Training Children to Cope with Dental Treatment

Jacqueline Nocella and Robert M. Kaplan
San Diego State University

Thirty children were randomly assigned to one of three groups prior to receiving dental treatment. One third of the children were assigned to a stress-inoculation group, one third to an attention control group, and one third to a no-treatment group. The stress-inoculation group received instruction in relaxation and in positive self-talk. Observations by an individual who was blind to treatment condition revealed that children in the stress-inoculation group exhibited fewer body movements and verbalizations during the dental procedure than children in the control groups, \( p < .05 \). The results are interpreted as consistent with several recent experiments showing that very brief psychological interventions can be useful for controlling undesirable reactions to medical and dental procedures.

Dental treatment is an undesirable experience for many children. Evidence suggests that the dental situation can take on aversive properties for children and that fear and anxiety cause both children and adults to avoid dental care (Train, 1969). The present study reports on a brief psychological intervention which might be used to train children to cope with dental treatment.

A large number of studies have suggested that a variety of interventions may help people cope with laboratory-induced stressors, including ischemic pain and cold pressors. Although the authors of these papers often suggest that the interventions have value in medical and dental practice, relatively few studies have evaluated these approaches in applied settings (see Kaplan, 1982, for review). Within the last few years, several reports have shown that a single session of cognitive-behavior modification can aid adults in coping with brief-duration painful stimulation in both the...
laboratory (Meichenbaum & Turk, 1976) and in medial settings (Kaplan, Atkins, & Lenhard, 1982; Kendall, Williams, Pechacek, Graham, Shisslak, & Herzoff, 1979).

The present experiment extends these findings to a childhood population in a dental setting. The value of a cognitive-behavioral intervention was compared against an attention control and a no-treatment control.

**METHOD**

The subjects were 30 children between the ages of 5 and 13 years who were patients in a Pediatric Dental Clinic. Since research has shown that previous dental experience can influence children's behavior in the operatory (Melamed, 1979), only children with prior dental experience were selected for participation. Approximately 80% of the children were scheduled for restorations (fillings) and the other 20% received extractions, or a combination of restorations and extractions. Subjects were randomly assigned to either a cognitive-behavioral group, an attention-control, or a no-treatment control group. Sex of the child was the only constraint upon the randomization; each group had equal numbers of males and females. The proportions of children receiving restorations and extractions were equivalent in the three groups.

Children receiving cognitive-behavioral training were taught a combination of strategies. The experimenter taught the child to identify stimuli which might trigger arousal, to use deep breathing exercises, and to relax specific muscle groups. The child was also instructed in positive self-talk. For example, the experimenter told the child, "If I get scared or worried I tell myself to 'relax' and I let myself relax my whole body. I tell myself, this is a good dentist, I'm doing good, I can handle this, I'm doing terrific!" Following this, the child was asked to close his/her eyes and go through an imagined visit to the dentist using positive self-statements, deep breathing, and the word "relax" to help cope with anxiety. The entire procedure was reviewed by an author of children's books to determine appropriate language levels for 5- to 13-year-old children. Minor adaptations in language were made for children of different ages. The experimenter then summarized by saying, "There are three things to remember: first, tell yourself to 'relax' and relax your body; next, take deep breaths and let them out slowly; and last, talk to yourself. Tell yourself how good the dentist is, how the sooner it gets started the sooner it will be over, and how you can handle this, how you're doing good—great." The single session treatment lasted only an average of 15 minutes.

The nonspecific treatment condition subjects were not given any strategies for dealing with stress. However, they did receive the complete
attention of the experimenter for approximately 15 minutes. During this period, school, summer vacation activities, pets, hobbies, favorite books, movies, and television shows were discussed.

Subjects in the no-treatment control group returned to the waiting room after consent for participation in the study was obtained. They were not given attention by the experimenter.

During the operative procedure, each child's behavior was categorized by a judge who was blind to treatment conditions. The following categories were used: facial grimaces, restlessness, moving arms and/or legs, sitting up, gripping chair, and verbalizations. The score for each subject was obtained by dividing the frequency of responses in each category by the length of the procedure. The observer was trained prior to the study until a 90% agreement with the experimenter was reached. When rater reliability was re-evaluated during the study, it was found to be 88%. It was hypothesized that observable reactions to the dental procedure would be lower in the experimental group than in the control groups.

RESULTS

Planned orthogonal contrasts were used to test for differences between the treatment and control groups. Tests of homogeneity of variance revealed that the assumption of homogeneity was violated for each contrast, Bartlett-Box $F(1, 27) = 4.56, p < .05$. Therefore, separate variance estimates were used for the comparisons. The separate variance estimate method requires a downward adjustment of degrees of freedom, but allows tests for each contrast to be conservative and unbiased. The first contrast demonstrated that the experimental group ($M = .39$ behaviors/minute, $SD = .28$) differed significantly from the control groups, $F(1, 24) = 4.67, p < .05$. As predicted, the contrast comparing the attention control ($M = .81$ behaviors/minute, $SD = .88$) and the no-treatment group ($M = .83$, $SD = .65$) was not statistically significant, $F < 1.0$. Additional ANOVAs were also used to evaluate the effects of sex and age. The age variable was created by dividing the children into the two age categories using a median split procedure. All main effects and interactions involving age and sex were nonsignificant.

DISCUSSION

In contrast to two control groups, the cognitive-behavioral intervention significantly reduced stress-related behaviors for children undergoing a dental procedure. Although similar reports were not published prior to the
execution of this study, we have recently learned of similar experiments confirming the usefulness of cognitive coping procedures for reducing fear-related behaviors of pre-school children during dental treatment (Siegel & Peterson, 1980). Similar results have also been reported in two studies on adults undergoing stressful medical examinations (Kaplan et al., 1982; Kendall et al., 1979). In the Kaplan et al. study, subjects who were scheduled for a sigmoidoscopy examination were given either cognitive-behavioral, cognitive, or relaxation training. These groups were compared with a control group which received only attention. The subjects in the cognitive-behavioral group were rated by observers as less anxious than the other groups during the examination. In the Kendall et al. (1979) study, the cognitive-behavioral intervention was more effective than a patient-education program or an attention control for preparing patients for cardiac catheterization. In concert with previous laboratory research, these studies document the effectiveness of a cognitive-behavioral technique for increasing pain tolerance in both children and adults (Meichenbaum & Turk, 1976).

It is encouraging that the results obtained in this study occurred as a function of one very brief training session. This suggests that the training could be used during the time a child typically spends in a waiting room. However, it is also important to caution that the effect has only been observed during one dental session which occurs immediately after the training. Longer lasting effects might not be expected with such a minor intervention.

REFERENCES


Train, G. S. The dentist's emotional reaction to the troublesome patient. Psychosomatics, 1969, 10, 176-180.