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To the Graduate Council:

I am submitting herewith a thesis written by Brenda Wiginton entitled "Time-Out for Oppositional Children: Some Response-Response Covariations." I recommend that it be accepted for nine quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Child Development and Family Relationships.

Major Professor

We have read this thesis
and recommend its acceptance:

Priscilla White

Robert G. Wahler

Accepted for the Council:

Vice Chancellor for
Graduate Studies and Research

TIME-OUT FOR OPPOSITIONAL CHILDREN: SOME RESPONSE-RESPONSE COVARIATIONS

A Thesis

Presented to

the Graduate Council of

The University of Tennessee

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

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by

Brenda Wiginton

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ABSTRACT

The present research attempted to modify the behavior of an oppositional child through the use of time-out and differential attention. In addition, observation of his general behavior was maintained to determine if changes in any non-targeted behaviors covaried with changes in the targeted oppositional behavior.

The subject attended the University of Tennessee Experimental Kindergarten. Video-tape time samples of his behavior were taken during the baseline and treatment periods. Frequency counts of oppositional and compliant behavior, as well as a range of general child behaviors, were then scored on behavioral checklists by trained observers. Comparisons of rates of occurrence for the behavioral categories observed were made between the baseline period and after administration of time-out and differential attention.

As expected, oppositional behavior was drastically reduced during the treatment period. Moreover, there was a covariation between the presentation of time-out and differential attention and an increase in parallel play. In addition, a possible covariation between administration of treatment procedures and a significant reduction in inappropriate play was established. Therefore, it is tentatively suggested that increases in desirable play behavior may covary with increases in compliant behavior directly manipulated by the administration of time-out and differential attention.

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CHAPTER I

INTRODUCTION AND RELATED RESEARCH

The earliest demonstrations of time-out as a decelerating consequence came from animal studies (e.g., Ferster and Appel, 1961; Zimmerman and Ferster, 1963). Prior to that experimental beginning, however, time-out was used by parents and teachers as a natural disciplinary technique. Classroom teachers administered time-out when they required a student to leave the room or to stand in the corner for unacceptable behavior. Parents have used time-out by sending a child to his room as a consequence for an undesirable behavior.

A time-out condition has been defined as an extinction procedure for decelerating an undesirable response by removing the subject from some reinforcing environmental condition(s) (Browning and Stover, 1971). Thus, the punishing effects of time-out are a function of the disparity between the time-out and the ongoing situation. To be effective, then, time-out must involve changing the subject from a rewarding to a non-rewarding, or much less rewarding, situation. In practice, this typically has involved placing the subject in a barren room (e.g., Wolf, Risley, and Mees, 1964). Such an implementation has proven to be especially advantageous when the reinforcing environmental conditions cannot be specifically identified (Browning and Stover, 1971). However, use of time-out has not been limited to this procedure. Studies have also used other methods for contingent removal of the reinforcing stimuli such as applying periods during which cashable tokens could not be

earned (Hawkins, et al., 1967), removing the subject from the dining room (Ayllon, 1963), moving the subject from her wheelchair to the floor (Bostow and Bailey, 1969), shutting off a cartoon film (Baer, 1962), and removing the edible reinforcer and turning away from the child (McReynolds, 1969).

Time-out is most often used in conjunction with differential reinforcement. Regarding this practice, Leitenberg (1965) has emphasized the importance of differential reinforcement for desirable behavior in the ongoing situation as an explanation for the resulting response alteration. Other researchers (Wolf, Risley, and Mees, 1964; O'Leary, O'Leary, and Becker, 1967) have also suggested that the combined use of time-out and positive reinforcement for incompatible, non-deviant behavior is superior to either used alone. In addition, Holz, Azrin, and Ayllon (1963) and Willoughby (1969) have demonstrated that a significant factor in the effectiveness of time-out for suppressing an undesirable response is the availability of alternative response modes leading to reinforcement.

Some attention has been given to the question of the most effective time-out duration. Time-out intervals of 15 seconds (Barton, et al., 1970) to 3 hours (Burchard and Tyler, 1965) have been used effectively. In a review of the time-out literature, Patterson and White (1969) indicated that a majority of investigators reporting successful results used time-out durations in the range of 5 to 20 minutes. In a comparison study, Burchard and Barrena (1972) found a 30-minute time-out duration to be significantly more effective than one of 5 minutes, but no

experimental comparisons have been made between the effectiveness of the maximum and minimum durations used. However, laboratory studies with animals have demonstrated that intermediate time-out durations produce the most accurate match-to-sample behavior (Zimmerman and Ferster, 1963). When long time-out intervals (2 hours) were used, a generalized suppression effect was found to decrease both correct and incorrect responses. Browning and Stover (1971) regarded extended time-out durations as being only a diminishment of the time during which new and desired responses could be learned.

Time-out has been used extensively in a variety of settings to manage a range of deviant behavior. An analysis of the literature, however, reveals that the majority of the time-out research involves dealing with institutionalized adult retardates (e.g., Hamilton, Stephens, and Allen, 1967), mental hospital patients (e.g., Holz, Azrin, and Ayllon, 1963), and children (e.g., O'Leary, O'Leary, and Becker, 1967).

Wahler (1968) found that differential attention alone was insufficient to obtain reliable command-following in oppositional children. However, in the same situation, the addition of time-out proved effective in decreasing the oppositional behavior. Numerous other studies have also shown that time-out is successful in modifying oppositional behavior. Such oppositional behavior as tantrums, glasses throwing, and eating problems (Wolf, Risley, and Mees, 1964), food stealing (Ayllon, 1963), out-of-seat behavior (Hawkins, et al., 1967), refusal to comply with adult instructions (Wahler and Nordquist, 1973) and disruptive behavior (Tyler and Brown, 1967; O'Leary, O'Leary, and Becker, 1967) have been

eliminated or drastically reduced by time-out and differential reinforcement.

This successful modification of oppositional behavior through time-out has occurred in a variety of settings including the home (Wahler, 1969; O'Leary, O'Leary, and Becker, 1967), the mental hospital (Ayllon, 1963; Wolf, Risley, and Mees, 1964), and a variety of educational settings such as a preschool classroom (Wahler and Nordquist, 1973), a special education setting (Hawkins, et al., 1967), and a training school cottage (Tyler and Brown, 1967). Though most of the studies have involved only one subject, some researchers have successfully used time-out simultaneously with two subjects (O'Leary, O'Leary, and Becker, 1967; Wahler, 1969) and with a group (Tyler and Brown, 1967; Hamilton, Stephens, and Allen, 1967).

In the use of time-out to modify oppositional behavior, researchers have found changes in non-targeted behaviors to occur as a result of changes in the targeted behavior. Covariations have been established between decrease in the frequency of oppositional behavior and reduction in the frequency of stuttered speech (Wahler, et al., 1970), increase in childhood imitation (Wahler and Nordquist, 1973), and suppression of enuretic activity (Nordquist, 1971). Both naturalistic (Wahler, et al., 1970; Nordquist, 1971) and laboratory (Wahler and Nordquist, 1973) settings were used in conducting the studies. However, in all of the studies attention was focused on just the treated behavior and one other reponse. Therefore, changes in other non-targeted behaviors were not observed or measured though they possibly occurred.

The purpose of the present research was to use time-out and differential attention in a naturalistic setting to modify the behavior of an oppositional child. Observation of his general behavior was maintained to determine if changes in any non-targeted behaviors covaried with changes in the targeted oppositional behavior.

CHAPTER II

METHODOLOGY

I. SUBJECT AND SETTING

S was a six and one-half year old Caucasian male from a large, low-income family. He was referred by the Department of Public Welfare and placed in the University of Tennessee Experimental Kindergarten in the summer of 1971. Although S was of public school age at the end of his first year in the program, the decision was made to keep him in the experimental kindergarten program for a second year because of his problem behavior. He also appeared to be mentally retarded, but his ability level in the classroom was impossible to assess because of his behavior. Accordingly, no accurate I.Q. measurement could be obtained because of his refusal to comply with the psychological examiner. There was no knowledge of his having attended preschool before entering the University of Tennessee program.

Since S had attended the kindergarten for over one year before this research was begun, an extensive observation period was available. Observations, written in long hand, as well as behavioral check lists revealed that S exhibited behavior which could clearly be defined as oppositional. His most frequent behavior involved refusal to comply with adult instructions and disobeying classroom rules by spitting, pushing, hitting, throwing, running out of the classroom, and taking away other children's toys. An attempt was made by E to teach appropriate

play behaviors through imitation and social reinforcement. This approach was discarded, however, when S's oppositional behavior became so extreme as to disrupt the functioning of the classroom. It was at this point that the decision was made to use time-out and differential attention to deal with the oppositional behavior.

The teachers for the program were graduate and undergraduate child development majors. The head teacher position was staffed by a graduate assistant. During the treatment phase of this research there was a change of head teachers. The first head teacher had had a previous year's experience working as an assistant in the program and was experienced in using time-out procedures. The second head teacher had worked in the program for two quarters, but had never used time-out. Additionally, one graduate and two undergraduates worked in the program as full-time assistants. An undergraduate assistant, who had three quarters of experience working in the program, but no prior experience using time-out, was primarily responsible for applying the treatment procedures.

The program involved sixteen kindergarten children, one-half of whom were from low-income and the other half middle-class families. The group consisted of three Blacks and thirteen Caucasians. Additionally, two of the children were hard-of-hearing, one child was physically handicapped (cerebral palsy), and one child was autistic.

The daily program was relatively structured. Emphasis was placed on teaching concepts such as the idea of a self in relation to a family and a community, seasons of the year, plants, animals, and pre-academic skills such as object, color, number, and letter recognition, and

shape-size discriminations. The teaching occurred during one large and two small daily group times in which specific activities were planned by the teachers, and an outdoor and an indoor free play period, where the children were free to choose from a variety of activities such as games, climbing equipment, painting, etc. Throughout the study, indoor free play time was used to sample teacher-child behavior. However, the behavioral management program utilized by the study was used consistently throughout all the daily activities.

II. APPARATUS

Fifteen minute video-tape time samples were taken daily during the free play period (Sony video-recorder, AV3400 series). A graduate student was trained to operate the equipment. Taping was done from a centrally located window in the observation booth wall which provided adequate coverage of the room. Although a black curtain covered the window to eliminate distraction caused by the camera, some of the children were occasionally aware of the presence of the camera.

Since the nature of the study required that S's response to teacher instruction be assessed, the teacher was wired for sound. An FM wireless transmitter (Olson model, RA 626) and a miniature microphone (Sony model, ECM-16) were used for this purpose. The FM transmitter sent teacher voice signals to an FM receiver housed in the observation booth. The receiver, linked to a mixer (Shure Audio Master, model M64), was used to transmit the audio signals to the video-tape recorder. Pre-recorded audio signals were sent at ten second time intervals to the video-tape recorder from a Sony audio-tape recorder via the mixer.

III. OBSERVERS

The tapes were scored by two graduate and two undergraduate volunteer observers. Two of the observers were aware of the experimental nature of the research and had prior experience in methods of naturalistic observation. The other two observers were experimentally naive and had not had experience in observation methods prior to the training received in this research. These observers were used as a reliability check against the experimentally aware observers. The observation method required the observers to make a coded check for the occurrence of a behavioral class and its stimulus consequences within successive 10-second intervals. Regardless of the number of times a response or stimulus class occurred during an interval, only one unit of behavior was recorded during that period. Reliability checks were conducted prior to and at the commencement of the baseline period and were made regularly during both the baseline and treatment periods. In each case, the experimentally naive observers were used to check against the other two observers. Observer reliability of .80 was achieved for each response and stimulus category before beginning baseline observations. Reliability was computed by adding the number of agreements and disagreements, dividing the number of agreements by the total, and multiplying the figure by 100, giving the percent of reliability.

IV. PROCEDURE

Behavior Classification and Baseline Observations

The present research was concerned with identifying covariations

between compliant/non-compliant behavior and other child behaviors. Before beginning treatment procedures, counts were made of the frequency of oppositional behavior (O), compliant behavior (C), teacher instructions (I), and a number of classroom behaviors which included inappropriate play (IP), cooperative play (CP), parallel play (PP), solitary play (SP), sharing (S), approaches to the adult dispenser of time-out (S_A) and approaches to other classroom teachers (Sa), approaches to a peer (Sp/), approaches by a peer (/Sp), and imitation of teacher behavior (Im). Observations were entered on a behavioral checklist similar to the one described by Nordquist and Bradley (1973).

Child responses were grouped into classes on the basis of their physical and functional similarities. Teacher behaviors such as talking to, touching, or making visual contact with S were considered as a single response class, teacher attention. Coding discrimination was made as to whether the teacher attention was by the dispenser of time-out (A) or other classroom teachers (a), and if it was positive or negative. Negative teacher attention (A-, a-) was scored when a negative verbal comment was made, such as telling S to stop his behavior, or when a negative physical approach was made (e.g., physically restricting S). Teacher attention was scored as positive (A+,a+) when S's behavior was verbally approved. All other teacher attention was scored as A or a. Behavior was coded as oppositional when S did not comply with a teacher instruction within an interval or when S broke a classroom rule (e.g., leaving the classroom without permission). Successive oppositional units were scored until S complied with the teacher instruction or a new instruction

was delivered. Compliant behavior was scored when S followed teacher instructions in the interval scored for teacher instruction or the interval immediately following. Consecutive compliant units were scored until S completed an instruction or until a new instruction was given. Inappropriate play was scored when S hit, yelled at, pushed, kicked, spit at, or took toys from another child. When S was involved in the same activity with at least one other child and there was obvious touching, talking, or looking at one another, cooperative play was scored. Parallel play was scored when S was involved in the same play activity with at least one other child, but there was no interaction between them (i.e., no tactile, verbal, or visual interchange). Solitary play was scored when S was playing by himself. The play behaviors were scored in a hierarachial order of inappropriate play, cooperative play, parallel play, and solitary play. That is, if more than one play behavior occurred during an interval, the behavior rated higher in the hierarchy was scored. The sharing response was scored when S gave a possession to another child, either spontaneously or on request from a child or an adult. Approach to an adult (or a peer) was scored whenever S talked to, touched, or gained eye contact with an adult (peer) and no adult (peer) attention had been scored during the preceding interval. Whenever another child talked to, touched, or gained eye contact with S but had not been in cooperative play with S, approach by a peer was scored. The approach categories were designated as being negative when a negative verbal comment or a negative physical approach was made by S or peers (e.g., pushing S away or yelling at him to stop by peers). Imitation

was coded when S's behavior matched the teacher's behavior either in the interval that teacher behavior occurred or during the interval immediately following teacher behavior.

Contingency Management Program

Once the behavioral categories appeared stable over sessions, a behavior modification program was designed to reduce the frequency of oppositional behavior through the application of time-out and differential attention techniques. This involved the teacher placing S in time-out immediately upon the occurrence of non-compliant behavior (refusal to comply with an instruction or the breaking of classroom rules). Social reinforcement was to be used by the teachers for compliant behavior. No instructions were given the teachers regarding S's other behaviors. Therefore, it was assumed by E that the general classroom reinforcement procedures would be used regarding these behaviors.

During the treatment period, the full-time assistant teacher primarily responsible for administering time-out received training in behavior modification therapy. The research director showed the teacher graphs of teacher/child interactions and video-tapes of the baseline and treatment sessions. Since the head teacher at that time was experienced in the use of time-out, she initially helped direct the assistant teacher in the proper classroom use of these procedures. The head teacher was also the secondary teacher responsible for administering time-out to S. All of the other classroom teachers were aware of the nature of the research with S, but were only responsible for applying the regular classroom reinforcement principles for S's appropriate behavior.

When the treatment period began, the classroom rules and the consequences of breaking those rules were explained to S. When S was placed in time-out, he remained a minimum of five minutes. If a tantrum occurred, he was not released until it had subsided for at least one minute. When S was removed from time-out, the teacher immediately delivered the same instruction that S had not complied with earlier. Records of the number of times and time spent in time-out were recorded by the teacher.

CHAPTER III

RESULTS

I. OBSERVER RELIABILITY

Observer reliability was checked periodically during the baseline and treatment periods. Percent of agreement exceeded 80 percent of all categories in every case.

II. BEHAVIORAL DATA

The results of the observations of S's behavior during the baseline and treatment sessions are shown in Table 1 and Figures 1-8. Table 1 lists the number of behavior units during each session for all of the behavioral and response categories being observed. Positive and negative teacher attention were included only if two or more behavior units had been observed. All of the teacher attention units listed are those for the dispenser of time-out since only five attention units were given by other teachers during baseline and only one unit during the treatment period.

Figures 1-8 depict graphically the behavioral and response categories observed in terms of number of behavior units except for compliant behavior, which is presented in percentage form. Total teacher attention units were included, but the imitation and sharing categories were excluded because of the negligible number of behavior units observed.

As predicted, time-out and differential attention were successful in significantly increasing S's compliant behavior. It should be noted

TABLE 1

NUMBER OF CHILD RESPONSES FOR OPPOSITIONAL (O) AND COMPLIANT (C) BEHAVIOR, INAPPROPRIATE PLAY (IP), COOPERATIVE PLAY (CP), PARALLEL PLAY (PP), SOLITARY PLAY (SP), APPROACHES TO THE ADULT DISPENSER OF TIME-OUT (S_A), APPROACHES TO OTHER ADULTS (Sa), APPROACHES BY PEERS (/Sp), NEGATIVE APPROACHES BY PEERS (/Sp-), APPROACHES TO PEERS (Sp/), NEGATIVE APPROACHES TO PEERS (Sp-/), SHARING (S), IMITATION (Im), AND THE NUMBER OF ADULT INSTRUCTIONS (I), AND TEACHER ATTENTION (A), NEGATIVE TEACHER ATTENTION (A-), AND POSITIVE TEACHER ATTENTION (A+) OVER ALL SESSIONS

Session	I	O*	A	A-	C*	A	A+	IP	A	A-	CP	A	PP	A	A+	A-	SP	A	A+	S_A	A	Sa	A	/Sp	A	/Sp-	A	Sp/	A	Sp-/	A	S	A	Im	A
Baseline																																			
1	30	52	20	5	12	6	-	21	5	3	5	2	40	20	1	2	19	11	-	1	1	-	-	2	1	-	-	6	-	1	1	-	-	-	-
2	25	38	29	-	10	4	-	16	13	-	3	1	22	9	-	-	49	31	-	1	1	2	2	-	-	-	-	2	-	-	-	1	-	-	-
3	22	47	17	-	4	3	-	11	2	-	2	2	26	16	-	-	46	24	-	2	2	-	-	8	7	3	-	-	-	-	-	-	-	-	-
4	30	61	26	3	10	3	-	26	10	1	6	4	35	18	-	2	23	13	-	-	-	1	-	2	1	2	-	5	2	-	-	-	-	-	-
5	23	47	17	-	6	2	2	1	-	-	1	1	27	11	-	-	47	24	4	1	1	-	-	9	1	4	-	2	-	-	-	-	-	-	-
6	10	15	2	-	1	-	-	1	-	-	1	-	7	2	-	-	77	26	1	1	1	-	-	4	2	-	-	2	1	-	-	1	-	-	-
Differential Attention and Time-Out																																			
1	15	1	1	-	13	5	5	5	1	-	1	-	79	24	9	1	4	3	-	2	1	-	-	2	2	-	-	1	1	-	-	-	-	-	-
2	10	2	2	-	9	4	1	-	-	-	-	-	40	16	-	-	40	8	3	-	-	1	1	2	1	-	-	2	1	-	-	-	-	-	-
3	10	3	2	-	8	5	2	2	1	-	7	-	50	29	3	-	30	17	2	2	-	-	-	-	-	-	-	4	2	-	-	-	-	-	-
4	2	0	-	-	2	-	2	-	-	-	-	-	33	17	2	-	57	4	1	-	-	3	2	1	-	-	-	-	-	-	-	1	1	-	-
5	1	0	-	-	1	1	-	-	-	-	6	-	45	12	2	-	32	4	1	-	-	4	1	6	-	-	-	-	-	-	-	-	-	-	-
6	4	0	-	-	6	1	2	1	-	-	10	2	39	14	-	-	37	12	2	1	1	1	1	-	-	-	-	3	-	1	-	-	-	-	-

*These figures were not used to compute percentage of compliant behavior. It was computed by counting the number of instructional units not followed by oppositional behavior, then dividing the sum of these instructions by the total number of instructions.

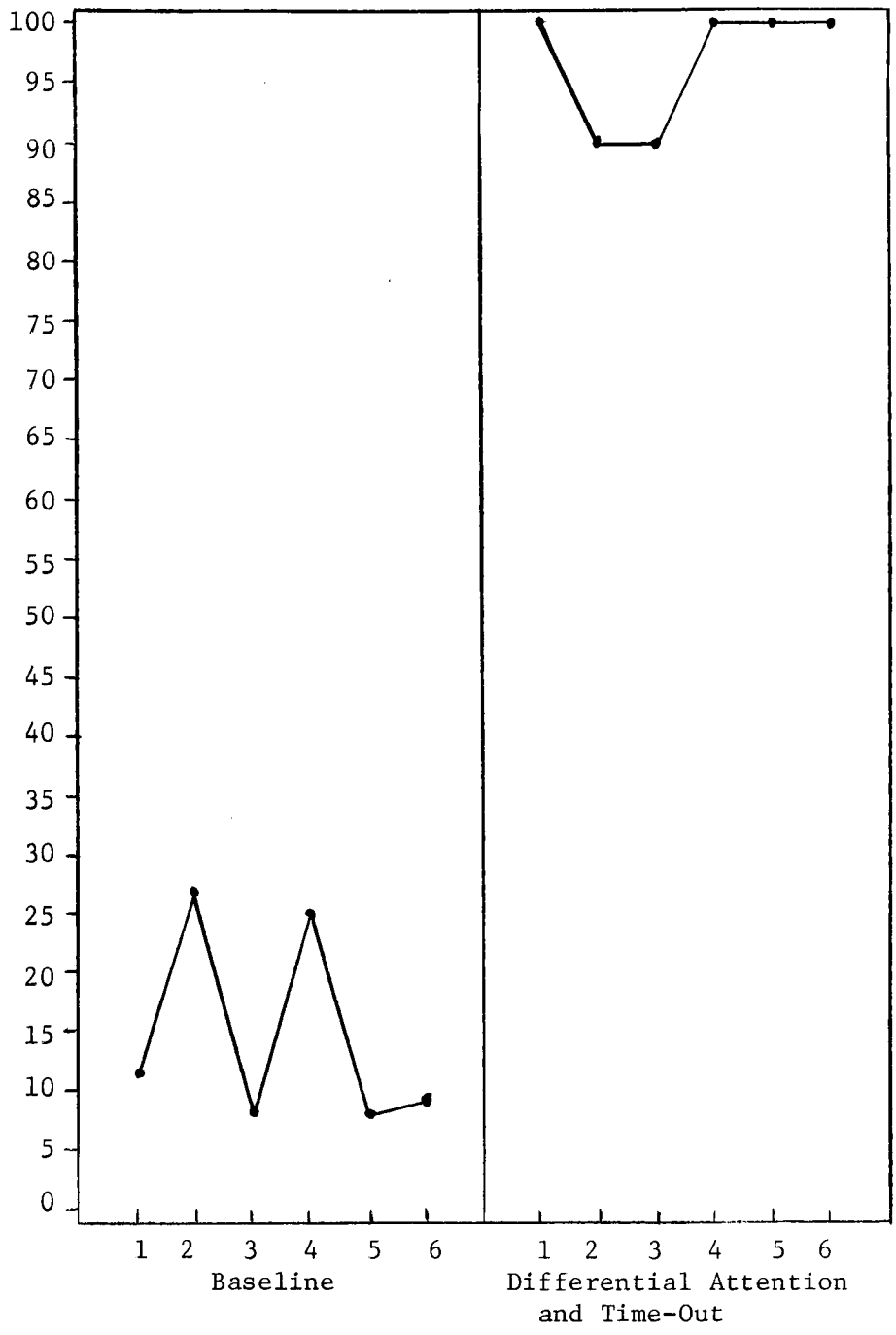


Figure 1. Response percent for compliant behavior.

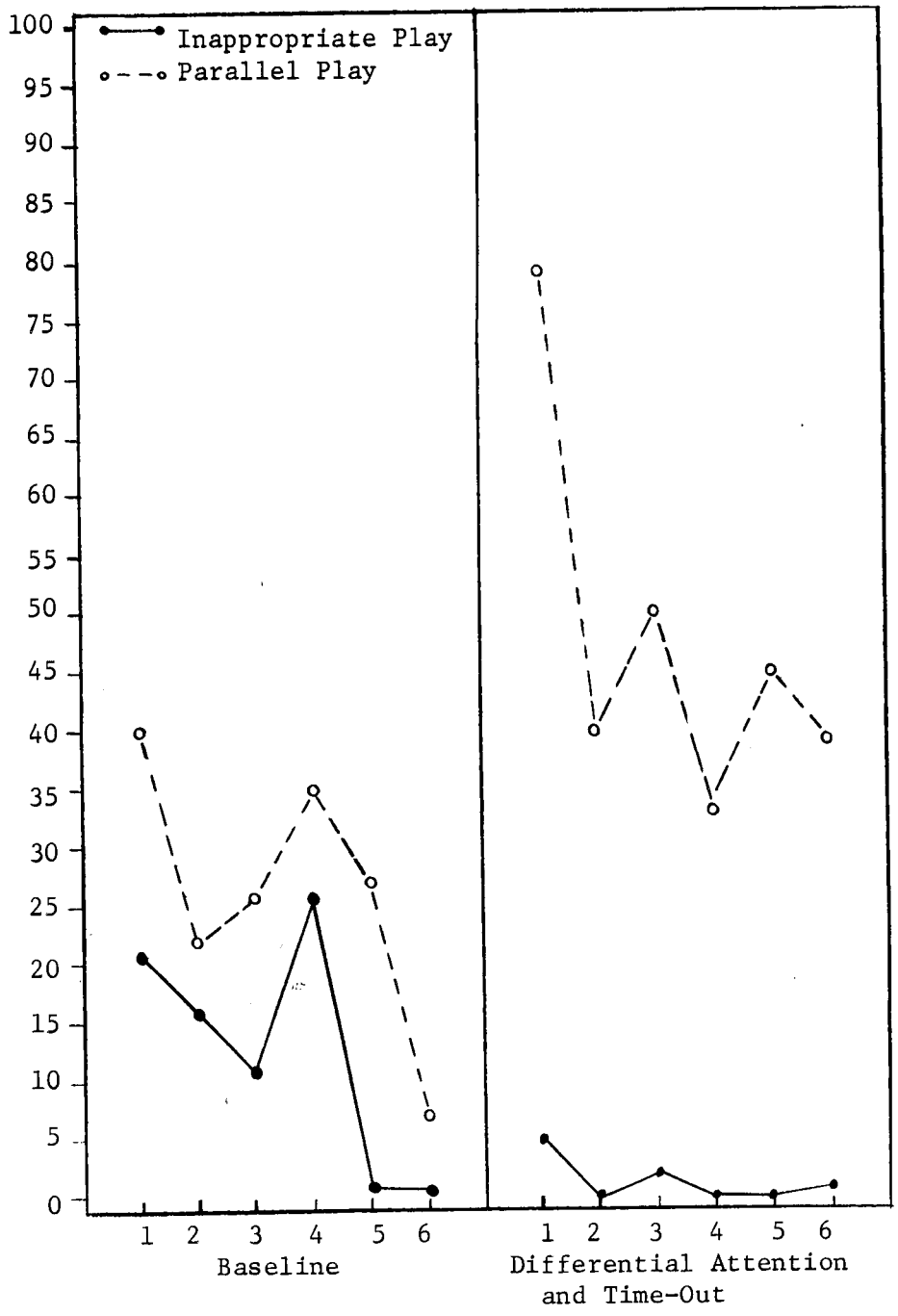


Figure 2. Number of behavior units in inappropriate play and parallel play.

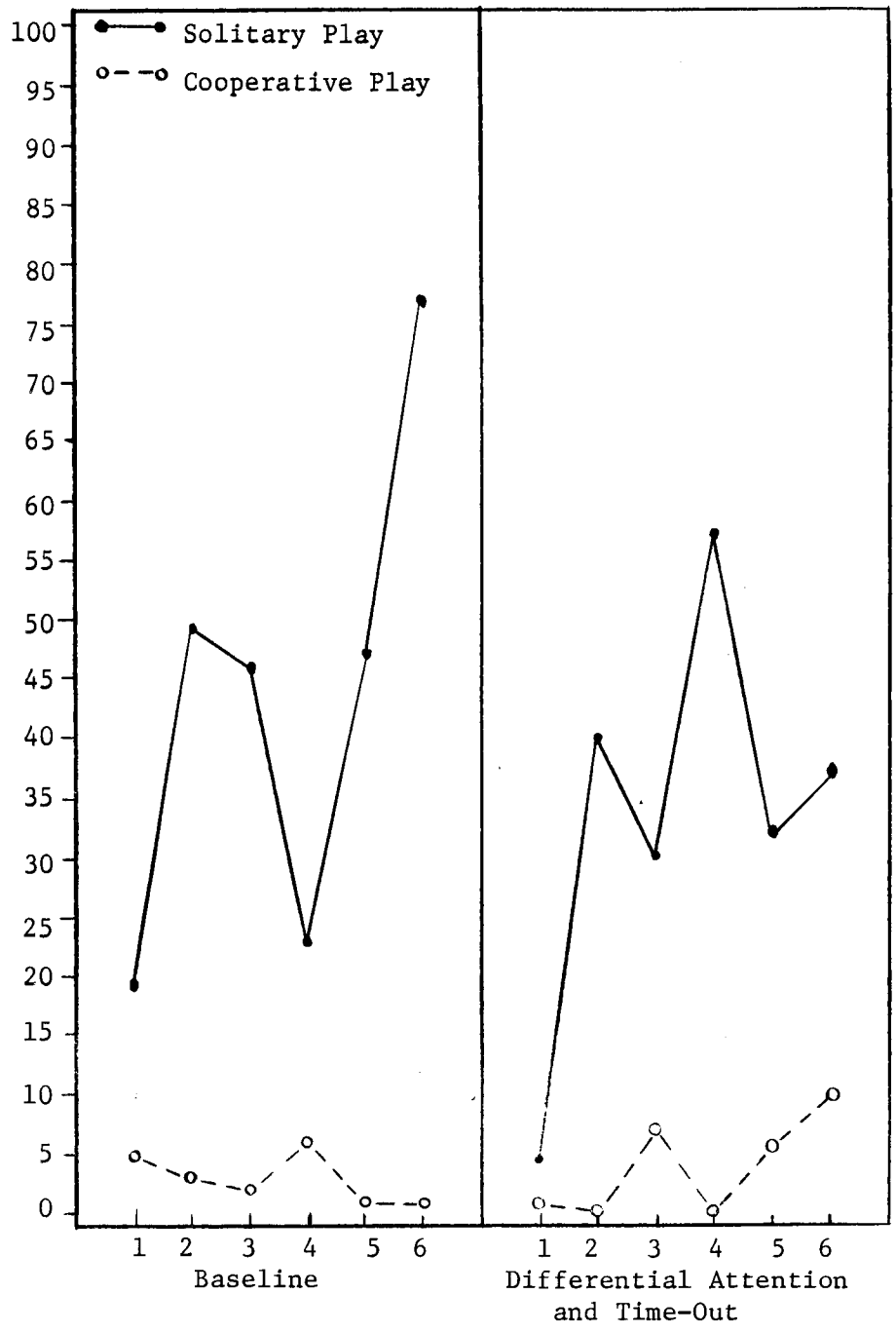


Figure 3. Number of behavior units for cooperative play and solitary play.

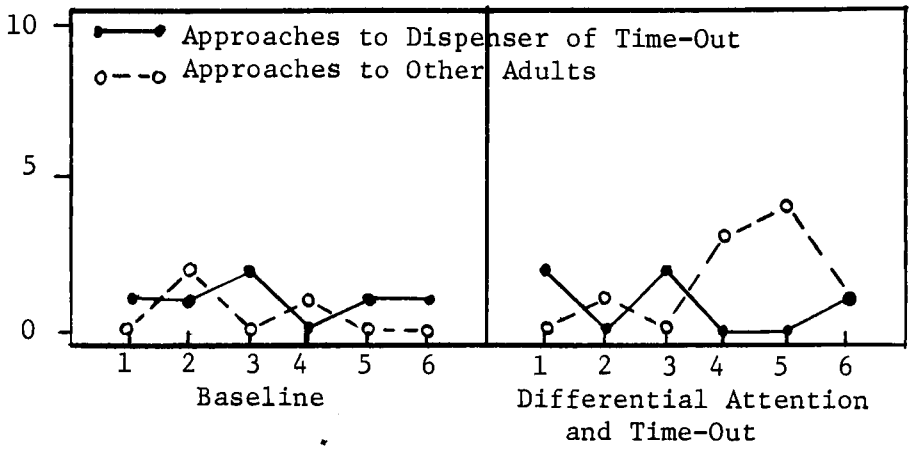


Figure 4. Number of behavior units for approaches to the adult dispenser of time-out and approaches to other adults.

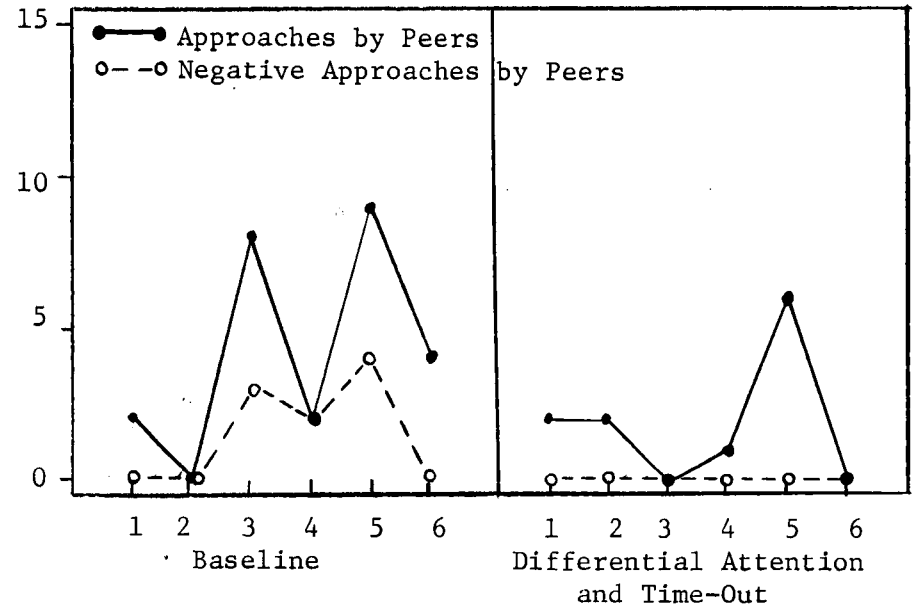


Figure 5. Number of behavior units of approaches by peers to S and negative approaches by peers.

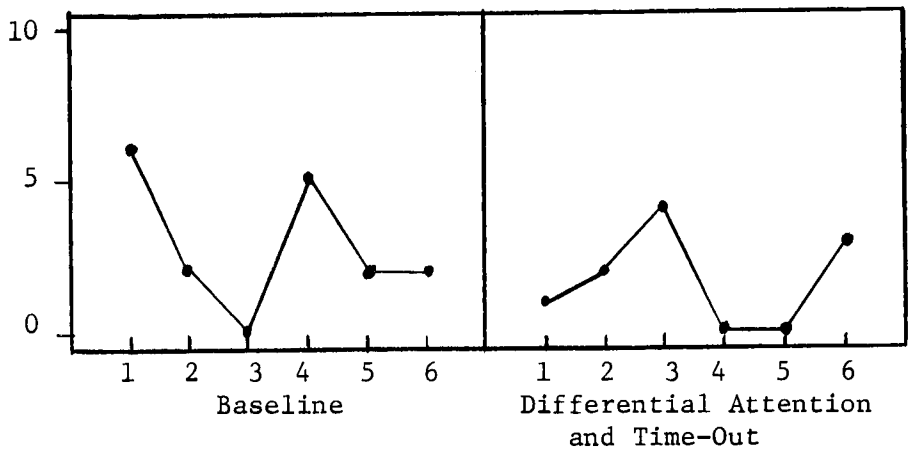


Figure 6. Number of behavior units of approaches to peers by S.

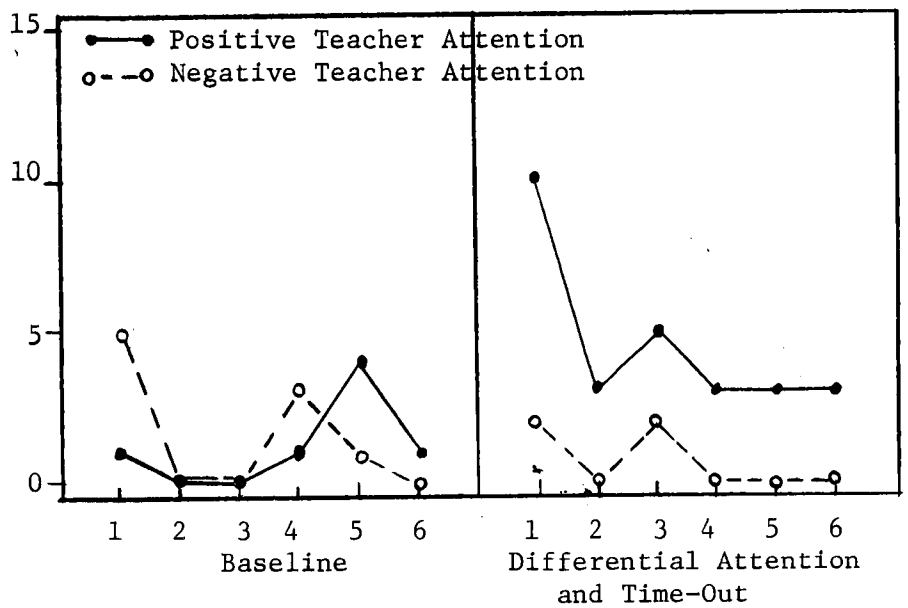


Figure 7. Total number of units for positive teacher attention (A+) and negative teacher attention (A-).*

*Total teacher attention units were not tabulated by adding all the teacher attention units on Table 1. When teacher attention occurred where more than one behavior unit was scored during a 10-second interval, only one teacher attention unit was counted.

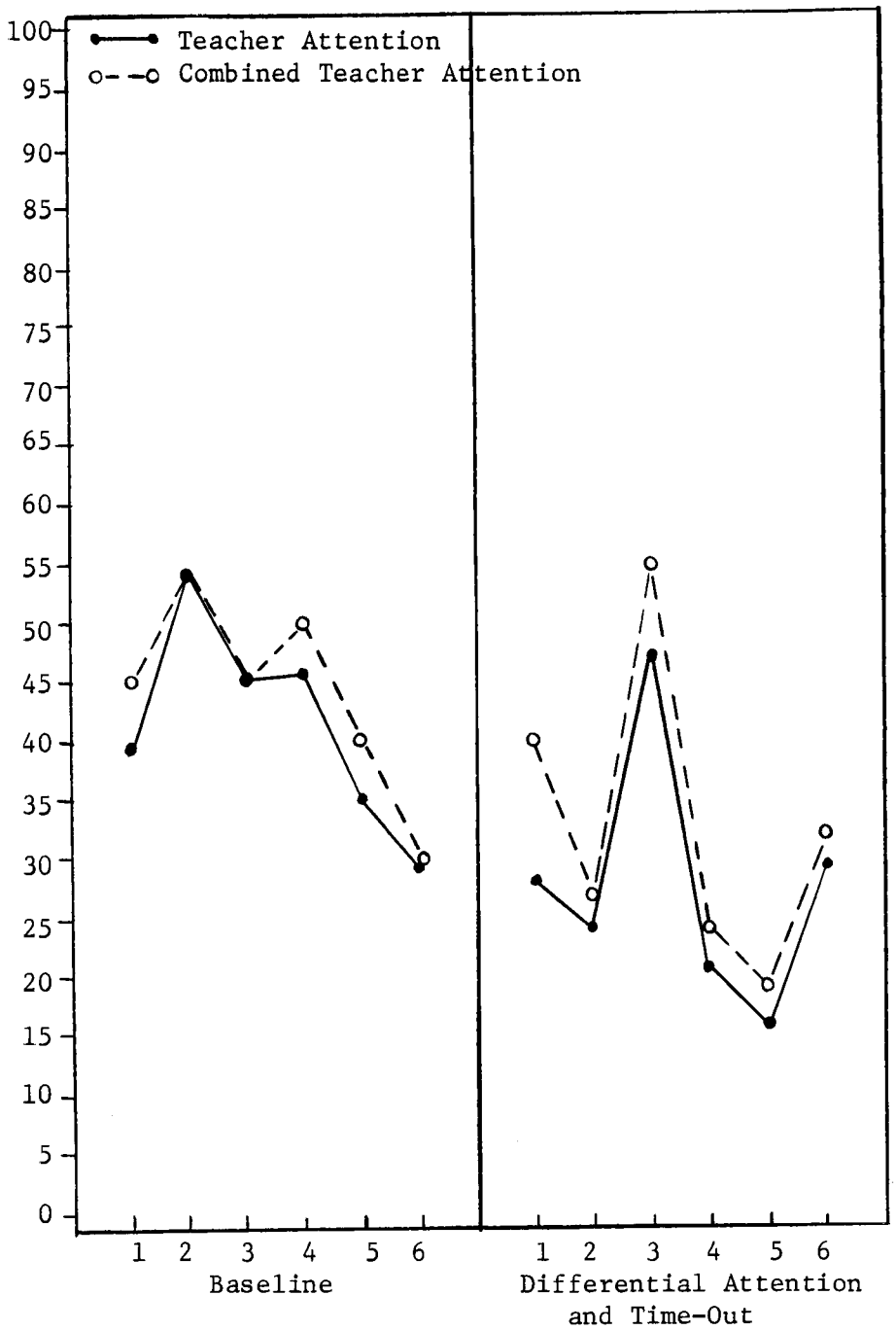


Figure 8. Total number of units for teacher attention (A), and combined teacher attention (A, A+, and A-).

that there was also a reduction in the number of teacher instructions from baseline to the treatment period. An average of 24 instructions during baseline decreased to an average of seven during treatment. However, since the number of teacher instructions was left by E to be naturally controlled by environmental conditions, the argument could be made that fewer instructions were needed to maintain S's compliant behavior during the treatment period.

There were no instances of imitation during the baseline or treatment period. This result is contrary to the findings of Wahler and Nordquist (1973) that increases in imitative behavior correlated directly with increase in compliant behavior, even though the resultant imitative behavior was not reinforced. A follow-up study (Burmeister, 1972) found that S first had to be reinforced for imitation before nonreinforced imitation occurred. Her hypothesis was that S initally did not know how to imitate. If imitative units of behavior had occurred during the present study, they should have been reinforced, although this was not a specific research criteria. Perhaps an important difference between this study and Burmeister's was that her teacher gave specific imitative cues such as "do this just like me," and the present study did not. Such cues could be crucial for eliciting the initial imitative responses. Research by Steinman (1970) supports this idea in that he demonstrated that imitation is a function of teacher instructions, either explicit or implied.

One of the most significant changes across the baseline and treatment sessions was a decrease in inappropriate play. However, Figure 2 clearly reveals that inappropriate play had drastically decreased during

the last two baseline sessions. In terms of the information available from the observations, this phenomena is unexplainable. The only other significant concomitant behavior change was an increase in solitary play. Perhaps these changes are directly related since two play behaviors are involved. The decrease in inappropriate play during the treatment period was probably to some extent a direct function of the treatment procedure because behaviors comprising this category, i.e., hitting and kicking another child, were also included under "classroom rules." Occurrence of these behaviors resulted in the administration of the time-out procedure. Thus, treatment reductions in inappropriate play were most likely the result of the time-out contingency.

The increase in parallel play was also a significant behavior change. This increase was possibly, at least partially, due to changes in stimulus contingencies since teacher attention following parallel play did change moderately across the baseline and treatment periods. The most notable change in teacher attention was the significant increase in verbal approving attention. Though the numbers involved were small, there was also an accompanying decrease in negative teacher attention.

The other play behaviors showed no clear trend. Cooperative play during the treatment period fluctuated more than during baseline. However, the average effect was similar, even though there was a decrease in teacher attention during the treatment period. As clearly depicted in Figure 3, page 18, the overall effect of solitary play was very unstable. There was a significant decrease in teacher attention from the baseline to the treatment period, but the average decrease in solitary play was small in comparison.

The small changes in number of S approaches to the adult dispenser of time-out and to other adults really appear to be variability in behavior, not actual change. However, this is inconsistent with the findings of other researchers who noted an increase in the number of S approaches to the adult dispensing the treatment when differential attention and time-out were used by parents (Wahler, 1969) and teachers (Wahler and Nordquist, 1973) of oppositional children. Perhaps the decrease in attention by the dispenser of time-out during the treatment period is at least a partial explanation for the inconsistency.

Peer approaches to S noticeably decreased during the treatment period. This decrease was partially explainable in terms of elimination of negative peer approaches. Nine negative approaches to S were recorded during the baseline, six of which were associated with inappropriate play. On the other hand, no negative peer approaches were recorded during the treatment period. The number of S approaches to peers also showed a slight overall decrease.

The number of units of sharing behavior observed was negligible. Two units were scored during baseline and only one unit during the treatment period. There was a significant increase in positive teacher attention, and a concurrent small decrease in negative teacher attention, from the baseline to the treatment period. However, there was a reduction in overall teacher attention during the treatment period.

CHAPTER IV

DISCUSSION

The results of the present study show some observable changes in S's behavior did occur during the use of time-out and differential reinforcement for oppositional behavior. Relatively good control over S's oppositional behavior was established during the treatment period. However, since S's school attendance was irregular, E feels that much better control over S's overall behavior might have been possible if he had consistently attended the program.

The establishment of treatment control over S's oppositional behavior would have been clear had the number of teacher instructions been more nearly equal across the baseline and treatment periods. That is, it is possible that increases in compliance were a direct function of decreases in number of instructions rather than the treatment procedures per se.

With regard to teacher attention, the nature of the present study required only that differential teacher attention in the form of social reinforcement be controlled in regard to oppositional/compliant behavior. The observational data revealed that this teacher attention was adequately controlled. Also, the treatment period's overall increase in positive teacher attention and decrease in negative teacher attention indicated that the teacher changed her attention contingencies in accordance with the treatment program. However, since the overall teacher attention in regard to total behavior decreased during the treatment period, the

question can be raised as to whether the treatment decrease, or lack of an increase, in some behavioral categories was a result of lack of teacher attention for these categories. Moreover, it should be noted that the general behaviors which showed the most significant treatment period change, inappropriate play and parallel play, were accompanied by the appropriate decrease and increase in teacher attention. However, other behaviors which showed no clear behavioral trend across the two periods, cooperative play and solitary play, were associated with a decrease in teacher attention. In addition, a behavior which showed a decrease, peer approaches to S, also showed a reduction in teacher attention. No cause/effect relationships can be drawn from these observations, but the relationship between these general behaviors and the increase in compliant behavior through the use of time-out would be more clear if teacher attention for the behaviors was held constant across the two periods.

Researchers (Nordquest, 1971; Wahler and Nordquist, 1973) have demonstrated changes in nonreinforced, non-targeted behaviors when time-out and differential attention were used to deal with oppositional behavior. However, Burmeister (1972) found that a change in the non-targeted behavior (imitation) did not initially occur until direct reinforcement was administered. Clearly, the S of the present study was also a non-imitator. Possibly, the S, like Burmeister's, did not know how to imitate, and therefore, increases in imitation did not correlate with concomitant increases in compliance.

A significant behavior change in this study that occurred

concurrently with the administration of the treatment program was an increase in parallel play. Also, the small number of occurrences of inappropriate play during the treatment period represents a significant change in comparison with the majority of the baseline sessions. However, the drastic reduction of inappropriate play during the last two baseline sessions eliminates the possibility of noting a covariation between use of the treatment program and decrease in inappropriate play. Since the baseline reduction of inappropriate play was largely unexplainable, the suggestion can be made that there was possibly a direct correlation between administration of time-out and differential attention and a consistent reduction in inappropriate play. Because these two behavioral changes are desirable in terms of play behaviors, it is encouraging that there was a covariation and a possible covariation with the presentation of the treatment procedures. Since previous research had documented covariations between increases in cooperative behavior and other non-targeted behaviors (Wahler and Nordquist, 1973; Nordquist, 1971; Wahler, et al., 1970), it is tentatively suggested that increases in desirable play behavior may covary directly with increases in compliant behavior directly manipulated by the administration of time-out and differential attention.

Because the present research did not attempt to demonstrate clear experimental control over targeted or non-targeted behaviors, it is possible that any or all of the changes that have been noted were due to extraneous factors not directly related to the treatment procedures per se. Although this is unlikely in light of previous research, clear casual statements should not be inferred from the results of the present research.

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VITA

Brenda Wiginton was born in Hamilton, Alabama, on June 3, 1949. She attended elementary school in that city and was graduated from Hamilton High School in 1967. The following September she entered Florence State University, Florence, Alabama, and in June, 1971, she received a Bachelor of Science degree in Home Economics Education.

In the fall of 1971, she entered the Graduate School at the University of Tennessee, and accepted a position as an Assistant Head Resident in the residence hall program there. The following fall she accepted a graduate assistantship with that university. In April, 1973, she accepted a teaching position in a private day care center in Madison, Wisconsin. She received a Master of Science degree with a major in Child Development and Family Relationships in August, 1973.