrease in SUDs for that group at session 4. Foods not targeted showed minimal changes, except for a drop in SUDs level for the "soft vegetables, pasta, cheese, and dairy" group.

This second food group was then targeted for the following week. The patient was now required to practice exposures only to the second food group, and reinforcement now required two servings from each of the two target food groups. A minimal increase in consumption was noted for this second target food group. In addition, there was only a small decrease in SUDs. Also, during this session (see first observation, week 5, Figure 1), the patient reported that she was feeling sick, that she ate nothing that day, and that she felt a temporary increase in her anxiety as a result. Because it was judged that her SUDs ratings may have been a function of her illness, and also that her illness may have been motivated by avoidance, the patient was encouraged to advance to the next target group, "meats." She was told that if she felt too

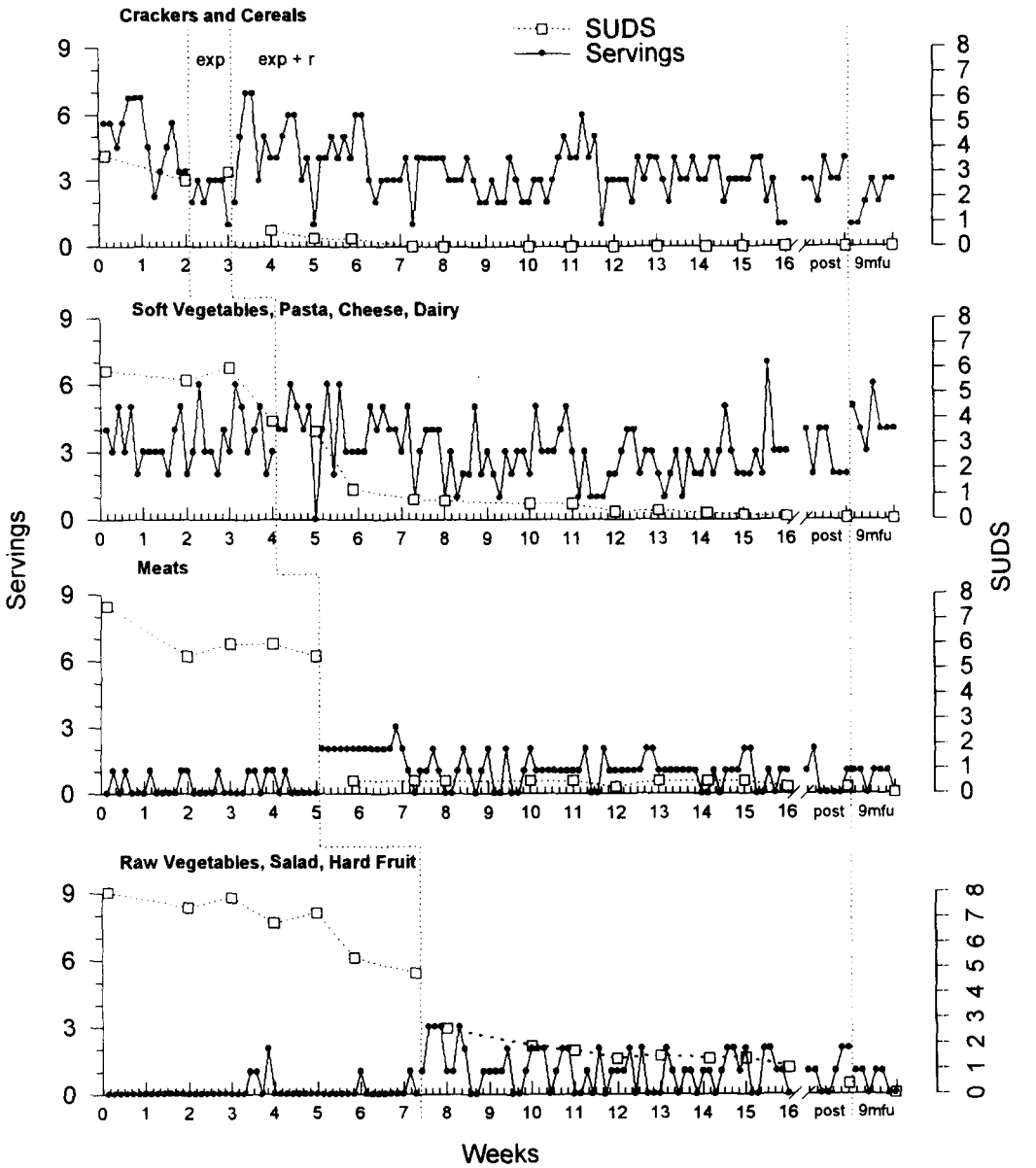

Figure 1. Multiple baseline across food groups for SUDs and daily food intake.

uncomfortable, she could continue to practice soft vegetables; however, she consented to advance to the next group.

Reinforcement now required consumption of two servings from each of the three target food groups, and exposure practices involved meat only. The consumption of meat evidenced an immediate increase from baseline, and a corresponding decrease in SUDs (weeks 5 and 6). The remaining group (i.e., "raw vegetables") began to show a decrease in SUDs during this time, but the servings remained at a near zero level.

Finally, in week 7, the remaining group was targeted ("raw vegetables, salad, hard fruit"). Homework involved daily exposures with these foods, and reinforcement now required two servings from each of the four targeted groups. Consumption of raw vegetables, salad, and fruits demonstrated an immediate increase in servings per day and a corresponding decrease in SUDs. For the remaining seven sessions, these practices were reviewed and strategies for maintaining gains through continued exposure were discussed.

Posttreatment and follow-up monitoring showed SUDs remaining at minimal levels and consumption of all food to be above her pretreatment baseline, with the exception of "crackers and cereals," for which the servings per day were roughly half of the pretreatment baseline.

Assessments

Behavior tests. At the conclusion of treatment and at the 9-month follow-up, the timed behavior test was repeated. Posttreatment and follow-up behavior tests demonstrated greatly reduced self-reported and observer-rated anxiety (see Figure 2). Average number of bites to finish dropped from 7.5 (pre) to 3.5 (post) to 3.0 (9-month follow-up), and average time (in seconds) dropped from 87.5 (pre) to 59.5 (post) to 26.0 (9-month follow-up).

Diagnostic assessments. Posttreatment diagnostic evaluation was administered by a blind, independent evaluator. No mental disorder was assigned at a clinical level (i.e., CSR4). She was assigned subclinical diagnoses of specific phobia, situational type (elevators) (CSR = 3) and anxiety disorder, not otherwise specified (CSR = 2). This latter subclinical diagnosis was

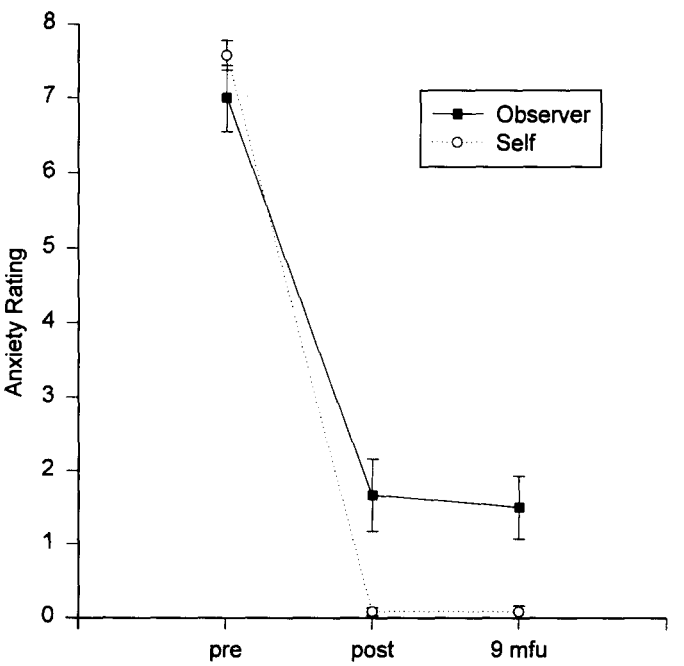

Figure 2. Mean self-reported and observer-rated anxiety levels (SUDs) during behavior tests at pretreatment, posttreatment, and 9-month follow-up. Note: error bars denote standard error of ratings across 6 tasks. "9 mfu" = 9-month follow-up.

assigned to describe occasional problematic generalized worry experienced by the patient. No features of her specific phobias (choking, flying) or panic disorder were noted. At the 9-month follow-up, no mental disorder was assigned at a clinical level. Subclinical fears of elevators and flying (CSR = 2) and dogs (CSR = 1) were observed. As in the posttreatment assessment, features of her initial choking phobia and panic disorder were absent.

Questionnaires. In addition, both the patient and her parents were asked to complete the questionnaire battery again at posttreatment and at the 9-month follow-up. At posttreatment, clinically significant reductions were noted in child and parent reports on measures of anxiety and depression. The initial CDI score of 3 dropped to 0, and the RCMAS *T*-score dropped from 43.4 to 31.9. Mother and father CBCL Internalizing *T*-scores dropped from 74 to 57 and from 59 to 53, respectively. At 9-month follow-up, the child's self-report scores remained unchanged as did the father's reported score. Mother's CBCL Internalizing *T*-score dropped further from 57 to 53.

Discussion

Improvement in the variety of the patient's foods and reduction in associated anxiety appears to be due to the specific effects of treatment. However, patterns in the daily monitoring did not allow definitive identification of whether reinforcement or exposure had the greater effect. For example, it may appear that reinforcement was the only active treatment component, because between-session data involving exposure alone did not evidence the desired change in the target behavior. On the contrary, data from within sessions demonstrated that exposure did have an immediate effect on reducing the anxiety in the absence of reinforcement. Collectively, the data suggest that reinforcement was probably most effective in increasing the amount of naturalistic exposure outside of sessions. Future examinations of reinforcement and exposure may need to evaluate these separate ingredients more closely with periodic removal of reinforcement or through a systematic "changing criterion" design (Barlow, Hayes & Nelson, 1984).

Some challenges with data interpretation emerged with observations from the daily intake diary. Because consumption was already at a reasonably high level during baseline for the first two groups, it was difficult to demonstrate an increase in consumption of these foods following the introduction of treatment. Thus, it may appear that the treatment was not effective in achieving the goal of increasing consumption of these foods; however, the actual treatment goal for this patient was to increase the amount of intake through an increase in variety, a goal that was achieved quite reasonably. Related to this issue was the more general problem of the inevitable interdependence of the four groups. Although clearest results would emerge from the demonstration of specific changes in the target food with no effect on the non-targeted foods, it was not possible to increase food intake in one target group without observing a natural compensatory decrease in the remaining groups. As a result, some ostensibly counterintuitive results emerged (e.g., consumption of crackers and cereals being higher at pretreatment than at posttreatment or follow-up). Conversely, with the SUDs data, there was some slight generalization across series—not surprising given that her fear was not of the foods per se, but rather of choking in general.

Generally, the monitoring, self-report, parent-report, and behavior test data converged to suggest the efficacy of the intervention. Interestingly, the major observable effects of treatment appeared to occur within the first 10 weeks. Although this might suggest that the treatment

duration could have been shortened, this was not necessarily the case. The problem was that there was actually a fifth category of foods (swallowing pills) that was targeted during weeks 10 to 14. However, these data were not systematically observed from the beginning of the design, because the patient did not discuss the problem with pills until late in treatment. That is, when developing the initial list of feared foods, she avoided mentioning pills, because that problem did not seem to her to be related to the phobia. Moreover, she feared that she might be asked to practice swallowing pills if she were to put them on her list. After several sessions, however, she volunteered this information, and it became the target of homework in the later weeks (swallowing M&Ms with water). These were first swallowed one at a time, then two at a time. Unfortunately, the changes in her consumption of vitamins, aspirin, etc. and the corresponding anxiety were not recorded systematically. Nevertheless, it appeared to be the case that such practice greatly increased her confidence about eating in general, generalizing to other foods (as evidenced by her own and her parents' verbal report) and may have contributed to continued success at follow-up. More generally, this issue highlights the importance of thorough and elaborate assessment prior to treatment and research design to ensure the inclusion of all possible treatment goals and target areas.

Despite some of these limitations, these data represent the first evaluation of choking phobia using a multiple baseline design, multiple assessment modalities (e.g., diagnostic, behavioral, self-report), and a follow-up assessment. The evidence suggests that a combination of exposure plus reinforcement reduced anxiety and increased the consumption of feared foods over a period of 16 weeks, with some generalization to non-targeted syndromes at posttreatment (cf. Brown & Barlow, 1992). Future examinations may need to better differentiate effects of exposure and reinforcement to determine their relative necessity. It may also be beneficial to determine whether this type of treatment can be delivered more quickly while maintaining its effects at follow-up. Finally, continued evaluations of these strategies with adolescents, as well as younger children may help to determine their applicability at lower developmental levels, and may ultimately lead to a more refined and efficient empirically-supported intervention for this disorder.

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