

Acceptability of various behavior management techniques relative to types of dental treatment

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Abstract

The purpose of this study was to determine if acceptability of behavior management techniques was dependent upon the type of dental procedure to be accomplished. Sixty-seven parents viewed videotaped segments of actual treatment of three- to five-year-old children with whom 10 behavior management techniques were used successfully. After rating the general acceptability of these techniques, they viewed six dental procedures: intraoral examination, radiographic technique, fluoride treatment, injection, restoration, and emergency extraction. The parents then were asked to indicate in which treatment situations each management procedure was acceptable or unacceptable for use on their child. The parents also were asked which behavior management techniques were totally unacceptable in any situation. The proportion of parents who found behavior techniques acceptable for each dental procedure, differences in proportions of approval for different techniques, and the proportion of parents finding a technique totally unacceptable were calculated. The pharmacological techniques of general anesthesia and sedation were judged acceptable by a majority of parents only for the extraction and extraction and restoration, respectively. The Papoose Board® and HOME never were viewed as justified by the majority of parents. Physical restraint by the assistant was acceptable in more situations than restraint by the dentist. Other techniques were acceptable to the majority of parents for nearly all procedures. Use of the Papoose Board was the technique most often judged totally unacceptable. However, all techniques were judged totally unacceptable by some parents.

Successful treatment of a disruptive child depends partially upon selection of an appropriate behavior management technique. When evaluating a child and selecting a management approach many factors should be assessed. These include: the type of behavior,¹⁻³ the child's anxiety,³ age of the child,⁴

⁶ child rearing techniques,⁷ personality variables,⁸ parental attitudes toward behavior management techniques, dental treatment to be rendered, and the legal implications.⁹

Data reported in a companion paper¹⁰ note that all behavior management techniques are not equally acceptable to parents and several techniques are generally unacceptable. The acceptability of a behavior management technique depends on the child's needs at the time of treatment, with the type and urgency of treatment influencing both the selection of a particular technique and parental acceptance of that technique. The purpose of this portion of the study was to determine if acceptability of behavior management techniques was dependent upon the type of dental procedure to be accomplished.

Methods and Materials

As reported in the previous study¹⁰ parents viewed 10 videotaped segments of actual behavior management sequences. They were asked to rate the acceptability of each management technique by placing a sticker along a line that had end points labeled most acceptable and least acceptable. Data reported in this study are an extension of that study.

Sixty-seven parents participated in this portion of the study (demographic data are described elsewhere).¹⁰ Ten behavior management techniques were explained and demonstrated to them. These included: tell-show-do; voice control; mouth prop; positive reinforcement; hand-over-mouth exercise (HOME); physical restraint by the dentist; physical restraint by the assistant; Papoose Boards^a and Pedi-Wraps^b; sedation; and general anesthesia.

The parents then viewed six dental procedures:

Dental exam: An intra- and extraoral examination of

^a Olympic Medical Corp, Seattle, WA.

^b Clark Associates, Worcester, MA.

the soft and hard tissues was performed using a dental mirror and explorer.

Radiographic technique: A radiographic film was placed in the child's mouth and exposed.

Fluoride treatment: Two paper trays containing fluoride gel were placed in the mouth for 4 minutes while excess gel was removed with suction.

Injection: An anesthetic solution was infiltrated in the maxillary anterior region.

Restoration: Caries was removed using a high-speed handpiece and bur. The tooth was restored with silver amalgam.

Emergency extraction: An infected, painful tooth was elevated and removed with forceps after adequate anesthesia was obtained.

All procedures were segments of actual dental treatment. The validity of the videotaped dental procedures was established by having eight pedodontists on the faculty at the University of North Carolina view the videotape and evaluate the material for presentation accuracy. Two dental procedures were re-taped at the recommendation of the group and subsequently approved.

The acceptability of a behavior management technique could depend on the parent's perception of the type and urgency of the required treatment. For instance, an elective procedure may not be viewed as important enough to warrant the use of several of the

behavior management techniques presented; yet, an emergency dental need might be perceived as important enough to use those same techniques. The questionnaire allowed participants to evaluate and record this information. (At this point, the parents had recorded the general acceptability of each management technique as previously described¹⁰ on the continuum from least to most acceptable, and had viewed the dental procedures.)

The parent were asked to mark each management technique that was acceptable to gain cooperation for each specific dental procedure. Thus, each technique and its acceptability for each dental procedure could be assessed. The parents also were asked to determine which behavior management techniques were unacceptable for use on a child in any situation.

To establish reliability, a pilot group of 13 participants was tested twice with six weeks. Results were analyzed using the paired t-test and signed rank test. The t-test focused on whether or not the differences between the responses for the first or second test were significant. The signed rank test was more appropriate for this small sample size.

The proportion of participants who approved or disapproved the use of specific behavior management techniques for particular dental procedures established "acceptability." The percentages of yes/no responses and their standard errors were calculated for each behavior management technique and dental procedure. Asymptotic regression was used to com-

TABLE 1. Proportion of Parents Indicating Acceptability of Behavior Management Techniques for Each Dental Procedure (N = 67)

Technique Exam		Procedure					
			Radiograph	Fluor.	Injec.	Restoration	Extn.
Papoose Board®	x	.119	.134	.09	.313	.328	.463
	SE	(.404)	(.042)	(.035)	(.057)	(.057)	(.061)
General anesthesia	x	.075	.03	.045	.149	.224	.567
	SE	(.032)	(.021)	(.025)	(.044)	(.051)	(.061)
Sedation	x	.209	.194	.164	.373	.537	.746
	SE	(.050)	(.048)	(.045)	(.059)	(.061)	(.053)
HOME	x	.388	.299	.239	.343	.388	.388
	SE	(.060)	(.056)	(.052)	(.058)	(.060)	(.060)
Physical restraint/ assistant	x	.522	.463	.478	.701	.567	.552
	SE	(.061)	(.061)	(.061)	(.056)	(.061)	(.061)
Physical restraint/ dentist	x	.493	.433	.448	.552	.403	.493
	SE	(.061)	(.061)	(.061)	(.061)	(.060)	(.061)
Voice control	x	.712	.636	.606	.606	.606	.606
	SE	(.056)	(.060)	(.060)	(.060)	(.060)	(.060)
Mouth prop	x	.672	.418	.552	.672	.761	.657
	SE	(.057)	(.060)	(.061)	(.057)	(.052)	(.058)
Positive reinforcement	x	.821	.791	.731	.701	.806	.701
	SE	(.047)	(.050)	(.054)	(.056)	(.048)	(.056)
Tell-show-do	x	.881	.851	.881	.672	.791	.642
	SE	(.040)	(.044)	(.040)	(.057)	(.050)	(.059)

N = 67

TABLE 2. Approval of Management Techniques Analyzed by Dental Procedure* (N = 67)

Technique	Procedure							
	Fluor.	Exam	Radio	< Injec.	Restor.	< Extn.	< .500	< Extn.
PB	Fluor.	Exam	Radio	< Injec.	Restor.	< Extn.	< .500	< Extn.
GA**	Radio	< Fluor.	< Exam.	< Injec.	< Restor.	< .500	< Restor.	< Extn.
SED	Fluor.	Radio.	Exam.	< Injec.	< .500	< Restor.	< Extn.	< Extn.
HOME	Fluor.	< Radio.	< Injec.	Exam.	Restor.	Extn.	< .500	< .500
PR-A	Radio.	Fluor.	.500	Exam.	< Extn.	Restor.	< Injec.	< Injec.
PR-D	Restor.	< Radio.	Fluor.	< Exam.	Extn.	< .500	< Injec.	< Injec.
VC***	.500	< Fluor.	Injec.	Restor.	Extn.	Radio.	Exam.	Exam.
MP	Radio.	< .500	< Fluor.	< Extn.	Exam.	Injec.	< Restor.	< Restor.
PR***	.500	< Injec.	Extn.	Fluor.	Radio.	Restor.	Exam.	Exam.
TSD	.500	< Extn.	Injec.	< Restor.	< Radio.	Exam.	Fluor.	Fluor.

* Values joined by solid lines are not statistically different from each other at the $p \leq .05$ level.

** Modeling does not indicate similar proportions between procedures.

*** Modeling not indicated due to similar proportion at the $p \leq 0.05$ level.

TABLE 3. Approval of Management Techniques Analyzed Within Each Dental Procedure* (N = 67)

Procedure	Technique										
	GA	PB	< SED	< HOME	< PR-D	.500	PR-A	< MP	VC	< PR	TSD
Exam.	GA	PB	< SED	< HOME	< PR-D	.500	PR-A	< MP	VC	< PR	TSD
Radio.	GA	< PB	SED	< HOME	< MP	< PR-D	PR-A	< .500	< VC	< PR	TSD
Fluor.	GA	PB	< SED	< HOME	< PB-D	PB-A	< .500	< MP	VC	< PR	TSD
Injec.	GA	< PB	< HOME	SED	< .500	< PR-D	< VC	< MP	TSD	< PR-A	PR
Restor.	GA	< PB	HOME	< PR-D	< .500	< SED	PR-A	< VC	< MP	< TSD	PR
Extn.	HOME	< PB	PR-D	< .500	< PR-A	GA	< VC	< TSD	MP	< PR	SED

* Values joined by solid lines are not significantly different from each other at the $p \leq .05$ level.

pare: the proportions of approval for each behavior management technique associated with each of the six dental procedures; and the proportions of approval for each dental procedure associated with the 10 behavior management techniques.^{11,12} Tests for overall differences among the approval proportions for each technique and each dental procedure also were calculated. Statistical models were fit to the proportions for the techniques which had significant differences ($p = 0.05$). Goodness-of-fit statistics then were calculated for these models to determine where differences existed among dental procedures and among management techniques. Finally, the proportion of parents indicating certain behavior management techniques were "always unacceptable" was calculated.

Results

The results of the paired t-test were not significant at the $p = 0.01$ level and the signed rank test confirmed that the responses for the first and second tests were not significantly different.

The proportion of parents indicating acceptability of behavior management techniques for each dental procedure is presented in Table 1. Mean values above

.500 were judged as acceptable techniques by the majority of parents for that dental procedure.

The model and the goodness-of-fit statistic confirmed the similarities and differences among the proportions for different dental procedures within each management technique. These similarities are illustrated in Table 2 and are evident from examining rows. In Table 2 similar proportions are found by solid underlines, clarifying the groupings of dental procedures within a particular management technique. For example, there are three distinct levels of approval for the Papoose Board. One level describes the acceptance to manage a child in need of an examination, radiograph, or fluoride treatment. A higher and distinctly different level approved the Papoose Board to complete an injection or restoration. Finally, the proportion indicating approval of the technique to complete an emergency extraction was higher and significantly different from all other proportions of the procedures for this specific technique.

A similar strategy was employed to compare the approval proportions for the behavior management techniques for a particular dental procedure. Again, models were fit for the proportions of acceptability for the dental procedures which had significant differences among the behavior management tech-

TABLE 4. Observed Proportion of Parents Indicating a Behavior Management Technique Was Always Unacceptable (N = 67)

<i>Technique</i>	<i>Proportion</i>	<i>Standard Error</i>
Papoose Board®	.328	.057
General anesthesia	.194	.048
HOME	.149	.044
Physical restraint/dentist	.134	.042
Physical restraint/assistant	.119	.040
Voice control	.090	.035
Sedation	.090	.035
Mouth prop	.060	.029
Positive reinforcement	.030	.021
Tell-show-do	.015	.015

niques. In this case all of the dental procedures exhibited significant differences among the management techniques. The similarities are illustrated in Table 3 and are evident from examining *rows*. In Table 3 similar proportions are joined by solid lines to clarify the groupings of management techniques within a particular dental procedure. For example, there were six distinct levels of approval of management techniques under the exam procedure. Papoose Board and general anesthesia formed one group. Sedation and HOME each had separate levels of approval. Finally, physical restraint by the assistant or dentist, voice control and mouth prop; and positive reinforcement and tell-show-do each formed two techniques pairs with similar levels of approval.

Proportions of parents who indicated that a behavior management technique was always unacceptable are listed in Table 4. Parents find clear differences as seen in proportions of the behavior management techniques that are acceptable.

Discussion

The acceptability of a management technique for different dental procedures provides interesting insight into parents' assessment of treatment need. The use of a Papoose Board was consistently unacceptable with all dental procedures, but acceptance of this technique was greatest for use with an emergency extraction. Similarly, general anesthesia and sedation were consistently unacceptable except when used for the emergency extraction. Additionally, sedation was acceptable to gain cooperation of a child in need of a restoration. Parents found these techniques more acceptable for completing the more anxiety-provoking and/or necessary dental procedures.

HOME was consistently unacceptable regardless of the dental treatment needed. Nonetheless, in two recent surveys of pediatric dentists, 80-88% indicated their use of the technique in selected cases.^{13,14} In addition, Davis and Rombom's survey of postdoctoral pedodontic training programs indicated wide-

spread acceptance of both restraint and HOME techniques.¹⁵ The majority of pediatric dentists consider this technique psychologically neutral, but using professional standards of practice for determining acceptability of a treatment is a dying concept.¹⁶ An understanding of the difference between the views of parents and professionals is essential for today's dental practitioner.

Physical restraint by the assistant or dentist was more acceptable for gaining the cooperation of a child for an injection as compared to the other dental procedures. This technique commonly is used for procedures requiring control to protect the child, dentist, and assistant. Parents also may have had previous experience with physical restraint of their children in a physician's office for injections, thus making them familiar with its necessity.

Use of a mouth prop and voice control were consistently acceptable, with the exception of the former being unacceptable for obtaining a radiograph. The perceived efficacy of using a mouth prop to obtain a radiograph may have influenced this result.

Positive reinforcement and tell-show-do were consistently acceptable; however, the percentages dropped significantly for their use with a dental injection or an emergency extraction. Considering the increased anxiety these two procedures may create, the parents could be showing doubt over the efficacy of these techniques for these treatment situations.

Upon examining Table 1, it is apparent that as a procedure becomes more mandatory for the child's well-being and comfort, more techniques become acceptable and the percentage of parents approving the techniques increases. For instance, radiographs and fluoride treatments — elective procedures — have three and four techniques, respectively, in the 50% or greater approval range. Exams and restorations are similar in that both received 50% approval for five techniques. Injections also received approval for the same five techniques plus physical restraint by the dentist; while the most essential dental procedure, emergency extraction, has seven techniques within this range of approval. A pattern of parental attitude toward dental procedures becomes apparent, with radiographs and fluoride treatments being least important and emergency extractions being most important.

Often techniques that are paired as having similar levels of approval do not appear to be related obviously (e.g., for an extraction, general anesthesia and physical restraint by the assistant are paired as are sedation and positive reinforcement). Clearly the acceptability of management techniques depends on the dental procedure and it also changes with the hierarchy of approval. Note, for instance, that HOME was the least acceptable technique for an emergency extraction.

Thirty-three per cent of the parents felt it is never acceptable to use a Papoose Board for gaining cooperation of a disruptive child dental patient. Sedation had a wider range of acceptability than general anesthesia; possibly due to its less morbid nature. Similarly, HOME and restraints by personnel were always unacceptable by one-sixth of the parents.

It is interesting that at least some parents indicated that positive reinforcement and tell-show-do are unacceptable. It is difficult to imagine a reason why these two techniques would receive the always unacceptable denotation. In reviewing the questionnaires, no pattern of reasoning could be determined.

Conclusions

1. The acceptability of different behavior management techniques is related to the specific dental procedure to be accomplished.
 - a. The pharmacological techniques of general anesthesia and sedation were judged acceptable by a majority of parents only for extractions and extraction and restorations, respectively.
 - b. Physical restraint by the assistant was acceptable in more situations than restraint by the dentist, which was judged acceptable only for the injection.
 - c. Voice control, mouth props, positive reinforcement, and tell-show-do are acceptable for nearly all dental procedures.
2. The Papoose Board and HOME are clearly unacceptable to the majority of parents for all dental procedures.
3. Each behavior management technique is totally unacceptable to some parents for each dental procedure. The Papoose Board was the technique most often judged unacceptable.

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