EFFECTS OF A PROMPTING PROCEDURE ON COFFEE SHOP CONSUMERS' USE OF REUSABLE CUPS

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By
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CERTIFICATION OF APPROVAL

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Dr. William Potter Professor of Psychology	Date
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ABSTRACT

Decreasing disposable cup use in coffee shop can potentially save trees from being cut down and used to manufacture disposable cups. The current study used a group multiple baseline design across stores to evaluate a personal prompting procedure delivered to customers of three coffee shops on the use of reusable cups. Results indicate that the personal prompt had a weak effect on decreasing the use of disposable cups, resulting in a 2%-4% overall decrease in two store locations and a 15% increase in one store location. Implications of these results are discussed.

CHAPTER I

INTRODUCTION

According to the Environmental Protection Agency (EPA), Americans generate an average of 4.6 pounds of garbage per person daily. It is then transferred to landfills and disposed of by burial, leading to soil and water contamination, or to incinerators, leading to the release of toxic materials into the air, water, and ground (EPA, 2012). Disposable cups compose a substantial portion of generated waste. Annually, Americans use an estimated 16 billion paper cups, which is equivalent to 6.5 million trees per year or 1,181,600 tons of wood (Romo & Peshiman, 2009). Each tree that is removed from the ecosystem to make paper cups is no longer able to absorb carbon dioxide, produce oxygen, or filter groundwater.

Annual disposable plastic cup use results in an estimated 7 million tons of plastic waste (EPA, 2013). When plastics break down, they do not biodegrade. Instead, they break down into smaller and smaller toxic fragments polluting the soil, waterways, and animals upon digestion. Although some plastics are considered recyclable, they can only be broken down and reused so many times before they become useless and must be sent to a landfill or incinerator (Gammon, 2008). While recycling materials prevents products from ending up in landfills and incinerators, even the process of recycling is

an energy-intensive process that can release more pollutants into the environment (Evolve Recycling, 2013).

Much of pollution is created by human activity. However, it has been argued that the largest contributors to the degradation of the environment are organizations, in comparison to individuals and households (Stern, 2000). Environmentally destructive behaviors of individuals are not freely chosen and the choices of consumers are constrained by the practices of organizations. Individuals have no direct involvement in organizations' decisions in manufacturing processes, product design and packaging, and waste management systems. Employees working within organizations may be able to make decisions to lessen negative environmental impacts. Consumers may also be able to influence public policy, but these are not easy tasks.

Since the late 1960's, researchers within the field of behavior analysis have used interventions targeting pro-environmental behaviors including safety, recycling, energy consumption, and physical health (Clayton & Helms, 2009; Dickinson, 2000; Engerman, Austin, & Bailey, 1997; Geller, Farris, & Post, 1973; Goldstein, Cialdini, & Griskevicius, 2008; Gravina, Loewy, Rice, & Austin, 2013; Priebe & Spink, 2012; Shultz, Khazian, & Zaleski, 2008; Wagner & Winett, 1988). Behavior analytic principles have also been applied in organizational behavior management (OBM) research to modify behaviors of consumers and employees, such as employee absenteeism, sales performance, and safety-related behaviors (Berkovits, Sturmey, & Alvero, 2012; Camden, Price, & Ludwig, 2011; Engerman et al., 1997; Ludwig & Geller, 1999; Milligan & Hantula, 2005).

Behavioral research has shown the use of prompts to be effective in modifying a variety of pro-environmental behaviors (Engerman, Austin, & Bailey, 1997; Geller, Farris, & Post, 1973; Wagner & Winett, 1988). Prompts are verbal or written antecedents that designate desirable target behaviors and are relatively low in cost and easy to implement. Prompts are most effective when the prompted behavior is easy to perform and when the prompt is delivered in close proximity to where the behavior is to be performed (Lehman & Geller, 2004).

Geller, Farris, and Post (1973) evaluated different prompting procedures on consumers' purchase of returnable soda bottles at a convenient store. Returnable bottles were containers acceptable for return after use. A cash deposit was paid upon purchase of the beverage and refunded when the container was returned for either refilling or recycling. This study measured the effectiveness of basic prompts, in the form of distributed handbills, on consumers' decisions to purchase returnable bottles rather than non-returnable containers.

Five variations of the prompt were used. In the handbill only condition, handbills were distributed to customers as they entered the convenient store. During the handbill and chart condition, handbills were distributed to customers and a scorekeeper publicly recorded whether each customer purchased a returnable or nonreturnable bottle. The handbill, chart, and group condition was similar to that of the handbill and chart condition except that during this condition, four people surrounded the chart when customers entered and left the store. Two variations of the handbill, chart, and group condition were conducted to determine whether the gender

of distributers, chart manipulators, and group members affected customers' choice of bottles at purchase (i.e male condition and female condition).

Geller et al. effectively demonstrated the functional relation between the use of a basic prompt and consumers' pro-environmental purchasing behaviors. Although the authors found no difference in purchasing behavior with each variation of the handbill conditions, they found an overall increase in the purchasing of returnable bottles by customers who were given handbills compared to customers in the control group. Ironically, in their attempts to influence consumers to reduce pollution by purchasing returnable bottles, they were actually generating additional waste through the use of handbills as prompts.

Prompting procedures have shown to be successful within small, individually owned business settings (Milligan & Hantula, 2005). The owner and sole store clerk of a small pet grooming business used prompts written on index cards to suggest additional products for customers to purchase at the register. In addition to a control condition where no prompts were used, product-specific prompts were used in one condition (i.e. "Would you like to purchase [specific item] today?") and non-specific prompts were used in the second condition (i.e. "Anything else today?"). Results indicated that both prompts quadrupled customers' additional purchases from baseline to the intervention phase (M = 8, M = 32, respectively). There was no difference in sales after a specific or general prompt.

Implementing similar procedures within larger organizations may help to avoid the cost of training employees and purchasing additional products to prompt

customers to purchase certain goods or services. Oral prompts may also help to save businesses money and additional waste. The effectiveness of vocal personal prompts was demonstrated in a study evaluating a low-cost, personal prompting approach to increase safety belt use by patrons at a supermarket (Engerman, Austin, & Bailey, 1997). The prompts used in this study did not require any materials that would eventually turn into waste.

To date, there has been no research in behavior analysis with a focus on the influence of personal point-of-choice prompts on consumers' decisions to use reusable cups. Point-of-choice prompts interrupt habitual behaviors and suggest alternative options at or near the location where customers are to make a choice (Olander & Eves, 2011). Reusing cups would lead to direct savings on labor, water, and product (Goldstein, Cialdini, & Griskevicius, 2008). It can also result in the reduction of solid waste in landfills, which reduces the contamination of water and soil and the release of greenhouse gases (Lehman & Geller, 2004). The current study examined the effects of a low-cost, personal point-of-choice prompting procedure on customers' decisions to use reusable cups for their beverages rather than disposable cups.

CHAPTER II

METHOD

Participants & Settings

This study was conducted in three Starbucks locations in Stanislaus County, California. Baristas employed at each location who worked during the observed hours implemented the personal prompting procedure. There were 13 males and 17 females. Observed hours were between 1:00 P.M. and closing time (closing times varied among stores). Store 1 closed at 10:00 p.m. Monday through Saturday and at 9:00 p.m. on Sundays. Store 2 closed at 11:00 p.m. Monday through Sunday. Store 3 closed at 7:00 p.m. Monday through Sunday. Before 1:00 p.m., all locations experienced their highest volume of customers and store managers did not want experimentation to interfere with the speed of service and sales.

Participants were customers who ordered their beverages inside and were the standard base of Starbucks customers in the Stanislaus County area. Secret shoppers were also considered participants because they posed as customers purchasing beverages. Prompts were used only with customers who purchased their beverages inside the cafe. Drive-through customers were excluded from participation because store-owned reusable cups were only permitted to be used within the store.

Training and Materials

Training

Research has shown that training groups involving role-playing outperform training groups that use lecture alone (Adams, Tallon, & Rimell, 1980). Based on these findings, role-playing was integrated into the training sessions. Barista training for each store included instruction, modeling, and role-playing. The experimenter gave a concise definition and explanation of the personal prompting procedure and modeled demonstrations of appropriate and inappropriate use of the procedure. Because of scheduling constraints, training was conducted individually with each barista during the last shift they worked before implementing the prompting procedure. The duration of training sessions was about 10 minutes. The MotivAider (see description below) was introduced and instructions were given on how to use it during observation hours. The experimenter also instructed how to count cups using a data sheet designed in Microsoft® Excel before and after the observation period each day.

Training sessions were conducted at each barista's respective store location at a table in the lobby. Within the session, the experimenter covered the study's purpose, a definition and an example of a personal prompt, the personal prompt to be used with customers, when not to use the prompt, how to use the MotivAider, how and when to count cups, the presence of secret shoppers, and the $50 gift card incentive for using the prompt accurately. The experimenter modeled the prompt first. Then the

experimenter and barista role played customer interactions to give the barista opportunity to practice the personal prompt.

Training for secret shopper observers was conducted at a table with blank data sheets on which to practice and lasted about 15 minutes. Training included defining and modeling appropriate prompts to be used by baristas and proper scoring of each customer transaction. After the experimenter described appropriate and non-appropriate prompted customer interactions and how to record data, the experimenter modeled data recording on the practice sheet for each possible customer interaction. The secret shoppers then were given a customer interaction scenario and asked to take data on their practice sheets. Training was complete after each secret shopper accurately recorded data for every possible scenario. Secret shoppers were asked to take data as discretely as possible.

Materials

Each location had available reusable ceramic mugs and glassware of various sizes ranging from 8 ounces to 20 ounces. Because all locations did not have reusable cups for 31-ounce beverages available, the personal prompt was not delivered to 31-ounce beverage orders. These mugs and glasses were only permitted within store lobbies and outside seating areas. After each use, cups were washed and sanitized to Starbucks standard for reuse.

The intervention was directed toward influencing customers to choose to have their beverage in a reusable cup rather than a disposable one, through the use of a simple personal prompt given by baristas at the front registers. After customers submitted

their drink orders, the baristas said, "Would you like to get a discount and use one of our reusable cups?" Baristas who delivered the personal prompt wore a MotivAider timer on their apron as a private tactile prompt to remind them to use the personal prompt. The MotivAider is a small electronic device that vibrates at timed intervals (Behavioral Dynamics, Inc., 2013). On average, 10 customers per hour made purchases at Store 1 and Store 2. Store 3 averaged about 15 customers per hour. Based on this information, the MotivAider was set every 10 minutes to prompt baristas at Store 1 and Store 2. The MotivAider at Store 3 was set every 15 minutes. As an incentive to use the prompt for each customer, baristas were told that they would be monitored by “secret shoppers.” The barista at each location who demonstrated the highest accuracy using the prompt would be awarded a $50.00 gift card from a retailer of his or her choice.

Experimental Design and Conditions

A group multiple baseline design across settings was used to assess the effects of the personal prompting procedure. This design was used to detect general changes in beverage purchasing and reusable cup usage in the customer base of Starbucks. At least three weeks of preliminary baseline data were recorded at each location to obtain a weekly pattern of cup usage per day. Baseline in stores continued until a stable pattern was observed before the intervention was implemented. The introduction of the prompting procedure at each location was staggered over time.

During baseline, no personal prompts were used during any transactions and baristas did not receive any instruction. During the intervention phase, baristas wore

MotivAiders and customers who ordered a beverage without a reusable cup received the personal prompt from the barista taking their orders. Baristas held up a ceramic mug or cold beverage glass as they delivered the prompt to help secret shopper observers identify appropriate personal prompts in the event that the lobby's noise level was high. Baristas were not made aware of the function of the visual prompt for secret shoppers.

To maintain treatment validity, baristas were told that "secret shoppers" would visit the store periodically. Secret shoppers consisted of undergraduate students who received extra-credit points toward classes for their participation, as well as volunteer baristas from other non-participating stores. For their participation, secret shoppers were given a $5.00 Starbucks gift card to use during their visit. The secret shoppers posed as customers and sat in the stores' lobbies. They discretely counted each occurrence in which the prompt was appropriately used and not used with each customer who ordered beverages in the store during 30-minute observation times. The observation times occurred the first 4-7 days of the intervention to ensure the prompt was being used by baristas. Observation days and times were assigned to secret shoppers who were available for those times.

The major dependent variable was based on the total number of disposable cups used at each location at the end of the night. A barista counted cups from the back room and those stocked in the coffee-making area before and after the observation period. The total number of disposable cups at the end of the period was

subtracted from the total number of disposable cups at the beginning of the period to determine the number of disposable cups used that day.

Secret Shoppers

During observation sessions for secret shoppers, if the barista delivered the prompt after a customer placed a beverage order and the customer did not bring their own reusable cup, the secret shopper would score the interaction as "prompt when needed." If the barista delivered the prompt after a customer placed an order that did not include a beverage (e.g. food item only), or placed a beverage order with their own reusable cup, the observer would score the interaction as "prompt when not needed." If the customer ordered a beverage requiring the barista to offer it in a cup and the barista did not use the prompt, observers would score the interaction as "no prompt when needed." Secret shoppers also took data on when baristas did not use the prompt when it was not needed.

Interobserver Agreement

Interobserver agreement (IOA) for total disposable cups used was assessed by having the experimenter simultaneously, but independently, count cups at each location for 20% of the intervention phase. To calculate IOA for cup counting, the number of agreements was divided into the number of agreements plus the number of disagreements and then multiplied by 100 to obtain a percentage. A percentage of at least 80% agreement was required to be considered reliable. Agreement for Store 1 was 100%, Store 2 was 100%, and Store 3 was 100%.

IOA data for manipulation checks was assessed by having a second secret shopper observer collect data simultaneously with, but independent of, the primary observer during observation periods at each location. IOA data for secret shoppers and baristas was calculated by taking the total number of agreements of the two observers and dividing it by the total of agreements plus disagreements and multiplying by 100 to obtain a percent of agreement. A percentage of at least 80% was required for the observation systems to be considered reliable. However, IOA data was very low and inconsistent, indicating the observation system was not reliable in monitoring baristas' use of the prompt. IOA data were recorded once for each location. Agreement for prompting opportunities and non-opportunities were 16%, 86%, and 100%. Although two of the three IOA data met agreement requirements as stated above, the total number of customers on which data was taken differed between secret shoppers. It is possible that secret shoppers were taking data on different customers.

Although secret shoppers were seated as close to registers as possible, the noise within the stores may have interfered with hearing customer interactions accurately. Furthermore, each secret shopper's data may not have reflected the same customer; one observer may have started taking data with a different customer than the other observer. This would result in each score representing a completely different customer interaction.

Because data taken by secret shoppers were questionable, the current study relied solely on data collected by baristas on the daily use of disposable cups to

determine whether the prompting procedure was effective. Additionally, because which barista demonstrated the highest accuracy using the prompt could not be determined, participating baristas from each location were instead randomly selected for the $50 gift card award.

CHAPTER III

RESULTS

Figure 1 depicts the overall daily disposable cup use across three stores before and after the implementation of the personal prompting procedure. During the baseline phase, the mean disposable cup use for Store 1 was 442.86 (*SD* = 46.59*).* On day 4 (Sunday), the store experienced a drop in use of disposable cups. However, the store manager reported Sundays to be low in customer volume consistently each week. In the intervention phase, the mean decreased to 425.95 (*SD* = 100.84). Although the data indicates an overall 3.82% decrease in disposable cup use, visual analysis suggests an increasing trend in customers' disposable cup use.

At Store 1, a few baristas were interviewed and it was reported that remembering to use the prompt was difficult, especially during periods when the store experienced high customer volume. In response, a visual prompt of the personal prompt was printed and placed on front registers for baristas on day 17. Although the next few days showed an apparent drop in disposable cup use, the data shows a resumption of an increasing trend several days after the visual prompt for baristas was applied.

The mean disposable cup use for Store 2 per day in baseline was 258.64 (*SD* = 31.53) and 254.73 (*SD* = 64.25) during intervention. The trend in baseline was minimal indicating a consistent weekly use of disposable cups. After implementation of the prompting procedure, a decrease in disposable cup use was observed. However,

the decrease was not apparent until day 27. Visual analysis suggests a decreasing trend in disposable cup use. Overall, Store 2 experienced a 1.51% decrease of the use of disposable cups. For Store 3, the mean disposable cup use was 106.19 (*SD* = 27.57) during baseline and 121.75 (*SD* = 24) during intervention. Although the data suggest there was an overall increase of 14.65% in disposable cup use, Figure 1 shows a slight decreasing trend.

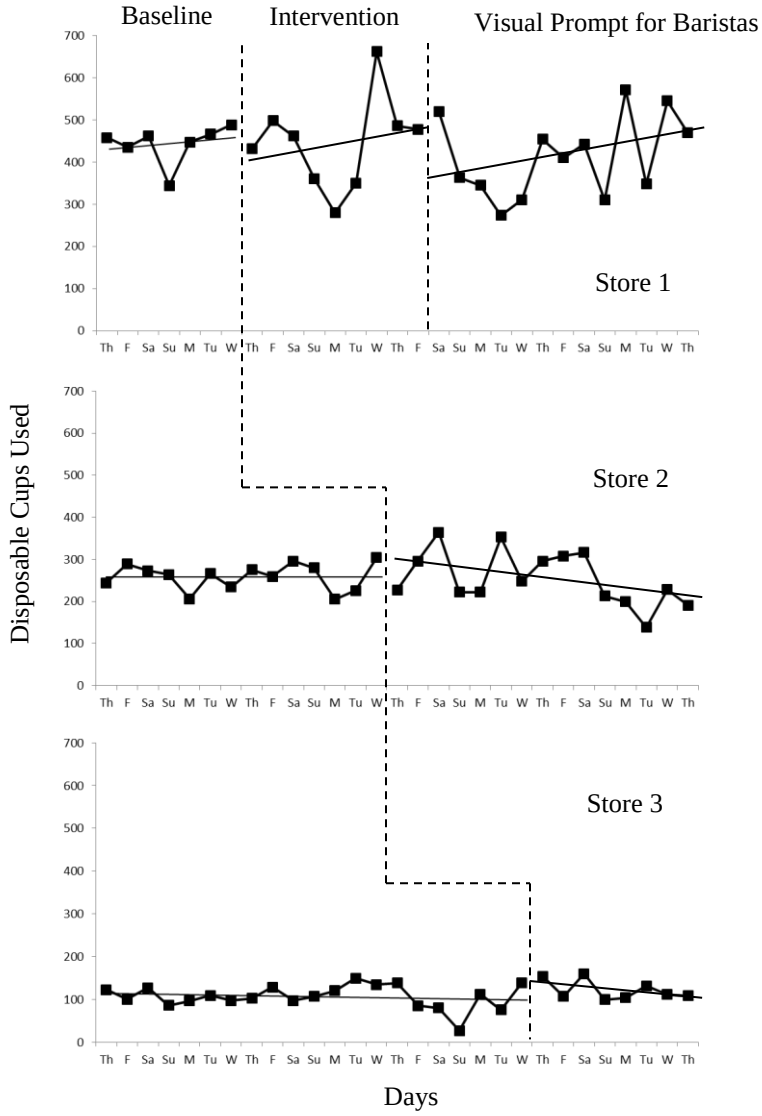

Figure 1. The total number of disposable cups used daily across three Starbucks locations. For Store 1, a visual prompt was implemented and displayed on registers after 16 days.

CHAPTER IV

DISCUSSION

The current study was unable to determine whether the personal prompting procedure was an effective intervention in reducing the use of disposable cups at three Starbucks locations. Results from the visual analysis indicate that the personal prompting procedure was effective in decreasing the use of reusable cups in Store 2. However, the same effect was not apparent for Store 1 and Store 3. Because the personal prompt alone for Store 1 seemed ineffective, a visual prompt was employed at registers for baristas to use the prompt with customers.

These results are inconsistent with those found by Engerman et al. (1997). It is unknown why Store 1 and Store 2 experienced an overall reduction in the use of disposable cups (3.82% and 1.51%, respectively) while Store 3's use increased by 14.65%. Even though this was not a powerful effect, if this was a sustainable decrease, a 2% – 4% reduction across all Starbucks stores would result in millions of trees saved annually. Starbucks has about 13,000 locations nationwide (Forbes, 2013). If all stores decreased their disposable cup use by 2% - 4% in one month, a total of 2,637,960 cups would be saved annually, amounting to about 1,072 trees saved per year. Unfortunately, because of time constraints and because store management did not continue to have baristas use the personal prompt with customers, there was no possibility to determine whether observed reductions in disposable cup use was sustainable.

There are several possible reasons why the personal prompt was weak in decreasing the use of reusable cups. Baristas may not have been consistently using the prompt during observation hours. Although data collected from secret shoppers proved to be unreliable, most of the data revealed the baristas used the personal prompt infrequently. Perhaps the $50 gift card incentive to baristas may not have been powerful enough to motivate baristas to ask each customer if they wanted to use a reusable cup. Not every barista received an equal chance at obtaining the award; some baristas were assigned to a register more often than others, thereby enhancing their chances significantly. The gap in frequency of register assignment may have been too large to be overcome by baristas' efforts. Future research may want to assess for and use a more powerful incentive to increase employee motivation and performance.

It should be noted that during the intervention phase for Store 1, Day 14 showed an exceptionally high total disposable cup use of 662. This may have been due to a spike in customer volume in response to a special promotion. Starbucks frequently offers discounts and coupons via email to customers for specific days and times. However, baristas and store managers were not regularly made aware of emailed discounts until customers redeemed their rewards at the register. Another possible explanation could be that disposable cups may have been miscounted by the barista tracking the number of cups in the store. Failing to document cups lent to other stores during observation hours would have resulted in an inflated number of disposable cups used that day and thus not representing the true cup usage by

customers. IOA data for counting cups do not support this explanation. However IOA data were only collected for 20% of the study.

For Store 3, day 18 of baseline experienced a drop in disposable cup use to only 27 cups used. This could have been caused by several factors. The volume of customers may have decreased considerably, or the barista responsible for counting cups may have miscounted, taken the initial count much later than 1:00 P.M., or failed to report cups borrowed from another store during observation hours, resulting in a significant number of cups added to the daily count and thus making it appear that only a small number of cups were used that particular day.

There is the possibility that the current study's measurement of effectiveness was not sensitive enough to detect any significant changes. It did not take into account each store's variability in customer volume each day. Stores may have experienced an increase in customer volume over the course of the experiment; if customers were using reusable cups more frequently as volume increased, counting cups alone may not have detected the increase in reusable cup use.

The level of strength of the personal prompt may not have been an accurate representation because customers who purchased and took their beverages to go also impacted the daily cup count. Future research should separate customers who intend to leave stores with their beverages from customers who intend to consume their beverages within stores. Additionally, customers who purchased 31-ounce beverages could not benefit from the intervention. All stores did not have reusable cups available in 31 ounces for customers to use.

Cups dropped on the floor or otherwise thrown away may have altered the accuracy of the data. Customers may have increased their use of reusable cups in response to the personal prompt, but the increase may not have been detected if discarded disposable cups were not included in the daily count. Tracking total sales or number of customer transactions may have lent more detailed information. Future research may elect to use a more sensitive measurement system that may facilitate greater detection.

It is possible the barista training was ineffective in teaching baristas how to use the personal prompt accurately with customers. Training on the personal prompting procedure was conducted individually with each barista and included instruction, modeling, and role-playing with the experimenter. Based on anecdotal evidence and the experimenter's direct observations, baristas at all locations did not consistently use the prompt with customers. Results may not have been consistent with the findings of Adams, Tallon, and Rimell (1980) which attributed role playing in group training to higher employee performance. The current study did not conduct training as a group. Future research may want to consider conducting training within a group setting, rather than individually, to determine whether it is an essential component to maintain treatment fidelity.

A study conducted by Latham, Ford, and Tzabbar (2013) found that providing performance feedback to employees at three restaurants in the same restaurant chain improved employee performance. Using a reversal design, results showed performance improved after the implementation of feedback. Once performance

feedback was reduced, and subsequently eliminated, performance steadily decreased back to baseline levels. Perhaps the use of performance feedback would have increased baristas' use of the prompting procedure with customers. Future research should consider implementing performance feedback to encourage treatment fidelity.

It should be noted that the incentive for customers to use a reusable cup is $0.10 reduction in the cost of their beverage order. If the average Starbucks beverage is $4.50, customers would only be receiving a 2% discount on their order. A $0.10 discount may not be sufficient enough for customers to opt for a reusable cup. Providing additional incentives to customers in future studies may increase the effectiveness of a personal prompt and the value of using a reusable cup.

In summary, the current study was not able to replicate past research in demonstrating the effectiveness of a simple personal prompt to alter customers' purchasing behaviors. Further research is needed to delineate effective strategies and controlling environmental factors related to consumer and employee pro-environmental behaviors.

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APPENDICES

APPENDIX A

DAILY CUP COUNT DATA SHEET

Date: _____ Barista: _____

	Per Box	Per Sleeve	1:00 P.M.			Close	
			Back	Floor		Back	Floor
SH	600	50					
TH	1000	50					
GH	1000	50					
VH	600	40					
TLC	1000	50					
GC	1000	50					
VC	600	40					
TRC	300	20					
	cups borrowed/lent:						

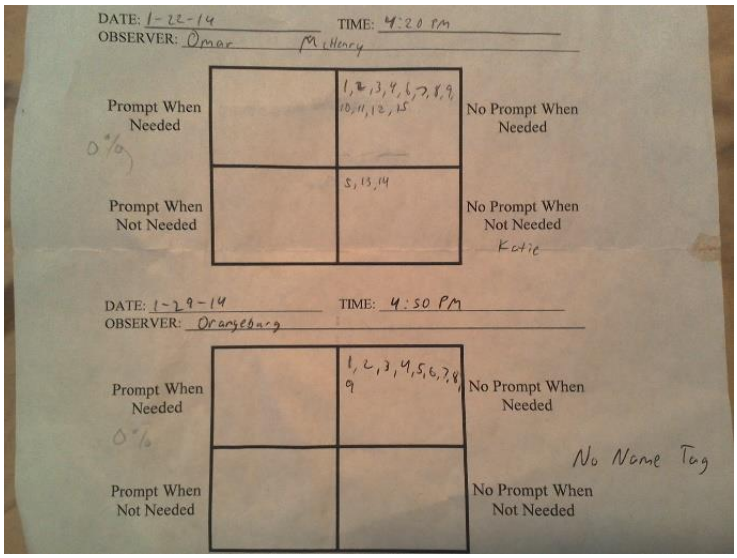
APPENDIX B

SECRET SHOPPER DATA SHEET

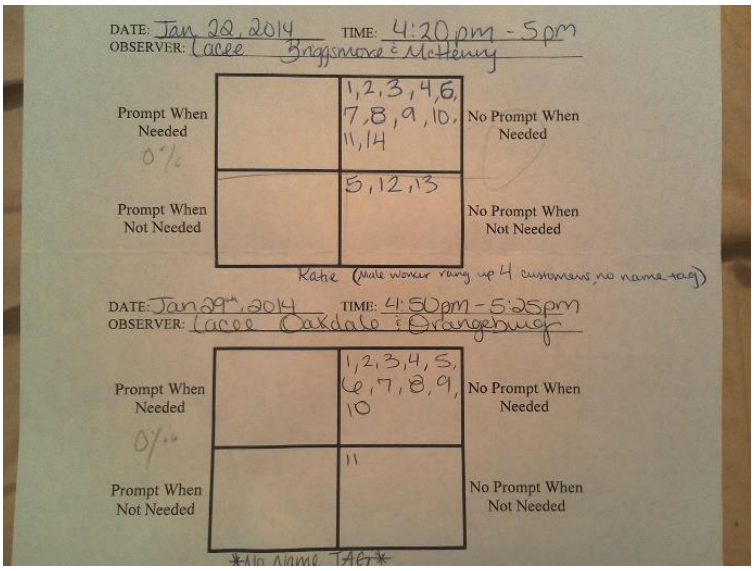
DATE: _____		TIME: _____	
OBSERVER: _____			
Prompt When Needed			No Prompt When Needed
Prompt When Not Needed			No Prompt When Not Needed

APPENDIX C

SECRET SHOPPER INTEROBSERVER AGREEMENT RESULTS



Secret Shopper #1



Secret Shopper #2