

HELPING AGGRESSIVE CHILDREN LEARN
TO CONTROL THEIR VIOLENCE

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PREFACE

This research was inspired and made possible by the ongoing therapy program for preschool children conducted at the Diagnostic and Therapeutic Nursery of the Child Psychiatry Section, Oklahoma Health Sciences Center, and its co-directors, Fran Morris and Sally Johnston. Both their ideas and their willingness to participate in this study have been of immeasurable help.

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CHAPTER I

THE PROBLEM

Review of the Literature

The function of the verbal system as an effective force in the regulation of human behavior has been extensively investigated by researchers both in the United States of America and in the Soviet Union. The underlying concept as developed by Vygotsky (1962) and Luria (1957, 1961) is one of the gradual internalization of control, which begins in the social situation, in the interaction of the infant with his mother. From his earliest days the child is subject to spoken instructions from adults. Their commands become an important means for regulating his behavior and lay the groundwork for his own system of self guidance. Luria comments that "the accomplishment of a simple action on verbal instruction can be regarded as the core of voluntary behavior regulated by speech" (1961, p.51). From this stage the child proceeds to spoken verbalizations and then to the internalization of the verbal instructions as self communication. Vygotsky (1962) was the first to assert the functional equivalence of the private speech of the child with some aspects of adult thought. For a review of the functional role of private speech see Kohlberg, Jaeger, and Hjertholm (1968).

The actual process of the child's development in ability to exercise motor control or self regulation through verbal instructions has

been systematically mapped by Luria (1957). Typically the child is asked to press a ball when he sees a red light. Prior to a year and a half of age he is unable to comply with these instructions. He will press the ball immediately, before the onset of the light and become distracted, forgetting to press, when the light appears. In the next stage, he is capable developmentally of initiating activity on instruction, but not of terminating or inhibiting the activity, i.e. he continues to press when the light goes out. This stage lasts from around one and a half to two and a half years of age.

Around age three to three and a half the child can understand and verbalize complex instructions such as "Press to a red light, don't press to a green one," but is unable to execute them motorically, actually pressing to either light. At this point, Luria suggests, the central nervous system excitation underlying his movements is still diffuse and the regulatory role of speech too weak to overcome it. However, the regulation can be strengthened both by the repetition of the instructions and by training the child to verbalize his instructions as a means of including his own speech in the regulation of his motor acts. Eventually, between the ages of four and a half and five and a half, effective self control both of initiation and inhibition of response is achieved. (For a detailed discussion of this research and Soviet and non-Soviet replications see Wozniak, 1972).

From this beginning, the study of verbal mediation, both internalized or covert and externalized or overt, has been extended into the areas of cognitive, as well as motoric, behavior. Internalized verbalizations have been demonstrated to play a major role in problem solving strategies of all types. An extensive review of work in this area may

be found in Jensen's (1971) article. Externalized verbalization or the phenomenon of the child talking to himself as a means of directing his behavior has also been investigated. Meichenbaum and his associates (Meichenbaum, Bowers & Ross, 1968; Meichenbaum & Goodman, 1969a, 1969b, 1971; Steffy, Meichenbaum & Best, 1970) have found overt self instructions to be effective in inhibiting motor behavior, increasing latency of response and reducing errors on cognitive performance tasks. Similarly Lovaas (1964) demonstrated the control of verbal operants (or the discriminative stimuli for those operants) over both verbal and manual responding.

This external verbalization or speech-for-self has been seen by Wozniak (1973) as a type of human action system which

may be presumed to be united with other human action systems in a hierarchy responsible for the self-regulatory nature of human behavior. Here 'self-regulation' is basically meant to imply the possession of the dynamic capability of adaptive functioning operating through a number of distinct sub-systems interrelated via a system of reafferent connections. Speech, as one such sub-system, must feedback not only on itself but on a variety of other response systems which in turn possess reafferent interconnections to speech. It is by virtue of inclusion in such a multiply reafferent structure that speech can participate in the self-regulatory process which insures the adaptive control of human behavior (p.2).

In the same presentation, Wozniak comments that a major problem in forming an organized picture of the results of studies investigating speech interactions has been the overgeneralization among mechanisms of verbal mediation. He sees at least six distinct regulatory mechanisms ranging from "lexical regulation" referring to the semantic meaning of a word and "syntactic regulation" referring to the "syntactic relationships which exist between two or more words which themselves may be serving as lexical regulators" through a variety of non-semantic mechanisms (i.e. "phonetic rehearsal," "phonetic cue-addition," the external

inhibition produced by the subject's orienting to his own vocalization, both motoric and acoustic, and "rhythmic regulation"). Of these the semantic structures determine the psychological connections between words and are basic to the operation of the speech system, not at the level of movement or sound, but at the level of meaning.

The focus of the current study is on the control of behavior by these semantic structures, or the underlying psychological meaning of verbal instructions. It seeks to support the concept of Luria and Vygotsky that the self regulation of behavior proceeds out of the social situation from the imposition of behavioral instructions by an adult to the child's internalized acceptance of those instructions and self patterning of behavior in accordance with them.

One may speculate that an intrinsic stage in the process of self patterning of behavior is that of learning the rules by which he is to govern himself. Bem (1967) found indications that the absence of verbal self control in three year old children appeared to stem from a learning deficit rather than from a developmental deficiency as had been postulated by Luria (1961). In investigating the establishment of an internal feedback system to generate clues for the termination of a motor task using a fading procedure, or sequence of steps by which the child progressed from a stage of instruction by others to inward self instruction, she demonstrated the ability of the children to acquire the internalized verbalization necessary to perform her task. She concluded that these results emphasized the importance of a learning procedure on the emergence of verbal self control and the establishment of effective self instructions. A similar fading method was used by Meichenbaum and Goodman (1971) in studies designed to teach a group of impulsive second

graders to provide themselves with internally originated verbal commands and respond to them appropriately. Briefly this procedure, termed a "cognitive self guidance treatment regimen," followed the developmental sequence of instruction by adults, followed by the child's instructions aloud to himself, and later by his covert or non-verbalized self instruction. The goal was to bring the subject's overt behavior under his own discriminative control. The tasks used ranged from simple sensorimotor tasks to complex problem solving strategies. Although the task behaviors themselves showed significant improvement, the classroom behavior of these children showed no significant change. This may serve to indicate that a design as mechanical as a fading procedure may have limited effectiveness in situations requiring a broad generalization of behavior, such as a classroom situation involving many types of behavior, or a social situation. The fading technique seems to involve "learning the rules." Other techniques may be required to put the rules into operation.

Luria (1961) found that repetition of the instructions by the adult in close time proximity to the behavioral stimulus was effective in the establishment or strengthening of self regulation (i.e. "remember the rules"). Another technique effective in influencing self emitted behaviors in a broad variety of complex situations is that of modeling. In various studies, Bandura (1969) has found that the learning of a new response and the inhibition and extinction of a previous response was a function of the observation of a model; that the relationship between the subject and the model was an important variable in vicarious learning of this sort; and that adult models were more effective than peer imitation. In addition, the basic learning techniques of positive and

negative reinforcement have been shown to be valuable agents in instituting control over behavior.

From a practical point of view, a group of behaviors over which the child, for effective social functioning, is required to gain control may be described as those with destructive or hostile-aggressive intent and effect. Generally aggression in childhood seems to be an universal phenomenon, at least in our culture. Sears, Macoby, and Levin (1957) reported that 95% of the 379 mothers interviewed in their study told of instances of strong aggression directed against them by their children. Similarly McCandless, Balsbaugh, and Bennett (1958) observed frequent conflict occurring (on the average of every five to eight minutes) during free play in a pre-school situation. However, the majority of children are able to regulate their behavior sufficiently to enable them to remain in their nursery or classroom situation.

Developmentally, the child is expected to have gained some measure of internalized control by age three or the time of entering a social situation, such as nursery school. In view of Bem's (1967) work, one may speculate that those children who have not demonstrated adequate self control by this age have not learned to generate their own cues to govern appropriate responding in situations in which their aggressive or destructive impulses are provoked. That aggressive non-verbal behavior may indeed be governed by verbal behavior has been demonstrated by Lovaas (1961). He found that nursery children between the ages of three and four emitted more non-verbal aggressive behaviors after being reinforced for aggressive verbal responses. One possible explanation given for this result was that the aggressive verbal response became a discriminative stimulus for the non-verbal aggressive behavior. If so, it

is equally plausible that an aggressive impulse may become a discriminative internal stimulus for the verbal inhibition of aggressive action. Thus a response chain may be established in which the aggressive impulse is linked with the verbal instruction to inhibit aggressive action. This inhibition of immediate physical response functions to provide the child with a brief period of time in which to decide which course of action to pursue.

The Present Study

The present study was designed to investigate the effectiveness of a combination of learning techniques in establishing internal self regulation of destructive and hostile-aggressive physical behaviors in preschoolers. The techniques used to establish and reinforce the internal self regulation of socially unacceptable behaviors consisted of a combination of the following:

1. repetition in the therapeutic situation of the particular rule for social conduct which dealt with the behavior in question. These rules were stated simply as "no hitting," "no biting," "no spitting," "no kicking," or "no throwing." This repetition took place each time one of the non-approved behaviors occurred. After such a reminder, if the behavior continued a type of negative reinforcement (see #2. below) was applied.

2. negative reinforcement, defined as removal of the child from the play group any time he failed to control his aggressive impulses. There were two levels of negative reinforcement. In the first, the child was asked to sit on a chair by the door until he indicated his willingness to control his behavior. If he then was still unable to

regain control, the second level of removal was applied. In this the child was removed to a separate playroom until he was willing to agree to exercise control. During these removals the verbal communication to the child was to the effect that the separation was to provide him with an opportunity to regain control, and not a form of punishment. Every attempt was made to avoid increasing the child's feelings of guilt over his inability to control his impulses.

3. positive reinforcement, defined as permission to return to the group. This permission was given by the teacher-therapist in an approving manner when the child assented to controlling his behavior.

4. modeling of their own control of aggressive and retaliatory impulses by the personnel present. No physical punishment was used at any time regardless of the behavior involved. For the present purpose, physical punishment was considered to include such disciplines as spanking, slapping, or other action designed to inflict physical pain. The bodily removal or restraint of a child was not considered to fall in this category.

A limited study using these remediation techniques and the same format of behavior observations was conducted on a group of five preschool children (Lucas, 1973). Results of the observations showed that the incidence of physical aggression decreased over a ten week period of time, while that of physical affection increased. The proportion of verbal behaviors emitted remained approximately constant, and no significant change was observed in the quality of verbal behavior (whether affective or aggressive). These results led to the speculation that expectations of an increase in verbal behavior with this particular population of children may be inappropriate. These children apparently

rely primarily on physical behavior for their interpersonal contacts. When they learn to control their more aggressive behaviors, the nature of their physical contact becomes proportionately more affectionate.

There were two major questions to be considered in the present study. The first concerned whether the treatment method outlined above produces a positive effect on behavior such that physical aggression decreases and physical affection increases. It was hypothesized that the application of this treatment procedure, or combination of learning techniques, on a consistent basis over the period of a few weeks would result in changes of the observable behavior of the children studied in the direction of less physical aggression and more physical affection. No changes were expected in the proportion or quality of the verbal behaviors emitted.

The second question inquired whether the observed behavior changes due to the treatment in a therapeutic setting would generalize to the normal social environment of the child. Accordingly it was further hypothesized that these behavior changes would indeed generalize from the experimental setting to the regular nursery school program attended by the child, producing an increase in physical affection and a decrease in physical aggression there as well.

CHAPTER II

THE METHOD

The research was conducted at the Diagnostic and Therapeutic Nursery (DT nursery) of the Youth Counseling, Family and Child Development Center (YCCDC), Child Psychiatry Section, Department of Psychiatry and Behavioral Sciences, Health Sciences Center, Oklahoma City, Oklahoma. This nursery program is funded by the Community Action Program as a service for the Head Start Centers in the area.

Subjects

The experimental group consisted of 15 pre-school children who were referred to the DT nursery through their Head Start Centers, or privately through YCCDC. The referral problem was uncontrollable physically aggressive behavior. The age range of the children was four to six years. They were seen at the DT nursery for two hours a morning, twice a week, while continuing to attend their regular Head Start or private nursery program.

A control group consisted of non-referred aggressive children present in the nurseries from which the children in the experimental group were obtained. The groups were matched for age, race, and sex, such that the average age was approximately the same (experimental group, four years ten months; control group, four years seven months), and the proportion of blacks (B) to whites (W) and males (M) to females (F) was

roughly the same (experimental group 6BM, 6WM, 2BF, 1WF; control group 6BM, 5WM, 3BF, 1WF).

Instruments

An adaptation of a behavioral checklist devised by Walters, Pearce, and Dahms (1957) was used for recording behavioral observations (see Appendix A). This checklist categorizes possible interpersonal behaviors as affectionate or aggressive, with the further subdivision into physical or verbal behavior, yielding four major categories: Physical Affection (PAff), Verbal Affection (VAff), Physical Aggression (PAgg), and Verbal Aggression (VAgg). To the Walters et al. category of PAgg was also added any destructive behavior directed at an object or item of furniture. The PAff category includes such behaviors as kissing, hugging, smiling, sharing; VAff includes complimenting, speaking in a friendly manner, and asking permission; PAgg includes pushing, hitting, snatching; and VAgg includes commanding, threatening, and refusing to comply.

In addition, a checklist was provided for noting the frequency as well as the intensity of the verbal interventions by the teacher therapists. The checklist categories consisted of three intensity levels of verbal intervention:

Level 1. An on the spot reminder to the child to control his behavior.

Level 2. Removal from the group to a separate chair in the playroom.

Level 3. Removal from the playroom.

Procedure

A behavioral observation was conducted for a total of two hours, one half hour at the beginning and one half hour at the end of two consecutive nursery sessions. One of a team of trained observers made frequency counts of the checklist behaviors emitted during that period of time by the child being observed. Following the two hours of observation, the child received four frequency scores from that observation, noting the total behaviors emitted in each of the four major categories.

Four such behavioral observations were secured on each of the experimental children. The first was taken in the home nursery of the child at the time he was referred to, and accepted by, the DT nursery. The second observation was made in the DT nursery following the child's first week in that setting. The delay period was to provide him with an opportunity to become accustomed to the new situation. In the event he showed insufficient incidence of the referral behavior after the week period, as determined by the nursery director, he was given another week in which to begin responding in his normal pattern before observations were taken.

Between these two pre-treatment observations and the post-treatment observations, a ten week period of treatment by the method outlined above was conducted. During this period, frequency data were collected on the verbal interventions (VI) made with the subject, noting both the frequency and the level of intensity of the interventions. These data were a sample of the amount of VI given each child and were collected six to eight times during the treatment period. Following the ten week period, the two post-treatment observations were conducted, one in each nursery.

Two observations were made on the control subjects. At the time of the first observation in the home nursery (H nursery) of an experimental subject, the first observation on a control subject in the same nursery was made. The second observation on the control child was made concurrent with the second observation on the experimental child in the H nursery.

Personnel

The staff of the DT nursery conducted the remediation training in the control of aggressive behavior. This staff consists of two co-directors who are faculty members of the Department of Psychiatry and Behavioral Sciences, and several trained volunteer workers. These volunteers participate in weekly staff meetings as well as in yearly training programs.

The behavioral observations were taken by a group of trained observers who volunteered to serve one morning a week in that capacity for the duration of the study. During the 18 month duration of the study, however, the observers gradually decreased from five to two.

Interobserver Reliability

Following original training sessions, interobserver reliability data were obtained. A scatterplot was graphed to determine initially whether the relationship between all pairs of observers was linear. Since the relationships did appear to be linear, an analysis of variance was used to estimate the reliability of a single observer's average ratings (Winer, 1971). The results of the first reliability check for five observers' ratings revealed that the reliability of the judgments

for a single observer was .92. Following approximately a four month period of observations, reliability was rechecked to determine whether or not retraining was necessary. These rechecks were conducted three times during the duration of the study. These checks showed the second reliability coefficient, computed from data of the four observers' judgments to be .95 for ratings by a single observer. The third and fourth reliability checks (for three and two observers respectively) resulted in reliabilities for a single observer's judgments of .97 and .98.

CHAPTER III

RESULTS

Findings of the Behavioral Observations

The frequency data in the four behavioral categories were transformed into the proportion of behaviors emitted, using the ratio of behavior frequency in each category to the total amount of behavior noted for each child. This served to remove some of the variability due to individual differences in the amount of interpersonal behaviors emitted, as well as to clarify the extent of the change occurring. (For the raw scores in each category see Appendix B).

Results of the behavioral observations on the experimental and control groups were analysed by a single factor analysis of covariance (Winer, 1971) for each of the four dependent variables, i.e. the post test scores on PAff, VAff, PAgg, and VAgg. In this case the covariate was the pre-test frequency of the corresponding behavior for both groups of subjects.

Results of the analyses strongly support the primary hypothesis expecting a decrease in PAgg. The experimental group, following the treatment program, exhibited significantly less PAgg than did the control group ($F=11.85$, d.f.1,27, $p<.001$). Contrary to the prediction of a significant increase in PAff for the experimental group over the control, there were no significant differences in the emission of PAff

behaviors between the two groups, although both groups did increase in PAff. Statistical support for an increase in PAff in the experimental group is presented in a later analysis; since the PAff increase for the control group is even larger than that for the experimental group, it was also presumed statistically significant. On the other hand, the VAff behaviors in the experimental group increased significantly more than those of the control group ($F=22.596$, d.f.1,27, $p<.001$). The category of VAgg showed no significant change or post treatment differences between the two groups. Table I summarizes the pre and post means and standard deviations for the experimental group (in DT nursery) and pre and post means for both groups in the H nursery. In addition, adjusted post means from the ANOCOV are included for the experimental group (DT nursery) and the control group (H nursery). For further reference and clarification, Table II shows the means and standard deviations of the raw frequency scores in each category for the experimental group in both locations and for the control group in the H nursery. (See Appendix C for the complete summary tables for all analyses.)

Although the analysis of covariance is considered fairly robust with respect to assumptions of homogeneity of within class variances and regression coefficients, a test was run to check that there were no significant differences in the within class regression weights (Winer, 1971). Tests of the four variables obtained the following results: with 1,26 d.f. in all cases, PAff: $F=.5274$, VAff: $F=.7841$, PAgg: $F=3.087$, VAgg: $F=3.45$. None of these results was significant at the $p<.05$ level.

To test the hypothesis of the observed changes generalizing to the home nursery, a 2X2 repeated measures analysis of variance (Winer, 1971)

TABLE I

PRE AND POST TREATMENT MEANS AND AVAILABLE STANDARD DEVIATIONS
FOR EXPERIMENTAL AND CONTROL GROUPS

Experimental Group						Control Group				
DT Nursery				H Nursery		H Nursery				
	Means		Stand.Devs.	Means		Means				
	Pre	Post		Adj. Post	Pre	Post	Pre	Post	Adj. Post	
PAff	.1540	.2300	.2319	.0824	.0943	.1113	.2547	.1233	.2293	.2274
VAff	.2033	.4013	.4278	.1001	.1122	.2040	.3493	.3793	.2073	.1809
PAgg	.4647	.2527	.2320	.1120	.1250	.5753	.2680	.3813	.4200	.4407
VAgg	.1793	.1133	.0961	.0746	.0550	.1093	.1247	.1127	.1427	.1599

TABLE II

RAW SCORE FREQUENCY DATA MEANS AND STANDARD DEVIATIONS
FOR EXPERIMENTAL AND CONTROL GROUPS

Experimental Group						Control Group						
DT Nursery				H Nursery		H Nursery						
	Means		Stand.Dev.		Means		Stand.Dev.		Means		Stand.Dev.	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
PAff	6.93	11.4	4.94	6.25	2.20	4.80	1.73	3.53	2.20	2.80	2.44	1.73
VAff	8.26	18.7	4.29	5.49	4.20	6.20	3.19	3.32	4.40	2.90	2.87	2.57
PAgg	19.6	13.3	7.74	8.66	13.6	5.87	5.97	5.77	7.27	8.40	5.93	6.31
VAgg	7.66	5.87	3.50	4.08	2.40	2.93	2.09	3.88	2.47	2.93	3.05	3.34

with repeated measures for both factors was conducted. The factors were the pre and post test scores of the experimental group (Factor B) with the scores grouped as those received in the home nursery and in the DT nursery (Factor A).

Results of this analysis showed a significant increase in PAff behavior in both the DT and H nurseries ($F=18.75$, d.f.1,56, $p<.001$). VAff behavior also showed a significant pre to post treatment increase in both locations ($F=39.994$, d.f.1,56, $p<.001$). PAgg showed a significant decrease in both locations ($F=57.184$, d.f.1,56, $p<.001$). VAgg showed no significant change in either location. There were no significant differences found in Factor A, nor in the AB interactions in any of the four analyses. This suggests that the behaviors emitted did generalize consistently from the treatment to the home nursery situation.

Effect of Verbal Intervention

In analysing the effect of the verbal interventions an area of secondary interest was the relationship between the amount of effort expended in verbal intervention (VI) and the amount of improvement shown. The amount of VI was defined as the sum of the frequencies of VI times the level of intensity of the intervention. The amount of improvement was defined as the post test scores in each category with the pre test scores partialled out of the post test. The semi-partial correlation of the amount of effort expended with the post test results after the pre test scores were partialled out was computed (see Appendix C). These semi-partial correlations were non-significant for all four categories in the DT nursery and for PAff and VAgg in the H

nursery. However the incidence of VAff in the H nursery was shown to be negatively correlated with the amount of VI ($r=-.6103$, d.f.13, $p<.01$). Conversely, VI was positively correlated with the amount of post test PAgg ($r=.6612$, d.f.13, $p<.01$).

CHAPTER IV

DISCUSSION

Results of the data analysis consistently support the major hypotheses under study. The primary questions were whether the treatment method employed could be related to positive changes in behavior such that PAgg would decrease and PAff would increase in both the DT and H nurseries. These changes were shown to occur in amounts significantly greater than those to be expected from chance variation when the behaviors of the experimental group were analysed for pre-post treatment changes. In addition, when compared with the control group, the PAgg of the experimental group also decreased significantly. However, there was no significant difference in the increase of PAff displayed by the experimental group over that of the control group. This suggests that the increase in PAff behavior is unrelated to the treatment program and may instead be a function of some other factor such as maturation or the socializing effect of a pre-school nursery program.

On the other hand, no significant changes were expected in the proportion or quality of the verbal behaviors emitted. Contrary to this expectation the VAff behaviors increased significantly in the experimental group both in the DT nursery and in the home situation, as well as in comparison to the control group. There was no significant change in the amount of VAgg behavior.

This significant increase in VAff displayed by the experimental group suggests the possibility of a modeling effect. Affective verbalizations may have been increased in the experimental group after the example of the non-punitive and empathic verbalizations of the teacher therapists. The latter were trained to verbally emphasize their role in the interventions as helping the child deal with a difficult problem (i.e. his uncontrollable aggressive impulses) rather than as punishing him for bad behavior. This positive verbal approach may have served as a model to encourage the child's own empathic verbalizations.

Of secondary interest in this study was the relationship of the amount of effort expended in verbal intervention to the observable behavior changes. Unfortunately these data were not collected a constant number of times for each subject. The observation periods ranged from six to eight periods of approximately 30 minutes each for the experimental group. This difference in the number of observations could distort the analysis somewhat. However inspection of the results does show that the seven children receiving the least VI averaged 6.7 observations while the seven children receiving the most VI averaged 7.0 observations, not a considerable difference.

No significant relationship was observed in correlating the amount of VI with the changes in behavior in any of the four categories in the DT nursery. Apparently the changes which occurred had no relationship to the frequency of the interventions. Possibly they may have been related to the consistency with which the aggressive behavior was curtailed by intervention. On the other hand, change in the H nursery behavior was significantly related to the amount of VI expended in two of the four categories, such that the greater the effort that occurred

in the DT nursery, the less the change that occurred in the home nursery. This result is due to the fact that the most aggressive children (i.e. those who required the most VI) showed the smallest percentage of improvement (i.e. decreased PAgg behavior) in their home situation. The seven children receiving the greatest amount of VI showed an average 18% reduction in PAgg, while the seven receiving the least amount of VI showed an average 35% reduction in PAgg. In the DT nursery these same children showed an average 16% reduction in PAgg for those receiving the most VI and a 23% reduction for those receiving the least. The explanation for this result may simply be that the more aggressive children have either more frequent or more forceful aggressive impulses and require additional time and effort to strengthen their internal control systems.

A similar explanation may be applied to explain the negative correlation of VI with VAff. Again the seven children receiving the most VI showed the smallest increase in VAff, while the children receiving the least VI showed the greatest increase in VAff. It should be noted that the average increase in VAff for these two groups of children in the H nursery was 10% and 18% respectively, while in the DT nursery it was 17% and 19%. Again it appears that the more impulsive children although already changing their behavior patterns into those more socially acceptable still require additional assistance in forming and internalizing their control systems.

Suggestions for Improving the Present Study

A number of procedural difficulties were involved in the present study. Generally these were concerned with the observers being present

in the room with the children, and with the manpower requirements of this type of study. Although the DT nursery was equipped with an observation booth, it was impossible to collect the verbal data from the booth. In addition the H nurseries had no such facilities. As a result the observers were often approached by children in the room wanting to talk or play. Although they were trained to avoid such distractions, some precision was lost in this manner. Concerning the observers themselves, considerable strain was put upon them by the manpower requirements of the study. These involved in excess of 200 hours for the observations themselves, plus driving time, missed appointments, loss of subjects who left the program for various non-related reasons. Some of these difficulties might be avoided by the use of video tape cameras with sound to record the observations, using children from a neighboring nursery to form the control group, or utilizing H nursery teacher ratings for base line and improved behavior data. Future studies might find it feasible to reduce the length of the observation periods. For example three periods of ten minutes apiece scattered throughout a nursery session might effectively sample the emitted behaviors in only half the observation time. This would also make it possible for more than one child to be observed on a given morning. One difficulty noted with the thirty minute period was that the child might readily play alone at some absorbing task, such as at the water table or the easel for a period of thirty minutes or longer, emitting no interpersonal behaviors. Shorter spot checks of behavior might therefore more accurately reflect his patterns in interpersonal behavior than the longer single observation period.

CHAPTER V

SUMMARY AND CONCLUSIONS

One problem which has gained attention in recent years is that of uncontrollable disruptive behavior in preschool and older children. Developmentally, children are expected to have gained control over their aggressive and destructive impulses by the age of three or four, or the time of entering a social, nursery school setting. Previous research has indicated that control of non-verbal behavior may be established using verbal behavior and a gradual internalization of verbal commands. The present study has employed a treatment program designed to assist the aggressive young child in controlling and reducing his aggressive and destructive behavior. The aim of the study has been to observe and quantify the incidence of affectionate and aggressive behaviors, both verbal and non-verbal, prior to and following this treatment program, to determine whether change in a positive direction did occur, and whether this change would generalize to the normal social environment of the child.

Results of the study indicate a significant decrease in PAgg behavior in the experimental group when compared with a control group of aggressive children, as well as a corresponding increase in VAff behavior. These changes occurred both in the experimental situation and in the H nursery of the child. PAff behaviors increased both in the experimental and control groups, and VAgg behavior remained essentially un-

changed.

Conclusions drawn from these data are that PAgg behaviors can be significantly decreased in pre-school children through a verbal intervention program without the use of physical punishment. An adjunct to the sympathetic and helpful interventions given to the children may be the increase of verbally affective behaviors in the children so treated. Finally, the observed changes in behavior can be seen to generalize from the experimental setting to the normal social setting of the child.

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APPENDIX A

BEHAVIORAL OBSERVATIONS - CHECKLIST CATEGORIES

BEHAVIORAL OBSERVATIONS CHECKLIST

Physical Affection

- a. Compliant, conforms to another's desire or request.
- b. Kisses, pats, fondles, hugs.
- c. Smiles, laughs with someone.
- d. Helpful, shares, gives assistance to another, divides materials with others.
- e. Sympathetic.

Verbal Affection

- a. Accepts, receives with favor, approves.
- b. Asks permission, requests.
- c. Speaks in a friendly manner, reassures, expresses warmth.
- d. Compliments, praises.
- e. Offers to share, compromise, cooperate.

Physical Aggression

- a. Annoys, teases, interferes.
- b. Hits, strikes.
- c. Makes threatening gesture, pursues.
- d. Snatches, damages, or throws property.
- e. Negativism, refuses to work with or conform to the directions of another.
- f. Pushes, pulls, holds.

Verbal Aggression

- a. Commands, demands.
- b. Cross purposes, conflict over ways of using equipment.
- c. Disparages, makes remarks indicating dislike of another; finds fault with or censures another's behavior; mocks, humiliates, laughs at another's misfortune; expresses desire that another be the victim of imperious events; attributes bad qualities to another.
- d. Injury via agent, entices another person to injure a third.
- e. Refuses to comply; rejects or denies activity to another.
- f. Shifts blame, tattles.
- g. Claims possession, threatens.

APPENDIX B

RAW SCORE FREQUENCY DATA

RAW SCORE FREQUENCY DATA FOR EXPERIMENTAL GROUP

Child	DT Nursery								Home Nursery							
	Pre				Post				Pre				Post			
	PAff	VAff	PAGg	VAGg	PAff	VAff	PAGg	VAGg	PAff	VAff	PAGg	VAGg	PAff	VAff	PAGg	VAGg
1.	11	5	39	10	18	16	21	9	0	1	8	0	1	3	0	1
2.	3	7	18	5	10	23	7	3	4	5	9	4	11	8	6	2
3.	5	5	13	5	7	11	11	4	1	4	9	0	2	4	3	1
4.	18	12	23	11	29	27	34	12	7	12	25	6	12	16	22	16
5.	17	7	17	10	9	9	4	2	1	9	11	3	5	5	2	1
6.	4	6	22	4	7	18	7	6	1	6	10	1	9	5	3	2
7.	6	18	19	7	12	19	23	10	1	2	18	2	2	2	5	1
8.	2	10	13	3	12	15	7	1	2	3	6	3	8	4	3	0
9.	6	5	13	1	4	19	3	5	3	1	7	1	2	6	2	3
10.	3	6	17	12	16	25	1	2	2	3	10	1	5	8	4	6
11.	1	0	22	10	15	20	17	4	1	1	5	0	3	6	3	0
12.	8	15	27	9	1	13	19	4	4	1	16	5	6	8	16	2
13.	3	9	7	7	10	26	14	16	1	3	5	5	2	6	3	4
14.	8	9	14	7	12	14	18	3	3	4	9	0	3	3	5	0
15.	9	10	30	14	9	25	11	7	2	8	15	5	1	9	1	4

RAW SCORE FREQUENCY DATA FOR CONTROL GROUP

Home Nursery								
	Pre				Post			
	PAff	VAff	PAGg	VAGg	PAff	VAff	PAGg	VAGg
Child								
1.	0	4	0	0	2	1	0	0
2.	1	2	19	10	2	0	11	11
3.	2	10	2	0	4	3	11	1
4.	0	1	17	6	0	2	7	9
5.	3	3	9	3	3	2	10	3
6.	2	5	4	1	4	1	5	0
7.	0	5	0	0	3	3	0	0
8.	4	6	8	0	7	2	24	2
9.	3	6	4	0	3	10	2	1
10.	0	2	2	2	3	2	5	0
11.	2	1	13	4	0	5	15	3
12.	2	4	13	4	2	1	5	3
13.	1	2	4	0	2	1	5	3
14.	3	4	3	0	5	4	4	0
15.	10	11	11	7	2	7	12	6

APPENDIX C

DATA ANALYSIS SUMMARY TABLES

ANALYSES OF VARIANCE-COVARIANCE
EXPERIMENTAL VS CONTROL

PHYSICAL AFFECTION

Analysis of Variance

Source	SS	d.f.	MS	F
Treatments	.0000	1	.0000	.0000
Within Group	.6297	28	.0225	

Analysis of Covariance

Source	SS(adj)	d.f.	MS	F
Treatments	.0001	1	.0001	.0060
Within Group	.6260	27	.0232	

VERBAL AFFECTION

Analysis of Variance

Source	SS	d.f.	MS	F
Treatments	.2823	1	.2823	13.192***
Within Group	.6001	28	.0214	

Analysis of Covariance

Source	SS(Adj)	d.f.	MS	F
Treatments	.3935	1	.3935	22.596***
Within Group	.4702	27	.0174	

***p .001

PHYSICAL AGGRESSSION

Analysis of Variance

Source	SS	d.f.	MS	F
Treatments	.2100	1	.2100	6.442*
Within Group	.9141	28	.0326	

Analysis of Covariance

Source	SS(Adj)	d.f.	MS	F
Treatments	.3079	1	.3079	11.85***
Within Group	.7017	27	.0260	

*p .05, ***p .001

VERBAL AGGRESSION

Analysis of Variance

Source	SS	d.f.	MS	F
Treatments	.0065	1	.0065	.430
Within Group	.4238	28	.0150	

Analysis of Covariance

Source	SS(Adj)	d.f.	MS	F
Treatments	.0273	1	.0273	2.132
Within Group	.3462	27	.0128	

REPEATED MEASURES ANALYSIS OF VARIANCE

Physical Affection

Source	SS	d.f.	MS	F
Within Ss				
A	.0012	1	.0012	.126
B	.1804	1	.1804	18.750***
AB	.0170	1	.0170	1.77
Error	.5389	56	.0096	

Verbal Affection

Source	SS	d.f.	MS	F
Within Ss				
A	.0099	1	.0099	.894
B	.4420	1	.4420	39.990***
AB	.0104	1	.0104	.941
Error	.6189	56	.0111	

Physical Aggression

Source	SS	d.f.	MS	F
Within Ss				
A	.0595	1	.0595	3.366
B	1.0114	1	1.0114	57.180***
AB	.0341	1	.0341	1.927
Error	.9905	56	.0177	

Verbal Aggression

Source	SS	d.f.	MS	F
Within Ss				
A	.0129	1	.0129	1.842
B	.0096	1	.0096	1.372
AB	.0248	1	.0248	3.540
Error	.3923	56	.0070	

***p .001

SEMI PARTIAL CORRELATIONS OF EFFORT
WITH FOUR MAJOR VARIABLES

DT Nursery

Variable	Correlation
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PAff	-.2396
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VAff	.0337
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PAgg	.1534
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VAgg	.1067
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Home Nursery

Variable	Correlation
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PAff	-.2259
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VAff	-.6103**
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PAgg	.6612**
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VAgg	.0959
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**p .01

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