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The Effects of Overcorrection on Self-Stimulatory Behaviors

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THE EFFECTS OF OVERCORRECTION ON SELF-STIMULATORY BEHAVIORS

by

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A Thesis
Submitted to the
Faculty of The Graduate College
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of the
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Michael L. Vreeland
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Self-stimulatory behavior has been defined as repetitive, stereotyped behavior that is neither functional nor reinforced by the individual's physical or social environment (Foxx and Azrin, 1973). This includes rocking, head-weaving, hand-waving, mouthing parts of one's body or objects, spinning objects, and rubbing parts of one's body. Many procedures have been employed in attempting to reduce or eliminate these self-stimulatory behaviors.

Forehand and Baumeister (1970) found that physical restraint prior to observation sessions increased body-rocking in retardates during the observation sessions. The same authors (1971) shaped up a lever-pulling response on a FR2 schedule of reinforcement with severe retardates and then returned to baseline conditions with a resultant increase in body-rocking when compared to the original baseline data. Lovaas (1966) used electric shock to suppress the self-stimulatory behaviors of autistic children. Forehand and Baumeister (1972) found that contingent shock reduced body-rocking to near zero levels with the effects being durable but also very situation specific. Other effective punishers utilized to suppress self-stimulatory behaviors include: loud sounds (Hollis, 1971; Smeets, 1972); slaps on the thigh (Bucher and Lovass, 1968); and verbal reprimand with shaking (Risley, 1968).

Another procedure used by researchers to reduce self-stimulatory behavior has been differential reinforcement of other behavior (DRO). Flavell (1973) reduced self-stimulatory behavior exhibited by three retarded male children by reinforcing toy playing with praise.

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Mulhern and Baumeister (1969) also employed a DRO procedure to reduce "rocking" in two retardates. Wright, Clayton, and Edgar (1970) advised ward personnel to ignore self-stimulating retardates in an attempt to extinguish the behavior; however, this procedure resulted in no change.

One other procedure, time-out-from-reinforcement, was used successfully by parents in their home to reduce the self-stimulatory behaviors of their autistic child to zero levels in a study reported by Nordquist and Wahler (1973). The child was placed in "time-out" (the child's room) for at least ten minutes contingent upon the occurrence of "ritualistic" behaviors; such as, "sighting" on fingers, flapping hands, twirling objects, or unusual gestures.

A new punishment procedure called overcorrection has recently been described as an effective means of reducing self-stimulatory behavior (Foxx and Azrin, 1973). Overcorrection is a procedure designed to "overcorrect the environmental effects of an inappropriate act" and usually involves the client's practicing "overly correct forms of relevant behavior" (Foxx and Azrin, 1973). Originally, overcorrection was a procedure developed to eliminate behaviors that resulted in the destruction of property or the disruption of a clean and ordered environment, for example where a client knocks over tables and chairs. An overcorrection procedure would be to require the client not only to replace the furniture but also to dust or polish it.

When undesirable behavior has no destructive environmental effects, the overcorrection procedure consists in the excessive
practice of behavior which is intended to replace the undesirable behavior. A client who clapped his hands at a very high rate was required through the enforcement of a trainer or therapist to move his hands to several different positions on command and to hold his hands in each position for a specified amount of time. Contingent upon hand-clapping, the therapist would say, "Hands over your head;" and if the client did not respond correctly within one second, the therapist would physically guide the client's hands to the specified position where the client would be required to hold his hands for 15 seconds. The client would be practicing behavior that is functional in that is is reinforced by the client's social or physical environment, as compared to the self-stimulatory behaviors.

The present project was designed to study and control for changes in the self-stimulatory behaviors of two retarded children produced by the overcorrection procedure.
METHOD

Subjects

Scott was a ten-year-old mentally retarded male who exhibited a multiplicity of handicaps including speech impairment and motoric retardation. Billy was a six-year-old mentally retarded boy who was also diagnosed as emotionally disturbed. He exhibited some mild left spastic hemiplegia due to traumatic brain damage suffered at the age of two. Neither child's I. Q. was obtainable due to their severely limited communication skills.

Both subjects attended the Kalamazoo Valley Multihandicap Center Monday through Friday from 9:00 a.m. to 3:00 p.m. The subjects' daily activities included training in fine motor skills, gross motor skills, self-care skills, language, pre-academic skills, and appropriate peer interactions. The Center staff worked with these children largely on a one-to-one basis, utilizing behavior modification procedures.

Setting

Experimental sessions 15 minutes in length were held twice each day. The same therapist worked with each child on an individual basis. One session was conducted in the morning and one in the afternoon. The experimental sessions were held five days a week over a three and one-half month period. All but three sessions were conducted in a sound-attenuated observation booth, a room about 6' x 8'.
which was furnished with two chairs, two desks, and assorted toys. The same booth was used throughout all sessions for both subjects; however, the furnishings were slightly different. For Scott, the objects present were a ball, a toy truck, and a rubber galoshe. For Billy, the objects present were a ball and a toy truck. Different sized desks were used for the children due to their differences in physical size.

All sessions were observed over closed-circuit television originating from a camera and microphone installed in the observation booth. The observer was stationed in a viewing room with two 8" x 8" television screens, a speaker system to and from the observation booth, and an automatic interval timer (Fry, 1973). The interval timer was set to go off after a specified amount of time had elapsed to insure that the overcorrection procedures were of constant duration. Occasion ally, sessions were video taped to allow a second observer to record the behavior. The second observer referred to written behavior definitions before viewing the video tapes and also participated in a practice recording session with the experimenter and primary observer before an actual observation and recording session. A comparison of the two records was used to determine the reliability of the behavioral observations.

The experimenter escorted the therapist and the child to the observation booth and indicated to the therapist the conditions that were in effect for that particular session. The experimenter returned to the viewing room and indicated the start of the session by saying, "Start," to the therapist via the speaker system. Interval recording
of the child's self-stimulatory behavior was made for the entire 15-minute session. At the end of the 15-minute session, the experimenter announced the end of the session over the booth speaker.

Behavior definitions

Scott: Scott engaged in a form of self-stimulatory behavior called mouthing, oral contact with objects other than food (Foxx and Azrin, 1973).

Billy: Billy emitted an unusual form of self-stimulatory behavior called hand flexions. This consisted of the opening and closing of either hand or both hands at the same time where the thumb or fingers made contact with the palm of the same hand. Billy's self-stimulatory behavior usually occurred when playing with toys or objects.

Both of the subjects seemed to emit their self-stimulatory behaviors at a higher rate when they were alone or were not interacting with other children or a therapist.

Recording

Interval recording

The subject's self-stimulatory behaviors were recorded using 15-second intervals throughout each 15-minute session (Hall, 1973). For each 15-second interval, the experimenter simply recorded whether the behavior under study occurred at least once.

The basic dependent variable was the percentage of recorded intervals that contained any self-stimulatory behavior.
In Billy's case, the intervals in which the overcorrection procedure was in effect were not included in the computations of the percentage of intervals in which the behavior occurred since he was prevented from emitting the self-stimulatory behavior when the overcorrection procedure was being used.

The overcorrection intervals were not excluded from the count in the analysis of Scott's data as he was not prevented from emitting the self-stimulatory behavior while his particular overcorrection procedure was in effect. As a matter of fact, Scott did occasionally emit the mouthing behavior when the overcorrection procedure was in effect.

Reliability

Inter-observer agreement on the occurrence of self-stimulatory behavior was computed by a frequency ratio. The number of instances of agreement on the observer records was divided by the total number of agreements plus disagreements. This quotient was multiplied by 100 to obtain percentage of agreement between observer records (Hall, 1971).

Overcorrection procedures

Scott

The procedure described as "oral hygiene" (Foxx and Azrin, 1973) was initiated contingent upon an instance of mouthing. This consisted of the therapist brushing the subject's teeth and gums with a toothbrush that had been soaking in a bowl of Listerine located on the
therapist's desk. The therapist moved the bowl of Listerine to the child's desk to make the bowl more accessible. The therapist periodically dipped the toothbrush into the Listerine while carrying out the procedure. The overcorrection procedure lasted for two minutes. When approximately 10 seconds remained in the two-minute training period, the experimenter said, "Time," over the speaker system, whereupon the therapist in the observation booth wiped Scott's outer lips with a washcloth that had also been soaking in the Listerine. The therapist then placed the washcloth and toothbrush back into the bowl of Listerine and put the bowl back on his own desk and then sat down at his desk and began looking at the reading material provided for him.

Billy

The "extended practice" overcorrection procedure (Foxx and Azrin, 1973) was used. Whenever Billy emitted the self-stimulatory behavior, the therapist said, "Stand up." If Billy did not respond immediately, the therapist physically guided him to his feet. The therapist then instructed Billy to move his hands into one of three positions: straight out in front of him; over his head; down at his sides. For example, the therapist would say, "Billy, hands over your head." The therapist manually guided Billy's hands into the position whenever he failed to respond to an instruction within one second. Billy was required to hold his hands in each position for 15 seconds, then was instructed into one of the other three positions. The therapist was equipped with a stopwatch to insure that each hand position lasted for the specified duration. While carrying out the overcorrection
procedure, the therapist physically prevented Billy from emitting the hand flexions by holding all of Billy's fingers straight out. By holding Billy's hands in this manner, the therapist also insured that Billy's hands remained in position, for whenever Billy's hands started to move out of the specified position, the therapist physically prompted Billy's hands back into the correct position. The therapist held Billy's hands in a manner that prevented the hand flexions from occurring but which still required Billy to exert the "effort" necessary to maintain the hand position. The overcorrection procedure was carried out for five minutes. At the end of five minutes, the observer said, "Time," over the speaker system. When the overcorrection procedure was ended, Billy was instructed to sit in his chair, the toys were placed on his desk, and the therapist sat down at his desk.

Baseline procedure

During baseline, the therapist who was present in the observation booth with the subject was at a desk with his side to the child. The child was seated at the desk facing the therapist. At the start of the session, the therapist placed the toys and objects upon the child's desk. The therapist was instructed to interact with the child only under the following conditions:

a. If the child started to leave his seat, the therapist said, "Sit down." If the child did not sit down within five seconds after the command was given, the therapist physically prompted the child to sit down.

b. If the child's head made contact with the desk, the child was instructed to, "Sit up." Again, if the child
failed to respond to the command within five seconds after it was given, the therapist physically prompted the response.

In Billy's case, one additional interaction was allowed. When Billy's hand or hands fell below his desk top level, the therapist instructed Billy to put his hands on the desk. The same procedure as above was instituted when Billy failed to follow the command. This additional interaction between the therapist and Billy was necessary in order to make the observation of Billy's self-stimulatory hand movements easier.

Throughout the session, the therapist looked at a magazine or book and occasionally looked at the child. If the toys and objects fell off or were knocked off the desk by the child, the therapist put the toys and objects back on the desk top.

The conditions in effect during baseline were intended to simulate situations where there was little or no interaction with others in order to closely approximate the conditions in which the self-stimulatory behaviors of the two subjects occurred most frequently.

Phase I

Scott

Baseline conditions were in effect for both sessions. Phase I was in effect for eleven days.

Billy

Baseline conditions were in effect for both sessions. Phase I was in effect for thirteen days.
**Phase II**

Scott

In this phase, the oral hygiene procedure was employed contingent upon instances of mouthing during the morning session. Baseline conditions remained in effect during the afternoon session. The materials used in the oral hygiene procedure were also present on the therapist's desk in the afternoon session. Phase II was in effect for 18 days; however, during days 26 through 29, the oral hygiene procedure was in effect during the afternoon session instead of the morning session. This occurred because the therapist who had been administering the oral hygiene procedure during the morning session on days 12 through 25 was rescheduled to work during the afternoon. It was felt that the presence of this particular therapist would exert a suppressive effect upon the mouthing behavior of Scott and then interfere with baseline observation.

Billy

In this phase, the extended practice overcorrection procedure was used contingent upon instances of hand flexions during the afternoon session. Baseline conditions remained in effect during the morning session. Phase II was in effect for 30 days.

**Phase III**

Scott

This phase consisted of a return to baseline conditions for both
the morning and afternoon sessions. This phase was put into effect because the suppressive effects of the overcorrection procedure seemed to be generalizing to the baseline sessions. During this condition, the therapists were instructed to behave as they had during baseline. This phase lasted for eight days.

Billy

In this phase, the overcorrection procedure was used during both the morning and afternoon sessions to suppress the self-stimulatory behavior. This phase lasted for the remaining 10 days of the study.

Phase IV

Scott

In this phase, the overcorrection procedure was used during both the morning and afternoon sessions to suppress the self-stimulatory behavior. This phase lasted for 11 days.

Phase V

Scott

This phase was instituted to determine whether Scott's low rate of mouthing behavior would generalize to other stimulus conditions. The frequency of the mouthing behavior was measured under two different stimulus situations. This phase had two conditions.

Condition 1

During the morning session of three consecutive days (days 50,
51, and 52), the therapist was absent from the booth. The overcorrection procedure was not in effect for these particular morning sessions. The overcorrection procedure was in effect for the afternoon sessions as usual. Condition 1 was followed by two days in which the overcorrection procedure was in effect for both the morning and afternoon sessions.

Condition 2

During the morning session of three consecutive days (days 55, 56, and 57), observations were conducted in a different setting. Although the furniture and objects were the same ones used throughout the study and Scott and the therapist were seated in the same manner as before, they were situated just outside of the observation booth in the classroom of which the observation booth is part. Other multiply-handicapped children and their therapists were present in this classroom. The overcorrection procedure was in effect for the afternoon sessions as usual. Condition 2 was followed by the last day of the study, in which the overcorrection procedure was in effect for both the morning and afternoon sessions.

Generalization

Data were collected for both subjects to determine if the low occurrence of self-stimulatory behavior would generalize to other therapists. During Phase I, all therapists who regularly worked with either Scott or Billy but did not participate in this study, participated in a 10-minute session that was video taped. The behavior was
measured through the use of interval recording with each interval lasting 15 seconds.

The therapists were instructed to behave in the same manner as the therapists participating in the study, that is, to pay minimal attention to the subjects and to attend to a magazine provided for them. The data assessing generalization were collected on day 8 for Scott and on day 9 for Billy. Data were also collected later in the study. For Scott, the data were collected on day 49 and for Billy on day 52. It should be noted that due to staff turnover, which occurred with the start of a new semester, the data collected near the end of the study for both subjects were with different therapists than those that participated in the generalization session that occurred in Phase I.
RESULTS

Scott

Self-stimulatory mouthing behavior was recorded for 15-second intervals throughout each 15-minute session. For each 15-second interval, the observer simply recorded whether or not any occurrence of the behavior under study was observed. Figure 1 indicates the percentage of recorded intervals in which the mouthing behavior occurred for each session of the study as a function of the five phases of the study. The number of times the overcorrection procedure was administered during each session is indicated within the parentheses above each data point.

During Phase 1, the 11 days of baseline, the therapists were instructed to avoid talking to Scott unless he got out of his chair or put his head down on his table. As indicated in the Figure during baseline phase, Scott’s mouthing behaviors occurred during 94 percent of the intervals on the average.

During Phase 2, the oral hygiene procedure was employed contingent upon the occurrence of mouthing during the morning sessions only. As indicated in Figure 1, there was a substantial decrease in the percentage of intervals during which the mouthing behavior occurred in the morning sessions as compared to the afternoon sessions. The mean percentage of interval occurrence for mouthing during the morning sessions of Phase 2 was 13 while mean percentage during the afternoon sessions was 65. It should be noted that on days 26, 27, 15
Phase 1: baseline for both morning and afternoon sessions; Phase 2: morning, overcorrection; afternoon, baseline; Phase 3: baseline for both morning and afternoon; Phase 4: overcorrection for both morning and afternoon; Phase 5: Condition 1, morning—overcorrection on Monday and Friday, therapist absent from booth on Tuesday, Wednesday, and Thursday; afternoon—overcorrection on Monday through Friday; Condition 2, morning—original setting, overcorrection on Monday and Friday, different setting on Tuesday, Wednesday, and Thursday; afternoon—original setting, overcorrection on Monday through Friday.

Reliability checks are indicated by the notation *. 

Figure 1  Percentage of Interval Occurrence for Mouthing Behavior
SELF-STIMULATORY MOUTHINGS
(PERCENT OF INTERVALS)

PHASE I

PHASE II

PHASE III

PHASE IV

DAYS

MORNING SESSION

AFTERNOON SESSION

0-0 RELIABILITY CHECK

(0) NUMBER OF PUNISHERS DELIVERED
28, and 29 the oral hygiene procedure was in effect during the afternoon sessions, and baseline conditions were in effect during the morning sessions. The computation of the mean percentage of interval occurrence for both the morning and afternoon sessions took this switch into account and treated the afternoon sessions (oral hygiene) in the same way as the pre-switch morning sessions. The morning (baseline) sessions were treated in the same way as the pre-switch afternoon sessions. The reasons for this switch were discussed in the Method section.

During Phase 3, baseline conditions were in effect for both the morning and afternoon session. This return to baseline for both the morning and afternoon sessions was felt to be necessary as it became clear that the suppressive effects of the oral hygiene procedure upon Scott's mouthing behavior were generalizing to the sessions in which baseline conditions were in effect. This generalization became evident during the last four days of Phase 2.

The Figure shows that there was a fairly rapid increase in Scott's mouthing behavior during Phase 3. The mean percentage of interval occurrence of Scott's mouthing behavior during Phase 3 was 38.

During Phase 4, the oral hygiene procedure was used contingently upon Scott's mouthing behavior in both the morning and afternoon sessions. These conditions were in effect for 11 days. The mean percentage of interval occurrence of Scott's mouthing behavior during Phase 4 was 2.

During Phase 5, Condition 1, the therapist was absent from the booth during the morning session on Tuesday, Wednesday, and Thursday.
The oral hygiene procedure was in effect during all of the afternoon sessions as well as the morning sessions on Monday and Friday. The mean percentage of interval occurrence of Scott's mouthing behavior during the three consecutive morning sessions of the therapist absent condition was 0.

During Phase 5, Condition 2, the therapist and Scott were observed in a setting outside of the observation booth during the morning sessions of Tuesday, Wednesday, and Thursday. The oral hygiene procedure was in effect during all of the afternoon sessions as well as the morning sessions on Monday and Friday. The mean percentage of interval occurrence of Scott's mouthing behavior in the different setting was .7.

Reliability

Reliability checks were made through the use of a second observer who viewed video tapes of various sessions during each part of the study. There was one reliability check made for each part of the study except Phase 5, Condition 1. Inter-observer agreement was calculated for occurrences of Scott's mouthing behavior and averaged 95 percent.

Billy

Self-stimulatory hand movements were recorded for 15-second intervals throughout each 15-minute session excluding the intervals in which the overcorrection procedure was being carried out. For each 15-second interval, the observer simply recorded whether or not any
occurrence of the behavior was observed. Figure 2 indicates the per-
centage of recorded intervals in which the self-stimulatory behavior
occurred for each session of the study as a function of the three
phases.

During Phase 1, the 13 days of baseline, the therapists were
instructed to avoid talking to Billy unless he got out of his seat or
put his head down on his table. As will be noted on inspection of
Figure 1, the data indicates that on the average Billy's self-stimulatory
hand flexions occurred during 76 percent of the intervals.

During Phase 2, the overcorrection procedure was put into effect
contingent upon the occurrence of the self-stimulatory hand flexions
during the afternoon sessions only. As indicated in Figure 2, there
was a fairly large change in the frequency of the hand flexions during
the afternoon sessions. The mean percentage of interval occurrences
for the hand flexions during the afternoon sessions of Phase 2 was 12.
The mean percentage of interval occurrences of the self-stimulatory
hand flexions during the morning sessions of Phase 2 was 70.

During Phase 3, overcorrection was utilized during both the morn-
ing and afternoon sessions. The mean percentage of interval occur-
rences of the self-stimulatory hand flexions during Phase 3 was 11.

Reliability

Reliability checks were made through the use of a second observer
who viewed video tapes of various sessions. Reliability checks were
made at least once for each phase of the study. Inter-observer agree-
ment was calculated for occurrences of Billy's self-stimulatory hand
Figure 2  Percentage of Interval Occurrence for Hand Flexions

Phase 1: baseline; Phase 2: overcorrection during afternoon session, baseline during morning session; Phase 3: overcorrection procedure during both morning and afternoon sessions.

Reliability checks are indicated by the notation *.
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O-O MORNING SESSION
●● AFTERNOON SESSION
★ RELIABILITY CHECK
(N) NUMBER OF PUNISHERS DELIVERED

PHASE I PHASE II PHASE III

SELF-STIMULATORY HAND-FLEXIONS (PERCENT OF INTERVALS)

0 5 10 15 20 25 30 35 40 45 50

0 20 40 60 80 100

DAYS

figure 2
Generalization

The percentage of interval occurrence of Scott's mouthing behavior and Billy's self-stimulatory hand flexions was computed from the observations of video taped sessions conducted with therapists who did not participate in the study. Each therapist participated in a session that lasted 10 minutes and was conducted in the observation booth that was used throughout the study.

Baseline conditions were in effect for these generalization sessions. The therapists were instructed to pay minimal attention to the subjects. Six therapists participated in generalization probe No. 1 for Scott, which totaled 60 minutes of observation. Six therapists participated in generalization probe No. 1 for Billy, which also totaled 60 minutes of observation. Figure 3 indicates the percentage of recorded intervals in which the self-stimulatory behaviors of Scott and Billy occurred during two generalization probes. Generalization probe No. 1 for Scott, which occurred on day 8 of the baseline phase of the study, showed a percentage of interval occurrence of 88. Generalization probe No. 1 for Billy, which also occurred during the baseline phase of the study on day 9, showed a percentage of interval occurrence of 88. Generalization probe No. 2 for Scott, which was conducted on the last day of Phase 4, showed a percentage of interval occurrence of mouthing behavior of 31.

Six therapists participated in Scott's second generalization probe resulting in 60 minutes of observation. Generalization probe No. 2
for Billy, which occurred on day 52, showed a percentage of interval occurrence of self-stimulatory hand flexions of 48. Six therapists participated in Billy's second generalization probe, which resulted in 60 minutes of observation.
Figure 3  Percentage of Interval Occurrence of Self-stimulatory Behaviors of Scott and Billy during Two Generalization Probes
figure 3

SELF-STIMULATORY BEHAVIOR

(Percent of Intervals)

Billy

No. 1  No. 2
GENERALIZATION PROBE

Scott

No. 1  No. 2
GENERALIZATION PROBE

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DISCUSSION

The results of the present study clearly show the suppressive effects of the overcorrection procedures utilized on the self-stimulatory behaviors that were studied. These data support Foxx and Azrin’s statement that "the overcorrection procedure appears to be a very effective and general method of eliminating self-stimulatory behavior" (1973, p. 11).

One drawback of using the interval recording method was that it was not possible to record the absolute amount of self-stimulatory behavior since only one occurrence of self-stimulatory behavior was recorded for each interval. A more sensitive measure would have been to count each individual self-stimulatory response. However, the self-stimulatory behaviors which were under study in this research would have been very difficult to break down into simple, discrete responses. Furthermore, if a frequency count was employed, the measurement of response duration would also have been necessary, at least in the case of Scott's mouthing behavior. Even with the limitations of the interval recording method used, the data show a substantial decrease in the amount of self-stimulatory behavior, especially in the case of Scott's mouthing behavior.

During Phase 2, the frequency of self-stimulatory behavior of both subjects decreased substantially within 10 days. This was also coupled with a decrease in the number of punishers (overcorrection) delivered. This is similar to the findings of Foxx and Azrin (1973) in which it was observed that the overcorrection procedures reduced
self-stimulation to a near zero level by the end of 10 days. However, in Billy's case, the frequency of self-stimulatory hand flexions began to increase after the seventh day of Phase 2 and rose by 17 percent by the ninth day. There was then an one-week vacation, followed by another increase of 13 percent on the tenth day of Phase 2. This was followed by a substantial decrease on the eleventh day of Phase 2, and this reduction was maintained for the rest of Phase 2. The sessions of Phase 2, in which baseline contingencies were in effect, showed levels of self-stimulatory behavior to be very similar to the levels recorded during Phase 1 for both subjects. This is a strong indication that the overcorrection procedures employed were responsible for the decrease in self-stimulation for both subjects.

It is interesting to note the change in Scott's self-stimulatory behavior following a one-week vacation, which occurred after the twenty-fifth day of the study. At this time, a switch occurred in which the overcorrection procedure was now being used to consequate mouthing in the afternoon session and where baseline conditions were in effect during the morning sessions. This change remained in effect for four days. During these four days, the frequency of Scott's self-stimulatory mouthing behavior during the morning sessions (baseline conditions) was very low. In fact, this frequency was quite similar to the frequency observed during the afternoon sessions where the overcorrection procedure was in effect. It appears that the suppressive effects of the overcorrection procedure upon Scott's mouthing behavior were generalizing to the morning sessions where baseline conditions were in effect. To see if this was the case, Phase 3 was
initiated, which involved a reversal to baseline conditions for both the morning and afternoon sessions. As shown in the data, there was a rapid increase in the frequency of Scott's mouthing when the overcorrection contingency was removed.

During Phase 3 of the observation of Billy, the therapists con sequated each occurrence of self-stimulatory hand flexions with the overcorrection procedure during both the morning and afternoon sessions. This resulted in a noticeable decrease of the frequency of the target behavior during the morning sessions, in which the baseline condition had previously been in effect during Phase 2. This fact lends additional support to the notion that the overcorrection procedure was an effective punisher for Billy's self-stimulatory behavior. The low rate of the self-stimulatory behavior during the afternoon sessions which existed in Phase 2 was maintained during Phase 3. For some unknown reason, the frequency of Billy's self-stimulatory behavior increased quite dramatically during the last two morning sessions of the study. As pointed out earlier, a similar increase in the frequency of Billy's self-stimulatory behavior during the session in which the overcorrection contingency was in effect occurred during the early part of Phase 2. It may be the case that the five-minute overcorrection period, which was made contingent upon Billy's self-stimulatory hand flexions, was not an intensive punisher. As Azrin and Holz (1966) pointed out, it appears that punished behavior will recover during a punishment situation somewhat depending upon the intensity of the punishing stimulus. Unfortunately, Billy's self-stimulatory behavior started to recover just at the end of the
study. It would have been interesting to see whether the behavior would continue to increase or return to its former low level as it did in the similar situation in Phase 2.

The overcorrection contingency that was in effect during both the morning and afternoon sessions of Phase 4 of Scott's study produced very low levels of self-stimulatory mouthing, at times reaching a zero level. During Phase 5, Condition 1, the therapist was absent from the observation booth for three consecutive morning sessions. Scott's mouthing behavior was at a zero level for these particular sessions. One might predict that with the therapist absent from the observation booth the frequency of Scott's self-stimulation would begin to increase. Scott apparently had a fairly easy discrimination to make, i.e., when the therapist was present, punishment would occur; and when the therapist was absent, no punishment would be forthcoming. Of course, this condition was in effect for only three days, which might not have been long enough for the behavior to recover. Also, it should be kept in mind that the overcorrection contingency was in effect during the afternoon sessions of this condition. The suppressive effects of the overcorrection procedure upon Scott's mouthing behavior seemed to generalize even to this novel situation. However, there is evidence available (Azrin and Holz, 1966) that lends support to the notion that had this particular condition been in effect for longer than three days Scott's self-stimulatory behavior would have eventually occurred during these particular "safe" sessions.

Phase 5, Condition 2, consisted of the therapist and Scott being studied in a different setting for three consecutive morning sessions.
Baseline conditions were in effect for these particular sessions. Once again, Scott's self-stimulatory behavior remained at very low levels during these morning sessions. It is clear that the suppression of Scott's mouthing behavior readily generalized to novel stimulus conditions.

The suppressive effects of the overcorrection procedures utilized in this study upon the self-stimulatory behaviors studied did not quite match those of the Foxx and Azrin (1973) study. That is, the self-stimulatory behaviors studied in the Foxx and Azrin (1973) study were reduced to a zero level and were maintained at that level for a period of three months or longer. One obvious reason that the results obtained in this study did not equal those of the Foxx and Azrin (1973) study was the fact that the self-stimulatory behaviors studied in this experiment were conseuated with the overcorrection procedure only during the 15-minute sessions which occurred twice daily for each subject. The self-stimulatory behaviors studied in the Foxx and Azrin (1973) study, however, were conseuated throughout a six-hour day, five days a week. It seems plausible that if Scott's mouthing behavior and Billy's hand flexions were conseuated throughout the entire school day, results more similar to those reported by Foxx and Azrin (1973) would have occurred. If Lovaas' (1971) theory is correct, i.e., that self-stimulation is reinforcing, then it is clear that since Billy and Scott had the opportunity to engage in self-stimulatory behavior throughout the entire day, with the exception of the experimental sessions, this behavior could remain at high strength unknown to the experimenter. If this opportunity was removed
via the consequation of this self-stimulation with overcorrection, this experimenter feels that a lower frequency of these behaviors would have been obtained. One other difference between this study and Foxx and Azrin's (1973) should be pointed out. Billy's self-stimulatory hand flexions, a behavior not dealt with in the Foxx and Azrin study, was consequated within a five-minute period of functional movement training. In their work when it appeared that five minutes of functional movement training was not suppressing the behavior, the training period was increased to 20 minutes. This resulted in the almost complete suppression of the self-stimulatory behavior studied. This increase in training time was not possible in the present study due to scheduling problems.

Overcorrection procedures such as used in this study have some advantages over other procedures used to reduce self-stimulation. Foxx and Azrin (1973) pointed out the practical advantage of teaching the client relevant behaviors intended to replace the self-stimulatory behaviors as well as the superiority of the overcorrection procedures compared to noxious stimuli when one is making ethical considerations. It also seems that the overcorrection procedures can be used in a greater variety of settings (at least the functional movement training) than such noxious stimuli as low noise or electric shock to punish self-stimulation. One other advantage would be the minimal cost involved as compared to the other procedures mentioned above.

As reflected in Figure 3, the suppressive effects of overcorrection generalized readily to other therapists. This is an important point to consider when comparing punishment procedures.
This experimenter, and other therapists as well, noticed increases in some appropriate behaviors of these two students after the overcorrection procedures were implemented and the levels of self-stimulation were lowered. The increased appropriate behaviors included eye contact; attending to "outside" events, such as task materials and other people; and following commands. This same phenomenon was reported by Risley (1968) and Koegel and Covert (1972). It appears then that self-stimulation as exhibited by retarded and autistic individuals frequently interferes with or slows down the rate of acquisition of appropriate and productive behaviors. The overcorrection procedures used in this study can be carried out by paraprofessionals and were shown to be effective means of reducing these problem behaviors.


Risley, R. The effects and side effects of punishing the autistic behaviors of a deviant child. *Journal of Applied Behavior Analysis*, 1968, 1, 21-34.
