

*GENERALIZATION IN A CHILD'S OPPOSITIONAL BEHAVIOR
ACROSS HOME AND SCHOOL SETTINGS*

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A 9-year-old clinic-referred boy, his mother, and his teacher were observed in 38 home and 38 school sessions on the same days. Categories of the boy's oppositional behavior and the inappropriate social attention of his mother and teacher were graphed to visually inspect changes during baseline, a parent-training phase, a follow-up phase, and a final parent-training booster phase. Parent-training phases produced reductions in the mother's inappropriate attention and in the boy's oppositional behavior, whereas the follow-up and baseline phases were associated with higher rates of these categories. Generalization occurred in the school across these home phases, as seen in the increase in rates of the boy's problem behavior, despite the lack of change in his teacher's attention. Correlational analyses of proportion scores reflecting the boy's home-school oppositional behavior and mother-teacher social attention suggested his responsiveness to relative changes in adult social contingencies across settings.

DESCRIPTORS: behavioral contrast, generalization, reinforcement, oppositional behavior, mother-child interactions, teacher-child interactions

When parents learn principles of contingency management, they are often able to respond effectively to most dilemmas generated by their children's behavior (see Patterson, 1982). In fact, many parent-education books devote considerable space to telling parents about how children learn to cope with their environments through experiencing the consequences of their various actions and words (see Polster & Dangel, 1984, p. 3).

Although contingency management is a necessary parenting skill, it is not always sufficient in meeting the challenges posed by various facets of children's socialization. One of the most perplexing challenges centers on generalization phenomena unrelated to direct reinforcement contingencies. There are many examples of this phenomenon across subgroups of children, with generalization

occurring both within environmental settings (Baer & Sherman, 1964; Steinman, 1970; Strand, Wahler, & Herring, 2001; Wahler, 1975) and, less frequently, across environmental settings (Forehand, Breiner, McMahon, & Davies, 1981; Fowler & Baer, 1981; Harris, 1979; Harris & Reid, 1981; Johnson, Bolstad, & Lobitz, 1976; Koegel, Egel, & Williams, 1980; Roane, Kelly, & Fisher, 2003). In the former case, parents have control of the setting, allowing them to support or to modify the generalized behavior, whereas in the latter case their control is more limited. Thus, if the generalized behavior is unwanted and occurs in a setting outside the home, the parents must negotiate with adults who control the other setting.

Because of this problem, it is important to pursue our understanding of generalization across settings, particularly when it involves strengthening children's maladaptive

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behavior. In four of the above-cited studies, children's maladaptive behavior was shown to generalize, but the direction of change across settings was not the same in all studies. Harris (1979) and Harris and Reid (1981) found positive correlations, whereas Johnson et al. (1976) and Koegel et al. (1980) found negative correlations in child target behaviors across two settings. Reynolds (1961) labeled this form of generalization (in which behavior changes in opposite directions across two conditions) *behavioral contrast*.

Given the small number of across-setting generalization studies conducted in children's natural environments, and given the differences in direction of the observed generalization effects, it is reasonable to conclude that little is known about this phenomenon. Further research is needed to monitor child responses in more than one setting and to measure stimuli that occur in temporal proximity to these responses. Because such research is labor intensive and expensive, single-subject studies conducted over numerous observations in disparate environmental settings are needed to detect generalization and to generate hypotheses concerning how children sometimes behave in ways that transcend direct reinforcement contingencies.

The present single-subject study was devised to generate stimulus control hypotheses concerning a clinic-referred boy whose oppositional behavior was already shown to covary across his home and school settings. We suspected that this generalization might meet the criteria for behavioral contrast; thus, we conducted an ABAB experimental analysis of the boy's behavior changes as a function of planned changes in his mother's parenting practices. If these clinical manipulations of his mother's social attention were then followed by reductions in her son's home opposition and increases in his school opposition, behavioral contrast might be

shown if his teacher's social attention stayed constant. Given this demonstration, we then hoped to assess covariations between relative differences in mother-teacher social attention and the boy's relative differences in his home-school oppositional behavior. Through this correlational analysis, we hoped to generate hypotheses concerning generalization.

METHOD

Participants

The child who participated in this study was Harry, a 9-year-old boy who had been referred to a university mental health clinic because of his mother's concerns about the boy's chronic opposition to her authority. His mother was a 30-year-old single parent who lived alone with her son in a working-class neighborhood of a medium-sized city. When asked about Harry's school behavior, his mother indicated that he was considered strong willed but not problematic in his classroom or elsewhere at school. Harry's teacher, who described him as "assertive but cooperative," supported his mother's conclusion. The teacher was a 35-year-old woman with 12 years of teaching experience.

Harry, his mother, and his teacher were asked to participate in this study after Harry's mother made contact with the clinic. Harry and his mother understood that their home problems would become the focus of a parent-training intervention, which was also part of the study of across-setting consistency in Harry's behavior. Harry's teacher understood that observations in her classroom would be conducted to assess any impact of the home-based intervention on Harry's classroom behavior. Although the teacher was told that our clinical help for Harry would be offered to her, she declined the offer, explaining that she felt competent to deal with Harry's classroom behavior.

Procedure

Upon receiving signed written consent to participate from his mother, his teacher, and Harry, 1-hr weekly baseline observations were scheduled at home and at school. To ensure standardization across home and classroom, ground rules for the observations were established. At home, televisions were to be turned off, telephone conversations were to be limited; the participants were Harry and his mother, who were instructed to stay inside the home during the observation. At school, sessions were scheduled during the teacher's discussion classes because we hoped to observe during times that maximized teacher-student social interactions.

The teacher reported only one suitable discussion period per day. Harry's mother picked times of the day in which she would have maximum opportunities to interact with Harry. Given that the teacher and mother focused on social interactions, these observation hours represented potentially stable settings compared to randomly selected times of the school and home days. Based on the findings of other researchers (see Jones, Reid, & Patterson, 1975), evaluation of coded behaviors lasted 60 min.

Observers were undergraduate students who received course credit in conducting psychological research. Their coursework included training in the direct observation coding system and their subsequent observations in the home and school settings. Data collection began after interobserver agreements between all possible pairs of observers reached a minimum criterion of 80% on all measures. Two regular observers, one assigned to the home and the second to the classroom, conducted all observations. They recorded all interactions in a scoring booklet with the guidance of tape-recorded 15-s intervals. On all sessions, a second observer, who conducted simultaneous but indepen-

dent observations as reliability checks, accompanied these observers.

Measures

All observations were conducted with the Standardized Observation Codes—Revised (Cerezo, 1988). This measure has been used in a number of observational studies with demonstrated reliability and validity (see Cerezo, 1988). The codes are recorded in brief intervals (15 s) that permit the examination of temporal and sequential associations between the various child and adult responses. However, because the whole interval was our basic unit of measurement, repeated single codes or code sequences were counted only once per interval. The codes of interest were assessed as follows for the two settings:

Neutral approach. This adult and child code included all instances of physical contact or verbalizations by one member of the dyad directed to the other member that was devoid of positive or negative verbal or non-verbal characteristics.

Negative approach. This adult and child code included physical or verbal complaints, coercive actions such as hitting or shoving, verbal coercion in the form of threats, or disruptive actions such as temper outbursts.

Positive approach. This adult and child code included any physical or verbal expressions of affection or approval.

Instructions. This code for the mother and teacher included commands or requests directed to the child.

Compliance. This child code included acts of obedience in response to the instructions by the parent and teacher, calculated as the percentage of instructions that were followed by compliance.

Noncompliance. This child code was the absence of obedience following an instruction by the parent or teacher.

Ignoring. This adult and child code was the absence of any reactions to the three ap-

proach codes, the instruction code, or to the compliance or noncompliance codes.

Time-out. This mother and teacher code involved the adults' successful removal of the child from an observation setting.

The study goals were focused on correlations between the adults' inappropriate social attention to Harry and his oppositional reactions to these adults. Therefore, the preceding behavior codes were combined into aggregate categories defining Harry's oppositional behavior and inappropriate social attention from the mother or teacher. The two aggregate categories were defined as follows:

Child opposition. This was a percentage of intervals in which the child acted in any disruptive manner to mother or teacher. Thus, oppositional responses included instances of noncompliance with adult instructions and instances of negative approach.

Adult inappropriate attention. This was the percentage of intervals in which adults reacted inappropriately to Harry's cooperative and oppositional responses. Inappropriate attention included all instances in which Harry's compliance and positive and neutral approaches were followed within 15 s by negative approach or time-out from the adult. Inappropriate attention also included instances in which Harry's negative approaches and noncompliance were followed within 15 s by a positive, neutral, or negative approach from the adult. Thus, the percentages of inappropriate attention were based on each adult's aggregate mistakes in reacting to Harry's cooperative and oppositional responses (inappropriate divided by inappropriate plus appropriate attention). Because this aggregate index was the only social attention record preserved in our archives, we could not separate these social contingencies for Harry's cooperative versus oppositional responses.

Parent Training

Given that the clinical goal was to reduce the mother's inappropriate attention to her

child, multiple observations were needed to document baseline stability in interactions at home and at school. In this phase, eight home and eight school same-day 1-hr observations were obtained; the intervention phase was comprised of 10 same-day 1-hr observations in each setting, as was the follow-up phase. When the data records showed that the mother's inappropriate attention was increasing in frequency during follow-up, a second set of booster sessions was scheduled, along with 10 additional observations at home and school.

The baseline and subsequent parent-training and follow-up phases constituted ABAB experimental manipulations as well as needed clinical interventions for this mother-son dyad. In a format described in Wahler, Cartor, Fleischmann, and Lambert (1993), parent training was focused on reducing the mother's inappropriate attention by coaching her appropriate use of ignoring, time-out, and positive or neutral approaches. All training was conducted in the home setting, beginning with the clinician and the mother reviewing a videotape of one baseline observation for purposes of highlighting the mother's appropriate and inappropriate use of management procedures. When the mother could reliably spot her own mistakes and correct use of the tactics (defined as 90% agreement with the clinician), the mother and the clinician then agreed on a time-out location, the oppositional responses by Harry that should produce time-out (i.e., demands, insults, and noncompliance), and those to be followed by ignoring (i.e., complaints). The weekly intervention phase observations then began, each of which was followed by a review of her videotaped performance. After the follow-up phase, in which no training or feedback to the mother occurred, the second parent-training phase was comprised of two booster sessions involving reviews and critiques of the mother's videotaped performance. When Harry was

in time-out, observers ceased their observations until his mother released him from the time-out location. A more detailed description of the parent-training intervention is available from the first author.

Design and Data Analyses

During each ABAB experimental manipulation of the mother's social attention, we graphed measures of Harry's oppositional behavior at home and in his classroom, along with associated measures of his mother's and teacher's inappropriate attention in their respective settings. Through visual inspection of changes in child and adult behavior across the baseline and intervention phases, we intended to assess his mother's reinforcement control of Harry's oppositional behavior and to look for changes in Harry's school-based oppositional behavior. Thus, if his mother could be shown to weaken and strengthen Harry's oppositional behavior through phases in which she either lessened or increased her inappropriate attention, we could evaluate any changes that occurred in Harry's classroom opposition. Finally, if his teacher's inappropriate attention following Harry's oppositional and cooperative responses remained steady across the phases, any systematic changes in Harry's school behavior would support our supposition that these generalization outcomes were not due to changes in the teacher's reactions to Harry.

Finally, we conducted correlational analyses of the data set to summarize the child-adult interactions within settings and to develop post hoc hypotheses about any obtained generalization findings.

RESULTS

Interobserver Agreement

Agreement between the two observers who recorded child and adult behavior in 38 home sessions and 38 school sessions was

assessed by a secondary observer in each setting. We assessed interobserver agreement on Harry's aggregate opposition category and his mother's and teacher's inappropriate attention category because they represented the substantive data (see Hartmann, 1977, for a discussion of this rationale). Across pairs of observers, intraclass correlation coefficients were computed as indexes of agreement and were as follows: mother inappropriate attention = .84; teacher inappropriate attention = .79; child opposition at home = .88; child opposition at school = .77.

Category Occurrence Patterns

Figure 1 presents Harry's oppositional behavior and an index of contiguous mother and teacher inappropriate attention to his oppositional and cooperative responses. Visual inspection of trends over the ABAB phases showed several findings. First, a comparison of the home and school baseline phases suggested that Harry was more oppositional at home than at school (home $M = 12.4$; school $M = 4.6$), and his mother was more likely to provide inappropriate attention than was his teacher (home $M = 10.1$; school $M = 2.5$). Second, parent training appeared to produce substantial reductions in his mother's inappropriate attention, and Harry's oppositional behavior showed a gradual reduction over the parent-training sessions. However, follow-up sessions revealed a lack of maintenance, with Harry's behavior returning to baseline levels by follow-up Sessions 8, 9, and 10. During the parent-training booster sessions, Harry's mother again reduced her inappropriate attention, and Harry quickly showed reductions in his oppositional behavior to the lowest levels seen across these home observations (mother $M = 0.5$; Harry $M = 2.4$). Thus, these findings demonstrate control of Harry's oppositional behavior by his mother's attention.

A surprising but consistent pattern was

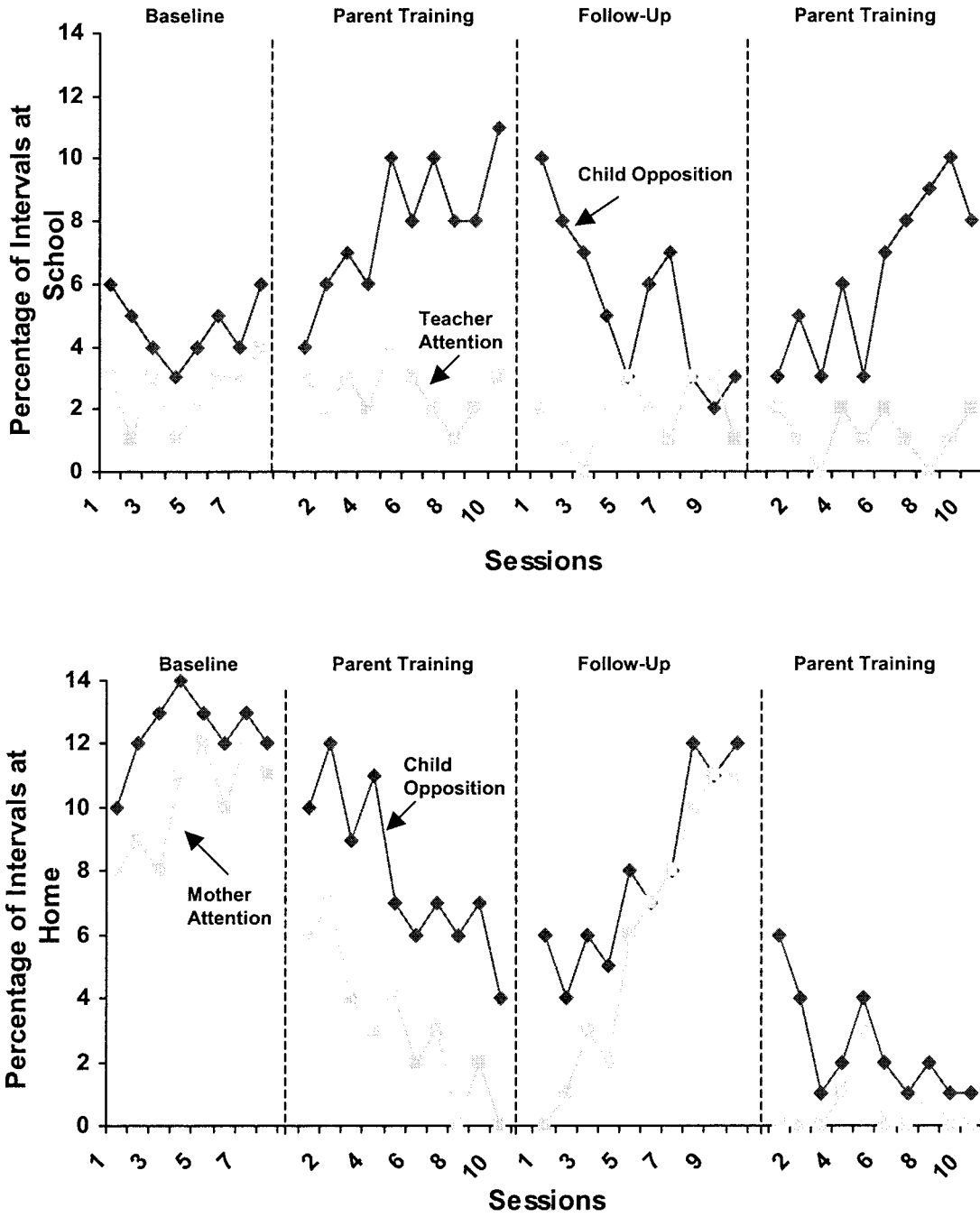


Figure 1. Percentage of 15-s intervals containing Harry's oppositional responses and the percentage of each adult's social attention classified as inappropriate immediately following Harry's oppositional and cooperative responses. Both child and adult categories are plotted over phases comprised of 38 home observations and 38 school observations.

also evident in Harry's oppositional behavior at school. Notice that home-based reductions in his opposition to his mother were clearly associated with increased opposition to his teacher, and this contrast phenomenon continued over the follow-up and second parent-training phases. Also, these school-based changes in Harry's behavior do not correspond to measures of his teacher's inappropriate attention, because she maintained her reactions at a steady level across observations. Of course, this steady level of teacher attention reflects her mistakes in reacting to both oppositional and cooperative responses by Harry. Given that we cannot provide a separate index of the teacher's inappropriate attention following Harry's oppositional responses, it is problematic to compare our findings with those reported in the behavioral contrast literature.

Correlational Findings

A summary of the mother-child and teacher-child interactions shown in Figure 1 was provided through correlating Harry's oppositional behaviors at home with his mother's inappropriate attention and correlating Harry's oppositional behaviors at school with his teacher's inappropriate attention. Harry's behavior and his mother's behavior were positively correlated ($r = .88$), and as expected, there was no correlation between his oppositional behavior and inappropriate attention from his teacher ($r = .03$).

DISCUSSION

Harry's levels of oppositional behavior at school did not appear to be related to the levels of inappropriate attention provided by his teacher. Rather, Harry's levels of oppositional behavior both at home and at school were affected by the levels of inappropriate or appropriate attention delivered by his mother at home, but the effects his mother's

inappropriate attention on his oppositional behavior at home and at school were in opposite directions. That is, decreases in his mother's inappropriate attention at home were associated with decreases in oppositional behavior at home (i.e., a positive correlation) and with increases in oppositional behavior at school (i.e., a negative correlation). This finding is consistent with other studies of behavioral contrast (e.g., Koegel et al., 1980).

However, there is reason to be cautious in referring to these generalization findings as behavioral contrast. Our measure of inappropriate adult attention was a percentage measure of social consequences for the combined oppositional and cooperative responses produced by Harry (e.g., attending to oppositional behavior or negative reactions to compliance). Because our index was not a frequency measure of this consequence for Harry's oppositional responses, we have no way of knowing about the differential probabilities of mother and teacher attention for the boy's two responses. Because behavioral contrast presumes a baseline constancy in schedules of reinforcement for the across-setting responses (i.e., Reynolds, 1961), our study does not satisfy this assumption.

Another limitation in any interpretation of Harry's across-setting generalization again concerns the aggregate index of inappropriate attention from adults, this time in reference to his teacher's mistakes in attending to Harry's oppositional and cooperative responses. Although her inappropriate attention did not covary with his oppositional responses, it is possible that her mistakes in reacting to Harry's oppositional responses might have been more numerous during the two parent-training phases compared to baseline and follow-up phases. However, the stable index of teacher attention shown across phases in Figure 1 would have to be accompanied by a lessening of her mistakes following Harry's cooperative responses,

which seems unlikely. If such a marked shift in her differential offerings of attention did occur during these phases, the only reasonable explanation for the changes would center on the dramatic rises in Harry's school opposition during the home-based intervention phases. Harry could have forced an increase in his teacher's attention mistakes during the oppositional episodes by escalating his rate of classroom opposition and, therefore, also lowering his rate of cooperative responses. Thus, if Harry led this process, the teacher's inappropriate attention could have been more frequent following his oppositional responses and still remained stable as an overall index across phases.

This speculation on Harry's role in controlling his teacher's social attention begs the question of why he increased his rate of oppositional behavior at school during the parent-training phases. This question brings us back to our original undertaking to understand across-setting generalization and, in particular, the opposite-direction changes in Harry's oppositional behavior across his home and school settings.

These results obviously present more questions than answers about the processes that underlie across-setting generalization. It seems that Harry responded to his mother and his teacher as if the inappropriate attention provided by these 2 adults were functionally equivalent. His generalization brings to mind previous research highlighting a distinction between local and molar stimulus control operations in complex ecosystems (Herrnstein, 1966; Rachlin, 1973, 1989). When discrepancies occur between the local and molar operations across settings, the affected individuals could generalize if they fail to discriminate the discrepancies and choose to follow the molar cues as if they were reliable markers of local reinforcement processes. Such a discrimination failure might have occurred in Harry's case, perhaps leading to superstitious tracking of relative

changes in the 2 adults' attention. If our hypothesis is valid, one could imagine discrimination-training interventions that could have weakened Harry's generalization through shifting his attention to the local contingencies. We hope that our hypotheses will stimulate experimental analyses aimed at documenting relativistic properties of reinforcement as determinants of across-setting generalization.

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STUDY QUESTIONS

1. Generally speaking, what does the term *behavioral contrast* describe, and why is it important to the study of both adaptive and maladaptive behavior?
2. What were two aggregate categories of behavior, and how were they measured?
3. Briefly describe the parent-training procedure.
4. What was the purpose of the parent-training booster sessions?
5. Summarize the results in terms of the relations between (a) Harry's oppositional behavior and his mother's inappropriate attention at home, (b) Harry's oppositional behavior at home and school, and (c) Harry's oppositional behavior and the teacher's inappropriate attention at school.
6. What feature of the experimental design differed from that of a typical reversal design?
7. Although the results were suggestive of a contrast effect, what features of the procedure limit such a conclusion?
8. How might information about the functions of Harry's problem behavior at home and in school influence interpretation of the current results?

Questions prepared by Pamela Neidert and Stephen North, University of Florida