A PORTABLE DEVICE FOR GROUP MODIFICATION OF CLASSROOM ATTENDING BEHAVIOR

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There is a need for a portable means of signalling appropriate classroom behavior that the teacher can carry with her as she moves about the room. An inexpensive wireless switch, adapted for classroom use, was used to turn on a clock when all children were attending to their work. When a movie was made contingent on accumulating a specific number of minutes on the clock, class-attending increased. Throughout these conditions, the records of class attending made by an independent observer with a stopwatch correlated highly with the remote controlled clock.

Coleman (1970), Packard (1970), and Schmidt and Ulrich (1969) have described methods of using group contingencies to modify classroom behavior. Each of these studies defined a target behavior that required each member of the class to behave within a specified, acceptable range in order for reinforcement to occur. Schmidt and Ulrich (1969) used a relatively expensive sound-level meter to monitor classroom noise. Reinforcements occurred when the noise remained below a specified level. Packard (1970) used a simple switch on the teacher's desk to turn on and off a red light. The light signalled non-attending behavior. A more sophisticated delivery system was described by Coleman and Toth (1970). They pointed out the need for some portable means of signalling appropriate classroom behavior that the teacher could carry with her as she moved about the room. The authors described a hand-held, radio-controlled transmitter that operated a counter. Although hand-held, the transmitter requires either a 30-in. (76.2 cm) antenna or a wire, clothing-mounted antenna. In addition, the total cost of the transmitter, receiver and counter is about \$73.00. In an attempt to find a more convenient, but less-expensive signalling system that still allowed the teacher complete freedom of movement, a "wireless switch" was adapted for classroom use.

Transmitter and Receiver

The 1 by 1.75 by 3 in. (2.5 by 4.4 by 7.6 cm) transmitter (1 oz.) uses a standard 9-v battery and is small enough to be carried in a shirt pocket. No antenna is required. It emits an ultrasonic beam that trips a relay in the receiver (3.75 by 2 by 2.5 in. or 9.5 by 5 by 6.5 cm). The receiver operates on 110 v, ac. Both units are shown in Figure 1. When the button on the transmitter is depressed, power is provided to a 110-v outlet at the rear of the receiver. To turn the power off, the transmitter button is pressed again. Using the 9-v power supply, the range of the transmitter is approximately 90 ft. The manufacturer indicates a greater range can be obtained by increasing the transmitter voltage. The transmitter and receiver cost \$21.95 (Lafayette Electronics, 111 Jericho Turnpike, Syosset, L.I., N.Y. 11791). A similar unit is available from Allied-Radio Shack for \$15.95 in kit form. The former unit has functioned reliably for over 1000 operations and is still in use. Since current drain on the battery occurs only when the switch is depressed, batteries were routinely changed at approximately three-month

¹Reprints may be obtained from Jerry Willis, Bureau of Mental Health, Jefferson County Dept. of Health, PO Box 2646, Birmingham, Alabama 35202.

Fig. 1. Transmitter and receiver used by the teacher to start and stop signal light and clock. The teacher could activate the receiver from anywhere in the classroom.

intervals, although the unit still functioned with the old batteries.

Application

The unit was used in a group behavior modification project of the classroom attention of first graders. The design of the project was essentially that described by Packard (1970). Attention was defined in the same manner, and the teacher was trained to carry the transmitter with her at all times. A 110-v double-pole double-throw relay was connected to the receiver. The relay was wired to operate either a red light or a large wall clock. When the teacher observed that all children were attending, she activated the clock by pushing a button on the transmitter. When she observed any child not attending, she again pushed the button. The

clock stopped and the red light came on. As a measure of reliability an observer, using a stopwatch, also measured the number of minutes the students were all attending while the teacher used the wand, on 42 days of the 46-day experiment.

During the treatment phase, which lasted 30 days, a movie was made contingent on accumulating a specified number of minutes attending on the clock. The initial requirement was 1 min in 60 min. Gradually, the requirement was raised to 31 min by the end of the study.

Figure 2 shows the effect of the procedure and provides a graphical illustration of observer agreement. Attention improved from a median of 0 min during baseline to a median of 31 min for the last 10 days. A product-moment correlation of teacher *versus* observer minutes recorded

Fig. 2. Number of minutes during a daily 60-min period when all students were paying attention. During Baseline 1, no instructions were given to the children and the teacher recorded attending with a stop watch. In Baseline 2, the wand, receiver, signal light, and clock were in use by the teacher and visible to the children, but still no instructions were given to them. On the first day of Baseline 3, the teacher explained why the light had been going on and off during class. She explained what she wanted the children to do to "pay attention" and wrote a permanent list of attending behaviors on the blackboard. Daily during Baseline 3 and treatment, the teacher read over this list with the children just before the observation period. Throughout treatment, the teacher told the class that they would be shown a movie at the end of the hour, contingent upon their reaching a pre-set criterion of attending. The class was always informed of the day's criterion. Movies appeared to be desirable reinforcers for this class, composed largely of culturally deprived children and the teacher's announcement that they had earned a showing was invariably greeted with enthusiastic shouts and applause.

during treatment was 0.87. Agreement was nearly perfect during baseline.

The wireless switch has a number of advantages over other types of apparatus. It is highly portable, inexpensive, requires little maintenance, and can be used to operate any 110-v

device such as a clock or light that has a power rating of 860 w or less. In one current application, the unit is used to operate a clock that the children watch as it accumulates attending time and a "happy face" lamp that also lights up when all students are attending.

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