Self-Modeling as an Intervention to Reduce Disruptive Classroom Behavior

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This study employed a multiple baseline design across individuals with a follow-up to examine self-modeling as a treatment for disruptive behavior in 4 school-aged males with social and emotional disorders. Self-modeling is defined as the positive change in behavior that results from viewing oneself on edited videotapes that depict only exemplary behavior. The students viewed two 5-minute edited videotapes of themselves behaving appropriately in the classroom on 6 occasions over a 2-week period. After viewing the intervention videotapes, all students evidenced a substantial reduction in disruptive behavior. To differing degrees, the students maintained their treatment gains at follow-up.

CHILDREN who exhibit disruptive classroom behavior significantly alter the learning environment in that they divert teachers' attention from academic instruction, reduce academic learning time, and require teachers to focus more on classroom management (Paine, Radicchi, Rosellini, Deutchman, & Darch, 1983). Disruptive behavior can further impede academic performance by compromising a student's ability to attend to tasks, stay seated, and follow classroom rules (Cobb, 1972).

The need for effective interventions that foster appropriate classroom behavior for these students is obvious. Ideally, the intervention should be nonintrusive, least restrictive, and produce substantial reductions in disruptive behavior. Furthermore, the treatment effects should generalize and endure.

Self-modeling may be an intervention that fulfills these criteria. It is defined as the change in behavior that results from repeated observations of oneself engaged in exemplary behavior (Dowrick, 1999). As a form of observational learning, self-modeling maximizes the similarity between the model and observer (Clark, Kehle, Jenson, & Beck, 1992). According to Dowrick, self-images of exemplary behavior can be conveyed through a variety of means, including audiotape, one's imagination, role play, photographs, or, the most frequently employed method, edited videotapes.

Over the last 25 years, evidence from more than 100 studies has shown the therapeutic effects of self-modeling (Dowrick, 1999). These effects are, in part, explained by the assumption that the self-images of exemplary behavior provide unequivocal instruction on how best to perform the target behavior, and the promotion of self-beliefs that the behavior can, in fact, be successfully performed (Bandura, 1997). Furthermore, generalization of the newly acquired behavior is facilitated by the fact that self-modeling is not as dependent upon the manipulation and design of the external environment.

Self-modeling has been successfully employed to promote personal and social skills, communication, physical skills, and academic and vocational competencies (Dowrick, 1999). Specifically, with respect to personal and social skills, self-modeling has been used to treat depression (Kahn, Kehle, Jenson, & Clark, 1990), inattentiveness (Clare, 1992), hyperactivity (Woltersdorf, 1992), cross-gender behavior (Dowrick, 1983), sexual dysfunction (Pryde & Woods, 1980), grooming skills (Pekroski, Craighead, & Horan, 1983), anxiety (Dowrick & Jesdale, 1990), aggression (Creer & Miklich, 1970; Davis, 1979), cigarette smoking (Owusu & Howitt, 1985), social dysfunction (Morgan & Salzburg, 1992), and noncompliance (Kehle, Clark, Jenson, & Wampold, 1986).

Bray and Kehle (1996) employed self-modeling with children who stutter. In addition, with regard to communication disorders, self-modeling has been used to treat children with selective mutism (Kehle, Madaus, Baratta, & Bray, 1998; Kehle, Owen, & Cressy, 1990) and expressive language deficits (Buggey, 1995).

Numerous studies have used self-modeling as an intervention to promote physical and athletic competencies such as gymnastics (Winfrey & Weeks, 1993), swimming (Dowrick & Dove, 1980), and basketball (Lee, Garrett, Kehle, & Douglas, 1997). Self-modeling has also been effective in helping individuals with physical disabilities, such as those requiring prosthetic devices (Dowrick & Raeburn, 1995). In addition, the intervention has been applied to increase academic competencies such as arithmetic skills (Schunk & Hanson, 1989), reading fluency (Bray, Kehle, Baratta, & Hintze, 1998), and classroom participation (Hartley, Bray, & Kehle, 1998). The find-

Cognitive and Behavioral Practice 6, 99–105, 1999
1077-7229/99/99–105$1.00/0

ings of the above studies, similar to the conclusion of Meharg and Woltersdorf's (1990) review, indicated immediate and substantial positive results.

Specifically, with regard to children with serious emotional disorders (SED), Kehle et al. (1986) reported dramatic and enduring decreases in disruptive classroom behavior as a result of the self-modeling intervention. However, in contrast to these findings, McCurdy and Shapiro (1988) found that self-modeling produced idiosyncratic results with students with SED. Similarly, Shear and Shapiro (1993) found that neither self-monitoring in combination with self-modeling nor self-modeling alone substantially reduced disruptive behaviors. They described the results as idiosyncratic and limited in effectiveness. Further, Clark et al.'s (1993) investigation with preschoolers showed no positive effects in reducing aggression and noncompliance. The present study incorporated several procedural modifications based on recommendations derived from the three studies that reported idiosyncratic results (Clark et al.; Kehle et al., 1986; McCurdy & Shapiro, 1988; Shear & Shapiro, 1993). This was done to refine the methodology in an attempt to provide further empirical validation for self-modeling with children with SED.

Method

Students and Setting

Participants included 4 males, aged 5 to 8 years, enrolled in a suburban elementary school. Two of these children were in a general education class comprised of 15 children, and 2 were in a self-contained special education classroom, comprised of 11 students. These children met Public Law 94-142 criteria for social-emotional disturbance and scored within the clinical range on the Conduct Disorder subscale of the Conners' Teacher Rating Scale (CTRS; 1989). Specifically, the students would break rules, argue, make excuses, and delay compliance to teacher requests. In addition, they would, at times, engage in fights, destroy property, and tease and verbally abuse other students. They tended to be deficient in self-management skills, were attention seeking, were often off-task, and had difficulty finishing their schoolwork. These characteristics, taken from the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV*; American Psychiatric Association, 1994), often led to class disruption. Disruption was defined in the present study as the occurrence of any one or more of seven observable classroom behaviors (O'Leary, Romanczyk, Kass, Dietz, & Santogrossi, 1979). Finally, all of the students evidenced average intellectual skills based on WISC-III testing conducted by the first author, and none were on medication before, or during, the investigation.

Design

A multiple-baseline design was employed across 4 individuals. The investigators randomly selected the order in which the students encountered the intervention.

Description of Dependent Measures

Direct observations. The frequency of seven disruptive behaviors (out-of-seat, touching, vocalization, playing, disorienting, making noise, and aggression), as defined by O'Leary et al. (1979), were directly observed throughout the phases of the study. As in the studies conducted by Kehle et al. (1986), and McCurdy and Shapiro (1988), these behaviors were collapsed into a single class of disruptive behavior due to the low frequency of some individual behaviors. Behavior observations occurred in 20-minute sessions during regularly scheduled class lessons, in the subject area and time of day identified by the teacher as most problematic. The presence of any of the seven disruptive behaviors was recorded during 15-second intervals using a partial interval time-sampling procedure (Sulzer-Azaroff & Mayer, 1991).

Token economy. Similar to McCurdy and Shapiro's (1988) study and serving as an indicator of the teachers' perceptions of the students' behavior across conditions, daily marks or points each student earned in his ongoing respective behavior management system were monitored. The students' behavior was monitored throughout the school day, which was divided into five time periods: whole-class instruction, activity time, speciality area classes, independent seatwork, and a second whole-class instruction period. During each of these time periods the teacher rated the student's behavior as simply being appropriate or disruptive and indicated this by color marking the student's folder (green = *appropriate*, red = *disruptive*). Thus, five green color markings would be a perfect day.

Conners' Teacher Rating Scale (CTRS). Teachers completed the CTRS for the students in their classroom at baseline and follow-up. This also served as an indicator of the teachers' perceptions of students' behaviors across conditions.

Treatment integrity. The experimenter monitored treatment integrity by comparing each intervention session to a written protocol. This was conducted at the close of each intervention session in the school psychologist's office where the intervention had taken place. The protocol comprised a checklist that outlined all aspects of treatment and was followed with essentially 100% accuracy.

Interobserver agreement. Interobserver agreement for each student across all phases of the investigation was determined employing percentage of agreement (dividing the number of intervals agreed on by the total number of intervals and multiplying by 100). The raters, two school psychologists (one of whom was blind to the treatment conditions and phases of the study), randomly coded in common approximately 25% of the total observation ses-

sions. Interobserver agreement averaged .9, with a range of .86 to .93.

Procedure

In concert with recommendations and suggestions provided by previous research (Clark et al., 1992; Kehle et al., 1986; McCurdy & Shapiro, 1988; Shear & Shapiro, 1993), the following procedural modifications were made: (a) the students were involved in determining their disruptive behaviors for editing in an attempt to facilitate their attention to the behaviors to be modeled; (b) more than one treatment videotape was made per student in an attempt to maintain interest and attention and to enhance generalizability by depicting more than one setting; (c) in concert with Shear and Shapiro's recommendation, that brief, intermittent presentations of the treatment videotapes may be more effective than continuous daily viewings, the videotapes were constructed to be 5 minutes in length and viewing was spaced by at least 2 days of no viewings. This notion is further supported by the spacing effect or the research finding that spaced presentations of material to be learned yields more pronounced learning than one massed presentation (Dempster, 1988); and (d) any naturally occurring instances of reinforcement for correct behavior were not deleted from the treatment videotape in an attempt to increase the potency of the model and enhance learning. Previously, researchers (e.g., Kehle et al.) deliberately deleted any footage that displayed subjects' behavior being reinforced. Although learning through modeling does not require reinforcement, previous studies have shown that an observer may be more inclined to imitate a model's behavior if the model is reinforced for the behavior (Bandura, 1986).

The procedure involved three phases: baseline, intervention, and follow-up. Baseline data were collected employing all three dependent measures during a 1-, 2-, 3-, and 4-week period for Students 1 to 4, respectively. Videotaping was conducted during two or three baseline sessions to capture sufficient instances of appropriate behavior to create the intervention videotapes (see Table 1). Data collection continued during videotape construction to insure that no changes in disruptive behavior resulted. All instances of disruptive behavior were edited out of the videotapes, leaving only appropriate and exemplary behavior. The final videotapes contained only behavior that both the experimenter and student agreed was desirable behavior. In addition, footage depicting the student being reinforced for appropriate behavior was included in the edited treatment videotape.

The intervention phase began on the school day following the completion of final videotaping and editing. Data collection continued employing direct observations and monitoring of the token economy. During intervention, the students viewed their 5-minute videotapes six times over a 2-week period. Although the effectiveness of this many viewings has not been studied, it is consistent with past investigations (Bray & Kehle, 1996; Kehle et al., 1990). The order of treatment tape viewing was randomized. Using a predefined script, students were informed that they would watch a videotape of their classroom behavior in the school psychologist's office with only the experimenter present. No other explanation occurred, except that if the child looked away from the television he was prompted to attend to the videotape. Follow-up data collection was bifurcated in that data were collected at the cessation of intervention, and at the end of 6 weeks, employing all three dependent measures.

Table 1
Procedural Outline of Self-Modeling Intervention

Step 1. During baseline, on three or more occasions, the child was videotaped in the classroom during typical classroom lessons for approximately 30 to 45 minutes. This amount of time is sufficient to capture at least 10 minutes of appropriate classroom behavior allowing the construction of two, 5-minute edited intervention videotapes.
Step 2. The videotape was edited to create two, 5-minute intervention videotapes depicting appropriate-only behavior. The editing was accomplished with student consultation; however, all instances of disruptive behaviors (see O'Leary et al., 1979)—out-of-seat, touching, vocalization, playing, disorienting, making noise, and aggression—were edited out of the intervention tape. Any naturally occurring instances of reinforcement for appropriate behavior were not deleted from the intervention videotape.
Step 3. The two videotapes were viewed, in a random order, by the students in private, with just the experimenter present, on at least six occasions over a period of 2 weeks in order to maximize the spacing effect. The spacing effect refers to the research finding that for a given amount of time, spaced presentations of the material to be learned (i.e., appropriate behavior depicted on edited videotapes) will yield substantially better learning than would a single massed presentation. Therefore, the students' viewings of the intervention videotapes were spaced by at least 2 days.

Results

Direct Observations

Figure 1 depicts the percentage of intervals per observation session in which disruptive behavior was present across the study. For Students 3 and 4, results indicated that levels of disruptive classroom behaviors substantially decreased relative to baseline and, further, that the gains were maintained at follow-up. Specifically, Student 3 showed a decrease in disruptive behavior from a mean of 55.25% during baseline to 31% at follow-up; Student 4

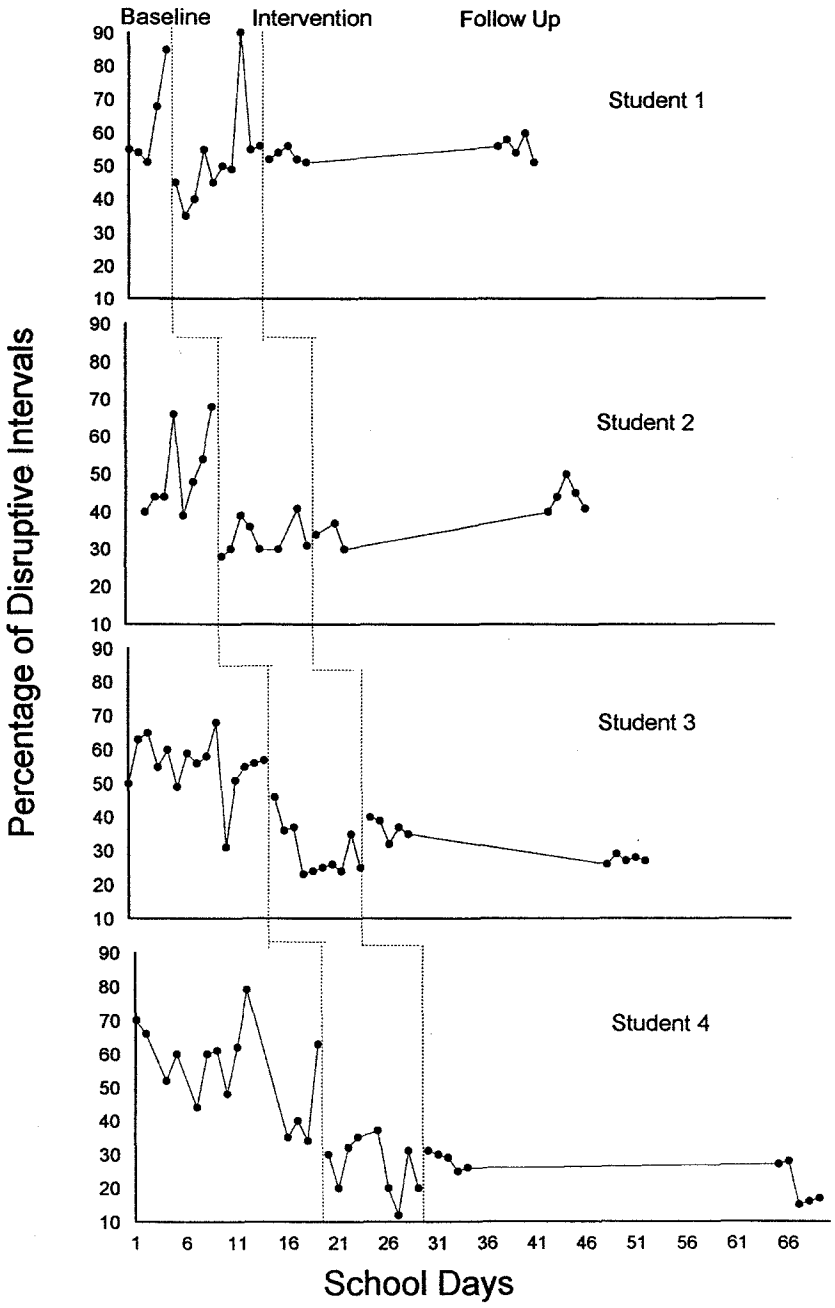

Figure 1. Percentage of intervals per observation session in which disruptive behavior was present across the study.

showed a decrease from 53.75% to 22%. Students 1 and 2 demonstrated a more modest decrease in levels of disruptive behavior from baseline to intervention, and maintenance of their treatment gains was minimal at follow-up. Specifically, Student 1 showed a decrease in disruptive intervals from a mean of 59.4% during baseline to 54% at follow-up; Student 2 showed a decrease from 50% to 40%.

Generally, the two students who demonstrated substantial improvements in behavior from baseline to intervention maintained those improvements at follow-up. In contrast, the two students who demonstrated less improvement in behavior from baseline to intervention evidenced only a 5% and 10% decrease respectively in their disruptive behavior at follow-up.

Token Economy

Table 2 displays the mean percentage of time periods (out of daily possible total of five) where the teacher judged

Table 2
Mean Percentage of Time Periods Across Phases Where the Students' Behavior Was Judged as Inappropriate

Student	Baseline	Intervention	Follow-Up
1	68%	60%	62%
2	55%	37%	48%
3	57%	36%	38%
4	61%	26%	24%

Table 3
Teacher Reported *T*-Scores* of Students on the CTRS Conduct Disorder Scale

Student	Baseline	Follow-Up
1	71	72
2	70	72
3	71	53
4	71	53

* According to the CTRS manual, *T*-Scores above 70 are considered clinically significant.

the students' behavior as inappropriate (as in McCurdy & Shapiro, 1988). Consistent with results from observations and the CTRS, all students were judged as behaving inappropriately during substantially fewer time periods during intervention and follow-up than during baseline.

CTRS

Table 3 indicates that the teachers' perceptions of students' behavior using the CTRS were consistent with observational data. All students scored within the clinical range on the conduct-disorder subscale before the introduction of the self-modeling intervention. An inspection of student ratings on the CTRS, specifically with regard to the conduct-disorder subscale, revealed that the teacher perceived that the behaviors of Students 3 and 4 improved dramatically relative to baseline. Ratings for Students 1 and 2 remained consistent with those obtained before baseline.

Discussion

Similar to the findings of McCurdy and Shapiro (1988), the present results revealed idiosyncratic effects across subjects. The magnitude of change was less pronounced than that found by Kehle et al. (1986), who reported a 37% decrease in disruptive intervals from baseline to intervention. The greatest decrease in disruptive behavior for students in the present investigation equaled 29%. However, findings from the present investigation were much more encouraging than those from Clark et al. (1993), where no positive effects were found relative to the self-modeling intervention.

When employing self-modeling to reduce disruptive behaviors, age may be an important variable that mediates its effectiveness. Also, possibly variables that correlate with age, such as cognitive development, self-appraisal, self-regulation skills, and ability to use predictive forethought, may also influence a child's ability to profit from self-modeling. The Kehle et al. (1986) study supports this hypothesis in that self-modeling substantially reduced disruptive classroom behavior in students aged 10 to 13 years. Students for the present study fell in the 5- to 8-year-old range, where the two older students evidenced more substantial gains than the two younger students. Specifically, when given the opportunity to contribute to the editing process (i.e., when asked to point out footage of disruptive behaviors), both of the older students selected at least one segment that was removed from their videotapes prior to intervention. Although the younger two students were given the same opportunity, neither selected appropriate footage for removal. Thus, it is tenable to assume that older children are more capable of benefitting from the self-modeling intervention. In accordance with Bandura (1986), in order for the modeling process to be effective, the observer must attend to, retain, and reproduce the modeled behavior, and must have sufficient motivation to do so. It is feasible that the two students who did not evidence substantial gains were deficient in one or more of these areas. It was a limitation of the study to not assess these processes prior to and after the intervention.

Two out of the four component processes in social cognitive theory that govern observational learning and the later performance of modeled behavior (Bandura, 1977) may be operating in the present study. All students attended while they watched their videotapes with very little prompting. All possessed the necessary motor production processes to perform the modeled behavior that was within each child's behavioral repertoire. Therefore, perhaps either the students did not possess the ability to retain what was modeled by symbolically encoding it in memory, or reduced motivational processes may have contributed to the differences among responses to the self-modeling intervention. In support of this hypothesis, it has been shown that self-observation is more effective when the students are motivated to change (Piersel, 1985).

Lastly, as proposed by Shear and Shapiro (1993), perhaps the idiosyncratic results in this and previous studies were partially due to the treatment procedures. Because the treatment videotapes are viewed outside the classroom, the requirement for the observational effects to generalize across time, settings, and behavior may be too difficult to achieve.

Contributions

Self-modeling may be an effective intervention for children with SED with respect to reducing their disruption of classroom activities and should be considered as an additional complement to clinical practice. Furthermore, it is less intrusive and restrictive than most behavioral approaches in that it requires substantially less of the students' time (Bray & Kehle, 1996).

Limitations

A threat to the external validity of the study relates to the nature of single-subject designs in that the findings cannot be generalized beyond the students in the study. A threat to the internal validity was possible reactivity to the videotaping equipment. Reactivity cannot be completely ruled out in that no data were collected to test the hypothesis. However, it was shown that no differences in behavior occurred when students were just videotaped and not shown the tapes versus changes in behavior that did occur with the self-modeling procedure (Dowrick & Raeburn, 1995).

Although not done in the present study, future research might profit from further investigating variables that may explain the idiosyncratic nature of results across subjects. Assessing the students' level of motivation to change and ability to retain information that was acquired through self-observation may prove particularly useful in determining which individuals will likely benefit from self-modeling.

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Cost-Effective Alcohol Treatment: The Community Reinforcement Approach

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Recent meta-analyses of the alcohol treatment outcome literature have pointed to a number of therapeutic modalities that consistently surface as generally more effective than others. Yet the gap between science and practice remains largely unaffected by these findings. Among the many possible reasons for this gap, a critical one is the difficulty of synthesizing research findings and methodically adapting them for private or clinic practice. This paper introduces the Community Reinforcement Approach (CRA), one of the well-supported treatment modalities. CRA is a cost-effective behavioral and social-learning-based treatment protocol. Its innovative, menu-driven approach to substance abuse also integrates several other cost-effective treatments to make a comprehensive package for the clinician. An overview of CRA is provided with the objective of helping the clinician increase his or her cost-effectiveness with alcohol abusing and dependent clients.

ALCOHOL TREATMENT is one of the few areas in mental health that has made striking progress in this century. From the early 1900s when alcohol abuse was seen as a mark of character failure (Miller & Hester, 1989) to the present-day exploration of biological-environmental interactions, treatment options have grown in both variety and effectiveness. In a series of large-scale meta-analyses, a number of effective and cost-effective treatments have repeatedly been found to outperform other, sometimes more popular, approaches, for treating alcohol abuse and dependence. Yet numerous authors have pointed to clear indicators that the gap between science and practice is not only large but growing (Allen, Litten, & Fertig, 1995; McCrady, 1991; Woody, McLellan, Alterman, & O'Brien, 1991). As McCrady wrote, clinicians "often draw heavily on their own clinical and personal experiences, thereby developing strong and impassioned beliefs about treatment, even though such beliefs may not have been subjected to empirical inquiry" (p. 215). Consequently, treatment programs tend not only to rely on modalities that have never been proven to be effective, but to neglect those that have (Miller, 1992).

Integration of empirically based protocols into practice undoubtedly faces multiple barriers. Not the least of those barriers are time for the clinician to process the literature, relevance of research populations to clinical ones, access to study treatment manuals, availability of training, and discordance of the new protocols with existing support systems (e.g., AA). Moreover, the scientific world appears to do little to make its "products" more accessible to the practitioner. Indeed, Goldfried and Wolfe (1996) make this point in no uncertain terms. They recount an anecdote about a scientists' roundtable discussion of this problem where "the point was continually made that the practicing clinician was 'not a good consumer' of research findings" (p. 1008). They go on to point out that were the problem presented to a group of corporate directors, "the likely discussion would not have been on the shortcomings of the consumer but on what could be done to make the product more appealing" (p. 1008).

Cognitive and Behavioral Practice 6, 105–109, 1999
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