

October 2019

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Recommended Citation

Schloss, P. J., Smith, M., Smaldino, S., Field, M., Tiffin, R., & Ramsey, D. (2019). Social Learning Treatment of Self-Injurious and Aggressive Behaviors of a Hearing Impaired Youth. *JADARA*, 17(2). Retrieved from <https://repository.wcsu.edu/jadara/vol17/iss2/6>

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SOCIAL LEARNING TREATMENT OF SELF-INJURIOUS AND AGGRESSIVE BEHAVIORS OF A HEARING IMPAIRED YOUTH

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INTRODUCTION

The impact of hearing impairment on children's and adolescents' behavioral characteristics has been a repeated theme in the professional literature (Altshuler, 1974, 1976; Sanders, 1980; Schloss, 1982). Research has demonstrated an increased prevalence of a number of personality disorders among hearing impaired individuals. Included are: immaturity (Altshuler, 1962); neurotic tendencies (Springer & Roslow, 1938); psychotic reactions (Myklebust, 1960); and depressive characteristics (Knapp, 1968). These data emphasize that the behavioral characteristics of hearing impaired individuals do not differ in kind from those of the general population (Reivich & Rothrock, 1972). However, as Kennedy (1973) suggests, an auditory impairment increases the probability that minor or major behavior disorders will occur. Vernon (1969) and Rodda (1974) support this view with prevalence figures of emotional disturbance ranging from 7 to 12% among hearing impaired individuals.

There is also consistent acknowledgement in the literature that therapeutic techniques popularized with the general population may be less than effective with the hearing impaired (Schloss, 1982). The learning and behavioral characteristics of the hearing impaired reduce their ability to benefit from verbally oriented insight therapies. Meadow (1976) has identified (1) communication deficits, the need for immediate feedback and reinforcement (2) the inability or unwillingness to consider the needs of others

and (3) the limited awareness of social norms, as major factors which promote behavior disorders among the hearing impaired. These same features reduce the extent to which communication based therapies are effective. Individuals unable to benefit from ongoing social interactions in natural environments are probably less likely to benefit from infrequent communications which occur in isolation from the natural events.

The social learning approach described by Bandura (1977) represents a particularly promising therapeutic tool for the treatment of behavioral disorders among the hearing impaired. Features of a social learning approach which make it particularly applicable to hearing impaired populations relate to the limited dependency on complex language structures and abstract thinking. Unlike therapies which seek to develop transference relationships with a therapist through verbal interactions, the social learning view emphasizes the continuous interaction between the youth and people and events in the natural environment. Intervention involves the structuring of natural environments so that prosocial behavior consistently produces success and reward while disruptive behavior produces the removal of pleasant events and/or the presentation of aversive consequences.

The purpose of the present paper is to present a single case, experimental design, demonstrating the impact of a social learning intervention on the self-injurious and aggres-

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sive behavior of a severely behaviorally disordered hearing impaired youth. A secondary purpose is to generate interest in similar research which may fill a serious void in the professional literature.

METHOD

Subject

The subject of this investigation is an 18-year-old boy referred to an inpatient mental health program for the hearing impaired because of chronic and intense self-injurious behavior and physical aggression toward others. The youth had previously been admitted and discharged from 12 programs, each of which reported limited therapeutic gains. Ineffective treatments included verbally oriented insight therapies, the use of time-out or other punishment procedures without concern for teaching positive social behaviors, and chemotherapy.

Various psychiatric diagnoses included a depressive disorder, temporal lobe epilepsy, pervasive developmental disorder, dependent personality, intermittent explosive disorder, and schizophrenic reaction. While this range of diagnoses reflects the limited validity of current classification procedures, it does highlight the chronic and pervasive problems evidenced throughout the youth's life. Audiological assessment techniques yielded a profound bilateral sensorineural hearing loss with speech detection thresholds of 80 dB and 85 dB being obtained for the right and left ears, respectively. Speech discrimination abilities could not be evaluated. Using a hearing aid (Phonic Ear Model 837), the youth obtained a speech detection threshold of 45 dB and warble tone thresholds of approximately 45 to 50 dB for the speech frequencies in a free field. Responses to the screening test and first two subtests of the Test of Auditory Comprehension indicated residual hearing was not being effectively utilized.

Two formal educational assessment instruments were administered: the Total Communication Receptive Vocabulary Test (Scherer, 1981) which yielded a deaf age

equivalent of 7 years 11 months and the Peabody Picture Vocabulary Test (Dunn, 1959) which indicated a mental age of 10 years 2 months. The youth demonstrated a high degree of competence in mathematics skills, achieving a grade equivalent of 14.8! on the Wide Range Achievement Test. Finger-spelling was identified as the youth's primary mode of communication.

A marked sensitivity to words or statements with a negative connotation was identified through staff observations. Words such as "no", "stop", and "wrong", stereotypical phrases such as "I don't know", and sentences containing a negative implication resulted in a display of physical aggression and self-injurious behavior. Social interactions with both peers and staff were highly deficient.

Data Collection

An individual social development program was implemented following a formal staffing between parents and educational and residential staff members. The program was designed to (a) reduce/eliminate aggression, (b) teach alternative, appropriate ways of responding to the conditions which provoked the aggression, and (c) teach the individual to self-manage these alternative behaviors. Specifically, the intervention procedure targeted the following two behaviors for reduction:

1. *Physical aggression toward people* which was characterized by forcefully grabbing a person by the arms or around the neck and repeatedly attempting to use his head to butt or attempting to bite, kick, or scratch.

2. *Self-injurious behavior* which was characterized by repeatedly headbanging a hard surface (such as a wall) and hand-biting.

Baseline data was collected 24 hours a day by staff at the residential and educational units for four consecutive weeks. The data collection procedure involved recording the frequency and duration of aggressive and self-injurious behaviors. These behaviors could not be monitored separately because

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they often occurred in combination. Data was plotted daily on a graph subdivided into two sections designated as the educational unit and the residential unit. The youth spent evenings and weekends in a 20-bed wing of the mental health unit. The youth spent 8 hours each weekday in an educational unit off of the grounds of the facility. Separate staff worked with the youth in each setting. The reliability of the response definition and data collection procedure was determined by two staff members independently recording the frequency and duration of the behavior to baseline and for at least 5 days in each treatment phase. Frequencies reported by the independent observers were the same in baseline and each subsequent phase. A reliability coefficient for duration was determined by dividing the shorter duration by the longer duration reported by independent observers. The resulting ratios were then averaged to produce an overall rate of agreement of .80.

Treatment Procedure

One factor suggested as contributing to the likelihood of disruptive behavior was the youth's heightened state of negative emotional arousal. Since positive emotional arousal is incompatible with negative emotional arousal, a technique for preventing aggressive behavior from occurring was to maintain the youth's positive emotional arousal. This was accomplished by involving the youth in a variety of meaningful and reinforcing activities. By maintaining a positive mood, it was expected the youth would be able to tolerate sources of frustration without losing control. It was hypothesized that if he was able to work through situations that, in the past, had been cues for aggression, these cues would become less controlling and, thereby, less likely to produce aggressive behavior. The following tactics were used to facilitate the development and maintenance of positive affect: the youth was identified by name frequently, especially when behaving appropriately; the youth's name was associated with specific appropriate behaviors in which he was engaged;

a positive, enthusiastic demeanor was modeled to help motivate the youth to become involved in a variety of activities and to approach situations positively; the youth was praised, approved, accepted, and provided affection; and his physical (e.g., handsome, fast, strong) and psychological (e.g., kind, helpful, thoughtful, self-control) attributes were labeled frequently.

A second factor hypothesized as contributing to the likelihood of the youth's disruptive behaviors was his inability to predict when natural positive consequences would occur throughout the day. With this being the case, he was unable to maintain a positive disposition in anticipation of pleasant events. Also, he was not motivated to cease disruptive behavior so that he could return to a routine that assured him of pleasant activities. To provide greater predictability for the youth (1) the staff developed and maintained a highly structured schedule which was seldom altered. (2) the schedule alternated pleasant with aversive activities so that the consequence of participating in an unpleasant activity was the initiation of a pleasant activity, and (3) he was reminded of the pleasant activities that he would miss as the result of remaining disruptive if he disrupted the schedule through disruptive behavior.

A third factor suggested as influencing the frequency and duration of disruptive behaviors was the youth's demonstrated inability to relax under stressful conditions. In order to teach the youth to self-induce emotional control, progressive muscle relaxation training was conducted for approximately 30 minutes, 4 days a week. The procedure, described by Bernstein and Borkovac (1973), involved tensing and releasing various muscle groups in order to artificially create a relaxed state. The sign for relax was used continually throughout training sessions in order to develop an association between the language cue and the emotional response.

Finally, it was hypothesized that the youth was motivated to engage in aggressive responses because of their ability to produce

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satisfaction (e.g., compliance from others) as well as their association with the removal of aversive events. Similarly, it was hypothesized that attempts to gain satisfaction through fingerspelling or other positive emotional responses were not effective. To insure that emotional control produced satisfying consequences and aggressive behaviors were not reinforced, the following procedure was adopted.

A set of index cards was prepared with 30 spaces for holes to be punched. Written on each card was an event identified as being potentially reinforcing for the youth. Statements included walk outside; soda; do math problems; read from popular press; chewing gum; and other items. Prior to each period the youth was allowed to select a card and told, "You need to stay relaxed and not hit for two minutes. Then you will get a punch on the card. When all the holes are punched, you can have (specify item)."

The card was placed on the table so that it would be readily visible and a kitchen timer was set for two minutes. He began to work on his regularly scheduled activity and continued to do so until the timer rang. Provided he had remained calm, the teacher punched one hole on the card while he was watching, then further reinforced his calm behavior with a pat on the back and with verbal praise, "You're working quietly on math; I like it when you are relaxed." The timer was then reset for another two minutes. In order to assist the youth in understanding the relationship between his relaxed behavior and positive reinforcement, the consistent verbal statement accompanied all "punches."

After all 30 holes had been punched, the youth exchanged it for the specified reinforcer. Another card was then selected and the procedure repeated. If at any time in the process the youth became self-injurious or aggressive, the card was removed and destroyed in his view. He was then told, "You hit! You cannot have the (specify reinforcer)." The youth was then instructed to lay on a mat and relax. If necessary, staff physically restrained the youth to insure that

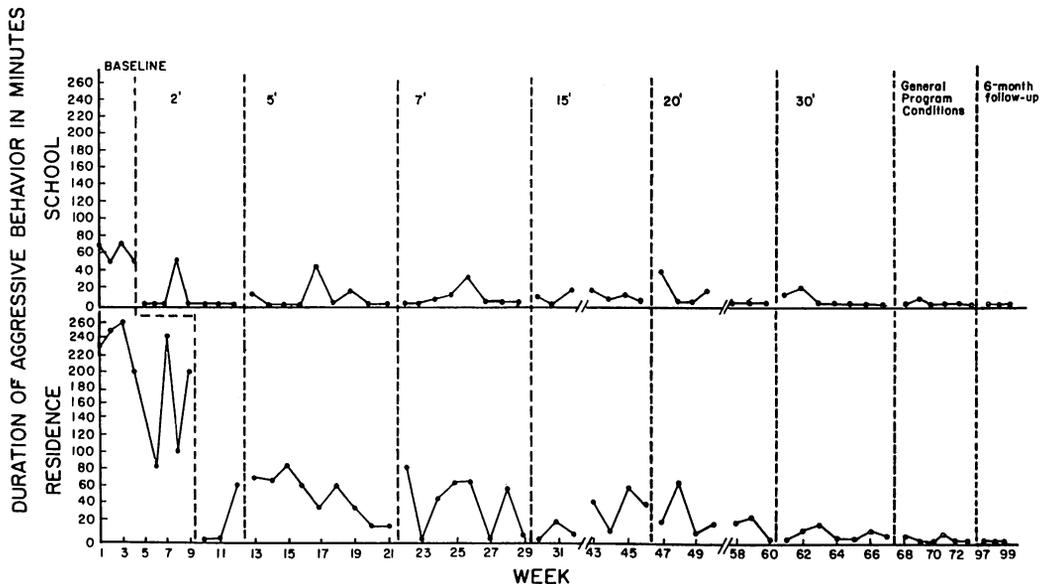
he did not hurt himself or others. While upset, the staff signed, "Relax; when you are relaxed, we will begin a new card." The youth was prompted to breathe deeply with his diaphragm, shake his hand loosely, and lie quietly as practiced during relaxation training.

Once relaxed, the youth was instructed to correct any damage to the environment and demonstrate a more appropriate non-aggressive way of behaving. Following this procedure he was praised for regaining control and allowed to select a new card. The youth then re-entered his schedule at the point the disruption occurred to insure that the behavior did not produce the avoidance of an unpleasant event. Time spent during the outburst was then deducted from scheduled pleasant activities.

RESULTS

The intervention procedure followed a multiple baseline across settings experimental design. The intrasubject replication design, described by Hersen and Barlow (1976), isolates the effect of the treatment on the dependent variable (aggressive reactions). The replication of treatment effects controls for the threats to internal validity identified by Campbell and Stanley (1963). Figure 1 demonstrates the effect of the treatment procedure on aggressive and self-injurious behaviors. Intervention was initiated at school following four weeks of baseline in which the duration of self-injurious and aggressive behaviors averaged approximately 60 minutes per week and 193 minutes per week in the respective settings. There was an absence of aggressive or self-injurious behavior in school during the first three weeks of intervention. On the fourth week there was a return to the baseline level with a subsequent absence of the target behaviors for four consecutive weeks. Once control was established in the school setting, the intervention was adopted in the residential unit. The effect was replicated with the first two weeks following intervention producing an absence of aggressive and self-injurious behavior.

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The reinforcement interval was delayed five minutes in both settings on the 16th week. This was intended to reduce the youth's dependence on continued cues and reinforcers commensurate with increased ability to self-induce relaxation. The fading procedure was also intended to promote the youth's ability to delay gratification. The youth adjusted to each successive fading step, including 5 minutes, 7 minutes, 15 minutes, 20 minutes, 30 minutes and finally the complete withdrawal of the program.

In general, the data indicates that the intervention program was effective in reducing self-injurious and aggressive behaviors in both school and living environments. Further, the program was successfully dismantled over a one-year period.

Beyond these empirical conclusions there was a notable change in the youth's interpersonal behaviors. He was able to engage in progressively longer home visits including a three week holiday without threat to himself or his parents. His parents as well as the school and residential staff also reported an increase in communication and alertness. Age appropriate peer interactions

with other hearing impaired youth have also been reported by staff. At the present time the youth is able to participate in an unstructured daily vocational placement in the residential facility, weekly recreational programs in the community including movies, skating, dancing, arcade activities, etc., and an independent living training program conducted for three hours, two days a week in an apartment complex. The youth's parents have begun to consider alternative community living arrangements for the future. Prior to intervention they were reconciled to the prospect of long-term institutional care.

DISCUSSION

The present investigation demonstrates a clear relationship between the social learning program and a reduction in the self-injurious and aggressive behavior of a hearing impaired youth. The importance of this demonstration is best understood by reflecting on incidence figures of severe behavior disorders among the hearing impaired ranging from 7 to 12% (Rodda, 1974; Vernon, 1969). It is hoped that the present report will generate further professional interest

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in treatment approaches for behaviorally disordered hearing impaired youth. The need for such work is emphasized by Tucker (1981) who had identified only four or five facilities in the nation providing fully functional mental health programs for this unique population.

The preceding demonstration is limited in that a number of components were included in the treatment package. While the effect of the package is clear, valid statements of the differential effects of the various treatment components cannot be made. In addition, because the program was conducted with one youth displaying highly unique learning and behavioral characteristics, the efficacy of the programs cannot be generalized confidently to other youths. Re-

plication of treatment effects with similar youths may provide a stronger case for external validity. As has been previously stated, a major objective of the present paper is to stimulate these efforts.

In conclusion, the social learning treatment paradigm demonstrated here provides an optimistic view for the provision of psychological services to traditionally underserved hearing impaired populations. Emphasis of the unique characteristics of every learner, empirical methodology and a positive orientation recommends its use for the behaviorally disordered hearing impaired. Future studies may demonstrate the broad potentials social learning technology holds for this population.

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