
2015

To Pay or Not to Pay: An Empirical Examination of the Effect of Injunctive Norms on Charitable Donations

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Recommended Citation

McClough, David; Ewing, Randall; and Schertzer, Susan (2015) "To Pay or Not to Pay: An Empirical Examination of the Effect of Injunctive Norms on Charitable Donations," *The Journal of Economics and Politics*: Vol. 22: Iss. 1, Article 5.

DOI: <https://doi.org/10.59604/1046-2309.1005>

Available at: <https://collected.jcu.edu/jep/vol22/iss1/5>

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TO PAY OR NOT TO PAY:

AN EMPIRICAL EXAMINATION OF THE EFFECT OF INJUNCTIVE NORMS ON CHARITABLE DONATIONS

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ABSTRACT

CHARITABLE ENDEAVORS OFTEN FACE RESOURCE CONSTRAINTS AND RELY ON ALTRUISM FOR MONETARY DONATIONS NECESSARY TO PURSUE MISSION-DRIVEN OPERATIONS.

IMPLEMENTATION OF AN HONOR-BASED PAYMENT SYSTEM TO ATTRACT DONATIONS ATTEMPTS TO ELIMINATE SOME PORTION OF THE COSTS ASSOCIATED WITH FUNDRAISING ACTIVITY. HOWEVER, HONOR-BASED SYSTEMS ARE NOT MONITORED AND, THEREFORE, SUSCEPTIBLE TO UNDERPAYMENT AND THEFT. THIS STUDY EXAMINES HOW POSTING A MESSAGE COMMUNICATING A NEGATIVE INJUNCTIVE NORM AFFECTS CHARITABLE DONATIONS RESULTING FROM PROVISION OF A SNACK BOX USING AN HONOR-BASED PAYMENT SYSTEM. THE STUDY FINDS THAT PRESENTATION OF AN INJUNCTIVE NORM DISSUADES CONTRIBUTIONS FROM DONORS INCLINED TOWARD SLIGHT UNDERPAYMENT BUT DOES NOT DETER GROSS UNDERPAYMENT OR THEFT. THE OVERALL EFFECT IS A DECLINE IN DONATIONS. THE STUDY CONCLUDES BY IDENTIFYING INSIGHTS LIKELY TO IMPROVE THE PROBABILITY OF SUCCESSFUL IMPLEMENTATION OF AN HONOR-BASED SNACK BOX INTENDED FOR CHARITABLE PURPOSES.

INTRODUCTION

On January 1, 2008, Radiohead famously debuted its album *In Rainbows* to its website only, instructing fans to pay whatever they felt the album was worth. Years later we know that fewer than half of the downloads were accompanied by a payment.ⁱ What is challenging to economists is not that half of the album downloads were not accompanied by a payment, rather that nearly half of them were accompanied by a payment. More recently, an established restaurant chain introduced a “pay-what-you-want” policy intended to make a nutritious bowl of chili available to all — especially to those who needed it. Initial reports suggested that patrons paid a bit more to make the chili available to those unable to pay full price.ⁱⁱ Whether the program is an innovative pricing strategy or a savvy public relations scheme, the sustainability of the program ultimately is determined by the willingness of customers to cover the costs. Sustainable honor-based payment systems defy economists’ expectations. Why would anyone pay for something if not required to do so? In reality quite a few people make payment voluntarily in exchange for goods and services. This case study examines voluntary contributions associated with a snack box. As with Radiohead and the bowl of chili, payment is entirely voluntary. We test different message strategies to evoke preferred behavior; specifically, we test message strategies to promote larger voluntary contributions.

ECONOMIC THEORY

Economic theory incorporates key behavioral assumptions to accommodate the use of optimization techniques that result in informative and interesting insights. Two key assumptions of economic theory are that more is preferred to less and that consumers seek to maximize utility given an income constraint. Given these simplifying assumptions, modeling altruistic behavior can be challenging if utility is derived solely from the consumption of goods and services. Altruistic behavior necessarily reduces consumption of goods and services, yet presumably increases utility and happiness as rational actors choose to forego consumption of goods and services in favor of acts of altruism. The obvious solution is to expand the utility function to include arguments that reflect the benefits of altruistic behavior. In the next section, we review the existing literature.

LITERATURE REVIEW

Susan Rose-Ackerman (1996) argues that altruism cannot be understood within the standard framework applied by practitioners of the economics discipline. Her argument is familiar. Economic models based on strict self-interest predict free riding; when the model is extended to its logical conclusion, the result is a complete absence of altruistic behavior. Any honor-based payment system challenges the utility maximization model that dominates the science of economics. After all, why would consumers voluntarily contribute more than they must pay when their resources can be used to secure additional utility through the purchase of more goods? The *Homo Economicus* metaphor portends a highly efficient being capable of instantaneous calculations of marginal benefits and costs, assuring maximum utility for any known resource constraint. *Homo Economicus* accommodates elegant mathematical representations of human behavior that generate informative insights. For this reason, *Homo Economicus* exists only in economic theory, or does he? A growing body of laboratory experiments suggests that human beings may be more like *Homo Economicus* than some prefer to think.

While examining the development of self-control in young people, Bucciol and Piovesan (2011) present compelling evidence that individuals pursue self-interest. In an experimental setting, Bucciol and Piovesan asked children ages 5 to 15 to report the result of a coin flip. Although the actual outcome is not known, 85 percent of the children reported the financially rewarded outcome. Given an expectation that the actual result of the flip approaches 50 percent, it appears that approximately 70 percent of the children

lied for personal gain. The result was consistent across gender and ages. In a separate treatment, researchers directly asked respondents to tell the truth. The request inspired less deceit driven by a substantial reduction among younger girls, although both boys and girls responded favorably to the request. Nonetheless, for most children the pursuit of self-interest in the form of a small financial payment overwhelms any hesitancy to lie.

Houser, Vetter, and Winter (2012) expand the research design to examine how undergraduate college students respond shortly after being treated unfairly. In this experimental design the individuals participate in an allocation game and respond to a survey asking whether they think the outcome of the game was fair. Respondents then flip a coin and report the result. Approximately half of all respondents reporting fair or unfair treatment lie about the coin flip outcome to obtain the financial reward; however, the subjects reporting that they were treated unfairly during the allocation intervention were more likely to report the financially rewarded outcome than those who report fair treatment. These studies suggest that the pursuit of self-interest is well established in young children as well as college-age students. Implicit in these results is the meager psychic cost associated with lying. In both experiments the financial reward is unremarkable, which suggests the marginal cost of the deception must necessarily be less. These studies suggest we can expect substantial larceny when relying on honor to overcome the pursuit of self-interest.

Laboratory experiments confirming pursuit of self-interest do not negate observations of generous behavior. Indeed, economic methodology accommodates altruism. The paradigm dominating economic science permits inclusion of additional arguments in the utility function to reflect psychological benefits derived internally, social benefits derived externally, and utility resulting from utility accruing to others; e.g., the case of parents, who derive greater utility forgoing personal consumption to provide consumption opportunities for their children.

Economists might be well served to recall that self-interest is a simplifying assumption for purposes of modeling economic behavior rather than a conclusion derived from the model. Experimental research presents evidence that voluntary contributions are common, so maximizing utility may not necessarily entail free-riding. Indeed, despite the opportunity to contribute nothing, experiments find that participants frequently voluntarily contribute 10 to 80 percent of the optimum with most offers in the 40 to 50 percent range (Ledyard, 1995).

Studies reveal that utility-maximizing individuals consider various criteria beyond minimizing cost as implied by the utility-maximizing model. Richard O. Beil and David N. Laband (1996), survey members of the American Economic Association (AEA), explored the extent to which members pay the appropriate dues. The AEA offers a variable membership dues schedule based on an individual's income. Individuals with annual income within the middle bracket are asked to pay 10 dollars more (20 percent) in annual dues than the dues assessed the lowest bracket, while individuals in the highest bracket are asked to pay an additional 10 dollars, which is 40 percent higher. Beil and Laband distributed a survey asking AEA members to report their income. Based on 301 responses (63 percent response rate), the authors find that only 3 percent of respondents report actual income falling in the lowest range, yet 25 percent of members identified themselves in the lowest category when identifying their annual dues obligation. This disparity is remarkable in the sense that it is not a larger proportion. More than half of AEA members voluntarily self-reported income in the highest bracket and thus imposed upon themselves a 40-percent premium. This behavior is not limited to membership organizations. Steven D. Levitt (2006) analyzes ten years of data collected across multiple locations reporting the daily contributions to a locked box for the purchase of bagels and donuts to find that the average payment was 90 percent of the posted price. In the absence of any monitoring or penalty, economic theory predicts consumers will pay nothing.

An interesting thread of economic research explores reasons for cooperating rather than pursuing self-interested behavior in situations involving a common resource (Ostrom *et al.* 1994). Schluter and Vollan (2011) examine how internalized values and norms may influence the decision to snatch flowers. Schluter and Vollan interview 57 individuals who just picked flowers and made payment at one of four

honor-based flower-picking locations. The study reports that 14 (24.5 percent) of the 57 respondents paid 80 percent of the posted amount due. Four of the respondents paid less than 5 percent. As with the AEA membership and the bagel and donut case studies, what is remarkable to economists is that people choose to pay anything at all.

In each of these studies the willingness to pay likely reflects an individual's recognition that the service will be discontinued in the absence of sufficient profit. AEA members assign some value to their membership in the organization and pay accordingly. The office workers who benefit from the convenience of bagels and donuts available each morning assign value to the service and pay accordingly. For the office workers, payment reflects the purchase of time. Similarly, access to fresh flowers is desirable to users of the service. In the absence of payment these services vanish. With this understanding, we might recognize the morality underlying the willingness to pay as cooperative rather than altruistic. Moreover, it seems reasonable to expect a norm to arise to enforce the sense of reciprocal cooperation to retain access to the service (Bicchieri and Xiao, 2009; Bicchieri, 2006; Sugden, 2004).

COMMUNICATING NORMS

Research examines the impact of norms on human behavior (Cialdini, 1993; Zimbardo and Leippe, 1991). Studies distinguish two types of norms: *descriptive* norms that identify what people do, and *injunctive* norms that reveal approved behavior. Communicating norms can be done using positive or negative wording. Positively (negatively) framed *descriptive* norms are prescriptive (proscriptive) in nature. Regardless of the wording, descriptive norms refer to the behavior of others to influence intended behavior. *Injunctive* norms command certain behavior whether presented positively or negatively (Winter, Cialdini, Bator, Rhoads, and Sagarin, 1998).

Cialdini, Demaine, Sagarin, Barrett, Rhoads, and Winter (2006) test the effectiveness of positively and negatively worded normative messages intended to dissuade theft of wood from the Petrified Forest National Park, located in Arizona. To test the effectiveness of the message, large signs were posted at the start of three popular walking paths and pieces of petrified wood were placed along the targeted walking paths. Every two hours the missing pieces of petrified wood were recorded, the inventory of petrified wood pieces was replenished, and the message on the sign was changed. The study presents evidence indicating that *injunctive* normative statements are more effective than *descriptive* normative statements, and the negatively worded version of *injunctive* statement was associated with the least theft overall. Although there is little difference between the positively worded versions of both statement types, the negatively worded *descriptive* statement was associated with the greatest amount of theft. This result is not surprising because the *descriptive* message implies that stealing pieces of wood is socially acceptable behavior — after all, many people do it. These findings offer compelling evidence that the wording of a message is an important consideration when attempting to convey a behavioral norm.

The existing literature reveals that honor-based payment systems can be viable but face challenges that may be mitigated by effective communication of social norms. This case study examines the effectiveness of normative statements associated with an honor-based donation system. We next develop a model and present the experimental methodology.

ECONOMETRIC MODEL

This study examines how variation in presentation of the message influences honor-based donations associated with a snack box. The collected donations are similar to total revenue as might be collected by a profit-seeking firm. Unlike total revenue of a profit-seeking firm, which is the product of a posted price and the quantity sold of each good, total donations are determined by an unspecified donation by the donor

each time he or she elects to contribute in exchange for a snack. The honor-based system, therefore, presents analytical challenges because donors do not necessarily select a snack in exchange for a donation and it is possible to obtain snacks without contributing a donation. Accordingly, there is no posted price acting as a determinant of demand for snacks. As a result, the quantity of missing snacks is likely to explain the dollar value of total donations because donors are likely to select a snack in exchange for the monetary contribution. Reflecting these considerations, we develop the principle econometric model to examine the impact of varying the message, M_i , on total donations, D :

$$D = \beta_0 + \beta_1 Q + \beta_2 E_i + \beta_3 M_i + \varepsilon$$

where Q is the total quantity of units removed from the snack tray, E is various measures, i , of the registered enrollment, M is the message type, i , and ε represents the error term.

This specification of the model contains elements of a typical demand function whereby the number of buyers is represented by enrollment, E_i , and tastes and preferences enter the model through message type, M_i . Other typical determinants are not included. For example, the data do not include income information or the price of substitute goods, which were available from a coin-operated vending machine. Vending prices did not change during the study period so this determinant of demand is not included in the model. More importantly, the model does not include reference to the price of the snacks because units can be removed from the snack box without contributing a donation.ⁱⁱⁱ

METHODOLOGY

The present case study uses data collected during the 2010-2011 academic year at a private Ohio university. Each morning and afternoon a snack box filled with familiar brands of candy, chips, pretzels, a toasted pastry product, cookies, water, etc. was placed in the hallway on the second floor of the building housing the business college along with an unsecured cup containing two dollars in change. Total donations in excess of costs of goods sold during the year were to be applied to travel costs associated with a student group's participation at the annual American Marketing Association conference. The product mix was adjusted throughout the year in response to revealed preferences, on the demand side, for individual items and in response to the rising cost, on the supply side, of items containing chocolate. The donation cup and snack box were not monitored so there was no way to identify who did or did not donate in exchange for snacks. The number of units of each item removed from the box and the amount of donations collected were recorded twice daily, at midday and at the end of the day. Due to the presence of the unsecured cup, it was possible that donations for each day part could be negative, reflecting theft in excess of donations. Following the recording of removed units from the snack box and the associated donations, the box again was stocked with four units of each item, which accommodated a visually pleasing arrangement of different snacks without denying sufficient abundance of popular snacks. Data were collected for a total of 16 different snacks over the course of the academic year. Table 1 provides descriptive statistics of the snack items.

To match enrollment data and message type, the message is modified each quarter. Levitt (2006) finds no effect due to weather conditions so we expect that any observed effect across quarters is related to message type or enrollment rather than weather conditions. During the first quarter (fall) a small text-only sign stating, "\$.70 each" was placed next to the snack tray. The sign included no additional wording. The amount was determined based on supply-and-demand conditions. The acquisition cost of the snack items at an area membership warehouse club chain determined the minimum price, while the presence of a coin-operated vending machine offering a variety of identical and close-substitute snacks located on the second floor of the building defined the upper limit. There were items in the snack box not available in the vending machine, and there were items in the vending machine not available in the snack box. The prices of items available from the vending machine but unavailable from the snack tray might exceed or be less than the

70 cents. All items available in the vending machine that were also available in the snack box required payment of 75 cents or more. As noted above, vending machine prices did not change during the study period.

Research contends that combining visual and rhetorical elements effectively communicates intended messages (Lester, 2006; Stafford, Spears, and Hsu, 2003). Accordingly, during the second (winter) quarter of the academic year, an 8-and-a-half-by-11-inch color photo of students was positioned behind the snack box with the text-only sign. Under the photo, the students are identified as participating at the conference during the previous spring quarter. For the third quarter, an injunctive normative statement was added to the photo and 70-cent suggested donation. The injunctive normative statement read, "Please don't take snacks without paying; proceeds are used to fund student participation at the American Marketing Association Annual Meeting."^{iv}

Given the duration of the study, we are unable to control for the effects of financial crisis or the recession preceding the data collection. It is not clear how the study might be affected by the financial crisis or the subsequent recession. Both events might contribute to increased or decreased self-interested behavior. Levitt (2006) presents evidence suggesting that social trauma such as the events of September 11, 2001, result in an increase in the payment; however, the recession may exacerbate self-interest as a survival mechanism during periods of economic distress and contribute to underpayment or theft.

DATA

The data reflect the donations and the quantity of units removed from a snack box each morning and afternoon during the 2010-2011 academic year. The final data set contains 233 observations.^v Enrollment data are included to reflect the number of students enrolled in classes in the building each weekday. We distinguish enrollment by floor and by class type (i.e., business and nonbusiness). The data set does not control directly for the presence of staff and faculty. All staff members are full time and tend to be present weekdays during standard business hours, so there is no expected variation during the study period. Faculty maintain consistent schedules during each quarter so variation across quarters is expected to closely resemble the more reliable enrollment data collected from the university's registrar's office.

The variables of interest are two dummy variables constructed to represent distinct message types examined by this study. Using the text-only message introduced during the fall quarter as the base case, dummy variables are created to identify the change in message type in the winter and spring quarters. For the winter quarter, the expectation is that the inclusion of a visual image of students will encourage an increase in total donations as well as larger donations per unit. For the spring quarter, the expectation is that the injunctive normative statement contributes to larger per-unit donations due to reduction in theft. The impact on total donations, however, is ambiguous. Theory predicts that an effective injunctive normative statement may curtail theft but the statement may also impact total donations as individuals opt to not donate at all rather than to donate less than the suggested amount. In this case the injunctive normative statement imposes a psychic cost that effectively serves as a price increase. Accordingly, we expect the higher effective price to reduce the number of units but not necessarily the total donations, which depends on the elasticity of the normative statement. As discussed earlier, findings reported by previous studies suggest that psychic costs may be low and that the negatively worded injunctive normative statement will curtail theft.

Table 2 presents descriptive statistics of the variables employed in the statistical analysis. In addition to examining total enrollment in the building, *TotalEnroll*, separate measures of enrollment are created to reflect total enrollment on the first floor, *Enroll1*, and the second floor, *Enroll2*. Similarly, variables distinguish the enrollment of business courses, *EnrollBiz*, and nonbusiness course, *EnrollnonBiz*. Greater distinction is achieved by isolating business and nonbusiness enrollment by location on the first, *EnrollBiz1* and *EnrollnonBiz1*, and second floor, *EnrollBiz2* and *EnrollnonBiz2*.

Because no classes were scheduled in the building on Wednesday mornings, there is an opportunity to explore indirectly the differences in faculty and student behavior. The variable *Faculty* distinguishes Wednesday morning observations from all other observations. The intent is to examine how the relative scarcity of students in the building impacts donations. A positive coefficient estimate for this variable indicates that faculty members contribute larger donations and participate in less theft than students on average, at least on Wednesday mornings, or some combination of both. A second variable is computed to reflect the number of chocolate snacks removed from the snack box. The intent is to examine donations by a broader category of snack options. There is no intuitively appealing approach to group the snacks based on observable characteristics, with the exception of combining the two chocolate snacks, which were two of the three more popular items. Efforts to distinguish healthy and unhealthy snacks, with the notable exception of bottled water, proved unsatisfying, in part, because the snack labels reveal little variation in caloric, sodium, or fat content. More importantly, we have no data linking donor perceptions of healthiness to snack items. Table 3 presents correlations among all variables.

RESULTS AND DISCUSSION

Table 4 summarizes regression results for multiple specifications of the model using *Donations* as the dependent variable. The separate specifications of the model reflect different measures of enrollment. For all specifications of the model, the adjusted R-squared indicates that nearly 64 percent of the variation in *Donations* is explained by the independent variables in the model. The F-statistic is statistically significant ($p=.000$) for all specifications of the model.

For these four specifications of the model, the coefficient estimate for *Units* is positive, indicating that, on average, after controlling for enrollment and the type of message a .50- to .54-cent donation is made in exchange for each snack unit removed from the snack box. Fifty cents represents 71 percent, while 54 cents represents 77 percent of the recommended .70-cent donation indicated as part of all three messages. This finding is consistent with previous research. It exceeds the 40-to-50-percent range identified by Lenyard (1995) yet falls short of the 90 percent identified by Levitt (2006). The observed discrepancy may be explained, in part, by recognizing that office workers likely incur higher opportunity cost associated with securing a donut or bagel than college students incur, who may only be in the building for a short period of time. Students arguably have more opportunity to identify substitute snacks compared to the office workers, and therefore may be more price sensitive and thus less supportive of the snack box than the office workers of the earlier study. An alternative explanation considers differences in money demand. Office workers from the earlier study may be more inclined to carry cash and coin than the college students of the more recent study, who may be more likely to rely on access to some sort of prepaid university meal plan.

The coefficient estimates for the dummy variable of the photograph of students participating at the previous year's conference are never statistically significant and alternate in sign depending upon the measure of enrollment. The coefficients are negative when measures of enrollment do not distinguish business and nonbusiness classes. In the fall quarter the message offered no indication of the purpose of the proceeds, whereas in the winter the message reveals who benefits from the donation. Whereas we expected the photograph to connect the donor and the beneficiaries, the empirical results suggest that the greater knowledge of the beneficiaries seems to inspire animosity among those unlikely to benefit from the proceeds. We may have been mistaken to view undergraduate business students as a homogeneous market segment. Recalling the results of Houser, Vetter, and Winter (2012) perhaps identification of these particular marketing students as beneficiaries prompted reprisal by those who viewed themselves as treated unfairly.

The coefficient estimates for the dummy variable of a normative statement in combination with the photograph are negative and statistically significant at the five-percent level. This finding suggests that the normative statement negatively impacts total donations after controlling for all other variables. The result

deviates from expectations derived from previous research. At issue is whether the normative statement deters theft of snacks, as intended, or whether the statement dissuades donations. The decline may reflect the dissuasion of donations less than the recommended amount due to the donor's unwillingness to violate the norm.

Nearly all specifications of the model generate coefficient estimates for the enrollment measures that are not statistically significant. The sole exception is model 4, in which the enrollment variables distinguish business and nonbusiness enrollment on the first floor and the second floor. Under this specification, the coefficient estimate for the variable reflecting business class enrollment on the second floor is negative and statistically significant at the ten-percent level ($p = 0.059$). The magnitude of the coefficient estimate, although negative, is close to zero (-0.004), so there is insufficient evidence to conclude that business students are more likely to donate less or nothing at all in exchange for snacks compared to nonbusiness students. The conclusion would be more reasonable if the coefficient estimate for nonbusiness enrollment on the second floor was positive and statistically significant rather than negative and not statistically significant. Moreover, students are not prohibited from enrolling in both business and nonbusiness classes. Of note, the coefficient estimate of the normative statement variable remains negative but increases in magnitude under this specification compared to all others. Inclusion in the regression of an interactive variable formed by the product of the normative statement dummy variable and the second floor business class enrollment measure does not offer any additional insight so the results are not presented.

To explore the faculty impact on total donations, a dummy variable, *Faculty*, is created isolating Wednesday mornings when no classes are scheduled. In the absence of scheduled classes, faculty and staff may be relatively abundant compared to the other nine day parts of the week during which classes are scheduled. The coefficient estimate is consistently negative but never reaches any conventional measure of the statistical significance. As such, this variable offers limited evidence to suggest that faculty may decrease total donations.

A dummy variable combining the two chocolate candy snacks captures the marginal contribution of donors choosing chocolate snacks. The coefficient estimate is consistently negative and never statistically significant. The negative coefficient estimate indicates that with each chocolate snack selected, total donations decline approximately \$.10. The sign and magnitude of the coefficient estimates offer suggestive evidence that, on average, individuals selecting chocolate snacks tend to negatively impact total donations.

Previous research finds that negative injunctive normative statements deter theft; however, models 1-4 result in a negative and statistically significant coefficient estimate for the dummy variable indicating inclusion of the negative injunctive normative statement. To examine this finding, we specify separate regression models that replace the dependent variable, *Donations*, with *Donations per Unit* and *Units*.

To examine the impact of the message on the average *Donation per Unit* we specify four regression models employing *Donations per Unit* as the dependent variable, which requires removal of *Units* as an independent variable. Theory and previous research predict that inclusion of the normative statement reduces theft and, thus, contributes positively to *Donation per Unit* as the denominator decreases in relation to the numerator comprising the ratio. Table 5 reports the regression results for models 5-8, which employ *Donations per Unit* as the dependent variable. Due to the removal of *Units* as an independent variable, the adjusted R-squared falls to less than four percent for these models. Nonetheless, the F-statistic remains statistically significant at the 5-percent level. In all specifications, the coefficient estimate corresponding to the normative statement is negative and statistically significant at the 5-percent level. Regardless of the measure of enrollment, *Donations per Unit* declines between \$.08 and \$.15. It appears that the normative statement rebuffed donations in greater proportion than it deterred theft.

To identify potential explanations for the decline in *Donations per Unit* associated with the normative statements, it is helpful to recall that the dependent variable is a ratio. The ratio can decrease if the numerator decreases, the denominator increases, or if a combination of both. The expectation is that

the normative statement will increase *Donations per Unit* by reducing theft, which would decrease the denominator. The empirical results, however, suggests the presence of some sort of intervening behavior. Intuitively, the results suggest that thieves were not deterred. Instead, the results imply that donors inclined to contribute less than the recommended donation chose to refrain from selecting a snack rather than donate less than \$.70. As a result, *Donations* overall decline proportionately more than *Units* decline while thieves, on average, persist in their in their egotistic behavior.

Some insight regarding the decline in *Donations per Unit* can be gleaned from the statistically significant, negative coefficient estimate of the independent variable *Chocolate*. The coefficient estimate reflects that *Donations per Unit* declines by \$.03, on average, for each snack containing chocolate that is removed from the box. Whether the selection of a chocolate snack is associated with donations less than the recommended contribution or more frequently removed without a donation, the implication that chocolate snacks negatively impact donations is supported by this finding.

To explore the effect of chocolate snacks, Table 5 reports the regression results for models 9-12, which reflect the use of *Units* as the dependent variable. The adjusted R-squared ranges between .426 and .432 and the F-statistic for all four models is statistically significant at the 1-percent level. Consistent with the results for models 1-3 and 5-8, none of the measures of enrollment are statistically significant at conventional levels; however, when the measures of enrollment distinguish business students and nonbusiness students, the coefficient estimate reflecting inclusion of the visual message is positive and statistically significant. The positive coefficient estimates indicate that the presence of the visual image of students attending the conference the previous year inspired removal of more units from the snack tray. This finding suggests that the visual image may have attracted more attention than the snack tray and the text-only message. The finding, however, is dependent on the measure of enrollment specified in the model. What is interesting is that the coefficient estimates of the normative statement are no longer statistically significant — although three of the four remain negative. This result suggests that the impact of the normative statement more likely affected the monetary donation than the decision to remove a snack.

In summary, the normative statement negatively impacts donations. Closer examination of the impact reveals that not only did the number of units decline but so did the average donation per unit. The implication is that the inclusion of a statement employing a negatively worded injunctive norm may very well have discouraged potential donations that fell short of the suggested donation while simultaneously failing to repel those possessing the most larcenous proclivities. The analysis offers potential insight into the potential offenders. First, evidence links underpayment with chocolate snacks. Second, there is weak evidence suggesting that the contribution of faculty members may be negative. Third, business students, especially those on the second floor closest to the snack box, may engage in pre-emptive reprisal for perceived mistreatment.

These findings must be considered in the broader context of the shortcomings of the study. The most glaring shortcomings of the study relate to research design and execution. This study, after all, required timely data collection to ensure comparability across all observations. Many observations are excluded from the analysis due to problems relating to data collection. Accordingly, the study would benefit from a larger dataset reflecting more consistent data collection. Similarly, to match the empirical analysis and economic theory with the research design, we were required to pair the variation in quarterly enrollment with the message. Whereas past studies vary the message more frequently, this study retained the message throughout the academic quarter. This decision addressed the challenge of the fixed location of the honor box in an institutional setting in which the same potential donors are present on a regular basis. Cialdini, Demaine, Sagarin, Barrett, Rhoads, and Winter (2006) are able to vary the message throughout the day because visitors to the park experience the message only once. In contrast, in order to isolate the effect of the message in this study, the research design required that each message be introduced only once. Varying the message would have contaminated the data because we would not be able to isolate the effect of the message that influenced the decision to select a unit and to make a donation.

Pairing the message variation with the academic quarter raises questions regarding how the timing of the message during the academic year influences donations. We cannot definitively claim that differences observed across the three messages are the result of varying the message, and we must accept the possibility that an omitted variable is correlated with the academic calendar. For example, weather variation is highly correlated with the academic calendar; however, we do not include weather variables because the data reflects morning or afternoon day parts that cannot be paired with weather data. Moreover, Levitt (2006) finds no effect from weather using ten years of data. Nonetheless, there may be an effect that is highly correlated with the three quarters of the academic calendar.

Despite these shortcomings, the study provides empirical evidence of the effect of varying the message associated with an honor system snack box. Further research addressing the experimental design can be expected to improve the generalizability of the results.

CONCLUSION

This case study contributes to a small but interesting research area examining the use of honor-based payment systems. Whereas earlier studies focus on the voluntary payment, this study examines communications alternatives to affect the payment. The findings inspire more research questions that are worthy of examination, especially as nonprofit organizations face greater fundraising challenges. A systematic understanding of how to improve the results of honor-based payment systems may very well facilitate greater fundraising success.

The present study offers three insights when operating an honor-based snack box to attract proceeds for a noncommercial purpose. First, it appears possible to determine an optimal mix of snacks to maximize donations in excess of costs. The key is identifying appropriate snacks to attract generous altruists which simultaneously repel pillaging. The popularity of chocolate snacks encouraged frequent and costly replacement of inventory with negative consequences on total donations. It would appear that frequent statistical analysis will assist in identifying snacks attracting donations and those inspiring plunder. Second, less information is a superior message strategy. It appears that additional information provided by a photograph may contribute to segmentation of donors that subsequently fosters animosity toward the identified beneficiaries. Third, inclusion of a negatively worded expression of an injunctive norm may work too well and dissuade potential donors. A “text-only” sign with the suggested donation may be the superior strategy when employing an honor-box system for charitable purposes.

TABLE 1: DESCRIPTIVE STATISTICS – SNACK BOX CONTENTS

Snack	Total	Minimum	Maximum	Mean	Std. Dev.
Snickers	166	0	4	1.38	1.209
Reese's PBC	322	0	4	.71	.923
Cookies	165	0	4	.71	.876
Cheetos	130	0	4	.56	.781
Lays Chips	113	0	4	.48	.777
Fruitsnack	111	0	4	.48	.866
ChexMix	94	0	3	.40	.663
Pop Tart	83	0	3	.36	.655
Pretzels	72	0	2	.31	.532
Trail Mix Bar	60	0	3	.26	.536
Bottle Water	54	0	3	.23	.489
Animal Cracker	45	0	2	.19	.456
Sweet & Salty	30	0	2	.13	.384
NutriBar	17	0	2	.07	.292
Krunch	30	0	2	.03	.205
Planters Bar	2	0	1	.01	.092

Table 2: Descriptive Statistics – Regression Model Variables

Variable	N	Minimum	Maximum	Mean	Std. Dev.
Dependent Variable:					
Donations	233	0	12.9	3.543	2.0958
Independent Variables:					
Units	233	1	18	6.32	3.266
TotalEnroll	233	0	532	305.3262	131.11980
Enroll1	233	0	254	144.67	58.221
Enroll2	233	0	371	160.65	105.036
Enrollbiz	233	0	487	291.8112	127.56678
Enrollnonbiz	233	0	52	10.7468	18.52143
Enrollbiz1	233	0	281	139.5322	76.69358
Enrollbiz2	233	0	272	154.6695	69.83174
Enrollnonbiz1	233	0	16	4.9185	6.78978
Enrollnonbiz2	233	0	38	5.7082	13.60593
Visual	233	0	1	.67	.473
Normative	233	0	1	.32	.468
Faculty	233	0	1	.0773	.26757
Chocolate	233	0	8	2.0944	1.63992
NonChocolate	233	0	13	4.2232	2.54307

Table 3: Correlation Matrix

N = 233		Rev	Units	Rev per unit	Visual	Norm stmt	Enroll total	Nonbus enroll	Bus enroll	Nonbus 1floor	Nonbus 2floor	Bus 1floor	Bus 2floor	Enroll 1floor	Enroll 2floor	Faculty	Choc count
Rev	Pearson Corr.	1	.796**	.356**	-.015	-.172**	.080	.057	.128	.101	.043	.127	.086	.040	.078	-.139*	.478**
	Sig. (2- tailed)		.000	.000	.818	.008	.222	.385	.050	.123	.514	.053	.193	.547	.234	.034	.000
Units	Pearson Corr.	.796**	1	-.200**	.013	-.109	.137*	.049	.185**	.100	.040	.153*	.172**	.049	.144*	-.191**	.643**
	Sig. (2- tailed)	.000		.002	.840	.096	.037	.456	.005	.130	.542	.019	.009	.459	.028	.003	.000
Rev per unit	Pearson Corr.	.356**	-.200**	1	-.036	-.111	-.039	.011	-.024	.016	-.004	-.007	-.070	-.011	-.043	.045	-.176**
	Sig. (2- tailed)	.000	.002		.580	.090	.554	.865	.712	.808	.954	.913	.288	.868	.518	.493	.007
Visual	Pearson Corr.	-.015	.013	-.036	1	.489**	-.558**	.412**	-.271**	.515**	.298**	-.218**	-.231**	-.367**	-.493**	-.033	-.148*
	Sig. (2- tailed)	.818	.840	.580		.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.614	.024
Norm stmt	Pearson Corr.	-.172**	-.109	-.111	.489**	1	-.210**	-.341**	-.130*	-.327**	-.290**	-.221**	-.043	-.326**	-.081	-.027	-.259**

N = 233		Rev	Units	Rev per unit	Visual	Norm stmt	Enroll total	Nonbus enroll	Bus enroll	Nonbus 1floor	Nonbus 2floor	Bus 1floor	Bus 2floor	Enroll 1floor	Enroll 2floor	Faculty	Choc count
Enroll total	Sig. (2- tailed)	.008	.096	.090	.000		.001	.000	.047	.000	.000	.001	.511	.000	.217	.678	.000
	Pearson Corr.	.080	.137*	-.039	-.558**	-.210**	1	-.138*	.888**	-.174**	-.066	.761**	.780**	.625**	.902**	-.564**	.192**
Nonbus enroll	Sig. (2- tailed)	.222	.037	.554	.000	.001		.035	.000	.008	.316	.000	.000	.000	.000	.000	.003
	Pearson Corr.	.057	.049	.011	.412**	-.341**	-.138*	1	-.047	.765**	.938**	.212**	-.226**	.329**	-.355**	-.123	.058
Bus enroll	Sig. (2- tailed)	.385	.456	.865	.000	.000	.035		.476	.000	.000	.001	.001	.000	.000	.061	.375
	Pearson Corr.	.128	.185**	-.024	-.271**	-.130*	.888**	-.047	1	.052	-.053	.863**	.819**	.429**	.870**	-.663**	.173**
Nonbus 1floor	Sig. (2- tailed)	.050	.005	.712	.000	.047	.000	.476		.432	.423	.000	.000	.000	.000	.000	.008
	Pearson Corr.	.101	.100	.016	.515**	-.327**	-.174**	.765**	.052	1	.564**	.147*	-.035	.145*	-.298**	-.210**	.062
Nonbus 2floor	Sig. (2- tailed)	.123	.130	.808	.000	.000	.008	.000	.432		.000	.025	.596	.027	.000	.001	.347
	Pearson Corr.	.043	.040	-.004	.298**	-.290**	-.066	.938**	-.053	.564**	1	.240**	-.251**	.410**	-.310**	-.122	.079

N = 233		Rev	Units	Rev per unit	Visual	Norm stmt	Enroll total	Nonbus enroll	Bus enroll	Nonbus 1floor	Nonbus 2floor	Bus 1floor	Bus 2floor	Enroll 1floor	Enroll 2floor	Faculty	Choc count
Bus 1floor	Sig. (2- tailed)	.514	.542	.954	.000	.000	.316	.000	.423	.000		.000	.000	.000	.000	.064	.233
	Pearson Corr.	.127	.153*	-.007	-.218**	-.221**	.761**	.212**	.863**	.147*	.240**	1	.495**	.411**	.722**	-.528**	.170**
	Sig. (2- tailed)	.053	.019	.913	.001	.001	.000	.001	.000	.025	.000		.000	.000	.000	.000	.010
Bus 2floor	Sig. (2- tailed)	.053	.019	.913	.001	.001	.000	.001	.000	.025	.000		.000	.000	.000	.000	.010
	Pearson Corr.	.086	.172**	-.070	-.231**	-.043	.780**	-.226**	.819**	-.035	-.251**	.495**	1	.370**	.768**	-.642**	.143*
	Sig. (2- tailed)	.193	.009	.288	.000	.511	.000	.001	.000	.596	.000	.000		.000	.000	.000	.030
Enroll 1floor	Sig. (2- tailed)	.193	.009	.288	.000	.511	.000	.001	.000	.596	.000	.000		.000	.000	.000	.030
	Pearson Corr.	.040	.049	-.011	-.367**	-.326**	.625**	.329**	.429**	.145*	.410**	.411**	.370**	1	.226**	-.471**	.141*
	Sig. (2- tailed)	.547	.459	.868	.000	.000	.000	.000	.000	.027	.000	.000	.000		.000	.000	.031
Enroll 2floor	Sig. (2- tailed)	.547	.459	.868	.000	.000	.000	.000	.000	.027	.000	.000	.000		.000	.000	.031
	Pearson Corr.	.078	.144*	-.043	-.493**	-.081	.902**	-.355**	.870**	-.298**	-.310**	.722**	.768**	.226**	1	-.444**	.162*
	Sig. (2- tailed)	.234	.028	.518	.000	.217	.000	.000	.000	.000	.000	.000	.000	.000		.000	.013

N = 233		Rev	Units	Rev per unit	Visual	Norm stmt	Enroll total	Nonbus enroll	Bus enroll	Nonbus 1floor	Nonbus 2floor	Bus 1floor	Bus 2floor	Enroll 1floor	Enroll 2floor	Faculty	Choc count
Faculty	Pearson Corr.	-.139*	-.191**	.045	-.033	-.027	-.564**	-.123	-.663**	-.210**	-.122	-.528**	-.642**	-.471**	-.444**	1	-.105
	Sig. (2- tailed)	.034	.003	.493	.614	.678	.000	.061	.000	.001	.064	.000	.000	.000	.000		.110
Choc count	Pearson Corr.	.478**	.643**	-.176**	-.148*	-.259**	.192**	.058	.173**	.062	.079	.170**	.143*	.141*	.162*	-.105	1
	Sig. (2- tailed)	.000	.000	.007	.024	.000	.003	.375	.008	.347	.233	.010	.030	.031	.013	.110	

* Statistically significant at the 0.05 level

** Statistically significant at the 0.01 level

TABLE 4: REGRESSION RESULTS

Model	1	2	3	4
Adj R ²	.638	.637	.636	.639
F-stat	69.284***	59.127***	58.991***	46.629***
Dep Var	Donations	Donations	Donations	Donations
Constant (s.e.)	1.007** (.507)	1.026* (.550)	0.695* (.404)	.978** (.424)
Units (s.e.)	0.542*** (.034)	.0541*** (.034)	0.504** (.034)	0.539*** (.034)
Enroll_total (s.e.)	-0.001 (.001)			
Enroll_1f (s.e.)		-0.001 (.002)		
Enroll_2f (s.e.)		-.001 (.001)		
Biz_enroll (s.e.)			-0.001 (.001)	
Nonbiz_enroll (s.e.)			-0.006 (.007)	
Biz_1f (s.e.)				0.001 (.001)
Biz_2f (s.e.)				-0.004* (.002)
Non biz_1f (s.e.)				-0.019 (.025)
Non biz_2f (s.e.)				-0.012 (.009)
Visual (s.e.)	-0.152 (.273)	-0.152 (.273)	0.188 (.297)	0.375 (.394)
Norm Stmt (s.e.)	-0.460** (.209)	-0.465** (.218)	-0.653** (.286)	-0.822** (.355)
Chocolate (s.e.)	-0.109 (.069)	-0.109 (.069)	-0.112 (.069)	-0.108 (.069)
Faculty (s.e.)	-0.277 (.438)	-0.287 (.451)	-.154 (.441)	-0.523 (.469)

*** Statistically significant at .01level

** Statistically significant at .05 level

* Statistically significant at .10 level

TABLE 5: REGRESSION RESULTS

Model	5	6	7	8	9	10	11	12
Adj R ²	.038	.034	.037	.037	.427	.432	.431	.426
F-stat	2.89**	2.369**	2.497**	2.127**	35.629***	30.403***	30.233***	22.518***
Dep Var	Donations per Unit	Donations per Unit	Donations per Unit	Donations per Unit	Units	Units	Units	Units
Constant (s.e.)	697** (.087)	0.709*** (.094)	0.661*** (.069)	0.079*** (.073)	3.151*** (.971)	3.803*** (1.042)	2.860*** (.764)	2.948*** (.809)
Enroll_total (s.e.)	0.000 (.001)				.000 (.002)			
Enroll_1f (s.e.)		0.000 (.000)				-0.005 (.004)		
Enroll_2f (s.e.)		.000 (.000)				0.001 (.002)		
Biz_enroll (s.e.)			0.000 (.000)				-0.018 (.013)	
Nonbiz_enroll (s.e.)			-0.001 (.001)				0.001 (.002)	
Biz_1f (s.e.)				0.000 (.000)				0.001 (.003)
Biz_2f (s.e.)				0.000 (.000)				0.000 (.004)
Non biz_1f (s.e.)				-0.004 (.004)				-0.028 (.048)
Non biz_2f (s.e.)				-0.002 (.002)				-0.020 (.017)
Visual (s.e.)	-0.003 (.048)	-0.003 (.048)	0.045 (.052)	0.079 (.069)	0.751 (.533)	0.739 (.739)	1.338** (.573)	1.460* (.768)
Norm Stmt (s.e.)	-0.083** (.037)	-0.087** (.038)	-0.119** (.050)	-0.151** (.063)	0.024 (.411)	-0.167 (.424)	-0.489 (.557)	-0.596 (.696)
Chocolate (s.e.)	-0.030*** (.009)	-0.030*** (.009)	-0.031*** (.009)	-0.030*** (.009)	1.287*** (.104)	1.280*** (.103)	1.277*** (.103)	1.281*** (.104)
Faculty (s.e.)	-0.004 (.007)	-0.010 (.079)	-.013 (.077)	-0.051 (.083)	-1.392 (.971)	-1.715* (.872)	-1.238 (.855)	-1.429 (.917)

*** Statistically significant at .01 level

** Statistically significant at .05 level

* Statistically significant at .10 level

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ⁱ “Radiohead publishers reveal *In Rainbows* numbers,” by Daniel Kreps, *Rolling Stone*, October 15, 2008.

ⁱⁱ “Pay what you want for new menu item at St. Louis Bread Co. Cafes,” by Kavita Kumar, *St. Louis Post Dispatch*, March 27, 2013.

ⁱⁱⁱ Specification of an econometric model in which the equivalent of total revenue is a function of the quantity of units sold violates the linear independence requirement when the price of the units sold is constant. In this model, however, linear independence is maintained because the individual donations vary.

^{iv} The wording of the injunctive statement follows closely the wording presented by Cialdini (2003) reviewing the message used for testing in the Petrified Forest National Park. The reference statement reads, “Please don’t remove the petrified wood from the Park, in order to preserve the natural state of the Petrified Forest.”

^v The number of observations for each of the three quarters fall, winter, and spring are: 78, 80, and 75; respectively.