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TIMEOUT FROM POSITIVE REINFORCEMENT FOLLOWING PERSISTENT, HIGH-RATE BEHAVIOR IN RETARDATES

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Brief isolation from a group situation was found to suppress persistent, high-rate misbehavior in two extremely withdrawn children, even though no positive reinforcement for other behaviors was systematically administered. Changes in a variety of behaviors, including looking, touching, speaking, responding, and other non-punished misbehaviors, were observed when isolation timeout was administered contingent on only one misbehavior of each child.

Timeout from positive reinforcement by brief isolation (isolation TO) has been extensively used to suppress undesirable behaviors in human subjects. The situations from which subjects have been removed have generally included one or both of two major sources of positive reinforcement: social reinforcement from a group situation and/or systematic reinforcement of other behaviors. Good results have been reported using isolation from a group (Tyler and Brown, 1967; Wolf, Risley, and Mees, 1964; Zeilberger, Sampen, and Sloane, 1968), using elimination of opportunity to earn reinforcement by other behaviors (Hewett, 1965), and using a combination of both isolation from a group situation and deprivation of reinforcement opportunity (Birnbrauer, Wolf, Kidder, and Tague, 1965; Burchard and Tyler, 1965).

Where isolation TO has been reported ineffective (Pendergrass, 1968; Risley, 1968) there was no group interaction outside of TO, and no systematic positive reinforcement was administered for other behavior.

In the present experiment, it was hypothesized that the very withdrawn child receives little positive reinforcement from the group situation. If no systematic positive reinforcement of other behavior is included in the treatment program, therefore, it would be expected that isolation from the group would have little effect on misbehaviors in the very withdrawn child.

Rates of occurrence of two persistent, high-rate misbehaviors by each of two retarded children were recorded during classroom free play. After baseline observations, each child was briefly isolated from the group following performance of one of his misbehaviors. The second misbehavior of each child was simply observed; rates of social interaction were also monitored. No systematic positive reinforcement of other behaviors was administered.

METHOD

Subjects

Two subjects, each of whom displayed two persistent, high-rate misbehaviors, were selected from a class of six retarded children at Haven School, Fla.[2] The children were severely retarded, and neither had been successfully tested with a standard IQ instrument. Their responsiveness to other individuals was evaluated in preliminary observations; both maintained low absolute levels of initiating social interactions.

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[2]The author wishes to thank the teachers and administration of the Haven School for their participation in this project.

A non-verbal, 8-yr-old retarded Negro boy (S 1) banged toys and books on the floor or on other individuals (bang), and bit his own lips and hand (bite). A non-verbal, 9-yr-old boy of Cuban extraction (S 2) tore strings from clothing and rugs to twirl (fiddle), and performed a repetitive, jerking movement involving either one arm, or the arm and trunk of his body (jerk). The persistent performance of all these behaviors had been reported by the teachers over a period of at least six months before the experiment began.

No isolation TO procedures had previously been used with either child.

Observation Procedures

Entries of social interactions and instances of undesirable behavior were made with coded symbols in prepared record sheets. Preliminary observations indicated that the behaviors of the potential subjects were extremely primitive. A list of only the simplest possible interactions was constructed. Four categories were used:

1. *Looking*—behavior entered here consisted of the subject directing his eyes toward the face of another person or following movement of another person.

2. *Touching*—the behavior consisted of any contact with another individual initiated by the subject. Hitting and hugging were both scored "touching".

3. *Speaking*—any verbal production directed toward another person was considered "speaking". Unintelligible sounds must have occurred with other behavior indicating direction, such as touching.

4. *Responding*—Subjects occasionally interacted with others without looking, touching, or speaking. In this category were included all behaviors that immediately followed another individual's looking and touching, speaking or responding to the subject; if the child followed teacher's instructions, this was categorized as "responding".

Observations and recording intervals were timed by a tape recorder producing voice signals after alternating periods of 10 sec (recording interval) and 20 sec (observation period). Twenty observations were made on each child daily.

Observations were made in two different classrooms. The experiment began in a small class of retarded children 5 to 7 yr old, but after two phases were completed, the subjects were transferred to a larger class of older children. The observation procedure was duplicated by a second observer at least once a week to determine reliability. Both experimenters sat inside the classroom.

Experimental Procedures

Three conditions were imposed on each subject:

1. *Baseline*—social interactions and undesirable behaviors were observed and recorded.

2. *Treatment*—one of the subjects selected for treatment, was isolated for 2 min after each occurrence of one undesirable behavior. Observations other than the occurrence of the punished behavior were not recorded for the punished subject in intervals during which the punished behavior occurred.

3. *Watch*—since both subjects were observed together, punishments of one subject during treatment phases were witnessed by the other subject.

Table 1

Experimental conditions administered to two retarded children in two classrooms.

	Experimental Phases	
	S 1	S 2
Classroom 1	1. baseline	baseline
	2. isolation TO	watch TO
Classroom 2	3. baseline	baseline
	4. watch TO	isolation TO
	5. isolation TO	watch TO

The schedule of treatment phases for each subject is presented in Table 1. Each phase, except the last, consisted of 10 observation days. The last phase was terminated after seven ex-

perimental days because of an administrative change in the class.

For S 1, the punished behavior was banging toys or books. For S 2, the punished behavior was twirling string (fiddle). The other misbehavior of each subject was recorded but not punished. The TO treatment was administered by the experimenter who called out "No, don't bang (fiddle)", as soon as the behavior was observed. The tape-recorded time signals were stopped, the child was put in the isolation booth, and the stopwatch used to time isolation intervals started. When the 2-min TO interval had elapsed, the subject was released and the taped time signals were recommenced.

The isolation booth was a plywood panel that could be hooked onto two large cabinet doors situated back to back. This arrangement produced a triangular, open-topped enclosure. The booth was at the side of the playroom, so that the isolated child could not see out but could hear sounds. Other children were not allowed to approach the booth.

RESULTS

Reliability

The observation procedure was duplicated by a second observer during 12 of the 47 experimental sessions. Reliability of observations was computed by dividing the number of intervals in which recordings agreed by the total number of intervals. For S 1, the mean per cent of agreement over all 12 duplicated sessions was 86%, with a range of 78 to 96%. For S 2, average agreement was 93%, with a range of 84 to 96%.

Undesirable Behaviors

The proportions of intervals in which the two undesirable behaviors of S 1 and S 2 occurred in all sessions are presented in Figures 1 and 2. The horizontal lines across each panel indicate the mean proportion of intervals in which responses occurred in the entire phase.

The rates of both undesirable behaviors of S 1 were rapidly suppressed during the TO treatment program phases, as is shown in panels 2 and 5 of Figure 1. This occurred even though the experimenter always stated the punishment contingency and administered punishment contingent on one behavior, banging. Immediate recovery of the behavior was demonstrated when the treatment contingency was removed.

For S 2, the effect of the treatment was evident only in suppression of the rate of the punishment behavior; the unpunished behavior showed no change in rate during the treatment period (panel 4 of Figure 2). In the phase following treatment, however, both the punished and the unpunished undesirable behaviors showed an increase in rate substantially above baseline levels.

A post-hoc examination of the data showed that the two misbehaviors of S 1 were performed simultaneously 58% of the time, while the two undesirable behaviors of S 2 were performed simultaneously only 31% of the time.

During treatment phase 2 for S 1, the subject began to throw objects at the experimenter, a behavior not observed on any previous occasion. One special isolation period of 2 min was administered during one episode, using the same procedure of reprimand and isolation in the classroom booth. The aggressive behavior did not recur.

No effects of observing TO administration on misbehavior of the watching child were apparent.

Social Interactions

The proportions of intervals in which looking, responding, touching, and speaking occurred in pre-treatment sessions, first treatment sessions, post-treatment sessions (Ss 1 and 2), and second treatment sessions (S 1 only) are shown in Figure 3. Since no systematic differences in responding were found for Watch and Baseline sessions, these sessions were combined. All sessions, Baseline or Watch, which occurred before the first treatment sessions are labelled

Pre-treatment. The post-treatment sessions consist of all sessions after the first treatment (S 2) and before the second treatment sessions (S 1).

For both subjects, looking was by far the most frequent behavior displayed. For S 1, the average per cent of all intervals in which looking occurred was 72%; for S 2, the average was 24% overall. Other behaviors of responding, touching, and speaking in combination occurred about half as often as looking, or less.

During treatment sessions, the rate of looking increased for S 1, while for S 2, it remained the same. In all other categories of social behavior, a decrease in responding was found during treatment. No recovery of baseline levels of responding was noted for S 2 after treatment; this sustained depression corresponded to the recovery *above* baseline of the punished and unpunished misbehaviors. For S 1, initial rates of responding may have been recovered during post-treatment sessions, but this effect is confounded with the change in classrooms, which coincided with the onset of post-treatment phases for S 1.

DISCUSSION

Suppression of the misbehavior treated by isolation TO was observed in two very withdrawn retarded children. In addition, these behaviors were suppressed even though they, and other high-rate self-stimulatory behaviors, could have been performed without interruption in isolation. No positive reinforcement for other behaviors was systematically administered. It appeared, therefore, that presence in

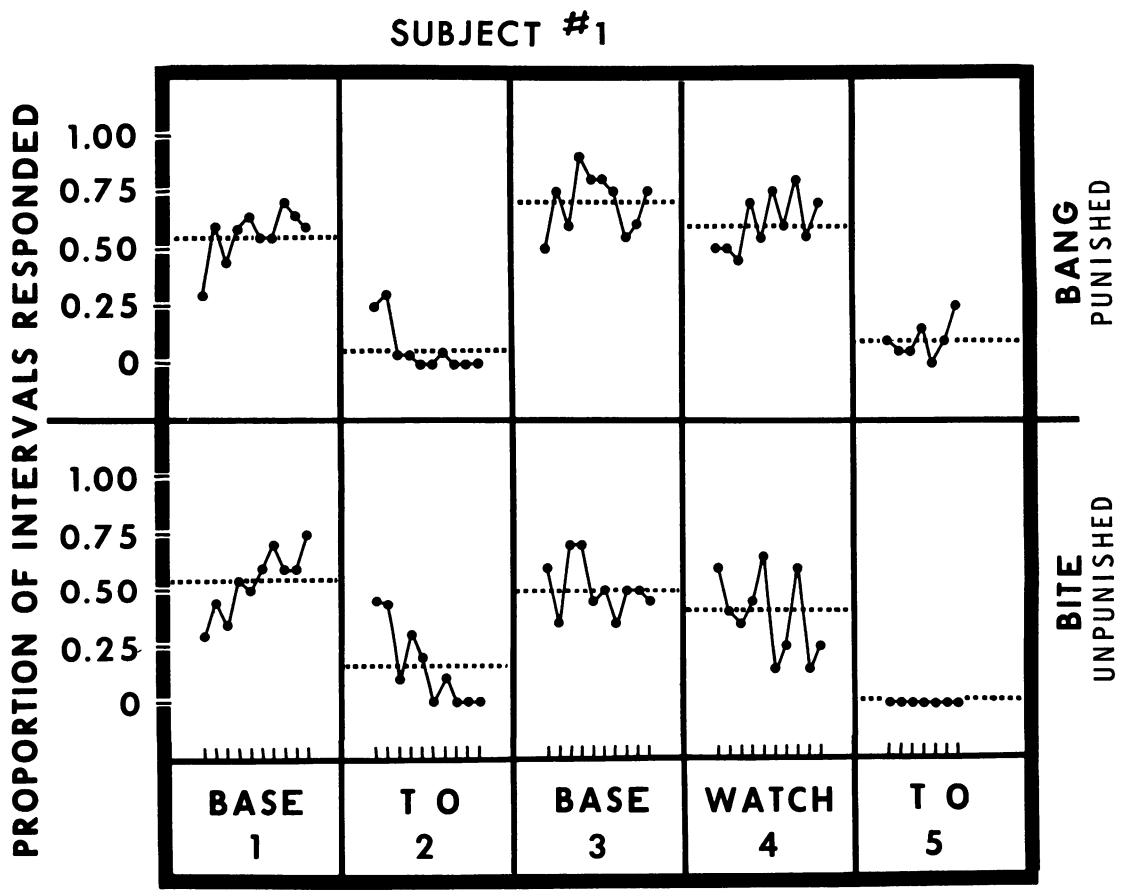

Fig. 1. Proportion of total intervals in which Bang (punished) and Bite (unpunished) responses were recorded for S 1 in 47 free play periods.

the group situation may have been a reinforcing event for these children, even though their active participation in group activities was minimal.

An analysis of the social behaviors displayed by the two children showed that by far the most common type of social response was looking. For S 1, the looking rate was actually very high, indicating that responsiveness to group activities was probably greater than the initial general estimate of the children supposed. Looking, which requires minimal skill, may be a more accurate measure of social responsiveness in a young or retarded child than more complex behaviors usually observed.

Of particular interest in this experiment were the systematic changes observed in many behaviors when punishment was administered contingent on only one of them. During treatment, it was found that rates of responding, touching, and speaking decreased slightly; this decrement of responding may be attributed to generalization of punishment (Azrin and Holz, 1966; Estes, 1944). If this explanation is accepted, however, the question arises as to why the rate of looking remained the same (S 2), or even increased (S 1) during punishment sessions. In later sessions, much of the looking behavior recorded was directed at the experimenters. It is possible that looking was associated with avoidance of punishment, and thereby negatively reinforced.

Two undesirable behaviors in each child were originally identified with a multiple baseline procedure in mind. It was found, however, that in S 1 both behaviors were suppressed by a pun-

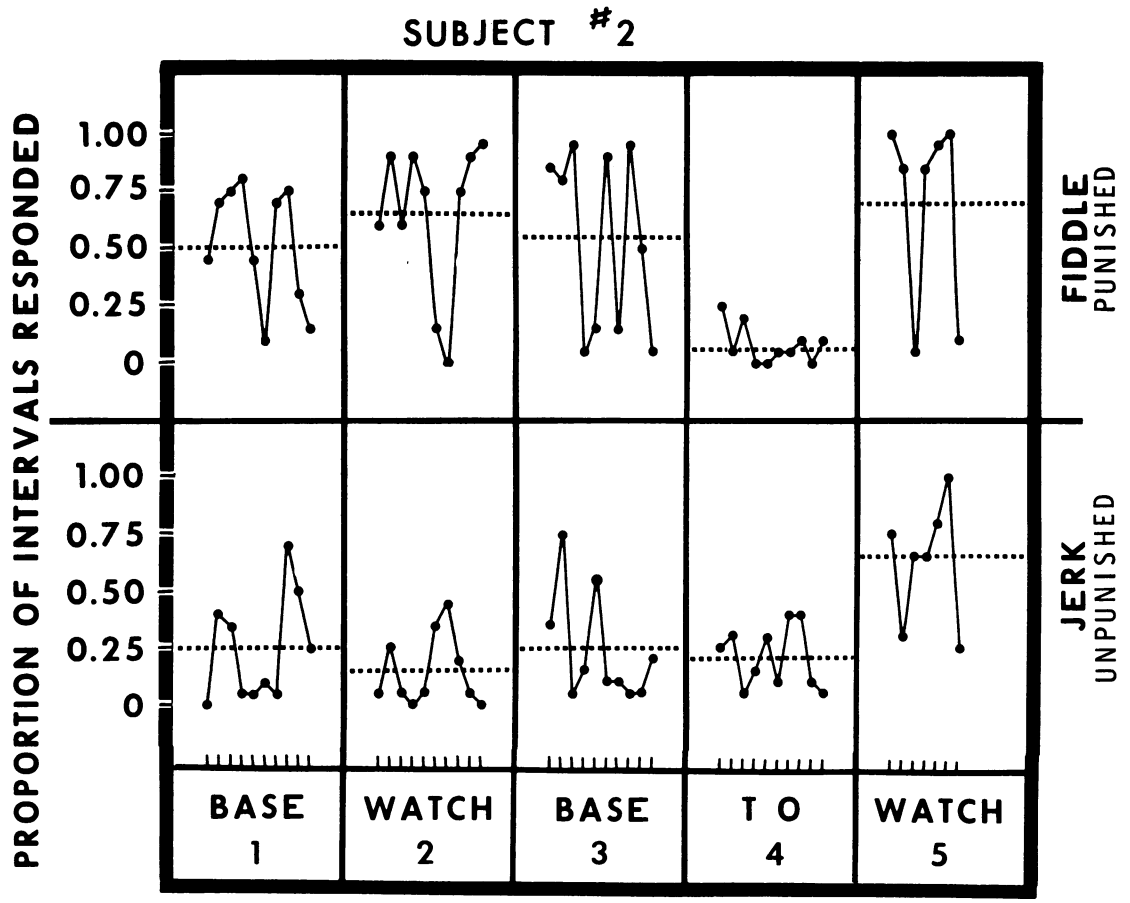

Fig. 2. Proportion of total intervals in which Fiddle (punished) and Jerk (unpunished) responses were recorded for S 2 in 47 play periods.

ishment contingent on only one of the behaviors. The expected discrimination was demonstrated by S 2. A post-hoc examination of the data showed that the two misbehaviors of S 1 occurred simultaneously a substantial percentage of the time, while this was not true for S 2. The so-called unpunished behavior of S 1 may actually have been followed by TO more than half of the times it occurred.

During the punishment sessions, aggressive behavior toward the experimenters was displayed, which increased in intensity until suppressed by one special reprimand and TO administration. Since the aggressive behavior was rapidly and completely suppressed for the remainder of the experiment by one 2-min isolation TO, this aggressive response cannot be considered a serious drawback to use of the TO treatment. Development of aggressive responses, however, indicates that this punishment procedure may generate frustration and other emotional behavior. Other research suggests that such effects are probably temporary (Azrin and Holz, 1966).

During extinction, rates of both punished and unpunished misbehaviors of S 2 increased over baseline, corresponding to the punishment contrast phenomenon described by Azrin and Holz (1966). Presumably this increase would have dissappeared over a longer extinction period.

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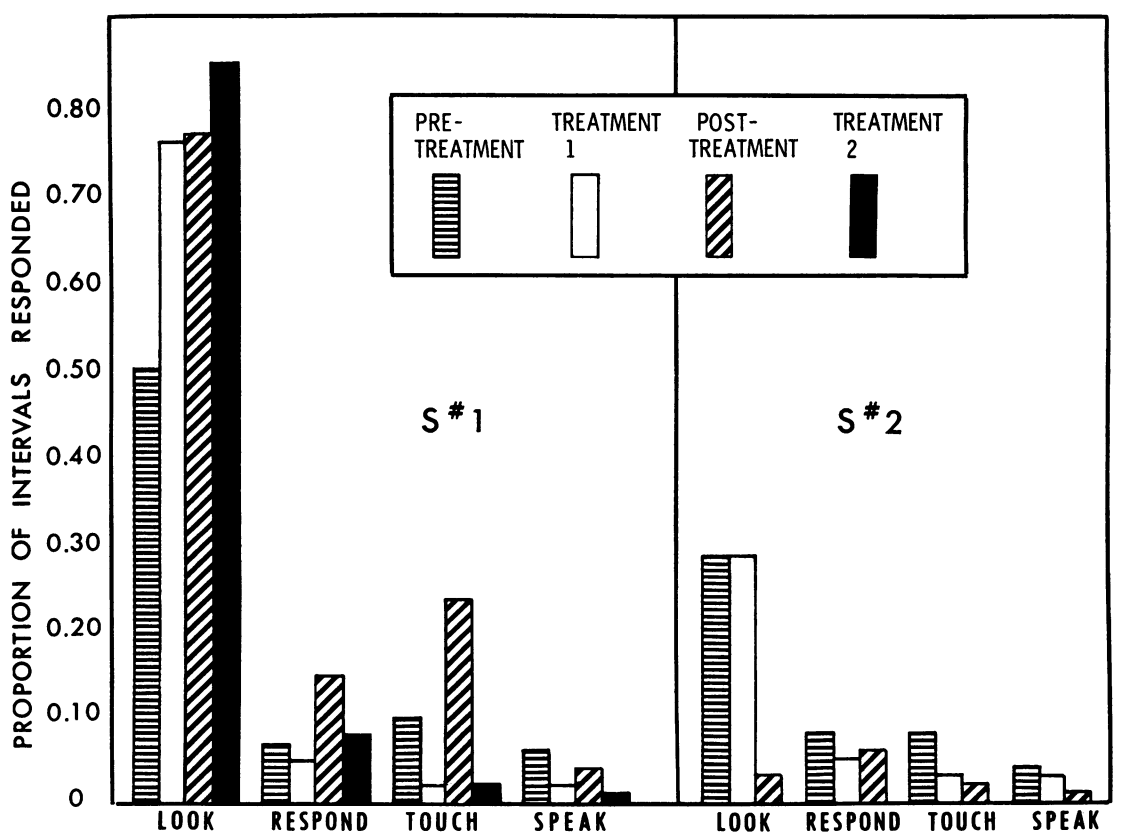

Fig. 3. Proportion of intervals in which Looking, Responding, Touching, and Speaking occurred in Pre-Treatment, First Treatment, Post-Treatment and Second Treatment Sessions for S 1 and S 2.

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