Psychologic Aspects of Disruption of Thumbsucking by Means of a Dental Appliance

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INTRODUCTION

For many years thumbsucking has concerned orthodontists and dentists, on the one hand, and child psychiatrists and psychologists, on the other. The various claims and recommendations of each group usually reflect its members' primary professional concern, and minimize or ignore other aspects of the problem. Most authors acknowledge either the dental or the psychologic features, but base their conclusions on observations in only the one area. Very few reports in the literature describe a coordinated, thorough psychologic investigation during dental treatment for thumbsucking.

We had the chance to make a study when Dr. E. S. Mack of the Mt. Zion Dental Clinic asked us to observe psychologically some of his clinic patients whose thumbsucking was disrupted by means of a dental device. Mack (1), who with Sweet (2) holds that thumbsucking may result in permanent malocclusion and in underdevelopment of upper lip, nose and chest, with mouth breathing and speech defects, advocates the use of a dental appliance on persistent thumbsuckers aged 3½ or older. He recommends dental interference only in cases in which thumbsucking has become an empty and meaningless habit; without explaining how to determine the meaning of the habit.

The device, called a "hay-rake," is a nonremovable appliance cemented to the child's teeth; a series of fence-like tines prevents thumbsucking and tongue-thrusting. Regretting that the appliance looks vicious and has a distasteful name, Mack nevertheless feels that with proper use it is benign and always successful. His concern with the psychologic aspects of this type of treatment led him to query fifteen young patients treated successfully. Almost all replied that they were not angry about wearing the appliance, that it was not difficult to get used to, and that they did not miss sucking their thumbs. Their parents had observed no disturbance or symptom substitution and in fact concluded that the children were more outgoing, and enjoyed other children's company more than before treatment. These replies supported Mack's theory that frustration of an infantile outlet is a necessary experience for growing up and leads to a redirection of energies into more wholesome external pursuits. Since Mack's inquiry permitted only yes and no answers, he correctly decided that a more thorough psychologic evaluation was required. This we set out to do.

EXPERIMENTAL PROCEDURE

The dental clinic referred three children: two white girls, Ann, aged 3 years and 9 months, and Kay aged, 5 years and 7 months; and a negro boy, Jo, aged 3 years and 9 months. These children were selected by the dental clinic on the basis of malocclusion co-

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inciding with either thumbsucking or tongue-thrusting and the parents' wish for this kind of treatment. We thus influenced neither the selection nor the decision in any way. The parents, who were all from a low socioeconomic background, generously cooperated in this long investigation. It was stressed that their information was confidential and contributed to our research knowledge. Ann was under observation for 27 months, Kay for a year, and Jo for 20 months.

Careful evaluation of each child was made before insertion of the appliance, to serve as a yardstick for possible future changes. First, an interview with the parent covered the child's complete developmental history and explored parental attitudes and handling of the child. The history included a systematic inquiry regarding the onset, duration, and chronology of an extensive list of common childhood disturbances. Direct observation of the child comprised three free-play interviews, the first preceded by a Stanford-Binet Intelligence Test; the second by a Rorschach; and the third by The Children's Apperception Test. The two latter measures are commonly used personality tests which disclose, through the child's interpretation of ambiguous material, his developmental stage, his fantasy life, his fears and his wishes.

After this evaluation the parent was instructed to report at once any subsequent changes in the child's behavior. The parents were again interviewed routinely about 10 days after insertion of the appliance. We first encouraged them to report their spontaneous observations, and then inquired about changes in the child's appetite, sleep, speech, show of anger, frustration or anxiety, social relations, need for approval and affection. We also checked the previous list of disturbances in order to ascertain shifts in symptom formation. Subsequent interviews with the children followed the earlier pattern, except that the intelligence test was omitted. Interviews with parents and direct observation of the children were repeated whenever the dentists or the parents reported changes in behavior or symptomatology. They were also done immediately before the removal of the appliance, ten days later and again several months later.

Case Summaries

Case 1; Ann. referred to us when she was 3 years and 9 months old, remained under our observation for 2 years and 3 months. The mother's history gave the impression that guilt and conflict over her own oral habits led her to resort to the appliance to combat Ann's thumbsucking. Her pregnancy with Ann was not planned and occurred at a time when the family had suffered serious financial reverses. Ann, like her older sister, was born with a congenital defect of the lower extremities for which she had to wear a brace at night. She was fed by bottle on self-demand schedule. At 7 months she was weaned abruptly within one week. Ann began chewing her fingers as a small infant, and because the child was born with a protruding jaw, her mother tried to prevent this finger chewing.

Ann started to sit, walk and talk at the normal time. Mrs. A. started toilet training extremely early because dirty diapers nauseated her. She began to put Ann on the pot at 3 months, and even before then tried to avoid soiled diapers by anticipating the baby's bowel movements. As soon as she could sit up, Ann was put on the regular toilet until she produced. To this she reacted with temper outbursts. Perhaps because of these early experiences, Ann was still enuretic at night and chose this area in which to please or displease her mother. Mrs. A. tried unsuccessfully

to curb her enuresis through various means.

Ann was described as a cuddly, affectionate, sensitive little girl, of whom other children usually took advantage. Thumbsucking and enuresis were her only symptoms. Before resorting to the appliance, Mrs. A. tried mitts and bitter ointments, to curb Ann's sucking, without success.

Preliminary interviews with Ann established her to be a friendly, cooperative, unanxious little girl of superior intelligence (I.Q. 122.) Thumbsucking was noted only when she was extremely fatigued. Her play reflected two main themes: self-consciousness about her deformed leg and conflict whether to please by neatness or express her antagonisms through messiness, the latter a recapitulation of her conflict with her mother over toilet training. Personality tests established that on the whole Ann was an emotionally well adjusted girl who was going through developmental phases appropriate for her age.

Appliance inserted: Observation of Ann a month after she received the appliance showed drastic changes. She was less spontaneous and more irritable, explosive and negativistic. Her play and tests showed an emergence of destructive feelings and anger at her mother for permitting her dental discomfort. Her activities also suggested that, under the impact of this experience, she was reverting to earlier stages of development. In the weeks that followed, her play expressed first an anxious concern with neatness and later an explosive release of aggressive messiness. Prior to this release she seemed depressed and remote, staring into space for long periods of time.

Her mother confirmed these radical changes by reporting symptomatology. Ann had become whiny, belligerent, tense and irritable. Formerly a clinging and affectionate child, Ann now brushed off all tenderness. For the first time in her life she had nightmares. She began to wet again during the day, her speech became more infantile.

In view of the gravity of Ann's reaction we advised, after several weeks' observation, removal of the appliance.

Removal of appliance and later replacements. In the period after removal, Ann improved somewhat, at least psychologically speaking. She immediately reverted to thumbsucking, which now had acquired new meaning. She used it to provoke her mother or else sucked in guilty hiding, usually in closets. Guilt-laden she twice said that "maybe the dentist should put back the fence," thereby suggesting that the appliance had now become for Ann an ally against what she had learned to consider her bad impulses.

When the appliance was replaced her symptoms recurred, although with less intensity. Her play now showed distinctly self-punitive patterns. Confirmation of these new tendencies came with a crisis toward which Ann was gradually building up. The dentists, who periodically reported how nicely she was adapting herself to the appliance, were surprised to find her suddenly very much disturbed. Three months after replacement of the appliance, Ann made a big scene while in the dental chair, screaming, refusing to talk and touching her genitals. Not long before, the appliance had become loose and Ann self-punitively allowed it to cause sores on her tongue and gums, without telling anyone what had occurred. In the dental office she accused the dentists of hurting her purposely and at Mrs. A's denial became so angry that she screamed at the assisting nurse, "They're trying to punish me for sucking my thumb."

When the appliance was removed once more, Ann's symptoms again di-

minished. However, she was now completely at the mercy of her thumbsucking, which had become compulsive and continuous and caused her tremendous guilt. She confided she could not stop "because it tastes so good." In the grip of a sucking spell she would plead to have "the fence put back."

Because Ann became increasingly self-punitive we advised psychotherapy at this point. Instead, the dental clinic constructed a new, removable appliance, the use of which Ann could control. She used the appliance at school to avoid being teased about thumbsucking. At home she sucked continuously, simultaneously fondling a rubber doll's toes, an act which incensed Mrs. A even more than did the sucking. This confirmed our impression that the sensuous aspects of Ann's habit also upset her mother.

Ann finally brought the appliance, crushed, to the dental clinic. The dental staff then decided to cease further efforts and to give psychotherapy a chance. Ann's symptoms had again become worse; she was withdrawn, sucked her thumb for hours at a time, refused solid food and took refuge in sleeping bouts. Mrs. A., however, consented only reluctantly to psychotherapy.

Mrs. A. withdrew Ann from treatment after only four sessions. Her explanation of startling symptomatic improvement really covered an intense fear of the child's disclosures during the treatment process. Ann's therapeutic hours consisted of a large-scale retaliation spree against all toward whom she felt resentment. This release undoubtedly gave her relief, but did not help her to work through her underlying feelings.

Follow-up: Upon inquiry six months later, Mrs. A. reported that Ann had improved generally; she had gained weight and enjoyed school. However, she sucked her thumb as much as ever, and her mother had finally given up trying to stop her, after Ann said repeatedly: "There isn't a thing you can do, Mommy! I have tried hard enough, haven't I?"

CASE 2. Kay, aged five years and six months at referral, was the child of her mother's second marriage. The father was alcoholic, and the parents had been separated a year. Mrs. D's impulsiveness, as reflected in her indiscrimate involvement in several marriages and unhappy love affairs, made her regard release as a beneficial outlet, and she so considered Kay's thumbsucking. Only the pediatrician's and the dental staff's persuasiveness and her own mother's influence caused her to agree to the appliance. The grandmother, an extremely rigid woman, tried to squelch in Kay any reminiscent signs of her own daughter's stubbornness. Doubtless she considered thumbsucking a forerunner of the kind of instinctual activity which she could not tolerate in her daughter.

Kay was breastfed for eight months on a four-hour schedule. She was weaned in a month to drinking from a glass. Toilet training was started at nine months; she never ceased being enuretic.

As long as Mrs. D could remember, Kay wanted to be a boy. At 2½ she flew into a rage when a dress was put on her; only school regulations got her out of trousers at the age of 4 and a half. She wore her hair like a boy and had been seen trying to urinate like a boy. She played with dolls only to scalp them or hang them up in cowboy fashion. At school Kay played only with boys, usually more roughly than they. She adored playing with her halfbrother, aged 10, and his friends. She early remarked on her brother's penis

and asked about breasts. When told their function, she said she never wanted to have a baby. She was strongly attached to her father and saw him monthly. She often begged her mother never to divorce him, and she took a consistently hostile attitude toward her mother's boyfriends.

In the way of symptoms, Kay frequently vomited to evade school. From her first year she had temper tantrums. Recently she had become afraid of the dark. She talked in her sleep. When she sucked her thumb or thrust her tongue she tried to snuggle up to someone.

Preliminary interviews with Kay established her to be a boyish, intellectually precocious child (I.Q. 131), who demonstrated both in manner and content of play an intensive fear of passivity. To feel any measure of security, she had to take an active, masculine role in handling things. Her tests, drawings and free play all reflected her intense confusion about sex and family roles, and also demonstrated her uneven development. Sucking was noted only when Kay was anxious or feared failure.

Appliance inserted: Kay eagerly anticipated getting a dental device. This eagerness, we found, was based entirely on Kay's desire to be like her brother, for she proudly boasted of having a brace like his. The appliance thus became a tool whereby Kay once more could deny reality and hope to become like a boy. Mrs. D's description of Kay's adaptation to the appliance agreed strikingly with the child's need to master experiences actively. She first tried to suck her thumb despite the brace and then, unable to do so, threatened to yank it out. Subsequently she teased her brother that now she was his equal. Mainly, though, she used the appliance to frighten people, charging, mouth open, as if to bite.

Except for increased restlessness and irritability, Kay showed few changes. Like Ann, Kay did not complain when the appliance caused sores in her mouth and swelling of her cheeks. To her, also, the appliance became a concrete sign of demarkation between "good" and "bad" impulses.

Removal of appliance. Two months after the insertion of the appliance, perhaps disappointed that it did not accomplish its magical purpose, Kay loosened and bent it. At her next appointment, the dentists pronounced the correction of her teeth fairly complete and suggested that the appliance was no longer needed. Kay resolved never to suck her thumb again, but this resolve soon broke down under the stress of a brief illness.

Follow-up: One month after the removal of the appliance the family reported Kay's thumbsucking as unchanged. Eight months later, after a series of traumatic events in the family, Kay was sucking her thumb incessantly.

CASE 3: Jo, the only child of a young negro couple, was referred at the age of 3½ because of lip chewing and tongue thrusting. Jo's mother was rigid, fanatically neat and compulsive; the father, ambitious and stern. Jo was unplanned and unwanted. Mrs. F. had not wished to breastfeed him. When he was 9 months old she began to wean him; when he was a year old, she threw away all his bottles. Though it was really precocious she considered his development slow.

When Jo was 6 weeks old, Mrs. F. began bowel training. She must have caught him always in time, since she could remember no soiled diapers. Ostensibly because his anus was too small, she dilated it, with medical advice, possibly in order to have control over his movements. He was wholly trained at the age of two. He now wets every four or five months, possibly on purpose.

Persistent eczema, asthmatic attacks and diarrhea since babyhood suggested early psychosomatic symptoms. In addition Jo was afraid of dogs and the dark. He stuttered occasionally. From the first year of life he had indulged in tongue-thrusting, which he liked to combine with touching soft things.

Preliminary interviews showed Jo to be an attractive, extremely passive phlegmatic boy whose I.Q. was in the high average range. All through the interviews he rubbed his tongue gently in a sucking motion against his teeth. There was no thrust in this activity just as there was no vigor in his general demeanor. Equally infantile was his steady insistence that he was 2 years old. Tests substantiated the impression of general immaturity.

Insertion of appliance: Jo adjusted himself very smoothly to the appliance, no doubt because it hindered his sucking in no way. He now simply rubbed his tongue sideways. His mother expressed disgust both about his sucking and the associated sounds. She reported no changes, and none were observed in his behavior. The tests revealed minor ones, in the direction of guilt formation and concern over bodily injury.

After failing to curb Jo's sucking, the dental clinic fitted him with an appliance with longer, sharper prongs. His sucking stopped, and marked, although temporary changes appeared. His mother complained about his assertiveness. He had become active, purposeful and quick in action; and he now expressed a good deal of aggression. His greater vigor may well have been a product of the ingenuity he needed to re-establish his old ways of gratification. This he did in two weeks' time, and as he resumed tongue sucking his old passivity returned.

Removal of appliance and follow up. Upon removal of the appliance eight months after its insertion, the protrusion of Jo's teeth had been corrected, but he had already resumed his sucking. The family reported seven months after the removal that Jo sucked his tongue as much as ever.

Discussion

Analysis of the above case material brings out several points. Comparing early developmental factors in these three cases, for example, we find that each child began sucking during his first year of life. Although this was not brought out in the brief case summaries, all three had been feeding problems ranging from moderate to severe and prolonged ones. All had been weaned abruptly. One of the children was breastfed and another was on self-demand schedule. Two had had extremely early toilet training.

Observation of these children's play, their test results and the fact of their persistent enuresis all suggested an as yet incomplete mastery of urethral control. Child study has established the danger, when one phase of development is prematurely pushed and therefore not mastered, that the child may revert to earlier phases of development. It is therefore quite possible that the early toilet training and abrupt weaning experiences in these children may have contributed to their seeking gratification in thumbsucking. While abrupt weaning and early toilet training may have contributed to the tenacity of these children's sucking, such a causal connection certainly should not be generally assumed on the basis of so few cases. Even in the three observed cases one cannot assume a unilinear causal relationship of these factors, because psychic phenomena are usually multiplely determined and are too complex to permit the establishment of such direct relationships.

In order to understand better the total situation, one must determine what

the sucking means to the mother, who after all is the active person to seek a cure through the dental appliance. In our cases, only one mother was generally rigid and condemning of every sort of instinctual activity. To the other two, the child's sucking affected certain focal points of conflict within their otherwise unrigid personalities. Two mothers showed undue disgust, especially with the associated sounds, as if they both sensed and rejected the sexual aspect of the activity. The third seemed both to sense it and to flaunt the child's sucking before her critical family just as she did her own sexual promiscuity.

In considering next what meaning the thumb or tongue sucking had for the children, we found varied meanings, understandable only in the entire context. To none of the three children did the sucking represent an "empty" habit. In one case it was an obvious, admitted source of sensuous gratification; in the second, a consolation whenever the child felt threatened with anxiety or failure; in the third, a part of generalized infantilism and thus not an isolated, meaningless, outgrown habit. The child's reaction after insertion of the appliance showed that the sucking had a definite function in each child's "emotional household." Even granting that habits sometimes outlive their original function and become "empty," this fact cannot be determined except through careful, prolonged, specialized study of each case.

Most important of all, the project showed how impossible it is to understand either the meaning of the sucking to each child or his response to the appliance without prolonged individual study. Even a thorough, preliminary evaluation of each child's personality does not suffice to predict his exact reaction to the appliance. In one case insertion of the appliance produced such drastic new symptoms as night terrors, day wetting, speech disturbance, refusal to eat solids, withdrawal into sleep and belligerent irritability. In the second child, aside from increasing her irritability, the appliance simply consolidated previously existing psychopathology, in that it further supported her unrealistic, magical hope of becoming more like a boy. The third child at first showed no changes because the appliance failed to prevent his sucking. When a larger appliance temporarily did so, this very passive child responded both with aggression and fear of injury. As soon as his sucking was re-established, he relapsed into his former listless passivity.

The diversity of these children's reactions shows the inner reasons why one child will react with more deleterious effects to the appliance than will another. The inner reasons come to light only through the prolonged, cumbersome study of each child's total personality organization that requires the specialized methods of child psychology. Because with even a careful preliminary evaluation one can usually not predict the child's probable reaction, such treatment programs would require continued attention to psychologic aspects—a costly procedure. Since it is often argued that early insertion of a "hay-rake" forestalls more costly orthodontic work later, the cost of psychologic attention should be considered in this comparison.

Aside from their highly individual reactions, all three children showed two side-effects of treatment. One was increased hostility, at both the level of behavior and of fantasy. One child even tried to frighten people with the appliance, the sight of which does elicit a startle reaction in the onlooker. The other side-effect was the children's newly emerging guilt over what they had learned to consider their "bad" impulses. The appliance seemed to become a concrete and tangible ally against

these impulses. The two girls especially showed their guilt by bearing, without complaint, the pain caused by the loosened appliance, as if it were deserved punishment. One girl even begged to have the appliance put back because she was now completely at the mercy of her compulsion to suck. Pleas of this kind can be very misleading: The dental clinic staff has interpreted them as signs of the child's eagerness to cooperate rather than as evidence of his guilt.

Parenthetically, we note that the appliance failed to stop thumb or tongue sucking in these three children; instead, it focused the child's attention on thumbsucking. In two cases thumbsucking became compulsive, constant, and intense; one child withdrew into closets to carry out her now guilt-ridden activity.

In a broad context, one of the most important considerations regarding use of dental appliances is the question whether thumbsucking causes permanent damage to the dental structures. Dentists do not agree on this point. Mack (1), Sweet (2) and others warn of dire consequences if thumbsucking is allowed to persist. Others, like Lewis (3) and Sillman (4), after making systematic, longitudinal studies on fairly large groups of thumbsuckers, concluded that it depends greatly on the child's age, type of thumbsucking and the constitutional anlage of the bite whether or not thumbsucking leads to malformations. Lewis found that thumbsucking before the eruption of permanent teeth usually causes no lasting deformities. Sillman pointed out that displacement of the oral structure may occur from vigorous thumbsucking in the first four years, but this corrects itself after thumbsucking stops unless the child has a poor bite to begin with. Extensive serial studies at the University of Michigan on the effects of thumb and fingure sucking were recently reported by Ruttle (5) and colleagues; 36 children had definite, persistent oral habits, mostly thumbsucking. The authors conclude: "Contrary to most publications, the effect of thumb and finger habits on the molar occlusion merely approaches statistical significance, and does not attain clinical utility."

Because of these contradictory reports upon the effects of thumbsucking in young children, and since recent systematic and extensive studies show the effect upon malocclusion to be "not nearly as great as is indicated in the literature," we propose the postponement of dental treatment when at all possible.

Psychologically, the years between 3 and 6 are most important because the child tentatively settles his image of his body and its functions and of his parents and his relationship to them. Measures that burden this developmental phase and accentuate its conflicts are therefore inadvisable. Most children give up thumbsucking before the permanent teeth erupt—the time often regarded in dental opinion as critical. By then, the child labors less under instinctual tensions, turns his energies more to outside activities and feels more sensitive to his appearance and to other children's teasing—conditions that help him to give up thumbsucking.

Orthodontic treatment which may later become necessary is thus not hampered by a previous and perhaps traumatic experience. The patient by then has more reason to cooperate with treatment. Preadolescents are particularly conscious of their appearance and eager to fit into their group. The child's greater reasonableness and his vanity join to enlist his cooperation.

Further research should be done on the entire problem of the effects of persistent oral habits in children. Psychologic observations in a larger series

of cases using the "hay-rake" appliance would help to determine what factors in the child's personality organization and home environment contribute to good or poor results. Similar studies on a group of older children undergoing orthodontic corrections would establish whether their psychologic situation differs from that of younger children and is more favorable to treatment.

Summary

Three children below the age of six whose thumb or tongue sucking was disrupted by a dental appliance were under psychologic observation from twelve to twenty seven months. In addition to a complete developmental history, these observations included play and test evaluations before, during and after treatment.

Results indicate that both the meaning to the child of the sucking and his reaction to the appliance were highly individual, and could be understood only in the context of the total case history. Each child's reaction depended on factors which could be brought to light only through prolonged and highly specialized study. Two side-effects which all the children shared were activation of hostility and guilt-reactions.

The appliance failed in all three children to stop sucking, and intensified it in two children.

These findings suggest the desirability of postponing dental treatment until a later age, and emphasize the need for further research.

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