

An Exploratory Study of How Undergraduate Students Modify Their Behavior to Participate in Sustainability Projects

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Abstract

In the past years, the concern to protect the environment has provoked interest in sustainability efforts to rise. The current study aims to answer the question: What motivates Millersville University undergraduate students to modify their behavior and participate in a sustainable project? The project that was explored here is TerraCycle, which is an organization that collects non-recyclable waste and either recycles, upcycles, or reuses those items. Overall, the design of the current study assesses the effectiveness of a competition intervention and a group feedback intervention to increase university students' TerraCycling behavior in a dormitory setting. An AB research design is used, and it is hypothesized that more items for TerraCycle will be collected during the intervention period compared to the baseline phase. Unfortunately, hypothesis testing was not conducted because of too few data points, but descriptive statistics and visual analysis were performed and interpreted.

Environmental issues are becoming increasingly important to act upon. In 2018, The United States Environmental Protection Agency (EPA) estimated that only 25.8% of American waste was recycled in 2015. Out of the total waste Americans generated in 2015, 137.7 million tons ended up in landfills (United States Environmental Protection Agency [EPA], 2018). Landfills emit toxins like methane into the air that contribute to the depletion of the ozone layer; methane can be the source of hazardous explosions, since it is a highly combustible gas (Chicago Metropolitan Agency for Planning [CMAP], 2013). It is

obvious that we need to make efforts to increase pro-environmental behaviors to divert our waste from landfills.

Previous research has shown that competition manipulations have increased recycling behaviors in college students living in dormitory settings (Geller, Chaffee, & Ingram, 1975; Witmer & Geller, 1976). Geller and colleagues (1975) found that notifying buildings via hanging posters that they were in competition with each other increased paper recycling behavior of students from baseline. Additionally, paper recycling increased when a competition was

introduced through flyers that were slipped under each student's door (Witmer & Geller, 1976). Overall, there is support to show that putting college students in a competition with each other can increase paper recycling (Geller, Chaffee, & Ingram, 1975; Witmer & Geller, 1976).

Feedback manipulations have also been shown to enhance pro-environmental behaviors (Schultz, 1998; DeLeon & Fuqua, 1995). For instance, Schultz (1998) found a significant increase from baseline to intervention (when the feedback was introduced) on curbside recycling participation when participants were given individual feedback (how much waste the individual household recycled) and group feedback (how much waste the entire group or neighborhood recycled). DeLeon and Fuqua (1995) also explored a group feedback manipulation, and found that feedback letters taped to residents' front doors increased recycling participation compared to baseline in an apartment complex. In all, group feedback manipulations have been used to increase recycling behavior (Schultz, 1998; DeLeon & Fuqua, 1995).

The current study explores how competition and group feedback interventions affect the TerraCycling behavior of undergraduate students. It is hypothesized that there will be more items collected for TerraCycle during the competition and feedback intervention phases compared to the baseline phases.

Method

Participants

Millersville University residential students living in East and West Villages served as the participants. East A and West B were randomly assigned to the

competition condition, East B was randomly assigned to the feedback condition, and West A was randomly assigned to the control condition. In total, 1,161 students were exposed to the TerraCycle program.

Materials

First, a large, cardboard box (24'' X 18'' X 18'') was placed in the front lobby of every building that served as the TerraCycle collection bin. In addition, the feedback and competition groups received emails about how much waste the building collected or the details of the competition. This information was also displayed on 22'' X 28'' posters that were displayed on each floor of the building.

Procedure

The course of the study contained two phases: baseline and intervention. Before the start of the study, all housing staff were informed about the TerraCycle program and about the study. At the beginning of the baseline phase, an email describing TerraCycle was sent out with a list of items that were accepted, and the collection bins were placed in the lobby of each building.

When the intervention phase started, posters were hung and an email was sent to the competition participants that notified them that their building was in a battle with another residence hall to determine which building could collect the most items for TerraCycle. The feedback participants received an email and posters around the building that stated how many items were collected in the previous week. The students participating in the feedback condition were given updated information each week. The entire study lasted for six weeks and the TerraCycle items were collected at the beginning of each week.

Results

Because the study only ran for six weeks, the assumptions for hypothesis testing were not met. Although hypothesis testing could not be conducted, visual analysis can be performed by examining time series graphs (see Figures 1-10). Broad trends include low participation and contamination (items collected by participants that are not accepted for TerraCycle) in the control condition, and a slight increase of TerraCycle participation when the feedback manipulation was introduced with minimal contamination. In addition, an increase in participation and contamination was observed during the intervention phase for the first competition building, but relatively low participation and contamination levels were seen in the second competition building.

Conclusion

In summary, the present study aimed to investigate the effectiveness of a competition and feedback manipulation at increasing undergraduate students' TerraCycle behaviors. Due to lack of data, visual analysis was conducted rather than hypothesis testing which makes it difficult to draw conclusions about the effectiveness of these manipulations. Future studies should expand the time frame so that hypothesis testing can occur, explore ways to increase awareness of the TerraCycle program and interventions, and limit confounding variables.

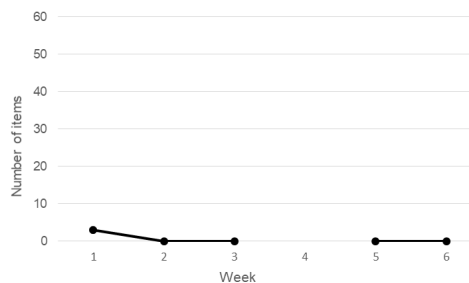


Figure 1. Control condition's (West A) TerraCycle participation level measured by number of items collected that are accepted by TerraCycle. Week four's data was thrown out due to Thanksgiving break.

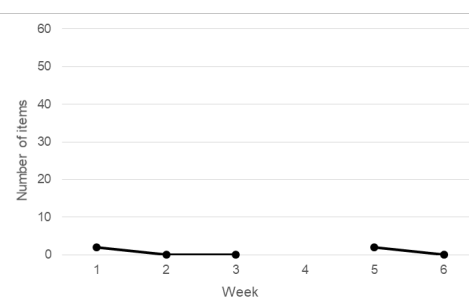


Figure 2. Control condition's (West A) contamination measured by number of items collected that were not accepted by TerraCycle. Week four's data was thrown out due to Thanksgiving break.

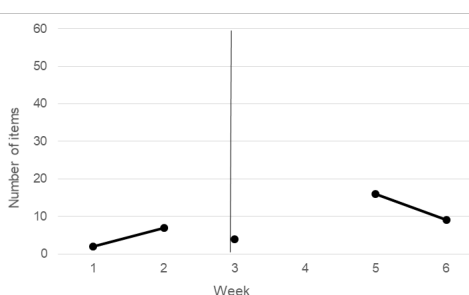


Figure 3. Feedback condition's (East B) TerraCycle participation level measured by number of items collected that are accepted by TerraCycle. The phase line indicates that the feedback manipulation started at the beginning of week three. Week four's data was thrown out due to Thanksgiving break.

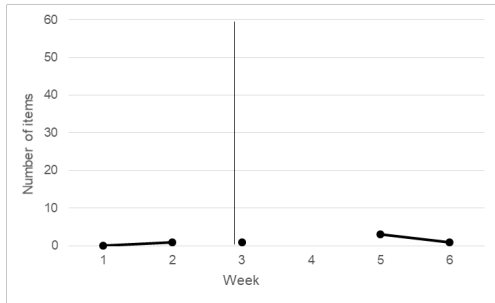


Figure 4. Feedback condition’s (East B) contamination level measured by number of items collected that were not accepted by TerraCycle. The phase line indicates that the feedback manipulation started at the beginning of week three. Week four’s data was thrown out due to Thanksgiving break.

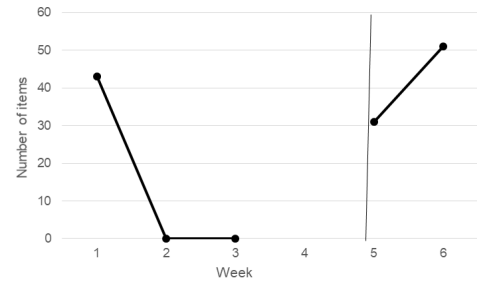


Figure 6. East A’s level of contamination measured by the number of items collected that were not accepted by TerraCycle. East A was one of the buildings in the competition condition. The phase line indicates that the competition intervention was started at the beginning of week five. Week four’s data was not considered due to Thanksgiving break.

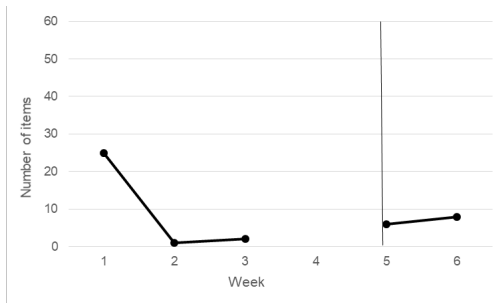


Figure 5. East A’s level of TerraCycle participation measured by the number of items collected that are accepted by TerraCycle. East A was one of the buildings in the competition condition. The phase line indicates that the competition intervention was started at the beginning of week five. Week four’s data was not considered due to Thanksgiving break.

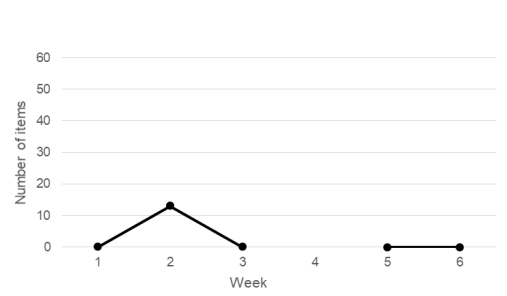


Figure 7. West B’s level of TerraCycle participation measured by the number of items collected that are accepted by TerraCycle. West B was the other building in the competition condition. The phase line indicates that the competition manipulation began at the beginning of week five. Week four’s data was not considered due to Thanksgiving break.

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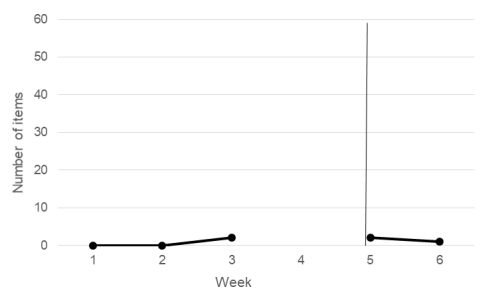


Figure 8. West B's level of contamination measured by the number of items collected that were not accepted by TerraCycle. West B was the other building in the competition condition. The phase line indicates that the competition manipulation began at the beginning of week five. Week four's data was not considered due to Thanksgiving break.

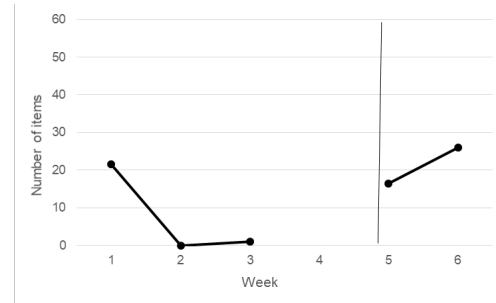


Figure 10. East A and West B's average contamination measured by the number of items that were not accepted by TerraCycle. These trends represent the entire competition group's behavior. The phase line indicates that the competition manipulation was introduced at the beginning of week five. Week four's data was not considered due to Thanksgiving break.

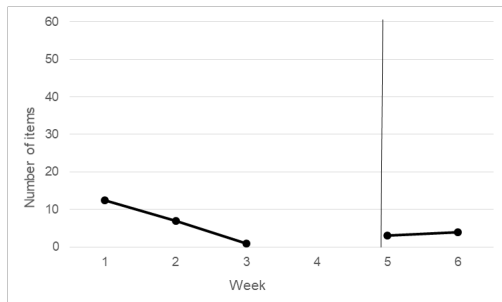


Figure 9. East A and West B's averaged TerraCycle participation levels measured by the number of items collected that are accepted by TerraCycle. These trends represent the entire competition group's behavior. The phase line indicates that the competition manipulation was introduced at the beginning of week five. Week four's data was not considered due to Thanksgiving break.

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