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Increasing Recycling in Academic Buildings: A Systematic Replication

Timothy D. Ludwig, Timothy W. Gray, and Allison Rowell

ABSTRACT

We placed recycling receptacles in two locations in academic buildings and studied recycling behavior within an ABA multiple baseline design. During baseline, recycling receptacles were placed in a central location. During the intervention, receptacles were moved into classrooms where beverages were primarily consumed. Baseline conditions were then reinstated. The percentage of cans recycled daily increased during intervention and returned to near-baseline levels during withdrawal. The percentage of cans discarded daily in the trash decreased during the intervention and increased to near-baseline levels during withdrawal. Implications of this study include making recycling more convenient in institutional settings.

Behavioral research has identified numerous interventions that increase recycling behaviors. Austin, Hatfield, Grindle, and Bailey (1993) used signs and education to increase paper recycling in two college departments. By placing signs over the trash containers and recycling containers, they increased recyclables from 51% in baseline to 84% in the experimental condition. Williams (1991) reported that less than half of the students in residence halls recycled their daily newspapers. He suggested that a majority of students would recycle if drop-off facilities were convenient for them. Brothers, Krantz, and McClannahan (1994) found that when recycling containers were placed in a central location of an office building, 28% of recyclable paper was recycled. When the containers were moved closer to the workers, recycling increased to 88% of all paper, and similar results were maintained for up to 7 months afterward.

The present study provided a systematic replication of the study by Brothers et al. (1994) applied to student recycling behaviors in university academic buildings. By making recycling more convenient, it was predicted that patrons of two academic buildings would increase their aluminum can recycling.

METHOD

Participants and Settings

Participants in the study included patrons of two academic buildings at a southeastern university over a 6-month period. Building A was a rectangular structure with three floors containing nine classrooms (no classrooms on the first floor, four on the second floor, and five on the third floor). Building B was a three-story building that contained 25 classrooms. To make the two buildings comparable, two perpendicular halls containing 10 classrooms on the second floor of Building B were used in the study. Trash containers were located inside each classroom, and two were located at the end of

each hall. Informal pilot observations determined that approximately 90% of soft drinks consumed in these buildings were consumed in the classrooms during normally scheduled classes.

Procedure

Recyclable-grade aluminum cans in the recycling receptacles (2 ft by 3 ft by 2 ft cardboard boxes lined with plastic to prevent leaking) and trash containers (2 ft cylindrical containers lined with plastic) were counted at the end of each academic day after classes ended for the day, but before the custodial staff began to empty the trash (i.e., between 4:00 p.m. and 6:00 p.m.). Interobserver reliability data was collected during 30% of the data collection sessions by two independent observers. The two observers agreed on the number of cans in recycling receptacles at the end of the day 90% of the time and agreed 98% of the time on the number of cans in the trash containers.

A multiple baseline ABA design across two buildings was used. The intervention was implemented and withdrawn at Building A, while Building B remained in baseline conditions. The same intervention was then implemented and withdrawn at Building B, while Building A remained in baseline conditions. This effectively counterbalanced the control relationships between the two buildings. There was an 8-week break in data collection, which coincided with the university's winter break, in the middle of the study.

During the initial baseline phase, recycling receptacles were placed in the middle of each hallway. Signs (8½ in. by 11 in.) posted over each recycling receptacle read, ''Recycle Empty Cans Here.'' A sign that read, ''Recycle Empty Cans in the Middle of Hall,'' was posted in each classroom directly over the trash containers. After baseline measures were collected, recycling receptacles were removed from the hallway and placed in each of the classrooms next to the existing trash containers. In the hallways, where the

receptacles were located previously, a sign was posted that read, ‘‘Recycle Empty Cans in Classrooms.’’ In each of the classrooms a sign was placed over the receptacles that read ‘‘Recycle Empty Cans Here.’’ After the intervention, recycling receptacles were moved back to the central location in the middle of the hall and signs were once again posted directing people to them.

RESULTS AND DISCUSSION

Over a 77-day period, 13,969 recyclable cans were counted, including 7,841 in Building A and 6,128 in Building B. Figure 1 displays the percentage of cans recycled and discarded in the trash in Buildings A and B over the course of this study. Percentage of cans was computed by dividing the number of cans counted in the recycling receptacle (for percentage recycled) or trash container (for percentage in trash) by the total number of cans counted in both the trash and recycling receptacles. During the baseline condition (hallways), 40% of cans (*M* = 56 cans per day) were placed in the recycling receptacle in Building A, increasing to 63% of cans (*M* = 81 cans per day) during the intervention (classroom), and returning to 40% of cans (*M* = 40 cans per day) during withdrawal (hallways). Conversely, 60% of cans (*M* = 85 cans per day) were placed in the trash container in Building A during baseline, decreasing to 37% of cans (*M* = 48 cans per day) during the intervention, and returning to 60% of cans (*M* = 59 cans per day) during withdrawal. In Building B during baseline, 35% of cans (*M* 5 23 cans per day) were placed in the recycling receptacle, increasing to 71% of cans (*M* = 71 cans per day) during the intervention, and decreasing to 43% of cans (*M* = 30 cans per day) during withdrawal. In Building B during baseline, 65% of cans (*M* = 46 cans per day) were placed in the trash container, decreasing to 29% of cans (*M* = 29 cans per day) during the intervention, and increasing to 57% of cans (*M* = 40 cans per day) during withdrawal.

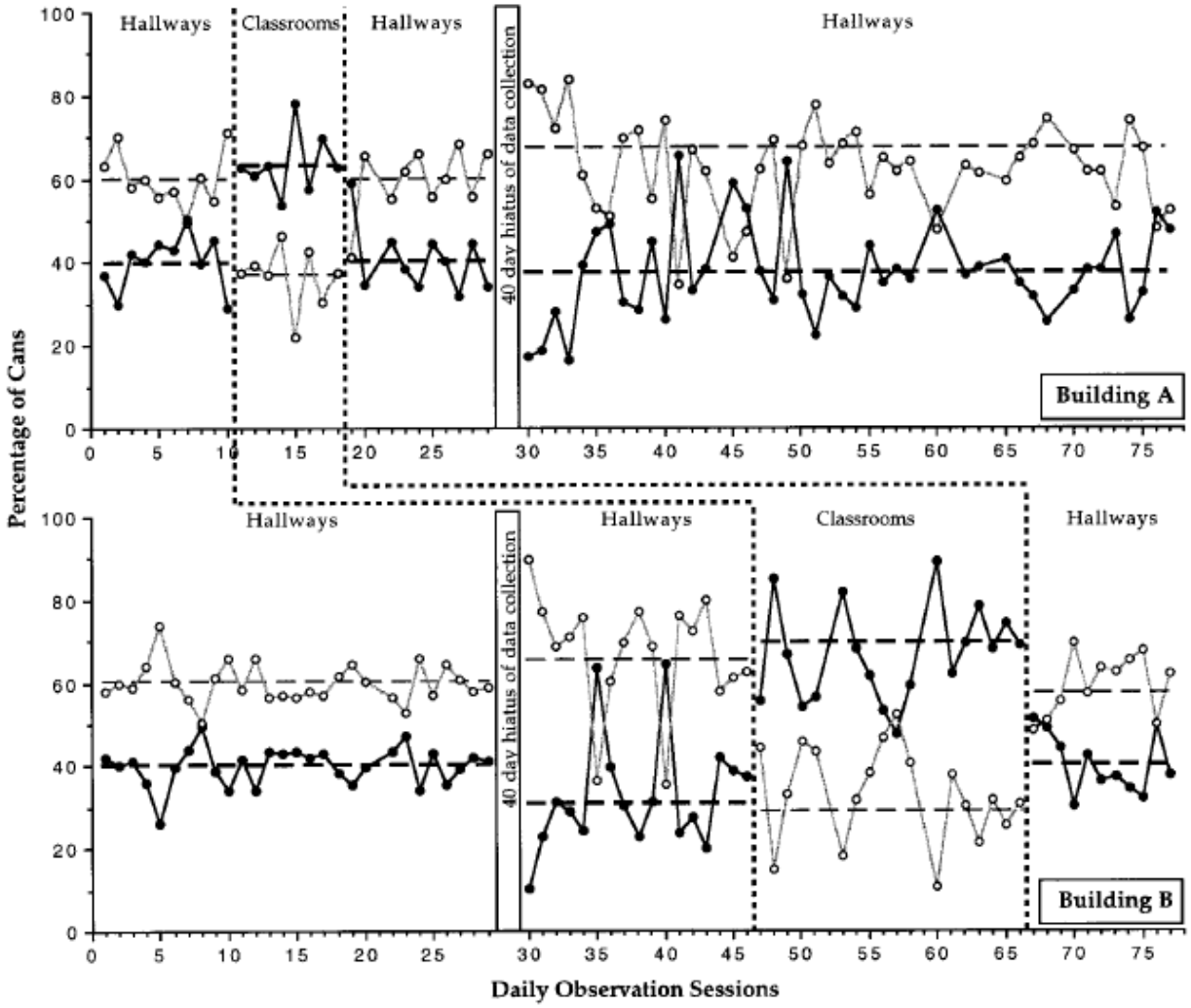

Figure 1. The percentage of cans counted in recycling receptacles and trash containers per day in Buildings A and B. Daily observation sessions were conducted Monday through Friday. Filled circles represent cans counted in recycling receptacles, and open circles represent cans counted in trash containers. Vertical dashed lines represent the phase changes. Thick dashed horizontal lines represent the mean number of cans counted in recycling receptacles for a given phase. Thin dashed and dotted horizontal lines represent the mean number of cans counted in trash containers for a given phase.

The results of the study show an increase in the number of aluminum cans recycled when recycling receptacles were moved from the building hallways to the classrooms. Locating the recycling receptacles in the classrooms made them more proximal to consumption. The consumer's behavior was directed by the convenience associated with discarding the empty can after consuming the beverage. The least convenient choice between recycling and discarding in the trash incurred the additional response cost of carrying the can an extra distance. Therefore, the most proximal choice would be preferred.

The covariance (Wahler, 1975) of recycling and discarding in trash was predicted because of their incompatibility. When recycling receptacles were moved to classrooms, the number of cans discarded in the classroom trash containers decreased about 50%. The increase of cans in recycling receptacles during this time almost accounts for the decrease of cans discarded in the trash.

The recycling operations in this study were maintained by undergraduate volunteers. Therefore, the recycling program ceased at the end of the academic year. University officials have committed to implement a campus-wide recycling program based on this study. Although placing recycling bins in classrooms may be more expensive for large-scale implementation, these data suggest that the institution can double the amount of cans recycled.

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