

Vomiting Reduction by Slower Food Intake

Nathan H. Azrin
Jacques P. Jamner and Victoria A. Besalel

Nova University, Fort Lauderdale, Florida
and Landmark Learning Center, Miami, Florida

Psychogenic vomiting of retarded persons might be partly the result of stomach overloading. A retarded male subject was treated by spacing the food intake and teaching him to eat more slowly. Vomiting decreased during the spaced food intake, resumed during normal intake, and decreased again during the reinstated spaced intake. These results indicate the importance of food-intake factors in psychogenic vomiting.

Psychogenic vomiting of retarded and nonretarded persons has been treated with some success by altering its consequences such as aversive shock (Kohlenberg, 1970; Lang & Melamed, 1969), time-out (Wright, Brown, & Andrews, 1978), DRO (Munford & Pally, 1979), social extinction (Wolf, Birnbrauer, Williams, & Lawler, 1966), liquid irritants (Sajwaj, Libet, & Agras, 1974), and overcorrection (Azrin & Wesolowski, 1975; Duker & Seys, 1977). As Davis and Cuvo (1980) concluded in their review, these results suggest that psychogenic vomiting in many cases is an operant behavior maintained by its consequences and therefore best treated by differential reinforcement and punishment. An alternative view is that vomiting can be the result of the manner of food intake, some evidence for which is the effectiveness of actively involving the individual in eating (Ball, Hendricksen, & Clayton, 1974) or

We wish to express our special appreciation to Bonnie Goldstein, Psychologist at Landmark Learning Center, for her assistance in program implementation and data collection and Katie Miller, Behavior Program Specialist, for her assistance in arranging for staff coverage and data collection.

Address reprint requests to: Nathan H. Azrin, PhD, Nova University, 3301 College Ave., Fort Lauderdale, FL 33314.

changing the consistency of the food (Ingersoll & Curry, 1977) or the amount of food (Jackson, Johnson, Ackron, & Crowley, 1975). Self-induced vomiting could be more simply a result of overly rapid eating and might represent an attempt to reduce the discomfort of stomach overloading. If so, slowing the food intake should decrease vomiting, even if the amount of food eaten remains the same. The purpose of this study was to evaluate this interpretation.

METHOD

Subject

The subject was a profoundly retarded 22-year-old male with a Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984) social age equivalent of 2 years, 2 months. Institutional records noted a score of less than 20 on the Stanford Binet Intelligence Scale. He had been institutionalized for 16 years, during which time the institution records reported continual rumination and vomiting. His weight had been fairly constant at 110 pounds but decreased to 105 pounds within a week, apparently due to increased vomiting. He was observed to eat his meals rapidly, after which he would begin ruminating while seated in a corner, regurgitate his meal on the floor or his bed and immediately reconsume it. Numerous medical examinations revealed no organic causes for the vomiting. His manner did not seem secretive, in that he took no measure to avoid detection. Voluntary control was indicated, in that he sometimes reacted to annoyances of others by vomiting directly on them.

Procedure

After a baseline observation period of 10 days, a spaced mealtime program was initiated, based on the mini-meal training program (Azrin & Armstrong, 1973). Each of the three regular meals was divided into five separate portions spaced 15 minutes apart, the amount of food per day being the same as that eaten at three regular meals. Through manual interruption and graduated guidance, the subject was taught to fill his spoon to only a normal level and to do so only after swallowing the previous spoonful. A 5-second interval of interruption was provided for overloading the spoon or for reloading prior to swallowing the previous spoonful. After an 11-day return to the baseline procedure, spacing of the food intake was reinstated for an additional 43 days, during which time the manual guidance was gradually reduced. The response was operationally defined as the forceful expulsion of a sizable amount (several ounces) of projected vomitus. The ruminative chewing of food was not considered even if a slight amount (less than 1 oz)

of vomitus dripped passively from the mouth. A second observer independently recorded the behavior after 20% of the meals, to obtain a measure of reliability.

RESULTS

Figure 1 shows a mean of 3.8 vomiting episodes per day during the baseline observation period. During the spaced-eating program, the vomiting episodes decreased to a mean of 0.8 episodes per day, with no vomiting on 11 of the 14 days. During the second baseline, the vomiting increased to a mean of 1.4 episodes per day during the 11-day period. When the spaced eating was reintroduced, the vomiting episodes decreased to a mean of 0.18 episodes per day during this 43-day period.

The mean duration spent eating the divided meal was 73.37 minutes. Of this time, 60 minutes was comprised of the 4–15 minute intervals separating the divided meal portions, leaving 13.37 minutes for the eating time. The eating time was 2.03 minutes for the undivided meal during the initial baseline procedure and 4.53 minutes for the second baseline procedure. The mean interrater reliability score was 96%. The subject's weight increased from the 105 pounds prior to treatment to 109 pounds upon completion of the second treatment phase. Follow-up data after 2 months showed the subject's weight being maintained between 108 and 109 pounds.

DISCUSSION

The results showed that vomiting was nearly eliminated during the spaced-intake phase. The subject appeared to be learning to eat more slowly, as evidenced by the increased time spent eating during the second baseline period. The subject returned to his normal weight, possibly because of the elimination of vomiting. These results are in accord with the findings of Ball et al. (1974) and Ingersoll and Curry (1977) that self-induced vomiting of retarded persons is sometimes the result of the manner of eating, a conclusion that also underlies the behavioral treatment of binge vomiting by otherwise normal adult bulimics (Fairburn, 1981; Kirkley, Schneider, Agras, & Bachman, 1985). The present findings can only be applied to forceful vomiting and not to rumination, because gross observation indicated that, once the subject had vomited, rumination did not appear to decrease appreciably during the spaced eating. The results of several studies confirm that ruminating is not decreased by decreasing stomach loading; indeed the converse has been demonstrated in studies of satiation (Rast, Johnson, & Drum, 1984; Rast, Johnson, Drum, & Conrin, 1981). Rumination and vomiting could be differentially affected by the manner of food intake. The present results sug-

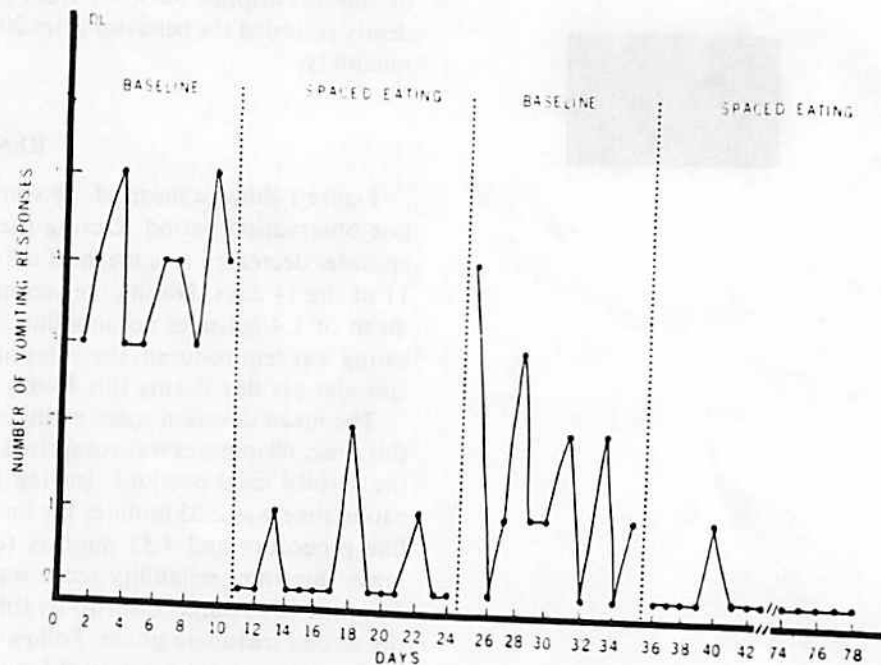


FIGURE 1. The number of vomiting responses by a retarded adult before and after a mealtime training program. During "Baseline" the subject ate the usual three meals per day at his own pace. During the "Spaced Eating" days, he was taught to eat slowly and was given 5 portions spaced 15 minutes apart at each meal.

gest that forceful vomiting that is apparently psychogenic can, nevertheless, be reduced by eating more slowly, without the need for programming negative consequences.

REFERENCES

- Azrin, N. H., & Armstrong, P. M. (1973). The "mini-meal": A method for teaching eating skills to the profoundly retarded. *Mental Retardation*, 11, 9-13.
- Azrin, N. H., & Wesolowski, M. D. (1975). Eliminating habitual vomiting in a retarded adult by positive practice and self-correction. *Journal of Behavior Therapy and Experimental Psychiatry*, 6, 145-148.
- Ball, T. S., Hendricksen, H., & Clayton, J. A. (1974). A special feeding technique for chronic regurgitation. *American Journal of Mental Deficiency*, 78, 486-493.
- Davis, P. K., & Cuvo, A. J. (1980). Chronic vomiting and rumination in intellectually normal and retarded individuals: Review and evaluation of behavioral research. *Behavior Research of Severe Developmental Disabilities*, 1, 31-59.

- Duker, P. C., & Seys, D. M. (1977). Elimination of vomiting in a retarded female using restitutional overcorrection. *Behavior Therapy*, *8*, 255-257.
- Fairburn, C. G. (1981). A cognitive behavioral approach to the treatment of bulimia. *Psychological Medicine*, *11*, 707-711.
- Ingersoll, B., & Curry, F. (1977). Rapid treatment of persistent vomiting in a 14-year-old female by shaping and time-out. *Journal of Behavior Therapy and Experimental Psychiatry*, *8*, 305-307.
- Jackson, G. M., Johnston, C. R., Ackron, G. S., & Crowley, R. (1975). Food satiation as a procedure to decelerate vomiting. *American Journal of Mental Deficiency*, *80*, 223-227.
- Kirkley, B. G., Schneider, J. A., Agras, W. S., & Bachman, J. A. (1985). Comparison of two group treatments of bulimia. *Journal of Consulting and Clinical Psychology*, *53*(1), 43-48.
- Kohlenberg, R. J. (1970). The punishment of persistent vomiting: A case story. *Journal of Applied Behavior Analysis*, *3*, 241-245.
- Lang, P. J., & Melamed, B. G. (1969). Avoidance conditioning therapy of an infant with chronic ruminative behavior. *Journal of Abnormal Psychology*, *74*, 1-8.
- Munford, P. R., & Pally, R. (1979). Outpatient contingency management of operant vomiting. *Journal of Behavior Therapy and Experimental Psychiatry*, *10*, 135-137.
- Rast, J., Johnson, J. M., & Drum, C. (1984). A parametric analysis of the relationship between food quantity and rumination. *Journal of The Experimental Analysis of Behavior*, *41*, 125-134.
- Rast, J., Johnson, J. M., & Drum, C., & Conrin, J. (1981). The relation of food quantity to rumination behavior. *Journal of Applied Behavior Analysis*, *14*, 121-130.
- Sajwaj, T., Libet, J., & Agras, W. S. (1974). Lemon-juice therapy: The control of life-threatening rumination in a six-month-old infant. *Journal of Applied Behavior Analysis*, *7*, 557-563.
- Sparrow, S. S., Balla, D. A., & Cicchetti, D. V. (1984). Vineland adaptive behavior scales. Circle Pines, MN: American Guidance Service.
- Wolf, M. M., Birnbrauer, J. S., Williams, J., & Lawler, J. (1966). A note on apparent extinction of the vomiting behavior of a retarded child. In L. P. Ullmann & I. Krasner (Eds.), *Case studies in behavior modification* (pp. 364-366). New York: Holt, Rinehart and Winston.
- Wright, D. I., Brown, R. A., & Andrews, M. I. (1978). Remission of chronic ruminative vomiting through a reversal of social contingencies. *Behaviour Research and Therapy*, *16*, 134-136.