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LETTERS

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The Modified Bluegrass Appliance

As a British librarian currently undertaking a review of the literature of fixed intraoral habit appliances used for the treatment of childhood digit habits, I was disconcerted to read Chris Baker's article on the modified Bluegrass appliance in JCO.1 Actually, Dr. Baker had published an earlier paper in the Journal of the Southeastern Society of Pediatric Dentistry,2 which may not be known to many practitioners since this journal is not abstracted by Medline and is quite difficult to obtain.

My disquiet focuses on the shift away from the treatment of school-age children, as reported originally by Haskell and Mink3 (in their clinical trials at the dentistry clinics of the University of Kentucky and University of Louisville), to the treatment of preschool children as young as 20 months. Whereas Haskell and Mink reported the treatment of 24 children between 7 and 13 years old, Dr. Baker has reported the treatment of 242 children between 20 months and 12 years old, with the majority stated as being in the lower age range. Although Dr. Baker's work appears to have succeeded in demonstrating the relatively comfortable and nonthreatening nature of the modified Bluegrass, with its multicolored plastic beads replacing the single, hexagonal Teflon roller, nevertheless there are some serious worries:

1. The consensus of the literature is that digital habits are normal and harmless up to 4 years of age; even Haryett's subjects were no younger than this.4,5 Dr. Baker's assertion that "the younger the child, the faster the habit ends" must be balanced against the morally dubious practice of recommending an invasive treatment where no identifiable pathology exists and where it is known that digit habits do not always lead to malocclusion.

2. Proffit and Fields go to great pains to stress that appliance therapy will only work if the child really wants to stop thumbsucking.6 They state that "if a child does not want to quit sucking, habit therapy, especially appliance therapy, is not indicated" and "these appliances can be deformed or removed by children who are not compliant, so cooperation still is important". It is hard to credit success with toddlers who do not have the cognitive ability to be motivated either to want to stop or to understand what the appliance is for. Worse, the literature is full of references to injuries sustained by poorly motivated and unwilling children when fitted with fixed intraoral habit appliances.

3. Khalil's work on the effect of palatal crib therapy on the speech of Egyptian children concluded that appliance therapy should only be used with children older than 4.5 years whose speech is mostly developed.7

4. The age group of the children treated by Dr. Baker is one in which the incidence of digit, pacifier, and other habits is falling very rapidly. In Warren and colleagues' study of the non-nutritive sucking habits of more than 600 Iowa children, from birth to 48 months of age, the incidence of digit sucking fell from 22% at 24 months to 12% at 48 months, while the incidence of pacifier sucking fell from 25% to 5% in the same period.8 This suggests that a very large fraction of the children treated by Dr. Baker would have ceased their habit in the natural course of time and without any treatment.

5. Haskell' s patent pays particular attention to the resistance of dental and orthodontic practitioners to adopting the Bluegrass appliance.9 He attempts to overcome this by splitting the rollerbeads so they can be assembled from two halves onto existing orthodontic appliances (such as Quad Helix-type appliances). The split configuration means there is a very real danger of the two halves parting and becoming aspirated by the child, thus causing a life-threatening situation. The safety requirements placed on toy manufacturers are testimony to these potential dangers.

6. Proffit and Fields point out the problem of maintaining good oral hygiene with palatal cribs, leading to tooth decay and mouth odor.6 With very young children this problem is bound to be greater.

My final objection to Dr. Baker' s work is the possibility that it could detract from what I sincerely believe to be the first really original contribution to the state of the art of using orthodontic appliances for treating childhood digit habits. As a librarian, I am primarily interested in the temporal flow of ideas within disciplines and, in tracing the history of habit appliance therapy from Locke' s original patent for the "Hay Rake" of 193610 to the present day, my conclusion is that there has been surprisingly little such flow of ideas! The principle of habit appliance therapy generally remains firmly rooted in the twin principles of physical barrier and pleasure removal.

The Bluegrass appliance, whether classical or modified, breaks this mold, and Haskell, Mink, and Baker deserve considerable praise for their efforts. For the first time, a positive effort has been made to design a habit appliance that is comfortable and nonthreatening to the child rather than one that is deliberately made uncomfortable and requires the child to spend as long as two weeks simply getting used to it. By challenging the child to play with the appliance with his or her tongue, to spin the roller or combination of beads, and to rattle the roller-beads from side to side, the appliance works on a totally different principle, one more akin to the reframing and habit-reversal techniques practiced by the behavioral specialists. The way in which the appliance has consolidated ideas ranging from the equine industry (bits for calming horses) to tongue trainers (Lingual Pearl11) is very impressive.

In recent years, some excellent results have been obtained by non-dental practitioners such as Van Norman12 (behavior modification) and Azrin and colleagues13 (habit reversal). Nowhere in the recent literature can I find a long-term comparative study to determine the relative effectiveness of dental or orthodontic behavioral approaches to treating digit habits. If the Bluegrass appliance is as revolutionary as is claimed, perhaps it could be the focus of such a study, and the claims made for it could be settled with greater confidence. •

REFERENCES

1 Baker, C.J.: The modified Bluegrass appliance, J. Clin. Orthod. 34:535-537, 2000.

2 Baker, C.J.: The modified Bluegrass appliance, J. S.E. Sac. Ped. Dent. 4:20-21, 1998.

3 Haskell, B.S. and Mink, J.R.: An aid to stop thumb sucking: The "Bluegrass" appliance, Ped. Dent. 13:83-85, 1991. Full text available at www.haskellbraces.com.

4 Haryett, R.D.; Hansen, F.C.; Davidson, P.O.; and Sandilands, M.L.: Chronic thumbsucking: The

psychologic effects and the relative effectiveness of methods of treatment, Am. J. Orthod. 53:569-585, 1967.

5 Haryett, R.D.; Hansen, F.C.; and Davidson, P.O.: Chronic thumbsucking: A second report on treatment and its psychological effects, Am. J. Orthod. 57:164-178, 1970.

6 Proffit, W.R. and Fields, H. W.: Contemporary Orthodontics, 3rd ed., Mosby- Year Book, St. Louis, 2000, pp. 446-447.

7 Khalil, A.M.: Short- and long-term effects of thumb-sucking habit breaking appliance on speech in children, Egypt. Dent. J. 40:827-832, 1994.

8 Warren, J.J.; Levy, S.M.; Nowak, A.J.; and Tang, S.: Non-nutritive sucking behaviors in preschool children: A longitudinal study, Ped. Dent. 22:187-191, 2000.

9 Haskell, B.: Oral habit retraining device, U.S. Patent No. 6,082,996, 2000.

10 Korrodi Ritto, A. and Leitao, P: The Lingual Pearl, J. Clin. Orthod. 32:318-327, 1998.

11 Van Norman, R.A.: Helping the Thumb-Sucking Child, Avery Publishing Group, New York, 1999.

12 Azrin, N.H.; Nunn, R.G.; and Frantz-Renshaw, S.: Habit reversal treatment of thumbsucking, Behav. Res. Ther. 18:395-399, 1980.