

The Effect of Time-Out Release Contingencies on Changes in Child Noncompliance¹

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This project evaluated the effect of time-out release contingencies on changes in child noncompliance to maternal instructions. Twenty-four clinic-referred, non-compliant, preschool children served as subjects. Each child was assessed under baseline conditions and then under one of three experimental conditions: Parent Release, Child Release, or Control. Children in the Parent Release and Child Release conditions experienced time-out contingent upon noncompliance. Temporal and behavioral time-out release contingencies were present in the Parent Release condition but not in the Child Release condition. A spanking procedure was used to inhibit premature escape from time-out for children in the Parent Release group. The results indicated that both time-out groups demonstrated increased compliance ratios. However, improvement associated with the Child Release condition was considered to be clinically insignificant.

Time-out procedures are generally included in the set of skills presented to parents to alter the conduct problems of their children (e.g., Patterson, Reid, Jones, & Conger, 1975). Moreover, time-out procedures have been demonstrated to be a contributing component to changes in child noncompliance (Roberts, Hatzenbuehler, & Bean, 1980; Roberts, McMahon, Forehand, & Humphreys, 1978) that occur in multicomponent parent training programs designed to suppress noncompliance (Forehand & Peed, 1979). Although several variables are involved in typical isolation-type time-outs (MacDonough & Forehand, 1973), the contingencies for release from time-out are of particular procedural importance. Re-

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lease contingencies specify the temporal and/or behavioral requirements to be met by the child in order to gain release from time-out. In time-out procedures used with noncompliant children, temporal contingencies for release have specified minimum time-out durations ranging from 2 minutes (e.g., Peed, Roberts, & Forehand, 1977) to 5 minutes (e.g., Wahler, 1969); behavioral contingencies for release have specified minimum periods of nondisruptive behavior ranging from 5 seconds (Forehand & King, 1977) to 2 minutes (Zeilberger, Sampen, & Sloane, 1968). The two types of release contingencies interact to define the total time-out duration. Specifically, failure to satisfy the behavioral release contingency extends the total time-out duration beyond the defined minimum duration until the behavioral requirement is eventually met (e.g., Peed et al., 1977).

Analogue studies with nonclinic children have supported the use of both types of release contingencies in time-out procedures used to suppress child noncompliance. Hobbs, Forehand, and Murray (1978) demonstrated that a time-out duration of 4 minutes was more effective in suppressing noncompliance than time-out durations of 1 minute or of 10 seconds. Therefore, temporal release contingencies requiring minimum time-out durations of more than 1 minute appear to be justified. Hobbs and Forehand (1975) determined that a behavioral release contingency requiring 15 seconds of nondisruptive behavior was associated with less disruptive behavior in time-out than a temporal release contingency. Although Hobbs and Forehand (1975) failed to find different effects on child noncompliance for the two release procedures, the behavioral release contingency did preclude the negative reinforcement of disruptive behavior in time-out. When only temporal release contingencies are in effect, children may be released from time-out (an aversive situation) while behaving disruptively, thereby negatively reinforcing the disruptive behavior. Therefore, behavioral release contingencies are currently justified in order to prevent the potential reinforcement of disruptive behavior in time-out.

Whenever a time-out release contingency is imposed upon a child, a procedure is needed to maintain time-out conditions until release requirements have been met. Typically, children are either spanked for premature escape from time-out (e.g., Peed et al., 1977) or prevented from premature escape by a physical barrier (e.g., Patterson et al., 1975). Unfortunately, studies comparing the efficacy of alternative time-out maintenance procedures (e.g., spanking versus a physical barrier) are not available. In this project a spanking procedure was used to inhibit premature escape from time-out since earlier studies (e.g., Forehand & King, 1977; Peed et al., 1977) have successfully suppressed noncompliance in preschool children using time-out procedures enforced by parental spanking.

In contrast to the empirical literature on the effects of time-out with noncompliant children, Dreikurs (1964) has advocated that for certain conduct problems parents use an isolation-type time-out (labeled a "logical consequence"; Dreikurs & Grey, 1968) with no specifiable temporal or behavioral release con-

tingencies. For example, Dreikurs has argued that a child who has violated the rights of others should be removed from the problematic situation until he is "ready" to respect those rights (Dreikurs, 1964, pp. 170-171). The child can terminate the time-out condition at any time with a motor response, presumably initiated when the child has "decided" to behave more appropriately.

The present study was designed to evaluate the effect of time-out release contingencies on changes in the noncompliant behavior of clinic-referred, preschool children. Three experimental conditions were defined. In the first condition (the Child Release group) children were sent to time-out contingent upon noncompliance; however, there were no externally imposed contingencies for release from time-out. Essentially, the children determined for themselves the duration of time-out as suggested by Dreikurs (1964). In the second condition (the Parent Release group) children were sent to time-out contingent upon noncompliance and required to remain there until both temporal and behavioral release contingencies were met. In the third condition (the Control group) children were not exposed to a time-out contingency but participated in the study to control for repeated-measurement and time-related effects.

METHOD

Subjects

Twenty-four children, ages 2 to 6, and their mothers participated. Each child was referred by local professionals for treatment of disobedience, tantrums, fighting, or other conduct problems. Each child displayed a compliance ratio of 60% or less in response to 30 standardized maternal commands issued during the baseline session.

Setting and Apparatus

All parent-child interaction occurred in a clinic playroom. Observations were made from behind a one-way window in an adjoining room. The observation room was equipped with a sound system and a Farrell Instruments "bug-in-the ear" for communication from the experimenter in the observation room to the mother in the playroom. Four sets of toys (animals, cars, blocks, and people) and three containers (box, house, and bus) were placed in the playroom. A cassette tape recorder and split earplug device were used to provide the experimenter and an observer with an auditory cue signaling a 5-second interval. The observer wore headphones to receive auditory input from the playroom and to prevent auditory input from the experimenter that might bias the measurements. Two stopwatches were used to record time-out duration.

Behaviors Measured

1. *Compliance*: a motor response initiated within the 5-second post-command interval that terminated in physical contact with the command-designated toy. *Noncompliance*: all responses other than compliance. The measures of compliant and noncompliant behavior were transformed into a *compliance ratio* by dividing the number of compliant responses per session by 30, the number of commands issued.

2. *Time-out duration*: the number of seconds between the onset and termination of time-out conditions. For children in the Child Release group, time-out began when the child was placed on the time-out chair and the mother finished the statement "You may leave the chair when you decide to do as you're told"; time-out ended when the child stood up and his/her buttocks did not touch the seat of the time-out chair. For children in the Parent Release group, time-out began when the child was placed on the time-out chair and the mother finished the sentence "Stay here until I tell you to leave"; time-out ended when the mother initiated the statement "Since you have been quiet, you may leave now"; seconds spent by premature child escape from time-out and maternal replacement of the child on the chair were excluded from the time-out duration.

3. *Spanking*: the number of premature escapes from time-out displayed by children in the Parent Release group.

Procedure

Mother-child pairs were randomly assigned to one of three groups (Child Release, Parent Release, or Control) with two restrictions: each group was balanced for sex and age of the child.³ This resulted in three groups of eight mother-child pairs. The overall mean age of the children was 3.6 years. Group mean ages did not differ significantly ($F(2,21) = .17, p > .25$). The Child Release and Parent Release groups each consisted of five males and three females. The Control group had six male and two female participants.

Prior to the experimental observations, each mother signed a consent form that had been approved by the university human subjects committee. The consent form specified all the experimental procedures (which included the spanking procedure for subjects in the Parent Release group), the potential risks and benefits of those procedures, and the right to withdraw consent at any point during the experiment.

³Children in the Parent Release and Control groups also participated in a larger, factorial study previously reported by Roberts et al. (1980). In that project the Parent Release condition was labeled the Time-Out Condition; the Control condition had the same label in both projects.

Each mother-child pair was observed two times, first under baseline conditions and then under one of three experimental conditions. The baseline observation occurred on the first clinic appointment; the experimental observation occurred on the second clinic appointment. The intersession interval averaged 9.9 days. Group mean intersession intervals did not differ significantly ($F(2,21) = .08, p > .25$). Upon completion of the experimental observation each mother-child pair participated in an individualized parent-training program appropriate for the child's set of presenting problems.

All maternal behaviors during the two observation sessions were rehearsed prior to the session by the mother and the experimenter without the child present. During the two observation sessions the experimenter controlled all maternal behavior with prompts and feedback via the bug-in-the-ear device. Maternal tasks during the sessions were to imitate statements (i.e., commands and time-out-related statements) and to follow instructions (i.e., motor components of time-out administration) relayed to her by the experimenter over the bug-in-the-ear.

Baseline Session. Prior to command presentation each mother gave her child the following prestatement: "[Name], I have some things for you to do. It's important to me that you do these things right away." Each mother then sat on the playroom floor, pointed to the command-designated objects, issued commands, and otherwise silently watched the child. Thirty commands were presented at approximately 15-second intervals. All commands took the form "Put this [block/car/person/animal] in the [box/house/bus]." At the termination of each maternal command, the experimenter started the tape recorder to establish the 5-second postcommand interval. After the experimenter and an observer had coded child behavior, the experimenter instructed the mother to issue the next command. The baseline session required approximately 8 minutes to complete.

Experimental Session. Command presentation and coding procedures were the same as in the baseline session. However, the 30 commands were randomly reordered for the experimental session. When time-outs occurred for children in the Child Release and Parent Release groups, both the experimenter and an observer used stopwatches to record time-out duration. The time needed to complete the experimental session varied as a function of the experimental conditions. The approximate median session durations for the Child Release, Parent Release, and Control groups were 10 minutes, 22 minutes, and 8 minutes, respectively.

1. *Child Release group:* Prior to command presentation, mothers in the Child Release group repeated the baseline prestatement. Additionally, these mothers stated, "If you choose not to obey, you will sit in the corner until you decide to do as you're told." (See Dreikurs & Grey, 1968, p. 78, regarding the role of "choice" in the use of logical consequences.) Command presentation was then initiated. If the child was noncompliant to a given command, the mother said, "Since you did not put the _____ in the _____, you have to sit in

the corner." She then placed the child on a chair in the corner of the playroom and said, "You may leave the chair when you decide to do as you're told." All child behavior during the time-out period was ignored. When the child left the time-out chair, the mother gave the next command.

2. *Parent Release group*: Prior to command presentation, mothers in the Parent Release group repeated the baseline prestatement. Command presentation was then initiated. If the child was noncompliant, the mother said, "Since you did not put the ____ in the ____, you have to sit in the corner." She then placed the child on the chair and said, "Stay here until I tell you to leave." Release from time-out was contingent upon the child sitting in time-out for 2 minutes plus remaining quiet during the last 15 seconds of that period. If the child was crying, whining, or yelling at the end of the 2-minute period, time-out duration was extended until the child was quiet for a 15-second period. If the child left time-out before meeting both release contingencies, the mother guided the child back to the chair and said, "Since you left the chair, I am going to spank you." She then spanked the child twice on the buttocks with her hand, placed the child back on the chair, and repeated the instruction, "Stay here until I tell you to leave." The duration of escape episodes was not counted toward the child's 2-minute time-out requirement. Time spent in time-out before and after escape episodes was summed until the 2-minute minimum was attained. All child behavior during the time-out period, other than escape behavior, was ignored. After the child met both release contingencies, the mother said, "Since you have been quiet, you may leave now." After the child left the time-out chair, the mother gave the next command.

3. *Control group*: Mothers in the Control group repeated baseline procedures.

Observer Reliability

Two students and the authors served as observers. Two of these observers, one of whom was also the experimenter, independently coded child behavior for every assessment of every mother-child pair, ensuring "awareness" of reliability checks on all occasions (Kent & Foster, 1977). Furthermore, all observers participated in biweekly training sessions to maintain coding accuracy (cf. Johnson & Bolstad, 1973). Data collected by the nonexperimenter observer were analyzed. Data collected by the experimenter were used only to calculate reliability indices.

An agreement reliability index of 99.1% was determined for the compliance measurements. This percentage was calculated by dividing the sum of the agreements by the sum of the agreements plus disagreements (30 per session) over all sessions. An interobserver reliability coefficient (Pearson r) of .99 was calculated from the time-out durations recorded by both the experimenter and the observer for each of the total 185 time-out occurrences. Observer agreement on the oc-

currence of premature escapes from time-out (i.e., spanking occurrences) was 100%.

RESULTS

Mean compliance ratios for each group across sessions are presented in Figure 1. A two-way analysis of variance with one between-subject factor (Groups: Child Release vs. Parent Release vs. Control) and one within-subject factor (Sessions: Baseline vs. Experimental) was performed on the compliance ratio data. The analysis yielded significant main effects for the Group factor ($F(2,21) = 4.8, p < .05$) and the Sessions factor ($F(1,21) = 22.3, p < .01$). In addition, a significant Group by Session interaction ($F(2,21) = 2.21, p < .01$) was detected.

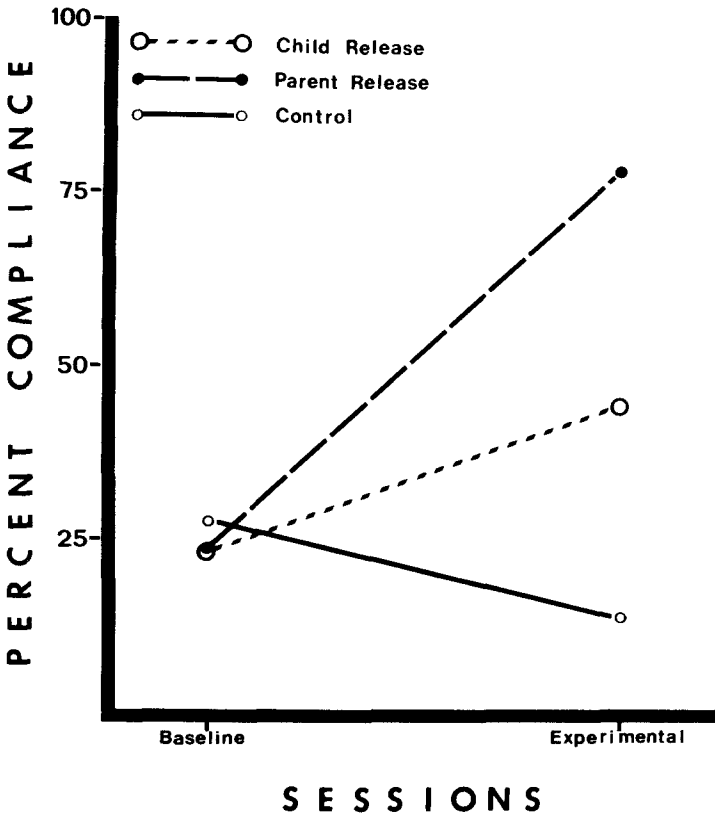


Fig. 1. Mean percent compliance for the Child Release, Parent Release, and Control groups across baseline and experimental sessions.

Tests for simple effects revealed significant differences between baseline and experimental sessions for the Child Release group ($F(1,21) = 7.8, p < .05$) and for the Parent Release group ($F(1,21) = 53.1, p < .01$). Therefore, the Child Release procedures were associated with a significant increase in the mean compliance ratio from 23.3% during the baseline session to 44.1% during the experimental session; Parent Release procedures were associated with a significant increase in the mean compliance ratio from 23.4% during the baseline session to 77.9% during the experimental session. Children experiencing control procedures failed to significantly change the group mean compliance ratio across sessions.

There were no significant differences among groups at the baseline session. However, a significant simple effect for groups was detected at the experimental session ($F(2,38) = 24.6, p < .01$). The Scheffé multiple-comparisons test yielded significant differences at the experimental session between the Parent Release and Child Release groups ($F(2,21) = 13.4, p < .01$), between the Parent Release

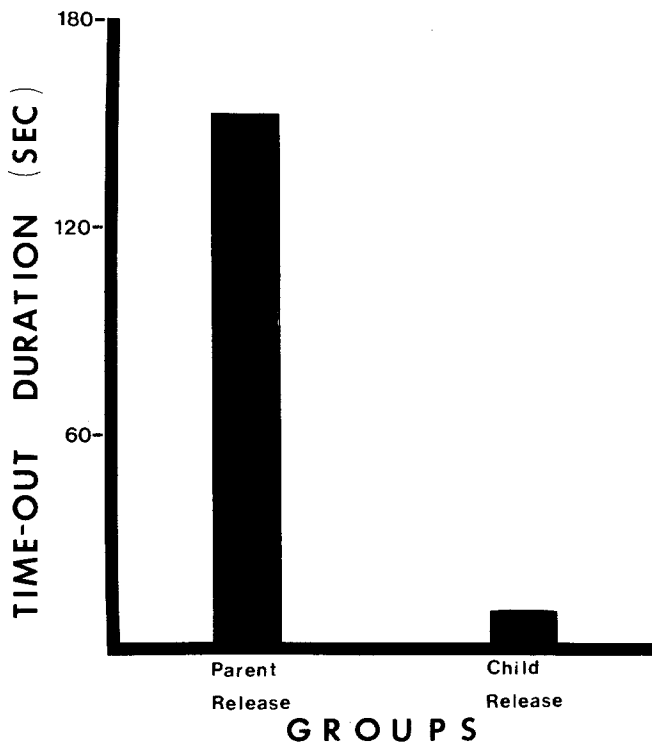


Fig. 2. The average median time-out duration for the Parent Release and Child Release groups during the experimental session.

and Control groups ($F(2,21) = 49.2, p < .01$), and between the Child Release and Control groups ($F(2,21) = 11.2, p < .05$). Therefore, at the experimental session the mean compliance ratio of the Parent Release group (77.9%) was significantly greater than the mean compliance ratios of both the Child Release (44.1%) and Control groups (13.3%); furthermore, the mean compliance ratio of the Child Release group was significantly greater than that of the Control group.

The mean number of time-outs for the Child Release group was 16.6 during the experimental session. In contrast, the Parent Release group mean was 6.5 time-outs. The difference between the means was significant ($t(14) = 3.4, p < .01$), indicating that children in the Child Release condition experienced significantly more time-outs than children in the Parent Release condition.

Mean time-out durations for the Parent Release and Child Release groups during the experimental session are displayed in Figure 2. Since the number of time-outs varied among the 16 children within a range from 2 to 23 occurrences, the median time-out duration was calculated for each child from her/his set of time-out occurrences and then subjected to analysis. The average median time-out duration was 152 seconds for the Parent Release group and 9.2 seconds for the Child Release group. A t test for independent groups yielded a significant difference ($t(14) = 7.9, p < .01$), indicating that the average median time-out duration for the Parent Release group was significantly greater than the average median time-out duration for the Child Release group.

All children in the Parent Release group were spanked at least once for premature escape from time-out. The group mean number of spankings was 8.3 and the median value was 3.5.

DISCUSSION

Both Child Release and Parent Release time-out procedures were associated with significant increases in group mean compliance ratios. In contrast, Control group children who did not experience time-out for noncompliance failed to demonstrate a significant change in the group mean compliance ratio. These results replicate earlier studies on the effectiveness of various time-out procedures to suppress noncompliance in the preschool child (e.g., Hobbs & Forehand, 1975).

Of greater interest, however, was the significant difference between the two time-out groups during the experimental session. Children in the Parent Release group who were required to meet both temporal and behavioral release contingencies during each time-out displayed a mean compliance ratio of 77.9%; children in the Child Release group who were not required to meet any externally controlled release contingencies during time-out displayed a mean compliance ratio of only 44.1%. Despite the statistically significant improvement in the mean compliance ratio displayed by the Child Release group, it is difficult to defend a compliance ratio of 44.1% as "clinically significant" (Barlow & Her-

sen, 1973) since normative data reviewed by Forehand (1977) indicated that nonclinic, preschool children typically obey 60% to 80% of all parental instructions. Children in the Parent Release group improved into this "normal" range, whereas children in the Child Release group did not.

One procedural difference between the two time-out groups that probably did not facilitate compliance acquisition was the time-out warning statement available only to children in the Child Release group. Children in this condition improved less than children in the Parent Release group, who did not receive a warning statement.

The release contingency manipulation created two differences between the Child Release and Parent Release groups that probably did influence the differential increases in compliance ratios. First, time-out duration was affected by the release contingency variable. The use of release contingencies for children in the Parent Release group guaranteed a mean time-out duration of over 2 minutes. In contrast, children in the Child Release group, who were not subjected to any specifiable release contingencies, rapidly "chose" to leave the time-out chair, displaying an average time-out duration of only 9.2 seconds. Since time-out duration has been shown to be a relevant variable in the suppression of noncompliance (Hobbs et al., 1978), it is likely that the different time-out durations detected in this project influenced the obtained compliance ratios. Second, the presence or absence of physical punishment was determined by the release contingency variable. All children in the Parent Release group were spanked at least once for leaving the time-out chair prior to meeting release requirements. In contrast, children in the Child Release group were never spanked because they were not required to remain in time-out for a specified period. Spanking has been demonstrated to suppress noncompliance (Bernal, 1969; Bernal, Duryee, Pruett, & Burns, 1968). Therefore, the spanking procedure inherent in the release contingency manipulation probably influenced the improved compliance ratio of the Parent Release group. Further analyses of the time-out duration and spanking components of the release contingency manipulation will be needed to determine the relative contribution of each variable to the release contingency effect.

Regardless of the outcome of future research, two clinically relevant conclusions can be made from the present study. First, the effect of time-out release contingencies on changes in child noncompliance was substantial and of clinical significance. Second, noncompliant preschool children quickly terminated time-out conditions when release contingencies were not imposed. Therefore, if time-out is to be used to suppress noncompliance in the referred preschool child, minimum contingencies for release from time-out appear to be necessary. In the absence of externally controlled release contingencies, the effects of time-out are likely to be significantly attenuated.

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