*THE EFFECTS OF A CHILD'S SELF-EVALUATION
PROGRAM ON COMPLIANCE WITH
PARENTAL INSTRUCTIONS IN THE HOME*

THOMAS P. O'BRIEN, LINDA S. RINER, AND KAREN S. BUDD

MEYER CHILDREN'S REHABILITATION INSTITUTE
UNIVERSITY OF NEBRASKA MEDICAL CENTER

A self-evaluation program was implemented with a kindergarten-aged boy in the home to increase compliance with parent instructions and decrease inappropriate verbal behavior. The self-evaluation package included the child's assessing the appropriateness of his behavior in 5-min intervals, receiving chips for positive self-evaluations, and exchanging chips for a reward following experimental sessions. In a reversal design, analyses were conducted of the effectiveness of the self-evaluation program, the requisite conditions for effective child behavior change with a self-evaluation approach, and the parent's efficiency in using the self-evaluation package. The self-evaluation procedures typically resulted in increased compliant behavior and decreased inappropriate behavior, although the effects generally weakened with time. Behavioral gains were greater and better maintained when the self-evaluation procedures were preceded by a phase of external evaluation via the mother than by baseline, suggesting that self-evaluation procedures may serve more to maintain the effects of external evaluation rather than to induce their own changes. The parent generally was efficient in implementing the procedures. Research and clinical implications for using self-evaluation procedures in a home setting are discussed.

DESCRIPTORS: self-evaluation, compliance, parent, children

The majority of attempts to alter disruptive or noncompliant child behavior in the home have used direct training of parents in child management skills (Wells & Forehand, 1981). Such training focuses on teaching parents to change their own behavior and, in turn, to modify their children's response patterns. Although direct parent training has many advantages as a child treatment method (Graziano, 1977), research over the past few years indicates it often

falls short of its goals, especially in terms of parents' generalization and maintenance of learned skills (Forehand & Atkeson, 1977). Self-control approaches have potential advantages for altering children's disruptive and noncompliant behavior, since they place responsibility for the generalization and maintenance of change on the children instead of the parents. While discussing problems in obtaining durable effects of parent training, Forehand and Atkeson recommended the investigation of self-control procedures because of their potential in promoting maintenance.

With a self-control approach, children are taught to observe and/or provide consequences for their own behavior. Self-evaluation procedures, as one type of a self-control approach, have been advocated as a viable means of teaching children to become more aware of their behavior and to alter it in accordance with

This research was supported in part by Project 405 from Maternal and Child Health Services to the Meyer Children's Rehabilitation Institute, University of Nebraska Medical Center. Appreciation is expressed to the Meyer Institute for supporting the senior author as a postdoctoral research fellow. Thanks also are due to Dwane McFerrin, who participated in the collection and analysis of the data. Reprints may be obtained from Karen S. Budd, Meyer Children's Rehabilitation Institute, University of Nebraska Medical Center, 42nd and Dewey, Omaha, Nebraska 68105.

acceptable standards (Drabman, Spitalnik, & O'Leary, 1973). A successful self-evaluation program would relieve parents of the responsibility for continually monitoring and providing consequences for their child's behavior. Thus, self-evaluation procedures would be more time efficient. Self-evaluation procedures may also ultimately allow discontinuation of the rewards used to induce improvement in behavior (Bolstad & Johnson, 1972; Robertson, Simon, Pachman, & Drabman, 1979).

To date, self-evaluation procedures have not been investigated as a means of modifying the disruptive behavior of children in home settings. However, there have been several investigations of self-evaluation procedures in classroom settings (e.g., Drabman *et al.*, 1973; Kaufman & O'Leary, 1972; Santogrossi, O'Leary, Romanczyk, & Kaufman, 1973). The goal of these procedures in the classroom has typically been to maintain the effects of a reward program following the discontinuation of teacher monitoring of that program or withdrawal of the rewards. Classroom applications of self-evaluation procedures have consistently resulted in decreases in disruptive behavior (e.g., Bolstad & Johnson, 1972; Drabman *et al.*, 1973) and increases in academic performance (Glynn, 1970; Lovitt & Curtiss, 1969).

There is also evidence for maintenance of gains. For instance, Bolstad and Johnson (1972) found that reduced levels of disruptive classroom behavior were maintained as well following a self-evaluation program as following an external evaluation program and better than after a program that provided no reward. In another study, levels of disruptive behavior lower than those found during the initial baseline, and nearly equivalent to those of the treatment, were maintained following termination of self-evaluation and back-up rewards with retarded children (Robertson *et al.*, 1979).

One of the interesting questions in the domain of self-evaluation concerns the necessity of having an external-evaluation phase precede a self-evaluation phase in order to achieve an

effective self-evaluation treatment. Glynn and Thomas (1974), in attempting to modify on-task behavior in a classroom, found that a self-evaluation procedure not preceded by a teacher-evaluation condition was effective. However, Santogrossi *et al.* (1973) and Turkewitz, O'Leary, and Ironsmith (1975) did not achieve a successful child-evaluation treatment for disruptive behavior until after a period of intermittent teacher checks on child evaluations.

Self-evaluation procedures as applied by parents have yet to be evaluated in any studies. Given the preliminary success and potential efficiency demonstrated by self-evaluation procedures in classroom settings, it appears that self-evaluation procedures may be useful in home settings as well. However, use of self-evaluation procedures by parents presents several distinct issues in need of examination. First, considering the extensive history of disturbed parent-child interactions preceding treatment, can self-evaluation result in substantial and durable child behavior changes when implemented by a parent? Second, is it necessary for the parent to apply external contingencies before a self-evaluation procedure will be effective in the home? Third, how efficient is the parent in implementing a self-evaluation procedure with his or her child? In contrast to teachers, parents usually have a longer and more intense history of deviant interactions with their children as well as less formal training in child management techniques. Thus, it is important to examine directly the effects of a self-evaluation approach as applied by parents.

The above issues framed the purposes of the present study. The effectiveness of a self-evaluation program was investigated with a mother and her seriously disruptive and noncompliant kindergarten-aged son. Detailed examinations of child and parent responses were made to assess the effects of treatment on the child's behavior, the prerequisite conditions needed to effect successful child behavior change, and parent efficiency in implementing the self-evaluation treatment.

METHOD

Child and Parent

Due to his disruptive behaviors, Scott was brought by his parents to the Meyer Children's Rehabilitation Institute, a university outpatient clinic for children with handicapping and behavior disorders. Scott was 5 yr and 11 mo old when the study began, had no learning or developmental difficulties, and was an only child. His parents reported that he was highly non-compliant with instructions and frequently engaged in tantrums. Both parents worked full-time outside the home. Because of the father's irregular work schedule, only the mother participated in the study.

Setting and Activities

All sessions were conducted in the family's home. Observations took place in a combination living room/dining room, kitchen, and bathroom. Most activity took place in the living room/dining room, which was furnished with a couch, tables, chairs, a cabinet, shelves, and a television.

The study consisted of 114 sessions over a 62-wk period. During the first four phases of the study, sessions occurred at a rate of about 3.0/wk. Due to illnesses, vacations, and prior commitments, the sessions occurred at a rate of 1.4 to 1.9/wk during the last four phases. Sessions generally started between 5:30 and 6:30 p.m. and lasted approximately 60 min. Of this hour, 30 min was used for observation and the remaining time was used for discussion with the mother. Determining rewards and providing feedback to the mother were some typical issues involved in these discussions.

As a part of the sessions in all conditions, six instructions were planned by Scott's mother before the session. Five of the instructions were designed to be completed in less than 90 sec, and one instruction was designed to require more than 90 sec to complete. In addition, the mother was permitted to issue any number of spontaneous instructions of any duration. Instructions

varied somewhat from day to day but generally involved having the child put away toys or articles of clothing or help the mother complete simple household tasks.

Few restrictions were placed on mother-child interactions. The investigators requested that the television be off during the sessions and that the mother keep phone calls and potential visits short by indicating that she was busy and would contact the caller or visitor later. When Scott's father was home, he chose to go upstairs for the observation portion of the sessions.

Observation and Recording Procedures

The observers used a continuous 10-sec interval recording system. Nine preliminary sessions were used to develop the observation code, achieve satisfactory reliability, and allow the family to adapt to being observed. Three individuals served as observers. One of these individuals served as the primary observer throughout the study, and his data were used in the analyses. The other two individuals' data were used to check reliability.

The observers recorded five categories of child behavior, which were: *Compliance*: active physical behavior directed toward the completion of an ongoing instruction. When any compliance took place in an interval, it took precedence over noncompliance, which was defined as the absence of active movement toward completion of an instruction. Compliance and noncompliance were recorded only during intervals when a parent instruction was ongoing. *Instruction completion*: when the child eventually completed all components of an ongoing instruction. This response was recorded as occurring or not occurring once per instruction. *Inappropriate verbal behavior*: abusive verbal comments including refusals to follow instructions, swearing, name-calling, bossy or unkind instructions, and threats. *Self-evaluation*: a verbal response to the parent's self-evaluation questioning indicating whether or not the child judged himself to have followed the parent's instructions quickly without being verbally abusive. *Chip taking*: picking

up a chip from the dish of chips following the mother's self-evaluation questioning.

The observers recorded seven categories of maternal behavior, which included the following: *Instruction*: an initial verbal command or request for the child to perform an act with a specific beginning and ending, excluding instructions regarding verbalization or performance of academic tasks. *Praise for instruction completion*: a verbal statement that, by its content, indicated that the mother approved of the child's behavior. This category was recorded only when it occurred in the same interval or the one following instruction completion. *time-out*: movement of the child to a designated area for at least 30 sec as a consequence for undesired behavior. *Self-evaluation questioning*: requests or directives by the mother to prompt the child's evaluation of his own behavior. This behavior category was scored only at the end of each 5-min period when evaluation was intended to occur. *Feedback on self-evaluation*: in response to the child's self-evaluation or chip taking, a verbal comment regarding the accuracy of the child's evaluation or chip taking.

All of the above-noted child and maternal behaviors except inappropriate verbal behavior were scored from live observations. In appropriate verbal behavior was scored from audiotape recordings of the sessions, since data from the preliminary sessions suggested that this method would improve reliability.

Scott's mother was responsible for scoring the following two behaviors:

1. Evaluation of child behavior. During self-evaluation and maternal-evaluation experimental phases, the mother recorded whether or not she judged that Scott had earned a chip, based on his compliance with her requests and frequency of verbally abusive behavior. She evaluated Scott's behavior during six successive 5-min periods across the observation session. She completed her own evaluation of Scott's behavior before questioning Scott on his self-evaluation.

2. Reward delivery. Scott's mother recorded data regarding the receipt of the reward following the session. These data included information on the nature of the reward, the date it was earned, and the date and time it was received.

Reliability of observer-collected data was determined by comparing the records of the primary observer and the person who simultaneously but independently observed sessions or listened to audiotapes. Reliability checks were made during 39 of the 114 total sessions (34%), with a minimum of 25% of the sessions in each experimental condition checked. Reliability was calculated for each behavior category by assessing the number of occurrence agreements across 10-sec intervals and then dividing this figure by the number of agreements and disagreements across 10-sec intervals. In addition, reliability for inappropriate verbal behavior was calculated by means of kappa (Hartmann, 1977). Given the low frequency of occurrence of inappropriate verbal behavior, consideration of the nonoccurrence intervals was deemed justified.

Experimental Design and Conditions

This study used a single-subject reversal design to evaluate the effects of a parent's application of the self-evaluation procedures. Three different experimental conditions were implemented: baseline (A), self-evaluation (B), and maternal-evaluation (C). The design followed an A-B-C-B-A-B-C-B pattern.

Baseline I: sessions 1-6. During baseline, the mother was asked to interact as she normally would with her son while issuing the six planned instructions as well as any other instructions she judged were needed.

Self-evaluation I: sessions 7-19. In this condition, Scott evaluated his behavior and received a reward contingent on evaluating himself positively (e.g., compliant and not verbally abusive) on four of six occasions. The purpose of this condition was to determine if Scott was capable of evaluating his behavior accurately, increasing

his compliance, and/or decreasing his verbal abuse without any preparation for self-evaluation. Six times per session, once approximately every 5 min, Scott's mother prompted him to self-evaluate by asking if he followed her instructions quickly without being verbally inappropriate. She also told him to take a chip if he evaluated himself positively and not to take a chip if he did not do what he was asked or was verbally inappropriate while doing it. It was emphasized that it was up to him to make the decision by himself with no help from his mother. Chips were available to Scott in a small dish. Scott's mother prompted him to take a chip if he did not take one soon after a positive evaluation. The mother was cued by a kitchen timer to question for self-evaluation. The mother was instructed not to react to Scott's evaluations with either approval or disapproval that could be communicated verbally or by her facial expressions.

The experimenters also requested that the mother evaluate Scott's behavior in order to allow a comparison of her evaluations and those of the experimenter. The mother was given the following evaluation guidelines to use in deciding if Scott's behavior warranted a chip: (a) Scott followed his mother's instructions at least 75% of the time, (b) Scott was verbally abusive on no more than one occasion during the 5-min evaluation period, and (c) Scott was not in time-out at the end of a 5-min evaluation period or for more than 2 min during a 5-min evaluation period.

Scott was also told that he would receive a reward if he earned at least four chips during the six opportunities. Before the session, Scott was permitted to select a reward, usually preferred activities or edibles, which his mother let him have soon after the session.

After each session, the senior experimenter reviewed the mother's evaluations of Scott's behavior with her. The experimenter praised her for occasions of agreement with the experimenter and requested an explanation for how

she determined her evaluation for occasions of disagreement. The experimenter then explained how he determined his evaluations.

Maternal-evaluation I: sessions 20-29. The purposes of this condition were to improve Scott's self-evaluation skills by providing him feedback on his evaluations and to increase Scott's compliance with instructions. Scott continued to evaluate his own behavior, following the procedures used in the previous condition. However, after Scott provided his evaluation, his mother gave him feedback on his evaluation. Her feedback included stating whether she agreed or disagreed with his evaluation and briefly providing examples of Scott's behavior to justify her evaluations. When Scott evaluated his behavior accurately (i.e., when his evaluation agreed with his mother's recording), his mother praised his self-evaluation. During this condition, the mother's evaluation determined whether or not Scott received the chips and, thus, the reward. The experimenter continued to review the mother's evaluations with her after each session.

Self-evaluation II: sessions 30-43. This condition was designed to determine if Scott was capable of self-evaluating accurately and if these procedures would maintain any positive effects resulting from the maternal-evaluation procedures. The procedures used during this condition were identical to those used during self-evaluation I.

Baseline II: sessions 44-60. The procedures in baseline II were identical to those used in the initial baseline condition.

Self-evaluation III: sessions 61-67. The procedures used in the two previous self-evaluation conditions were repeated in this condition.

Maternal-evaluation II: sessions 68-87. The procedures were the same as those used in the first maternal-evaluation condition with one exception. During this condition, the criterion for receiving a reward was increased from four chips to five chips approximately halfway through the condition.

Self-evaluation IV: sessions 88-114. The procedures in this condition were the same as those in the previous self-evaluation conditions, except that the requirement of having five chips to earn the reward was continued from the previous condition.

While the study was in progress, Scott's mother was never taught any management techniques other than the use of the self-evaluation and contingent reward procedures described above. She was not told how to apply time-out correctly until after the study was completed. Prior to and during the study, she used her own form of time-out by instructing Scott to go upstairs to his own room or to a chair in the living room. She usually told Scott that he should not come out until he was ready, so the duration of time-out was decided by Scott. In addition to the time-out periods implemented with Scott, there were approximately 10 other times when Scott's mother instructed him to go to time-out, but he did not obey and she did not force him.

RESULTS

Reliability Data

Mean interobserver agreement levels across the study for child responses were as follows: compliance, 84%; instruction completion, 94%; inappropriate verbal behavior, 69%; self-evaluation, 98%; and chip taking, 95%. These levels were satisfactory except for inappropriate verbal behavior, which occurred at a relatively low rate across the study. When reliability on this category was computed by means of kappa (Hartmann, 1977), agreement measures for the conditions ranged from .71 to .91 with an overall kappa of .80. These values suggest that reliability was satisfactory for inappropriate verbal behavior when both occurrence and non-occurrence data were considered.

For the mother's behaviors, mean interobserver agreement values across the study were as follows: instruction, 97%; praise for instruction completion, 70%; time-out, 50%; self-evalua-

tion questioning, 100%; and feedback on self-evaluation, 96%. The low reliability levels for praise and time-out appeared to be related to infrequent occurrences of both behaviors across the study.

Child Behavior

Figure 1 displays changes in Scott's levels of compliance, instruction completion, and inappropriate verbal behavior across daily sessions. Inspection of the top graph shows that maternal-evaluation conditions produced consistently high levels of compliance (mean of 79%), and self-evaluation conditions typically produced comparably high rates of compliance at the beginning of a condition followed by a deterioration in performance over time. However, the order of conditions appeared to have a systematic effect on behavior during self-evaluation: When preceded by maternal evaluation, compliance rates were higher and more durable than when preceded by baseline. The final self-evaluation condition provided a strong test of the durability of self-evaluation effects, in that it extended across 27 sessions over a 5-mo period. Despite some intersession variability, compliance during the last 20 sessions of this condition remained at a mean of 67%, which was a drop from an average of 88% during the first 7 sessions of this condition.

Examination of Scott's instruction completion in Figure 1 shows a pattern similar in several respects to that for compliance. Instruction completion maintained a very high and stable rate during maternal-evaluation conditions (mean of 98%), with more variable and somewhat lower levels during baseline and during self-evaluation conditions that were preceded by baseline. However, unlike the results for compliance, Scott's instruction completion showed very little if any deterioration during self-evaluation conditions when they were immediately preceded by mother evaluation; his mean level of instruction completion in these self-evaluation phases was 97%.

Fig. 1. Percent occurrence of target child behaviors across all sessions. BL refers to baseline conditions, SE to self-evaluation conditions, and ME to maternal-evaluation conditions.

Scott's inappropriate verbal behavior was also in Figure 1. Levels of inappropriate verbal behavior decreased in comparison to baseline affected by experimental treatment, as shown

levels in both maternal- and self-evaluation conditions, with the lowest and most stable rates occurring during the two maternal-evaluation conditions and the final self-evaluation phase preceded by mother evaluation.

Another child behavior of interest was Scott's self-evaluation. Scott virtually always evaluated himself positively, irrespective of his performance. There were only 12 instances of negative self-evaluation across the study: 10 during self-evaluation conditions and 2 during maternal-evaluation conditions.

Mother Behavior

Records of the mother's use of the experimental procedures indicated that she implemented the self- and mother-evaluation techniques as planned. Specifically, she questioned Scott regarding his own evaluation of his behavior on 100% of the occasions during self- and maternal-evaluation conditions, provided feedback on the accuracy of Scott's self-evaluation during 100% of the instances in the maternal-evaluation conditions, and withheld feedback as planned on 100% of the opportunities during the self-evaluation condition. The mother's self-recording of her reward delivery indicated that she always provided and withheld rewards appropriately.

The mother's overall agreement with the experimenter's evaluation of the child's behavior, using the evaluation criteria outlined for the mother of 75% compliance and no more than one verbally abusive statement during a 5-min interval, was 66%. Since the mother generally appeared to be too lenient in her evaluations, her accuracy was also computed using a compliance level of 65% with two inappropriate verbal behaviors allowed. Using those standards, her overall agreement with the experimenter's evaluation increased to 76%. Thus, the mother was reasonably accurate in evaluating her son's behavior.

The mother's rate of praise for instruction completion and use of time-out showed little relation to the nature of the conditions or the

rate of child compliance. Praise occurred for only 6% of the completed instructions across the entire study, with a gradual decrease in frequency across successive conditions. Time-out occurred only six times across the study, twice in the initial baseline condition and four times in the final self-evaluation condition.

DISCUSSION

The data suggest that self-evaluation procedures, used in a home setting, are moderately effective in maintaining the effects of an external reward program. Changes in the child's rates of compliance, instruction completion, and inappropriate verbal behavior in self-evaluation conditions following maternal-evaluation conditions were clear and fairly durable in comparison to the effects occurring in the baseline phases or self-evaluation conditions following baseline.

It does appear that it was necessary for the self-evaluation procedures to be preceded by a period of external contingencies. When preceded by a baseline condition, the effects of self-evaluation procedures were sometimes substantial but typically not stable, often returning to baseline rates. This situation occurred for all three of the main dependent variables: compliance, instruction completion, and inappropriate verbal behavior. However, when preceded by a maternal-evaluation condition, the self-evaluation methods were more effective in extending the favorable rates achieved during the maternal-evaluation conditions. In school settings, Santogrossi *et al.* (1973) and Turkewitz *et al.* (1975) found that self-evaluation procedures were effective in controlling disruptive behaviors only after a period of external evaluation. The pattern of results obtained by these investigators as well as in the present study suggests that the self-evaluation package was effective primarily due to its effects in maintaining gains resulting from maternal-evaluation procedures rather than by instigating substantial changes on its own.

Both the self- and maternal-evaluation con-

ditions consisted of several treatment components: the mother's inquiring about the child's behavior, the child's self-assessment, the acquisition of chips, and the receipt of a reward. The key difference between self- and maternal-evaluation phases was that in the former the reward was contingent on the child's statement of his behavior whereas in the latter it was contingent on the child's actual behavior, as perceived by the mother. Presumably, the mother's immediate feedback to Scott on the accuracy of his self-assessment and the contingent reward delivery in maternal-evaluation conditions had a lasting effect on the child's behavior in succeeding self-evaluation conditions. However, considering that both experimental conditions entailed several variables, the exact nature of the controlling variables cannot be conclusively determined.

Although the effectiveness of a self-evaluation approach may be due primarily to its success in maintaining the effects of maternal-evaluation procedures, self-evaluation procedures had effects independent of those of the maternal-evaluation methods. This conclusion is supported by the findings that the initial self-evaluation condition resulted in temporary improvements over baseline I on rates of compliance, instruction completion, and inappropriate verbal behavior. Additionally, the self-evaluation II condition when following the baseline II condition interrupted trends of decreasing rates of compliance and instruction completion and an increasing rate of inappropriate verbal behavior while leading to slight improvements on those three measures. It is possible that these initial effects were due to the novelty of the self-assessment component and/or to the noncontingent chip taking and rewards available as part of the self-evaluation treatment package. The clinical importance of these effects is minimal, considering that child behavior changes were transitory and eventual rates were below acceptable levels; however, they may be of value in understanding the function of a self-evaluation program on child behavior.

Although the effects of self-evaluation fol-

lowed a similar pattern for rates of compliance, instruction completion, and inappropriate verbal behavior, somewhat more durable results were shown in the measures of instruction completion and inappropriate verbal behavior. This finding is most evident for self-evaluation conditions following maternal evaluation, where instruction completion and (especially in the final condition) inappropriate verbal behavior remained essentially at the same levels as in the preceding maternal-evaluation conditions. Instruction completion is a measure of eventual compliance, in that it indicates that an instruction was finished, regardless of the time involved or the rate of noncompliance before final compliance. The results suggest that self-evaluation procedures function to maintain eventual compliance and low rates of inappropriate verbal behavior better than immediate and continuous compliance with parental requests.

Since Scott almost always evaluated himself positively, accuracy of self-evaluation did not appear necessary for self-evaluation procedures to be at least temporarily effective. Kaufman and O'Leary (1972), while investigating self-evaluation procedures in a classroom setting, also discovered that inaccurate self-evaluation did not result in an ineffective treatment. The possibility that accurate self-evaluation would increase the durability of self-evaluation effects awaits further investigation. Placing contingencies on the child's accuracy in self-evaluation for a period of time prior to requiring self-evaluation may be a useful method for initiating accurate self-evaluation and, perhaps, for maintaining reduced rates of inappropriate behavior as well.

In addition to examining the experimental effects of a self-evaluation program in the home, this study provides some insight into the practicality of the self-evaluation approach for parents. The mother was able to implement the self-evaluation questioning, feedback on self-evaluation, and reward delivery correctly from the outset of training and maintained her efficient performance throughout the study. Her accuracy in evaluating Scott's behavior was only

moderate, especially considering the ample number of times she was provided feedback on her evaluations by the experimenter. However, given that the child's appropriate behavior in maternal-evaluation conditions was consistently high despite only moderate accuracy by the mother, the findings suggest that self-evaluation procedures could be successfully implemented by a parent beyond the context of a highly monitored research situation. Obviously, the time entailed in the present study was much greater than would be feasible in a clinical situation. The training time needed to introduce the procedures to a parent is estimated at approximately 8 h. This figure includes 1 h each to describe and demonstrate the self- and maternal-evaluation procedures and 3 h each to observe their application, shape proper parental evaluation, and give the necessary feedback.

Another issue regarding the practicality of a self-evaluation approach concerns its effectiveness in obtaining desired child behavior changes. In general, the present evidence does not support recommending the use, in a home setting, of self-evaluation procedures independent of external evaluation, at least with a child as young as the one in the current study. However, the finding that self-evaluation was effective in temporarily maintaining most of the gains induced by maternal-evaluation procedures suggests that combining self-evaluation methods with intermittent external evaluation may be a useful strategy. Several investigations of self-evaluation for successfully reducing disruptive behavior in the classroom have included intermittent external checks (Dragman *et al.*, 1973; Robertson *et al.*, 1979; Turkewitz *et al.*, 1975). In these studies, the probability of any particular child's self-evaluations being checked was reduced with time. There has been no investigation even in a school setting, however, comparing intermittent checks with the abrupt withdrawal of external checks. Future research should be aimed at determining the effectiveness of self-evaluation when coupled with intermittent external evaluation methods and the schedule of inter-

mittent external evaluation which is most appropriate.

In summary, the present study showed that self-evaluation procedures independent of external evaluation methods had noticeable but transitory effects on the noncompliant and verbally inappropriate behavior of a young boy in the home. The increased durability of treatment effects following maternal evaluation phases suggests that self-evaluation methods hold promise for maintaining the effects of external-evaluation procedures when implemented by a parent. Considering the shortcomings of current parent implemented interventions in promoting successful maintenance of treatment (Forehand & Atkeson, 1977), the present findings are important in suggesting an alternative approach to extending the effects of home-based treatment.

REFERENCES

- Bolstad, O. D., & Johnson, S. M. Self-regulation in the modification of disruptive classroom behavior. *Journal of Applied Behavior Analysis*, 1972, 5, 443-454.
- Dragman, R. S., Spitalnik, R., & O'Leary, K. D. Teaching self-control to disruptive children. *Journal of Abnormal Psychology*, 1973, 82, 10-16.
- Forehand, R., & Atkeson, B. M. Generality of treatment effects with parents as therapists: A review of assessment and implementation procedures. *Behavior Therapy*, 1977, 8, 575-593.
- Glynn, E. L. Classroom applications of self-determined reinforcement. *Journal of Applied Behavior Analysis*, 1970, 3, 123-132.
- Glynn, E. L., & Thomas, J. D. Effect of cueing on self-control of classroom behavior. *Journal of Applied Behavior Analysis*, 1974, 7, 299-306.
- Graziano, A. M. Parents as behavior therapists. In M. Hersen, R. M. Eisler, & P. M. Miller (Eds.), *Progress in behavior modification* (Vol. 4). New York: Academic Press, 1977.
- Hartmann, D. P. Considerations in the choice of interobserver reliability estimates. *Journal of Applied Behavior Analysis*, 1977, 10, 103-116.
- Kaufman, K. F., & O'Leary, K. D. Reward, cost, and self-evaluation procedures for disruptive adolescents in a psychiatric hospital school. *Journal of Applied Behavior Analysis*, 1972, 5, 293-309.
- Lovitt, T. C., & Curtiss, K. A. Academic response rate as a function of teacher- and self-imposed contingencies. *Journal of Applied Behavior Analysis*, 1969, 2, 49-53.

- Robertson, S. J., Simon, S. J., Pachman, J. S., & Drabman, R. S. Self-control and generalization procedures in a classroom of disruptive retarded children. *Child Behavior Therapy*, 1979, 1, 347-362.
- Santogrossi, D. A., O'Leary, K. D., Romanczyk, R. G., & Kaufman, K. F. Self-evaluation by adolescents in a psychiatric hospital school token program. *Journal of Applied Behavior Analysis*, 1973, 6, 277-287.
- Turkewitz, H., O'Leary, K. D., & Ironsmith, M. Generalization and maintenance of appropriate behavior through self-control. *Journal of Consulting and Clinical Psychology*, 1975, 43, 577-583.
- Wells, K. C., & Forehand, R. Childhood behavior problems in the home. In S. M. Turner & H. E. Adams (Eds.), *Handbook of clinical behavior therapy*. New York: Wiley, 1981.

Received January 19, 1982

Final acceptance August 3, 1982