*THE APPLICATION OF GENERALIZED CORRECT SOCIAL
CONTINGENCIES: AN EVALUATION OF A
TRAINING PROGRAM¹*

BARRY S. PARSONSON, ANN M. BAER, AND DONALD M. BAER

UNIVERSITY OF WAIKATO AND UNIVERSITY OF KANSAS

Two aides operating a kindergarten-style program for institutionalized mental retardates were trained, using observer feedback, to apply generalized "correct" social contingencies to 10 defined classes of appropriate and inappropriate child behaviors. A multiple baseline design was used to demonstrate, sequentially, the effects of the training procedure upon the attending behavior of each teacher. After withdrawal of feedback, a posttraining follow-up served to assess the durability of training. For both aides, the effect of training was to increase the proportion of appropriate child behaviors attended to, compared with baseline data, and a follow-up over a number of weeks indicated that the effects of training were apparently durable.

There is abundant evidence that social contingencies applied by staff and/or parents can modify selected problem behaviors of children. This has been shown with preschool children (*e.g.*, Baer and Wolf, 1968; Harris, Wolf, and Baer, 1964), school children (*e.g.*, Hall, Lund, and Jackson, 1968; McAllister, Stachowiak, Baer, and Conderman, 1969), children at home (*e.g.*, Hawkins, Peterson, Schweid, and Bijou, 1966; Herbert and Baer, 1972), and in clinical groups with brain injury, emotional disturbance, or retardation (*e.g.*, Hall and Broden, 1967; Zimmerman and Zimmerman, 1962). The behaviors modified have ranged through poor

social interaction skills, academic, attending, and orderly classroom behaviors, and general child-management problems. These studies have shown that a selected behavior or class of behaviors can be modified by having adults consistently attend to desired behavior and ignore undesired behavior.

Two conclusions seem justified. First, such procedures represent the most economical, natural, and relevant of all modification techniques. Second, even when other contingencies (*e.g.*, a token economy) are in effect, social contingencies inevitably occur and should be arranged so as not to shape or maintain behaviors incompatible with the requirements of these other contingencies.

Thus, an important problem for current research is to develop techniques to teach, quickly, family or staff to use their inevitable social contingencies in a *generalized* correct manner; *i.e.*, to apply uniformly correct social contingencies across all possible behaviors. This generalization is a major feature of interest. The goal of such training should be to promote, and durably impart, the highest levels of competence in the application of correct social contingencies so as to ensure the strengthening of appropriate behaviors and the weakening of inappropriate behaviors.

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Thomson, Holmberg, and Baer (*unpublished*), pursuing a similar goal in the training of preschool teachers, noted that of seven techniques tried, observer feedback was the most uniformly effective procedure. In their work, teacher training focused on improving the trainee's application of social contingencies to the modification of a single class of child behavior (Cooper, Thomson, and Baer, 1970). Cossairt, Hall, and Hopkins (1973) investigated the effects of experimenter's instructions, feedback, and feedback plus social praise on a single behavior class (teacher praise of student attending during mathematics classes). They reported the effect of feedback alone to be inconclusive, in that it increased teacher praise more effectively than instructions with one subject and not with the other. However, these authors were forced to terminate the feedback condition prematurely, preventing an unequivocal assessment of its effectiveness. Cossairt *et al.* concluded that experimenter feedback plus social praise was the most effective single training procedure and that a "package" using all three methods was also successful.

The present study applied frequent observer feedback to the *generalized* improvement of staff use of social contingencies across all classes of child behavior, and then examined its apparent durability after termination of training.

METHOD

Subjects

Two teachers, jointly responsible for organizing and running a kindergarten-style program emphasizing the development of pre-academic and self-help skills for institutionalized retarded children, served as subjects. Both had completed the first year of a 5-yr on-the-job training program in the care of retarded children, but had received no special training for their current role. One subject (Teacher A) had completed a university level introductory course in psychology.

Both women had previously had brief ex-

posure to specific operant procedures and were interested in learning how to apply them more generally in their program.

Child Subjects

The number of children enrolled in the kindergarten program varied throughout the study from four to eight. Four children attended consistently over the duration of the investigation; two others attended regularly until shortly before the study ended. Of these six, three were male and three female; their mean age was 9.4 yr (range, 6.2 to 11.5 yr). All were severely retarded.

Setting and Daily Program

For much of the study (12 weeks) the program operated four mornings a week in a large playroom. Most of the morning was spent in this room, apart from a half-hour period during which the children went to the toilet and later watched a television preschool program in the adjoining room.

The morning program (9:30 a.m. to 11:45 a.m.) typically included music activities (*e.g.*, dancing, beating time, calisthenics), imitative games, cooperative play, and pre-academic activities with a variety of materials and equipment. A snack time provided opportunity for the training of self-help feeding skills. The latter part of each morning (11:00 a.m. to 11:45 a.m.) was devoted to individual programs of pre-academic activities for the children.

During the final six weeks of the study, the group moved to a new room in the same unit. Associated with the new location was an outdoor play area. The daily program was then altered by replacing the television viewing with outdoor activity and increased individual training in pre-academic activities.

Observation Code

All observations were made according to a two-category-by-10-category code, covering all classes of child behavior attended to by the teachers. This code cited 10 areas of child be-

Table 1

Abbreviated Definitions of Child Behavior Comprising the 2-by-10 Observation Code

<i>Category of Child Behavior</i>	<i>Code Symbol</i>	<i>Appropriate Form</i>	<i>Inappropriate Form</i>
(1) Activity	A	Acceptable use of identifiable activity	(1) Unoccupied (2) Avoidance of positive activity
(2) Bizarre	B	Not applicable	(1) Autisms (2) Self-destructive acts (3) Habits
(3) Compliance	C	Follows instructions, requests, <i>etc.</i> , within 10 seconds	Does not comply or approximate compliance within 10 seconds
(4) Disruptive	D	Not applicable	(1) Disruptive (2) Destructive
(5) Language	L	Says audible words or phonemes	(1) Inaudible (2) Gestures (3) Growls, <i>etc.</i>
(6) Self-Help: Feeding	SHF	(1) Eats (2) Sits at table (3) Distributes own food, dishes, utensils without help (4) Feeds self	(1) Messes (2) Steals (3) Feet or head on table (4) Is fed (5) Runs away from table (6) Bangs utensils, <i>etc.</i> (7) Pulls table cloth
(7) Self-Help: Clothing	SHC1	(1) Dresses (2) Arranges clothes (3) Clean clothes	(1) Undresses (2) Messes clothes (3) Damages clothes
(8) Self-Help: Toilet	SHT	(1) Uses toilet (2) Asks to use toilet (3) Washes hands (4) Uses tissue or handkerchief	(1) Gets off toilet during use (2) Soils (3) Picks nose, licks mucous (4) Wipes nose on clothes, <i>etc.</i>
(9) Social	S	(1) Interaction (2) Cooperation	(1) Isolate (2) Aggressive
(10) Miscellaneous	M	Attention to low frequency behavior (<i>e.g.</i> , "Bless you" to sneezes)	Attention to low frequency behavior (<i>e.g.</i> , gagging on food)

havior, eight of which could occur in either of two forms, appropriate or inappropriate; two other areas of child behavior, bizarre and disruptive, could occur only in inappropriate form.

Abbreviated definitions of the 10 areas of child behavior are listed in Table 1.²

²A detailed list of the definitions of child behaviors may be obtained from the first or third author.

Teacher attention to child behavior was observed in a two-category code, as either topographically positive or topographically negative. These categories were defined as follows:

Negative teacher attention was any verbal expression of disapproval (including growls); frowns, head shaking, and hand gestures such as shaking a finger; any removal of materials or objects from the child; and the placing of the child in timeout (accomplished by excluding him from the room).

Positive teacher attention was any other form of attention, specifically including all verbal statements of approval, praise, encouragement, or affection; smiles, hugs, pats, and kisses; the supplying of materials and/or objects; and all passive or neutral expressions to the child.

The above forms of teacher attention were recorded only if they had been made to a specific child. The defining criteria required that the teacher name or touch the child, or be in close eye contact with him as the attention occurred, or that she provide him with or deprive him of materials or objects. General comments to everyone (*e.g.*, "Well done, children!"), or simply looking at a child, without other concurrent forms of attention, were not recorded as teacher attention.

The focus of observation and recording was always on the teacher. Each teacher attention, positive or negative, to a specific child created an occasion for recording. When the teacher attended, the topography of her attention was recorded and, simultaneously, the child's behavior immediately preceding her attention was coded as falling in one of the 10 areas defined, and as being appropriate or inappropriate. Thus, each event of teacher attention produced three

scores by the observer(s): (1) positive or negative teacher attention had been given to (2) appropriate or inappropriate child behavior falling in (3) one of 10 categories of possible child behavior. These three observations were recorded on a two-row recording form, illustrated in Figure 1.

Figure 1 shows that the first teacher attention recorded was positive in topography, and was in response to inappropriate disruptive behavior (*e.g.*, she gave a cookie to a child who had been pushing over the chairs placed around the snack table). The second teacher attention was positive in topography and was given to appropriate self-help (feeding) behavior (*e.g.*, she said, "Was that what you wanted?" to the child who was now sitting at the table eating the cookie she had given him). The third teacher attention was negative in topography and was a response to an inappropriate language behavior (*e.g.*, she said, "No, you've had enough!" to the child who, having finished his cookie and being capable of verbally requesting another, instead pointed at the remaining cookies).

To overcome the sequential recording problems presented by prolonged physical or verbal attention (for example, when a teacher had a child sitting in her lap, or was engaged in an extended conversation with a child), the following conventions were adopted:

Prolonged physical attention. In the event of prolonged physical attention, only the initial teacher attention was recorded, except when: (1) the teacher attended to a change in the child's behavior, (2) the teacher briefly shifted her attention to another child and then returned it to the original recipient, or (3) she stopped attending to the child for approximately 10 sec

		1st teacher attention	2nd teacher attention	3rd teacher attention	etc.
Child behavior	Appropriate		SHF+		
attended to was:	Inappropriate	D+		L-	

Fig. 1. The recording form for observation of teacher attention to child behavior, with exemplary entries.

and then resumed her attention to him. Each of these exceptions was recorded as a new event.

Prolonged verbal attention. Verbal attention composed of more than one sentence with less than 5 sec between each sentence, clearly directing attention at one unit of behavior (e.g., "Well done! That was great! Do you think you can do it again?"), was recorded as only one attention. For all brief verbal interactions, or when there were more than 5 sec between sentences, each sentence was regarded as a distinct teacher attention to the child.

Attention to concurrent child behaviors. On those occasions when a teacher attended to a child displaying both appropriate and inappropriate behaviors concurrently (e.g., chewing shirt while stacking blocks), the attention was recorded as being to the inappropriate behavior.

Reliability. Because data collection was based on the recording of sequences of attending behavior, any divergence in sequence would subsequently produce considerable disagreement between observers. This problem was prevented by having one observer announce successive instances of teacher attention by saying "now" quietly and waving his pencil (the latter strategy was adopted when noise in the room masked the announcer's voice). Only occurrence of an event was cued; classification and coding of that event was recorded independently by the observers, who stood 4 to 6 ft (1.2 to 1.8 m) apart.

Possible announcer bias was reduced by alternating the announcing role between the observers after every fifteenth observation. Additional recording symbols were devised so that if the announcer cued an event that the co-observer disputed as a teacher attention, or had failed to observe, the latter could record the disagreement. Also, when a co-observer noted an event not cued by the announcer, that disagreement also was coded as such. In this way, observers could note disagreements over the occurrence of events without destroying the correspondence of their sequential entries.

Analysis of coding disagreement revealed that the category of compliance was the foremost

source of interobserver disagreement. This may have arisen because compliance referred to a general category of child behavior occurring within the context of all the other specific categories of child behavior for which the teachers attended. An observer failing to perceive a request or instruction was most likely to attribute any resultant teacher attention to the specific behavior context within which it occurred, rather than to compliance. Consequently, both compliance and the specific behavior context within which it occurred were coded in the same recording space. Concurrences between observers on each of these categories were scored as agreements when calculating reliability.

At each phase of the study (baseline, training, and posttraining follow-up), interobserver reliability percentages were obtained, both for the classification of the child behavior attended to (appropriate or inappropriate) and for the category into which that behavior fell. Reliability percentages were calculated by dividing the number of agreements by the sum of agreements and disagreements.

Observational procedure. A coded, sequential description of the specific appropriate and inappropriate child behaviors attended to by a teacher, and the topography of that attention, were recorded each session in five consecutive blocks of 15 responses. This gave a total record of 75 sequential attention responses per teacher over an observation session, typically of 15- to 20-min duration. Normally, it was possible to complete two such observation sessions per subject in the 1.5 hr (9:30 a.m. to 11:00 a.m.) of the daily program selected as the observation period.³

Observational sessions were conducted only on days when both teachers were in attendance at the kindergarten program.

³After 11:00 a.m., the children received individual pre-academic training. Baseline observations of this period revealed a high proportion of attention to appropriate child behaviors (Teacher A's mean was 79%; Teacher B's mean was 72%). Also, such individual attention was atypical of the rest of the daily program.

The phases of the daily program during which each teacher was observed were rotated from day to day. This provided a balanced record of teacher-child interactions across a variety of activities and contexts.

Three unobtrusive postchecks were made, 7, 12, and 14 days after regular posttraining follow-up observations ceased. This was done to establish whether the durability of the teachers' performance was dependent upon the presence of an observer obviously carrying recording paraphernalia. (The unobtrusiveness of postchecks was established by questioning teachers at the end of the study.)

Training procedures. The training procedure used frequent feedback. At the completion of recording each block of 15 sequential attention responses, the observer handed the trainee a slip of paper. This reported the proportion (as a percentage) of her last 15 attentions given to appropriate child behaviors and the proportion given to inappropriate child behaviors (*e.g.*, "Appropriate, 67%", "Inappropriate, 33%").

This method resulted in feedback at frequent intervals, usually every 3 to 5 min during observation. The teachers were asked to regard their feedback reports as confidential, and were advised not to discuss them with each other.

Before the training of Teacher A began, the goals of the training program, the definitions of behaviors under observation, and their own baseline performances were discussed with both teachers together. Teacher A was informed that she would be given feedback on her performance, and Teacher B was encouraged to improve her attentional skills "by her own efforts"—*i.e.*, without feedback. The "own-efforts" condition was introduced to assess the possible effectiveness for Teacher B of instructions to improve performance, combined with discussion of the behavioral definitions and goals, without the provision of feedback concerning progress.

At the inception of her training, each teacher was provided with written details of the classes of child behaviors observed, both appropriate and inappropriate, and with the associated op-

erational definitions used by the observers. This familiarized them with the behaviors under observation, thus enabling them to learn which contingencies to apply.

The aim of the training procedure was to increase the proportion of attention given by the teachers to all appropriate child behaviors, thus enabling them to apply social contingencies in a generalized correct manner.

Design

In order to analyze the efficiency of the training procedure, a multiple baseline design was employed. This design served to demonstrate that after baseline periods of differing length, the sequential application of the training procedure to the two teachers generated similar increases in the proportion of attention given to appropriate child behaviors. Additionally, an intensive posttraining follow-up was used to establish whether the changes achieved as a result of training evidenced durability following withdrawal of feedback.

RESULTS

Reliability

The interobserver reliability percentages obtained for each subject at each phase of the study for the category of behavior attended to, and its classification as appropriate or inappropriate, are detailed in Table 2.

All but three of the interobserver reliability percentages obtained for the category of child behavior attended to were 80% or more. Mean interobserver reliabilities for both subjects on the category of behavior were 83% and 81% for Teachers A and B, respectively.

The reliability of classification of child behavior as appropriate or inappropriate was consistently above 80%, with mean interobserver reliability percentages of 90% being obtained for both subjects.

Disagreements between observers on the occurrence of an event, announced or unannounced, occurred on only three of the 14 oc-

Table 2

Interobserver reliability percentages for category of child behavior and its appropriate/inappropriate classification, for both teachers at each phase of the study.

<i>Teacher A</i>			<i>Teacher B</i>		
<i>Phase</i>	<i>Category</i>	<i>Appropriate/ Inappropriate</i>	<i>Phase</i>	<i>Category</i>	<i>Appropriate/ Inappropriate</i>
Baseline	65	81	Baseline	75	85
	80	91		80	91
Training	83	88	"Own Efforts"	83	91
	87	93		85	93
Posttraining	84	92	Training	76	88
	81	91		84	89
Follow-up	99	93	Posttraining	84	92
Mean	83	90	Mean	81	90

casions when reliability was assessed (seven checks for each teacher). The three reliability percentages obtained on those occasions for occurrence of attention events were 93%, 97%, and 97%.

During reliability assessment sessions, the observers alternated the role of announcing when to record after every fifteenth observation. Reliability during those 15-item blocks when the first observer cued the second was virtually identical with that obtained when the second observer cued the first. The respective reliabilities of classification of child behavior attended to averaged 90% and 91%. Similarly, the rates of teacher attention to appropriate behavior scored by the principal observer varied little as a function of whether he or the second observer was cueing, the difference averaging three percentage points.

The sessions of the study when reliability was checked are recorded in Figure 2.

Training

Each point on the graphs in Figure 2 represents the percentage of positive attention given by each teacher to appropriate child behavior, out of a total of 75 sequential attentional responses.⁴ (On one occasion, inadvertent use of

a modified record sheet led to the recording of only 60 responses.)

Teacher A's baseline showed considerable variation. The proportion of her attention given to appropriate child behavior ranged from 56% to 87% (mean = 69%), with only three of the 15 points equalling or exceeding 80%. Over the eight-day training period, when observer feedback was supplied, attention to appropriate behavior by Teacher A increased considerably, relative to her baseline record. Of the 15 points recorded in this condition, 12 equalled or exceeded 80% (range 75% to 95%), with a mean of 85% over the entire training condition.

Once the proportion of attention to appropriate behavior had stabilized in the 80%-to-100% range, Teacher A's training was discontinued and feedback withdrawn. Teacher A's behavior was then monitored for an 11-week period. Initially, there was a very slight decline in the proportion of her attention given to appropriate behavior, followed by a recovery to levels that equalled or occasionally exceeded those attained

appropriate child behaviors, 96% and 93% of these attentions (respectively) were positive. When they attended to inappropriate child behaviors, 83% and 76% of these attentions were positive. Thus, when they attended, their attention was likely to be positive, but a little less likely to be positive if the child behavior was inappropriate.

⁴Analysis of the topography of teacher attentions showed that when Teachers A and B attended to

Fig. 2. Percentage of attention to appropriate child behaviors at baseline, training, and posttraining follow-up phases, per observational sessions (75 sequential attentions) for Teachers A and B.

during training. This 11-week follow-up phase included a two-week vacation followed by a change in classroom location, but the effect of these disruptions appears to have been minimal.

Of the 17 points recorded during posttraining follow-up, only two were below 80% (range 79% to 97%, mean 87%). The unobtrusive postchecks made 7, 12, and 14 days after the

completion of regular data collection revealed that the level remained high 11 weeks after training terminated.

During her baseline period, Teacher B displayed a relatively stable proportion of attention to appropriate child behaviors, ranging between 49% and 80%, with a mean of 64%. Only one of the 15 baseline points exceeded 80%. The "own-efforts" condition (concurrent with Teacher A's training) was apparently similar to baseline, all of the points falling within that previously established range. However, from the outset of her five days of training, Teacher B showed an immediate increase in attention to appropriate behavior relative to the pretraining conditions. In all, eight of the 10 points recorded during training fell within the 80% to 100% range. The proportion of Teacher B's attention given to appropriate child behavior ranged from 73% to 100%, with an overall training condition mean of 85%. These results paralleled those obtained with Teacher A.

As with Teacher A, withdrawal of observer feedback at the start of the posttraining follow-up did not produce a return to baseline by Teacher B, despite the brevity of her training. Her posttraining performance, monitored over a period of more than eight weeks, was particularly stable; all of the nine points during follow-up fell between 83% and 93%, with a mean of 87%. Teacher B's performance appeared unimpaired by the two-week vacation and the following change in location. The unobtrusive postchecks made 7, 12, and 14 days after cessation of obvious recording showed no decline in the effects of training after eight weeks.

DISCUSSION

This study systematically examined the effectiveness of frequent observer feedback as a procedure for training staff to apply their social contingencies in a generalized correct manner to a wide range of child behaviors. This required that they attend to appropriate child behaviors and ignore inappropriate child be-

haviors. An examination was also made of the durability of the training procedure after observer feedback was terminated.

Although the baseline records of the two subjects differed, in that Teacher B displayed more frequent and regular variations in performance than Teacher A, there was a remarkable similarity in their overall performances on both training and posttraining conditions.

The apparently high proportion of attention to child behaviors recorded during baseline for both teachers probably resulted from the high staff-child ratio and the child-care methods used by the staff. However, such baseline levels do not contra-indicate further training. Herbert and Baer (1972) reported three cases of parents with baselines in a comparable range (55% to 72%) who had very poorly behaved children. Training those parents to attend to 80% or more of appropriate behavior greatly improved the children's behavior. Thus, Herbert and Baer's results support the value of increasing the competence of adults who are already apparently moderately successful contingency managers, as in the present study.

The present results also show that the teachers became more consistent, as well as more competent, at attending to appropriate child behaviors as a result of the training program. For both teachers, training produced relatively rapid increases in the proportion of attention given to appropriate child behaviors. In overall performance on the training condition, Teacher A increased by over one-quarter of her baseline mean, and Teacher B improved on her mean baseline performance by more than one-third. The data obtained from the posttraining follow-up, and the unobtrusive postchecks, revealed that both teachers maintained the levels achieved during training, despite the withdrawal of observer feedback and the disruptions in routine caused by their two-week vacation and the change in classroom location. The finding that brief training (eight days for Teacher A, five for Teacher B) continued to be effective for some weeks after termination of observer feed-

back indicates that this training procedure can be used to impart relatively durable skills and, to some degree, answers the question of durability raised by Cooper *et al.* (1970).

The "own-efforts" condition was applied only to Teacher B, and the results demonstrated that instructions to improve her performance, combined with discussion of behavioral definitions and goals, were not sufficient to change her attending behavior significantly. The data obtained during "own efforts" were essentially similar to those of her baseline condition. It was only after Teacher B began receiving feedback on her performance that she showed a significant and sustained increase in the proportion of attention she gave to appropriate child behavior.

The findings of this study demonstrate that such staff can be taught quickly, and apparently durably, to utilize their inevitable social contingencies in a generalized correct fashion upon all possible behaviors. The results also support Thomson *et al.*'s (*unpublished*) finding that frequent observer feedback represents an effective technique for training staff in the application of social contingencies. The frequency of feedback (every 3-to-5 min) and the fact that it was given during training sessions may account for the relative effectiveness of the procedure in the current program, in contrast to the finding of Cossairt *et al.* (1973), who used feedback after 15-min sessions.

The recording of sequences of behavior may be worthy of some comment. This system was adopted because it offered a means of collecting a total sample of the teachers' attending behavior over the observation sessions. It was considered that observer feedback to the teachers should provide them with information on the correctness of their application of social contingencies, based upon all of the child behaviors they attended to, rather than upon a sample of those behaviors. The implementation of the system did present some problems, especially with respect to interobserver reliability, but as the reliability data indicate, these problems were largely surmounted.

Finally, it should be noted that the question of whether the skill in applying generalized correct social contingencies gained by the teachers generated concomitant increases in the output of appropriate behaviors by the children is not answered in this study. However, some common experience and literature suggest that the ability to apply social contingencies correctly to a wide range of child behaviors, both positive and negative, would be a useful addition to any training aide's repertoire.

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