

## Evaluation of behavior management technology dissemination in pediatric dentistry

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### Abstract

*A survey of the behavior management practices of pediatric dentistry diplomates was conducted. One hundred sixty respondents reported the frequency of use of 15 different management practices. Results show preference for traditional management practices, such as hand-over-mouth, tell-show-do, sedation, and restraint, over newer technology such as live modeling, filmed modeling, contingent distraction, or contingent rewards. Respondents reported management difficulties with nearly one in four children seen and reported the need for alternative, safe, effective management techniques. Reasons are discussed for reliance on traditional management techniques and methods for increasing exposure to newer management technology.*

### Introduction

In 1972, a survey was published regarding the behavior management techniques of the American Association of Pedodontic Diplomates. The respondents strongly supported the notion that psychological principles are important in the successful management of disruptive children; however, their management techniques focused primarily on pharmacotherapy and variations of physical restraint (American Association of Pedodontic Diplomates 1972). By 1979, pediatric dentists reported that the noncompliant and disruptive child was a common problem faced in clinical work (Ingersoll et al. 1978). Perhaps as a result, some pediatric dentists began to expand their management repertoires (Levy and Demoto 1979). Many more, however, continued to rely on physical restraint and sedation as a primary means of management. Indeed, in 1981 20% more pediatric dentists were using the hand-over-mouth (with airway restricted) technique than in 1971 (American Association of Pedodontic Diplomates 1981). At that time, however, the efficacy of a wide range of technology for child management yet had not been demonstrated clearly in the dental office or operator.

In recent years, research in the dental operator has proven the value of psychological techniques in prepar-

ing children for (Anderson and Masur 1983) and managing children during (Allen and Stokes 1989) dental treatment. Research published in both psychological and dental literature has demonstrated the efficacy of a variety of noninvasive techniques. The effectiveness of some procedures, such as filmed modeling, has been shown primarily with "normal" (nondisruptive) clinic samples. Its effectiveness appears to be dependent, at least in part, on a variety of variables such as age and previous experience with the dentist (Melamed et al. 1975; 1978; 1984). Other procedures have been found to be quite effective with children selected based on high levels of fear or disruptiveness. These include live modeling (Williams et al. 1983), desensitization (Klesges et al. 1984), and contingency management procedures such as contingent distraction (Ingersoll et al. 1984), and contingent escape and reward (Allen and Stokes 1987; Allen et al. 1988). Not since 1981 (Weinstein et al. 1981), however, has an assessment been conducted to determine the extent to which new technology has been successfully disseminated. More important, there are no data available concerning the factors responsible for the acceptance of new management technology by pediatric dentists. Finally, there are no recent assessments of the prevalence of management problems in pediatric dental practices or of the need for continued development of new management technology.

The present survey provides an assessment of the types of management needs and management techniques currently used by pediatric dentists. Previous research has suggested that the practices of pediatric dentists can be evaluated accurately by assessing the practices of those with Diplomate status (American Association of Pedodontic Diplomates 1981). These dentists have advanced training and experience in pediatric dentistry and typically have well-developed behavior management armamentariums. The survey also provides information about the variables dentists consider most important to their adoption of new behavior management technology.

## Method

Subjects were selected by virtue of their Diplomate status in the American Academy of Pediatric Dentistry (AAPD). Three hundred members of the Academy with Diplomate status were selected randomly and sent surveys concerning their exposure to new developments in behavior management and their current use of both traditional and newer behavior management techniques. Traditional management practices considered included sedation, restraint, hand-over-mouth, verbal reprimand, tell-show-do, noncontingent prizes, parents in operatory, and stopping treatment. Newer, nontraditional management practices included relaxation, contingent rewards, distraction, and filmed and live modeling. One hundred eighty-four (184) surveys were returned, and 160 were suitable for tabulation, constituting a 53% return rate.

## Results

Table 1 shows the management techniques used by pediatric dentists in their practices. The procedures are ranked according to the reported frequency of usage in managing all types of children during restorative dental treatment. Tell-show-do and the delivery of a prize (independent of the child's behavior), are the management strategies reported used by most dentists, followed by verbal reprimand and sedation. In fact, of the 15 techniques assessed, the top seven are traditional management practices. Less than 5% (8) of the respondents have used contingent distraction or filmed modeling.

**TABLE 1. Management of Cooperative and Disruptive Children (Ranked by overall popularity).**

Rank	Management Techniques	Per cent Using	
		Cooperative	Disruptive
1	Tell-show-do	96	83
2	Non-contingent prize	93	83
3	Verbal reprimand	18	76
4	Sedation	9	74
5	Parents in operatory	64	57
6	Restraint	3	83
7	Hand-over-mouth	1	73
8	Live modeling	66	41
9	Relaxation	46	41
10	Stop treatment	11	55
11	Noncontingent distraction	26	18
12	Hypnosis	12	8
13	Contingent rewards	14	11
14	Filmed modeling	5	5
15	Contingent distraction	5	5

Table 1 also shows how the respondents typically handle cooperative and disruptive children. Tell-show-do and the noncontingent prize are the most popular management practices, regardless of how cooperative or disruptive the children were during treatment. For cooperative children, dentists were more likely to try management techniques such as live modeling, relaxation, or distraction. When children become disruptive, however, many more dentists reported reliance on more invasive procedures such as verbal reprimand, restraint, sedation, and hand-over-mouth. Few reported trying contingent rewards, contingent distraction, or filmed modeling with either type of child.

Results show that with the current management strategies, nearly 1 in 4 (22%) of all children seen by pediatric dentists present marked management problems (Table 2). Some respondents reported that as much as 70% of their practice was made up of children presenting management problems. A multiple regression analysis found that the presence of these management problems was independent of both the age of the dentist and number of years in practice. More than 60% of the respondents reported interest in safer, cost-effective alternative strategies for managing young disruptive children. More than 70% reported concern about ethical, legal, or safety issues related to the use of traditional, invasive management procedures, particularly physical restraint, hand-over-mouth, and sedation.

When questioned about factors that influence their acceptance of new management techniques, the respondents focused their responses in four primary areas.

**TABLE 2. Management Concerns Reported by Diplomates.**

	Percent	Range
Children seen in practice presenting management problems		
■ moderate	15	5-70
■ serious	7	0-50
Dentists reporting top management priority as a safe, cost-effective strategy for managing young children 2-3 years old	64	
Dentists reporting concerns about ethical, legal, and safety issues with invasive procedures	72	

**TABLE 3. Frequently Cited Factors Influencing Acceptance of New Management Techniques.**

Factor	Per cent
Time invested in implementation	53
General acceptance by colleagues	50
Degree of difficulty in implementation	45
Financial costs involved	36

Table 3 shows that dentists are most concerned about the cost-effectiveness and general acceptance of the procedures by their colleagues. Cost-effectiveness included time and monetary investment, as well as the skill level required to perform the procedure.

Finally, on the average, respondents reported they had not attended a continuing education class for three years and reported that the ones they did attend typically focused on traditional management techniques. They also reported rarely looking for behavior management articles in psychology journals. The most common subscriptions were to *Pediatric Dentistry*, *Journal of the American Dental Association*, and *Journal of Dentistry for Children*. No other journal was reported by more than 10% of the respondents.

## Discussion

The results of this survey suggest that pediatric dentists face frequent behavior management problems and continue to seek safe, cost-effective techniques for managing difficult children. Most expressed concerns consistent with those reported by parents in an evaluation of the acceptability of dentists' behavior management practices (Murphy et al. 1984). Parents reported a significant preference for noninvasive reinforcement techniques instead of sedation, restraint, and hand-over-mouth. The dental respondents reported that they rely heavily on these forms of behavior management, particularly with difficult children, in spite of their own growing reservations about traditional invasive management practices.

The results of the present survey suggest several conditions that may be contributing to a reluctance to adopt newly developed behavior management strategies.

### Cost-Effectiveness

Cost, effort, and time were reported as critical variables in determining whether to accept new management techniques. Time, in particular, was important to the respondents. Time also is important to parents, who often are more concerned about expedience than dentists. However, there is no empirical evidence that sedation and restraint are more cost-effective or efficient than published alternative management techniques. The absence of cost-benefit analyses may have left practitioners without the comparisons needed to accurately assess the relative value of alternative procedures. Given the importance of efficiency to dentists and parents, it is very important that cost-benefit analyses are included in reports of new techniques.

### General Acceptance

The general acceptance of a technique by colleagues is an important determining factor in the adoption of

new techniques. In developing new procedures, general acceptance can be encouraged when dentists are major contributing authors in research evaluating behavioral techniques in the dental clinic. Indeed, a mandate from the Behavior Management Conference and Workshop recently held by the AAPD (1988) called for the encouragement of interdisciplinary research with behavioral scientists. The absence of dentists as major contributors may attenuate the social validity and acceptability of new techniques (Kazdin 1977). The participation of dentists in developing management technology acts as an important source of endorsement to professionals.

### Compensation

General acceptance of a procedure also would be enhanced if alternative behavior management techniques were compensated by third-party carriers. Currently, there are few monetary incentives for dentists to use behavior management techniques which are less invasive but which also may require additional time to implement. Combined lobbying efforts by the American Dental Association, the AAPD, and the American Psychological Association may be the most productive and efficient means of securing reimbursements for behavior management practices. Such practices are essential to providing quality dental care to children in a least-restrictive environment. Psychologists also would have much to gain by third-party carriers' acknowledgment of the important role of behavioral technology to comprehensive patient management in dental settings.

### Training

Acceptance of a procedure also is promoted through education. Very few respondents reported attending continuing education (CE) classes in which they were exposed to nontraditional techniques. Anecdotally, we found a noticeable dearth of articles on nontraditional management practices on the reading list for the pediatric diplomate examination. At the recent workshop on behavior management (AAPD 1988), one of the concluding recommendations was that training at the predoctoral level require a demonstration of competence in nonaversive and nonpharmacological behavior management methods. Dentists able to show minimal competence with some of these techniques may place themselves in a better position either to choose between or to combine traditional and nontraditional strategies.

CE classes on nonaversive and nonpharmacological treatments also are important. The number of CE classes attended decreases the longer a dentist is in practice. Perhaps the opportunity for exposure to newer techniques would attract more *seasoned* dentists. In addition, training should encourage dentists to refer difficult management problems to specialists. Indeed, recom-

recommendations from the AAPD workshop supported the referral of difficult patients. For example, in a recent study, nontreatment practice visits conducted by a behavioral psychologist were shown to be very effective in reducing the disruptiveness of three year olds during dental treatment (Allen et al. 1988). Dentists willing to consult a specialist when faced with a difficult child can continue with other patients while the specialist prepares the child for dental treatment (Ingersoll 1982). Such an arrangement may prove attractive for dentists concerned about the liability associated with sedation or restraint.

### Publication Outlets

Part of the failure of behavioral technology to make an impact on dental management practices may be due to the journals authors have published in. In recent years management technology for dentists has been reported in the *Journal of Applied Behavior Analysis*, *Behavior Modification*, *Journal of Consulting and Clinical Psychology*, *Behavior Therapy*, *Journal of Pediatric Psychology*, and *Journal of Clinical Child Psychology*. These journals are not typically read by dentists, but they do encourage submissions by researchers in behavioral technology. One solution may be for dental journals to encourage authors (dentists and psychologists alike) conducting behavioral research to submit both single-case experimental designs (within subject) and large group design studies. Single-case experimental designs provide demonstrations of functional relationships between management techniques and behavior change. The results of these studies often are more applicable to patients seen in the average practice.

### Conclusion

Pediatric dentists report the need for improved and expanded behavioral management technology. However, exposure to, and acceptance of, safe new management techniques based on psychological principles has been slow. More research is needed which investigates both traditional and nontraditional child-management techniques during restorative dental treatment. Equally important is developing effective means of exposing dentists to this research.

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