

BEHAVIOURAL CONTROL OF SELF-INJURY IN THE MENTALLY RETARDED

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Self-injury is a common problem among retarded children and the most effective treatment has been pain-shock punishment. Alternative treatment techniques were used to control such behaviour in two severely retarded children. In the first case, each self-injurious response resulted in (1) verbal reprimand, (2) arms being restrained in treatment I and mild punishment and arms being restrained in treatment II, and (3) differential reinforcement of other behaviour. In the second case, the child received noncontingent attention for six hours a day. Self-injury was eliminated in both cases with lasting effects.

Self-injury is a severe psychological disorder that is commonly seen in the mentally retarded. It is any self-inflicted behaviour which leads to lacerations, bruising, or abrasions of the patient's own body. The most frequently reported behaviours are headbanging, face slapping, hair pulling, skin picking, and scratching. Lesser forms include recurrent vomiting and/or rumination, self-induced organic seizures through hyperventilation, and excessive painful masturbation.

Systematic observations of the prevalence of self-injury in institutionalized populations give varying figures. Fifteen to nineteen percent of institutionalized mentally retarded adults exhibit self-injury (Ballinger, 1971; MacKay, McDonald, and Morrissey, 1974). For children, it ranges from 4 to 6 percent (Backman, 1972) to as high as 23 percent (Singh, 1967a). While those suffering from the Lesch-Nyhan syndrome (Lesch and Nyhan, 1964; Dizmang and Cheatham, 1970) and the de Lange syndrome (Shear, Nyhan, Kirman, and Stern, 1971) constitute a very minor percentage of those children who engage in self-injury because of medical reasons, it is a behavioural problem for other groups.

The traditional medical treatment for such behaviours has involved the use of drugs. However, several varieties of drugs, including amphetamines and barbiturates, have proved ineffective (Berkson, 1965). Since the problem is behavioural, it can be argued that a behavioural treatment technique is more appropriate.

Three groups of behavioural techniques have been used to deal with self-injury: (1) differential reinforcement of other behaviour (DRO) and of incompatible behaviour to establish behaviours competing with self-injury (Lovaas, Freitag, Gold, and Kassoria, 1965); (2) punishment (including noxious stimuli and timeout) procedures to suppress self-injury (Bucher and Lovaas, 1968; Pendergrass, 1972; Tanner and Zeiler, 1975); and (3) withholding all contingencies associated with self-injury to extinguish such behaviours (Lovaas and Simmons, 1969).

As noted by Frankel and Simmons (1976), each of these treatment techniques has met with some success. The use of any of these techniques depends upon such factors as the availability of trained personnel on the treatment team, the behavioural repertoire of the patient, ethical considerations (especially in the use of contingent aversive control), and the possibility of permanent damage to the child if self-injury is not eliminated immediately. Although aversive treatment techniques (e.g. shock, ammonia vials) have been found to be highly effective in eliminating even the most intractable forms of self-injurious behaviours, the ethical considerations in state hospitals preclude its use in most cases (see Bucher and Lovaas, 1968; Lucero, Vail, and Scherber, 1968, for more detailed discussions).

To overcome the problems associated with the use of simple aversive techniques, Singh (1976b) used a sequence of behavioural contingencies to eliminate self-injury in two severely retarded children. Mild punishment, consisting of a tap on the fingers or verbal reprimand, was contingent on each self-injurious response. This was followed by a brief timeout period and then differential reinforcement of other behaviours incompatible with self-injury. In both cases, this procedure was effective in rapidly eliminating self-injury within three weeks. This paper reports cases of two children successfully treated for self-injury. The first case allowed a comparison of the relative efficacy of two procedures: DRO procedure in conjunction with physical restraint, and simple punishment. The second case assessed the use of an extended period of baseline observations as treatment.

CASE 1

Method

Subject The subject was a 11.5 year-old male, resident at Mangere Hospital and Training School, a state psychopaedic institution for the mentally retarded. He was diagnosed as severely retarded due to Down's syndrome. He had bilaterally recurrent dislocation of the hip joints which necessitated the use of a walker and a distended abdomen as a result of aerophagy. Medical case notes indicated that he had a marked valgus deformity, particularly of the right foot, and rather uncoordinated lower limb movements. He had no speech and did not obey verbal commands. His IQ could not be assessed but his behavioural age on the Fairview Self-Help Scale was 12 months.

Procedure The treatment was carried out in the residential unit where the child lived with 33 other severely retarded children. The procedure was divided into five phases: (1) baseline (measurement of the operant rate of self-injury), (2) treatment I (restraint procedure), (3) baseline (reversal), (4) treatment II (punishment procedure), and (5) post-treatment observations.

Pre-baseline observations indicated that this child injured himself frequently in all ward settings. A single self-injurious response was defined as a slap to or picking the skin off the side of the face.

The five-day baseline observations consisted of 10 sessions in which a staff nurse recorded all self-injurious responses of the child. Each session was of two hours duration, with two observation sessions daily. There was no specified consequence for self-injury during this period. Treatment I was initiated in Phase 2, with two daily sessions for 60 min. each for 15 days. Everytime the child slapped his face or picked his skin he was verbally reprimanded ("No, don't do that") and his arms were restrained for 30 sec. If the child did not indulge in self-injury for 60 sec. (DRO 60 sec.) he was given social (hugs and cuddles) and primary (sweets) reinforcers. If he made a self-injurious response, the DRO timer was reset and he was reprimanded and restrained for 30 sec. The DRO interval was increased by 60 sec. every hour of treatment.

Baseline condition (Phase 3) was reinstated during the reversal period of five days. Following this, treatment II procedures were instituted in Phase 4. The only procedural difference between the two treatment conditions was the addition of punishment in Phase 4. Punishment involved striking the child with a piece of dowelling on the appropriate hand (for face slapping) or on the fingers (for skin picking). Every time the child indulged in self-injury, he was verbally reprimanded, punished, and then his arms were restrained for 30 sec. This was accompanied by DRO 60 sec. which increased by 60 sec. every hour of treatment. Treatment II was terminated when the child did not exhibit any self-injurious behaviours for five consecutive days. The post-treatment in Phase 5 involved observing the child for self-injurious responses for four weeks after treatment.

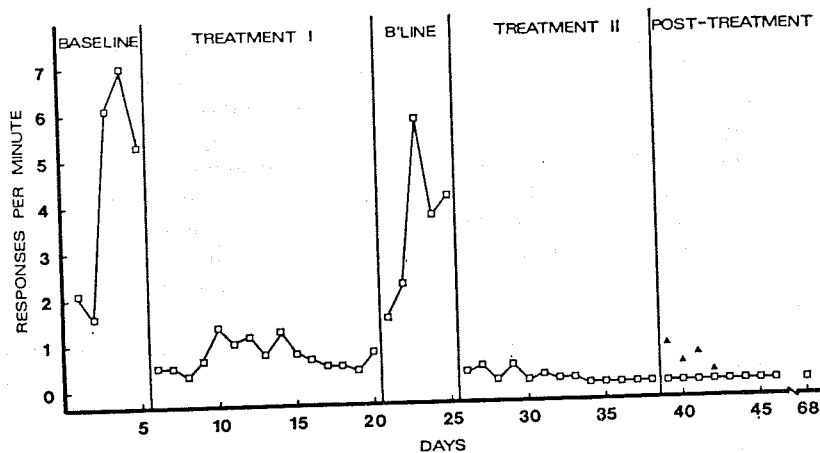


Figure 1. Rate of self-injurious behaviour per minute during baseline, treatment I (verbal reprimand, restraint, and DRO), reversal, treatment II (verbal reprimand, punishment, restraint, and DRO), and post-treatment phases. The triangles indicate the rate of new self-injurious responses during post-treatment.

Results

Figure 1 shows the rate of responding during the five phases of the study. The behaviour observed in Phase I did not represent steady-state responding and varied between 1.6 and 7.0 responses per minute, with a mean of 4.42. In Phase 2, during treatment I, the child's self-injurious behaviours were reduced substantially. Their rate of occurrence varied between 0.34 to 1.34 responses per minute, with a mean of 0.74. The rate of responding increased to a mean of 3.46 during the reversal in which the baseline procedures were re-instituted. The rate varied between 1.5 and 5.8 responses per minute. It decreased to a mean of 0.01 in Phase 4 when treatment II was introduced, varying between 0 and 0.4 responses per minute. No self-injurious behaviours were recorded on the last five days of treatment II.

The child did not indulge in either face slapping or skin picking during the post-treatment period. However, as shown by the triangles in Figure I, he transferred his self-injurious responses from the side of his face to his left arm and forehead. This was at a mean rate of 0.5 responses per minute for the first four days of post-treatment. Treatment II procedures were initiated for these behaviours on the first day of their occurrence. No self-injuries were observed from the fifth day of post-treatment.

CASE 2

Method

Subject The subject was a 14.4 year-old female resident of Mangere Hospital and Training School who was diagnosed as an epileptic and severely retarded due to an attack of acute encephalitis at 14 months. She had bronchopneumonia at 18 months with a relapse of encephalitis. Her medication was carbamazepine (Tegretol) 200 mg t.i.d. for epilepsy and methylphenidate (Ritalin) 5 mg daily for hyperactivity. She had no speech but obeyed spoken commands. On the Vineland Social Maturity Scale her social age was estimated at 2.2 years. This child had a six-year pretreatment history of self-injury which included headbanging, face slapping, skin picking, and elbow bashing. Her headbanging was chronic and she had to wear a helmet throughout the day.

Procedure The treatment was carried out in the dayroom of the unit where the child resided with other severely retarded girls. The procedure involved finding the operant rate of her self-injurious responses followed by treatment. Each self-injurious response was defined as a single act in which the child either banged her head, picked her skin, slapped her face, or bashed her elbow.

Preliminary observations had indicated a decreasing rate of self-injurious responses when the child was given noncontingent attention, that is, when attention was paid to the child regardless of what she did. Although the planned conditioning procedure involved DRO and punishment techniques, this finding led us to experiment with only

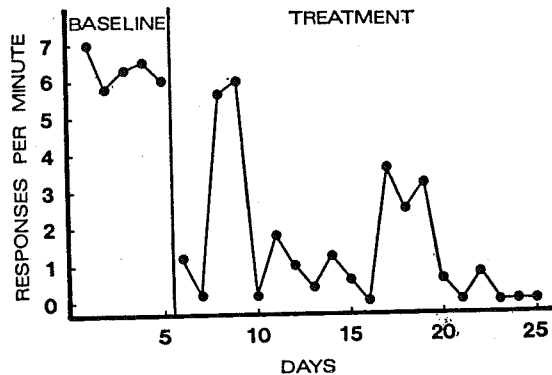


Figure 2. Rate of self-injurious behaviour per minute of case two during baseline and treatment (noncontingent attention) phases.

non-contingent attention as treatment. The five-day baseline observations were carried out by a staff nurse viewing the child unobserved. During treatment, one nurse was in the vicinity of the child for at least six hours daily. She recorded all instances of self-injury and gave the child noncontingent attention throughout the day on no particular schedule. That is, attention was given in strict independence of a self-injurious response, where the probability of attention given to the child for self-injury equalled the probability of attention given for its non-occurrence. The procedure was, then, simply an extension of the baseline conditions but with the nurse in full view of the child. Formal recording was terminated when there was no incidence of self-injury on three consecutive days. Since this case study was treatment-oriented rather than an experimental investigation, a reversal of conditions to those prevailing before treatment was thought undesirable, especially when the child's head wounds were just healing.

Results

Figure 2 shows the response rates of the child under the two conditions. During the period when a baseline rate was measured, she engaged in self-injury at a mean rate of 6.32 responses per minute, varying between 5.8 to 7.0. During the treatment period this decreased to a mean of 1.45 responses per minute, with a range from 0 to 6.0. On days eight and nine the response rates were as high as during the baseline period. The frequency of the behaviour varied remarkably over the 20 days of treatment with no incidence of self-injury being recorded on five days. Although no formal records were kept of the post-treatment, the child's nursing records show that the undesirable behaviour has not recurred for over four months. The child has now been included in small group activities and has access to staff non-contingent attention most of the day.

DISCUSSION

The results of the first study showed that DRO together with restraint quickly reduced the frequency of self-injury in a retarded child. However, it was only when a punishment procedure was used that the behaviour was eliminated. Generally, research confirms the finding that punishment quickly suppresses behaviour.

In treatment I of the first case, it is not clear whether the major behavioural effects were a function of the DRO procedure or of the restraint procedure. Other researchers have found the DRO procedure to be highly successful in eliminating self-injurious behaviour (Corte, Wolf, and Locke, 1971; Lovaas, Freitag, Gold, and Kassorla, 1965), particularly if short-interval schedules are used in the DRO procedure, as in this study. Since the DRO and restraint procedures were used in both kinds of treatment of the first case, the differential effects of the two treatments can be attributed to the punishment procedure. These results support the findings of Singh (1976b) that mild punishment together with DRO procedures effectively eliminates self-injurious behaviours.

In the second case, the results show that noncontingent attention may be an effective procedure for eliminating a class of self-injurious behaviour. In addition to displaying three other forms of self-injury, this child practised frequent headbanging and wore a helmet for many months to cover her head wounds and permit them to heal. However, the child had dented the helmet so much that her wounds did not ever heal prior to the present treatment. The helmet is no longer required.

This study suggests that merely providing noncontingent attention to a child, as sometimes occurs when baseline measurements are taken, can successfully decrease behavioural excesses. Although no adequate controls were used, these results support previous findings that monitoring an undesired behaviour can help control it (Maletzky, 1974; Michie, Rossi, and White, 1976). Clearly, one must be cautious in regarding baseline measurements as constituting no treatment. Of the 2000 cases on file with Lindsley, five percent of those had behaviours change solely in response to having had those behaviours observed and recorded (as quoted in Duncan, 1969). The results support the hypothesis that self-injury in the mentally retarded is a behavioural problem and is governed by its consequences. It can be rapidly brought under control by DRO and punishment procedures. Also, in a small percentage of cases, the behaviour may be controlled simply by systematic observation and recording. However, the efficacy of the procedure may be a function of the individual's past history of reinforcement.

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