

III. THE PARENT-ADMINISTERED TREATMENT OF THE INAPPROPRIATE BEHAVIOURS OF A RETARDED INFANT

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INTRODUCTION

Aversive stimuli have been used widely to suppress a range of self-stimulatory, self-destructive, and antisocial behaviours (Forehand and Baumeister, 1976; Harris and Ersner-Hershfield, 1978; Johnston, 1972). However, although electric shock appears to be the most effective means of eliminating behaviours, ethical considerations prevent its widespread use (Harris and Ersner-Hershfield, 1978). Alternative aversive, but effective stimuli, include aromatic ammonia (Singh, 1978, 1979; Singh *et al.*, 1980), and lemon juice or citric acid (Becker *et al.*, 1978; Marholin *et al.*, 1980; Mayhew and Harris, 1979; Rapoff *et al.*, 1980; Sajwaj *et al.*, 1974).

Lemon juice is preferable to ammonia since, in moderate quantities, it has not been shown to possess any of the deleterious side effects, e.g. nasal mucosa, that have been noted with the latter substance (see Tanner and Zeiler, 1975). Moreover, as Marholin *et al.* (1980) have pointed out, lemon juice "can be applied quickly"; requires "little time to train" persons in its usage; can be "topographically related to maladaptive behaviour"; and is "less open to ethical objections when compared with electric shock" (p.48).

Another procedure that has been shown to be effective in the elimination of various inappropriate behaviours is overcorrection (Foxy and Azrin, 1972, 1973). As originally conceptualized by Azrin, Foxy, and their colleagues (Azrin, Kaplan, and Foxy, 1973; Foxy and Azrin, 1972, 1973; Foxy and Martin, 1975), overcorrection consists of two separate components, either, or both of which may be employed in treatment. In the first component, restitution, the individual restores the disturbed environment to a state better than it originally was. In the second component, positive practice, an individual practises many times, a response incompatible with the inappropriate one.

The overcorrection procedure has been used effectively with many behaviours, whether antisocial, stereotypic, or self-destructive (Marholin *et al.*, 1980; Ollendick and Matson, 1978). It is argued that overcorrection is educative in that it teaches alternative behaviours (Ollendick and Matson, 1978).

However, it is clear that with very few exceptions, both overcorrection and aversive methods have been administered by professionals or para-professionals in institutional or school settings. Few cases have reported these procedures being administered by parents in home settings (Forehand and Baumeister, 1976; Harris and Ersner-Hershfield, 1978). Nevertheless, in this case, the parents of a young retarded infant did, in fact, treat their child's inappropriate behaviours with these very same procedures in the home setting.

METHOD

The Child

L. was a 3½ year old girl who suffered two serious "grand mal" epileptic seizures at 3 and 6 months of age. She had not suffered any further seizures since that time and all medication had been discontinued. Brain damage resulted from the seizures. Although formal

assessments are difficult at such a young age, the P-A-C Forms (Gunzburg, 1972) and Portage Guide to Early Education Checklists (Bluma, Shearer, Frohman, and Hilliard, 1976) indicated gross deficits in all areas — particularly in motor skills and expressive language. Her receptive language was at a much higher level than all her other skills. The child's pediatrician estimated that her performance was at approximately 2 years of age in most areas.

The programme was instigated at the parents' request. An initial interview was arranged with both parents, the consulting psychologist (H.J.J.) and the teacher (D.M.D.) present. The parents were concerned about L. biting books and objects, pulling other children's hair, and pulling objects from the kitchen benches. However they lacked confidence to deal with these problems in an effective way. The child had been exhibiting the inappropriate behaviours for approximately 6 months before treatment was begun and it was the mother's continued contact with the teacher that made her aware that the child's behaviour could be modified.

It is interesting to note that while these behaviours occurred often at home they *never* occurred at school. This may have been due to firmer handling and more stimulating activities throughout the time at school.

The child had been attending a Special Developmental School for 4 months before the programme began. She was part of a group of six 3 and 4 year olds who attended the school 4 days per week. Her general performance in relation to the group was poor, especially in the gross and fine motor areas and in terms of expressive language.

The Target Behaviours and Dependent Measures

The behaviours were of concern to the parents because of their hazardous nature and frequency. For example, the biting of objects was selected because it was feared that the child might hurt herself. She had, on one occasion, bitten and broken a glass into pieces in her mouth. Moreover, the two biting behaviours were expensive in that bitten chairs in the house required reupholstering, and countless books had been ruined.

Hair pulling was treated because of its obvious antisocial, painful and inappropriate nature, while pulling objects from the bench was considered a plainly dangerous behaviour. On one particular occasion, L. pulled a very hot casserole off the bench, narrowly escaping being seriously burned.

Because the inappropriate behaviours were discrete, a simple frequency recording method was used. The parents were requested to record every single episode of each behaviour for every day between 3.30 p.m. - 6.30 p.m. (and this time was held constant) on a prepared recording sheet. The open planned house enabled the child to be readily observed by the parents from either the kitchen or living room.

The behaviours occurred whether both or either the mother or father were present, and their frequencies did not appear to be related to the stimulus control properties of either parent. The mother attended the school on a weekly basis to consult with the teacher who collected the data from the mother and monitored progress.

Design

A series of AB designs with extended follow-ups (Hersen and Barlow, 1976) was chosen to indicate the severity of the problem behaviours at baseline and also to demonstrate visually the impact of the various treatments upon the respective behaviours. Each behaviour was treated sequentially and cumulatively but it is not correct to conceptualize the design as a multiple-baseline design across behaviours since firstly, the independent variables differed in each case. Overcorrection was employed for treating two of the four problem behaviours

and there were parametric variations between treatments. The remaining two problem behaviours were treated with an entirely different procedure. Secondly, baselines for all four behaviours were not commenced at the same point in time. Instead new behaviours were baselined on successive fortnights. While it was initially decided to record/change behaviours using a multiple-baseline design, this appeared too difficult for the parents, given the frequency and number of behaviours and the time of day when treatment was to be conducted (i.e. around meal-time).

Treatment

Treatment took place from the time the child arrived home from school (3.30 p.m.) until her bedtime (6.30 p.m.) — a period of 3 hours. Treatment was continued outside these times when the child was at home, as at the weekends, but not recorded as part of the programme.

Lemon juice was selected as the aversive stimulus for treating the biting of objects behaviour and for the biting of books behaviour. An aversive stimulus was chosen instead of overcorrection because of the seriousness of the consequences of the responses. Lemon juice was chosen because of its proven efficacy; it was cheap, easy and quick to administer; and it was thought that its mode of action fitted the oral nature of the two biting behaviours.

For each episode of biting objects or books 5cc. of lemon juice was squirted into L's mouth using a small plastic syringe which was 'loaded' and close at hand. The statements "No, don't bite" or "No, not in your mouth" were used to accompany the physical punisher. Positive verbal and social reinforcements were given whenever L. handled a book or object appropriately without biting. For example if she picked up a glass and took it to mother to fill it and did not bite it, she was reinforced.

For each episode of the hair pulling behaviour the child was immediately verbally punished with the statement "No! we don't pull people's hair". She then had to make restitution for the inappropriate behaviour by giving the offended person a cuddle to indicate non-verbally that she was 'Sorry'. L. was then required to take the brush out, brush the offended person's hair 20 times, and put the brush away.

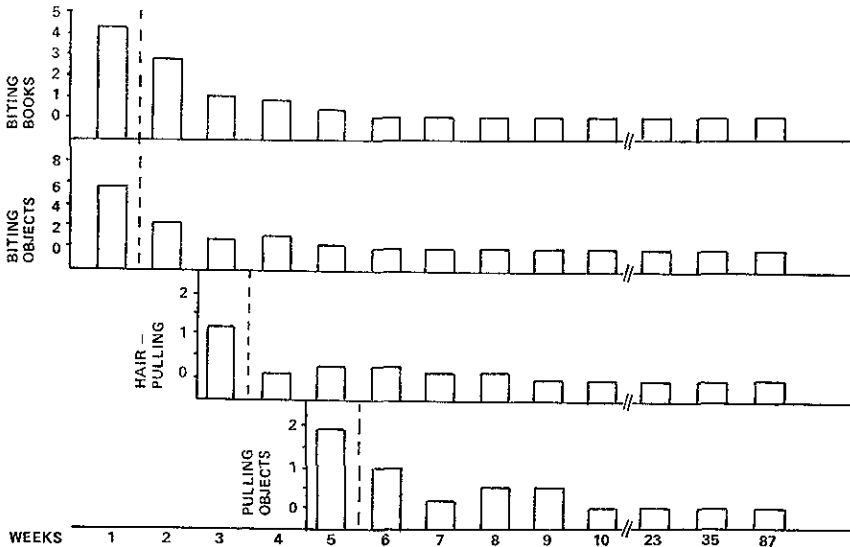
For each episode of pulling objects from benches the child was punished with "No! Don't pull the thing(s) off the bench". Positive practice consisted of 10 repetitions of an arm sequence of "arms up, out, in front, and down". The child also had to make restitution for things spilt or dropped, e.g. putting a knife back on the bench and straightening other objects up.

Manual guidance was used in the early stages of the treatment of both behaviours, though a certain amount of prompting was still needed in the final days of treatment. The parameters of the overcorrection procedure, e.g. the number of repetitions for each "inappropriate" behaviour were arbitrarily determined after consultation among the parents, the teacher and the psychologist. Decisions were made on the basis of what would be aversive, educational yet practical.

RESULTS

Figure 1 displays the data for each of the four behaviours. All weeks represent the averaging of data for 7 days with the sole exception of Week 1 which represents the averaging of data for 8 days.

Figure I



Mean daily number of episodes for each of the four target behaviours per week

With the exception of Week 1, all weeks ran Monday to Sunday inclusive. It can be seen that the application of each procedure produced a drastic reduction in each behaviour in the first week of each treatment and it took 5-6 weeks to completely eliminate the behaviours treated. Although it was *not* a multiple-baseline design across behaviours, it can be seen from Figure 1 that each behaviour decreased dramatically when treated.

Specifically, during the 8 days of baseline, L. bit books 34 times ($\bar{x}=4.25$; range=0-6 episodes per day), and this decreased to a total number of 20 episodes during the first 7 days of treatment ($\bar{x}=2.86$; range=0-5 episodes per day). A further decline occurred during Week 3 to eight episodes per week (range=0-3 episodes per day). Further reductions were observed with continuing treatment of this target behaviour over the ensuing weeks, and by Week 6 the behaviour was completely eliminated.

During the 8 days of baseline L. bit objects 45 times ($\bar{x}=5.63$; range=3-8 episodes per day) and this reduced dramatically to a total number of 15 episodes in the first week of treatment ($\bar{x}=2.14$; range=0-5 episodes per day). A further decline occurred in the following weeks and by Week 6 the behaviour had been completely extinguished.

Hairpulling behaviour reduced in frequency from its weekly baseline total of eight episodes ($\bar{x}=1.14$; range=0-3 episodes per day) to two episodes in the first week of treatment (range=0-1 episode per day). This behaviour was completely eliminated by Week 9.

The fourth behaviour occurred 13 times during baseline (Week 5: $\bar{x}=1.86$; range=1-3 episodes per day) and this was reduced to six episodes during the first week of treatment (range=0-2 episodes per day); being extinguished by Week 10.

For the 3, 6 and 18 month follow-ups (Weeks 23, 35 and 87) the parents were asked to record data for one week periods from 3.30 p.m. to 6.30 p.m. Monday to Sunday inclusive. This allowed fair comparisons with baseline and treatment weeks. Treatment gains were maintained at the 3, 6 and 18 month follow-ups for all four behaviours.

DISCUSSION

The results are most encouraging when it is considered that long-term follow-ups have often revealed poor maintenance of treatment gains and even complete relapses when overcorrection has been employed (Matson *et al.*, 1979). While caution is necessary when generalizing from single cases, the striking success of overcorrection in this case when compared with those of other researchers (e.g. Matson *et al.*, 1979) warrants attention. The success of the present programme may be due to a number of factors. For example, in this case, the child was very young; the problem behaviours possessed a short history (6 months); the child received attention for appropriate positive behaviours; and was not institutionalized; and while the responses were clearly inappropriate they did not possess the 'autistic' stereotypic quality, e.g. body-rocking, that has been attributed to lack of alternative external stimulation (see Carr, 1977). These characteristics of the child and her behaviours can be contrasted with the populations typically reported in the overcorrection literature (see Ollendick and Matson, 1978) whereby the individuals are generally older, institutionalized, and exhibit chronic stereotypic behaviours which occur across many situations (Coleman *et al.*, 1979).

Though the child no longer pulled objects from benches, she did still occasionally touch objects on the benches. However this was of no concern to the parents since she no longer attempted to pull objects *off* the bench onto the floor (and herself). The parents claimed that she touched objects in a much more constructive and purposeful way, e.g. attempting to help mother carry dishes to the table.

The use of an aversive stimulus was as effective as overcorrection in eliminating the problem behaviours to which it was applied and this was consistent with other findings (Becker *et al.*, 1978; Sajwaj *et al.*, 1974). It is noticeable that the aversive stimulus produced quite dramatic results and had eliminated the target behaviours by the fifth week of treatment.

After the conclusion of the treatment phase (Week 10), the parents were asked to make casual one hour observations outside of the treatment times on various weekends to see if the behaviour occurred outside of the formal observation times. The parents reported that the behaviours did not occur anymore and this was also reported at the formal follow-ups (3, 6 and 18 months).

It should be noted that there was no evidence of 'symptom substitution' — no new behaviours that were either topographically similar, or dissimilar emerged; nor did the problem behaviours erupt at school. While researchers have noted 'symptom substitution' with compulsive and stereotypic behaviours (e.g. Marchant *et al.*, 1974) its non-occurrence with the present case may reflect in part the non-stimulatory and purely antisocial nature of the present behaviours.

The parents were enthusiastic about the success of the programme (the mother rated all four behaviours as being 5 on a Likert Scale of 1-5, this being very much improved) and both parents, but particularly the mother, developed an acute awareness of what could be expected from their child. Another important but uncharted effect was the resulting change in parental self-efficacy (see Bandura, 1977). The parents' success in treating L. increased confidence in their own ability to handle any future problems that may arise with the child. Furthermore, the parents' confidence in the teacher's judgment has increased and they freely seek the teacher's opinion on various matters relating to the education and socialization of children.

SUMMARY

The four inappropriate behaviours of a 3½ year old retarded female infant were treated by the parents in the home setting. A series of AB designs documented both the initial

frequency of the behaviours as well as the impact of the various treatments. All four behaviours were completely eliminated through the use of lemon juice and overcorrection and formal follow-ups conducted 3, 6 and 18 months after the treatment phase supported this finding. Symptom substitution or symptom emergence in other settings did not occur.

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