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## Social Norms and the Price of Zero

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The standard economic model assumes that demand is weakly decreasing in price. While empirical evidence shows that this is true for most price levels, it might not hold for the price of zero, where social norms are not entirely compatible with the self-maximizing economic agent. A set of experiments shows that switching from a low price to a price of zero has two effects on behavior: First, in accordance with the economic theory, more people demand the product. Second, whereas in the low price case some individuals demand high quantities of the product, in the zero price case most people take only one unit of the product. As a result, lowering the price to zero may lead to a net *decrease* in the total amount demanded in the market. We further show that polite priming results in higher demand than ethical priming in both zero price and 1¢ conditions.

**Keywords** Social norms; Zero price; Samples; Experiments

### Introduction

We begin with the premise of two distinct exchange relationship modes (e.g., Clark & Mills, 1979; Fiske, 1992; Heyman & Ariely, 2004). One is a market relationship and the other is a social–moral relationship. In a market relationship, price and market norms determine demand. In contrast, in a social–moral relationship, social and moral norms determine demand.

We posit that switching from a low price to a price of zero would move people between the two distinct relationship modes. Faced with a low price, individuals would demand high quantities of the product in accordance with the market relationship. However, at zero price, where the social–moral relationship applies, people would demand a single unit in accordance with the social norm. As a result, lowering the price to zero may lead to a net *decrease*

in aggregate demand—the total amount demanded in the market. An important goal of our experiments was to first show how people can move between these distinct relationship modes depending on the price. A secondary goal was to examine whether the relative salience of the two relationship modes can vary within each price point.

It is constructive to consider the role of self-interest in exchanges (e.g., Bagozzi, 1975). In an exchange, one obtains ownership, but that ownership needs not be selfish. It can involve a communal sense of extended self within a community (Belk, 1984, 2010). By providing a product free of charge, we are not only moving people from a market relationship to a social–moral relationship, as argued so far, but we might also be expanding perception of self-interest to include others, known as “the aggregate extended self” (Widlock, 2004). In other words, the social notion of greed (discussed shortly in the context of social norms) becomes relevant. Taking too much now stands to harm one’s “extended self”

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by depleting a common pool resource. However, when we charge a negligible price of 1¢, that price accrues to the individual—not to his extended self. We thus shrink the extended self as well as alleviate obligations of reciprocal exchange (the sense of “owing” something to the giver). This would alleviate concerns about greed, as greed is in one’s self-interest and is harmful only to the extended self.

Under the idea of self-interest, the law of demand asserts that demand weakly decreases as price increases. While both individual and market demand are likely to follow this law for most price levels, we show that they might not hold for the price of zero—as the price of zero involves not only a specific price level but also the social norms. As an illustration, consider going to a bakery and seeing a sign that says “free doughnuts, help yourself” in front of a plate of doughnuts. You can take as much as you like. We conjecture that some people would take only the one or two, as this is the “socially acceptable” amount. But what if the sign on the plate would say “1¢ per doughnut, help yourself”? In this case, taking doughnuts is not tied to a social norm. This example illustrates that social norms can operate when no monetary exchanges are salient and that the inclusion of a monetary trade-off can interfere with these norms.

Consumption involves complex social aspects (e.g., Solomon, 1983). Social norms have been shown to influence consumption in a variety of products including convenience foods (Verlegh and Candel, 1999), hotel towel reuse (Baca-Motes, Brown, Gneezy, Keenan, & Nelson, 2013; Goldstein, Cialdini, & Griskevicius, 2008), and electricity consumption (Allcott, 2011; Harries, Rettie, Studley, Burchell, & Chambers, 2013), to name a few.

The effect of monetary payment on the social norms that individuals apply is discussed extensively in the literature (e.g., Clark & Mills, 1979; Coleman, 1990; Deci, 1971; Fiske, 1992; Frey & Jegen, 2001; Gneezy & Rustichini, 2000a,b; Heyman & Ariely, 2004; Lindbeck, 1997; see Gneezy, Meier, & Rey-Biel, 2011 for a review). Specifically, when monetary payment is explicitly mentioned, the norms and rules that people bring to bear are different and relate directly to market norms of exchange and to cost-benefit analysis. In Gneezy and Rustichini (2000a) and Heyman and Ariely (2004), for example, with mundane tasks, participants decreased effort with a low payment relative to no payment at all.

The literature also shows that when monetary payment is not mentioned, transactions are considered to be in the social-moral relationship domain, causing people to apply norms of fairness and reciprocity to the exchange.

It is useful here to elaborate on what precisely is prescribed by social norms in the present context. In general, it is considered rude to decline a gift (e.g., Lyckholm, 1998), much to the detriment of the residents of Troy, who accepted the gift of a large wooden horse. In the context of confections, there is a corresponding well-known social etiquette commonly discussed in etiquette publications and forums. It is the idea that it is impolite to refuse dessert or a confection in a social setting. While in the age of diet and allergies, it is becoming increasingly more acceptable to decline, it is still a widely discussed topic of proper etiquette (Echlin, 2010; Sisson, 2009). In our context, we expect that some people would take a candy, when it is offered free of charge, for the sake of being polite. Therefore, when social norms are salient, we expect there to be more takers of candy than when social norms are not salient. Under the assertion that social norms are more salient when the price is zero, we can state *H1*.

*H1:* More people will demand the product when the price is zero than when the price is positive.

On the other hand, appearing greedy is frowned upon in social settings (Hoffman, McCabe, & Smith, 1996). In the context of food, asking for second helpings in social settings has been historically considered impolite. A leading social etiquette guide instructs to “never ask for a second helping of soup, or of anything at a course dinner” (Cooke, 1896, p. 225).

High demand for candy, when offered for free, is especially likely to be perceived as greedy (Green, 2013). Therefore, we expect that when social norms are salient, people will demand fewer units. Under the assertion that social norms are more salient when the price is zero, we can state *H2*.

*H2:* Conditional on choosing to consume, people will demand fewer units when the price is zero than when the price is positive but low.

The second hypothesis is based on the prediction that at a low price, most individuals will demand multiple units of the good, while at a price of zero, most individuals will demand the socially acceptable amount of one or two units of the product.

A set of experiments supports these hypotheses. The results also show that the combination of these two forces is such that in some cases, the aggregate demand is higher when the price is low than when it is zero.

We are interested in testing whether social norms can serve as a mechanism for changing behavior.

Toward that end, Cialdini, Reno, and Kallgren (1990) distinguish descriptive norms from injunctive norms. Cialdini et al. (1990) credit the distinction to Deutsch and Gerard (1955), who delineated normative and informational influences. Descriptive norms pertain to what others are thought to do, whereas injunctive norms pertain to what people ought to do. In other words, descriptive norms may indicate the norm for polite behavior, whereas injunctive norms relate to ethical behavior. In one test for social norms as a mechanism for changing behavior, Experiment 1 in the section “Experiment 1: Ethics, Politeness, and Social Norms,” we create a situation in which participants receive verbal information regarding what others do—the descriptive norm. In these manipulations of Experiment 1, subjects are given a verbal indication of the behavior of others, indicating others as being polite or ethical. In Experiment 3 in the section “Experiment 3: Starburst Experiment,” we account for whether people are in company of others—thereby being observed and observing others—potentially making descriptive social norms more salient. In Experiment 5, detailed in the section “Experiment 5: Priming Transaction and Social Norms,” we prime social norms via socially oriented sentences. The primed norms pertained to ethics—thereby corresponding more closely to injunctive social norm. We refer to these tests in *H3*.

*H3*: There is a relationship between demand and outside influences (priming–presence of others) affecting social norms.

This article is largely about social norms as they pertain to manners—an important part of morality (Caldwell, 2015; Johnston, 1916; Yeung, 2010). In recent behavioral economics literature, the distinction between morals and manners is manifested in the distinction between social preferences and social norms (Binmore, 2010; Gächter, Nosenzo, & Sefton, 2013). In Discussion section, we bring the insights from the experiments to real market applications to demonstrate that in real market applications, such as towel usage in hotels, avoiding waste in buffets, or cleaning up after yourself at a fast food restaurant, social priming is consequential.

### Experimental Studies

Ariely (2009, pp. 107–109; 111–112) described portions of our research and briefly mentioned Experiments 3 and 4 conducted in this work. The patterns mentioned in that book, referencing the present

work, were posed to illustrate that a price of zero evokes different social norms than a low price of 1¢ and may result in people being more moral (or possibly better mannered). Given this special issue on morality, we ran additional experiments specifically for this special issue that prime two variants of morality.

#### *Experiment 1: Ethics, Politeness, and Social Norms*

Experiment 1 brings some elements of the distinction between manners and morals in a study involving four treatments. A body of literature (see overview in Yeung, 2010) has long pondered the distinction between morals and manners, also referred to as ethics and etiquette, respectively. For example, when dividing a pie equally between you and your friends, are you applying etiquette, that is good manners, or are you applying ethics, that is being fair to your friends? And more importantly, is this merely a semantic distinction or does it have implications outside of linguistics? To examine this issue, we repeated the protocol of Experiment 1 with priming for etiquette (politeness) and ethics.

*The experimental protocol.* A research assistant held a tray with 50 Lindt truffles before knocking on each office door. The research assistant carried bill and coin change. The truffles were replenished between participants to keep any inferences based on the amount of chocolate the same across all participants. The experiment involved four conditions in a  $2 \times 2$  design with (free, 1 cent)  $\times$  (polite, ethical).

In the free chocolate conditions, the research assistants simply placed the tray in front of the participants and asked them “would you like some chocolates?” (plural form was used). The added statement was added right after offering chocolate and before chocolate is taken. Specifically, “Would you like some chocolates? People have been so polite today.” And “Would you like some chocolates? People have been so ethical today.”

In the 1¢ conditions, each truffle was priced at 1¢. In these conditions, the researcher placed the tray in front of the participants and asked them “would you like some chocolates? The cost is 1¢ per truffle.” These were interacted with one of the following two statements: “People have been so polite today,” and “People have been so ethical today.” The statement was added right after mentioning the cost, and before chocolate is taken. Specifically, “Would you like some chocolates? The cost is 1¢ per truffle. People have been so polite today.” And “Would you like some chocolates? The cost is 1¢ per truffle. People have been so ethical today.”

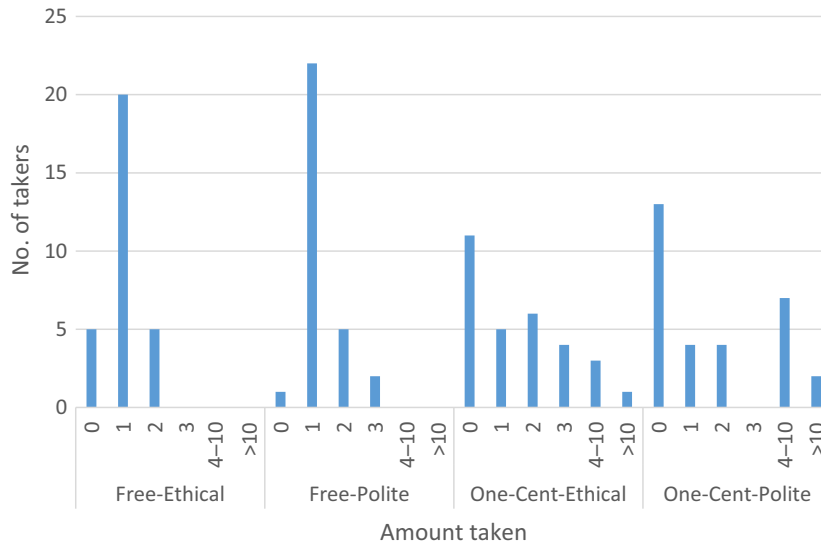


Figure 1. Experiment 1. Average amount of Lindt truffles taken by individuals across the four conditions (Free × Polite, 1¢ × Polite, Free × Ethical, 1¢ × Ethical).

*Results and discussion.* A total of 120 participants participated, 30 per treatment. We begin by looking at the number of takers at each quantity, shown in Figure 1. Testing *H1*, for the ethical frame, we get a chi-square of 3.1, and *p*-value of .08. For the polite frame, we get a chi-square of 13.4 and a *p*-value < .01. Thus, we find strong support for *H1*. There are more takers when the price is zero. We test this with a binary logit with an interaction term. We see in Table 1 that price is highly significant, *p* = .029, whereas the price × priming manipulation is marginally significant.

The average number of truffles taken is different across the four conditions [ $F(3, 116) = 2.27, p = .04$ ]. The highest number of truffles is taken in the One-Cent-Polite condition (mean = 3.6), a lower number is taken in the One-Cent-Ethical condition (mean = 2.2), followed by Free-Polite (mean = 1.3), and the lowest number of truffles is taken in the Free-Ethical condition (mean = 1).

As seen in Table 2, a two-way ANOVA, with the number of truffles taken as the dependent variable, shows that only the price comes out significant in this comparison.

In pairwise comparisons, comparing Free-Polite to Free-Ethical, we get a one-tailed *p*-value of .049. However, due to high variance, we get a one-tailed *p* = .18 for One-Cent-Ethical versus One-Cent-Polite. Nevertheless, the difference between ethical and polite is consistent with the free conditions. Comparing Free versus One Cent in Ethical framing, the one-tailed *p*-value is .04. For polite framing, the *p*-value is .05.

Next, we examine the distributions of the individual level demands. As can be seen in Figure 1, participants in the free conditions took very few truffles. Of the 30 participants in the Free-Polite condition, 22 took only one truffle, five took two and two took three. Of the 30 participants in the Free-Ethical condition, 20 took only one truffle, five took two, and none took more than two. In contrast, in the One-Cent-Polite and One-Cent-Ethical, only four of thirty and five of thirty, respectively, took only one truffle. One person took 40 in the Free-Polite condition.

The research assistants were instructed to record anything noteworthy besides the list of items they were required to record. For nine of 60 participants in 1¢ conditions (five in One-Cent-Ethical and four

Table 1  
Experiment 1. Binary Logit. Dependent Variable: Whether Truffles Were Taken (1) or Not (0)

| Parameter         | Estimate | SE    | <i>p</i> -Value |
|-------------------|----------|-------|-----------------|
| Intercept         | 1.609    | 0.490 | .001            |
| One Cent          | -1.341   | 0.613 | .029            |
| Polite            | 1.758    | 1.129 | .119            |
| One Cent × Polite | -2.160   | 1.243 | .082            |

Table 2  
Experiment 1. Two-way Analysis of Variance With the Number of Truffles Taken as the Dependent Variable

| Parameter         | Estimate | SE    | <i>Pr</i> >   <i>t</i> |
|-------------------|----------|-------|------------------------|
| Intercept         | 1.000    | 0.779 | .202                   |
| One Cent          | 1.167    | 1.101 | .292                   |
| Polite            | 0.267    | 1.101 | .809                   |
| One Cent × Polite | 1.167    | 1.557 | .455                   |

in One-Cent-Polite), the research assistants (four different assistants, independently and without prompting) recorded people indicating they were out of cash. Thus, the polite and ethical priming potentially suggested for people a way to politely or ethically decline to take any truffles. The only other noteworthy event that repeated was four cases of people insisting to overpay in the 1¢ polite and three people in 1¢ ethical. Thus, both framings moved at least seven people to a Pay-What-You-Want setting, a format which is increasingly being given prominence in the marketplace (Gneezy, Gneezy, Nelson, & Brown, 2010; Kim, Natter, & Spann, 2009; Schmidt, Spann, & Zeithammer, 2014).

### *Experiment 2: Office Experiment*

In the section “Introduction,” we introduced the two competing concepts of a market relationship and a social–moral relationship. The current experiment intends to find whether the market relationship extends to nonmonetary forms of payment—specifically effort. Contrasting these two types of exchange modalities is important in order to test whether the elimination of social norms associated with the introduction of cost is limited to monetary costs or can be generalized to nonmonetary costs.

Experiment 2 examines two payment modalities: monetary payment versus effort. The underlying hypothesis is that effort as a nonmonetary cost would move participants away from a social–moral relationship toward an exchange relationship. As they trade in their effort for chocolate, the chocolate becomes a payment currency rather than a social act, and the norm should move accordingly away from the social–moral relationship.

A research assistant went around offices at the MIT Media Laboratory and offered Lindt truffles to 60 office occupants (graduate students, faculty, and administrators). The research assistant held a tray with 50 Lindt truffles before knocking on each office door. The experiment involved three conditions: In the free condition, the truffles were free, and cost was never mentioned. In this condition, the research assistant simply placed the tray in front of the participants and asked them “would you like some chocolates?” (plural form was used). In the 1¢ condition, each truffle cost 1 cent. In this condition, the research assistant placed the tray in front of the participants and asked them “would you like some chocolates? The cost is 1 cent per truffle.”

Finally, in the effort condition, participants were handed a page with a sequence of letters printed

on it (80 letters per line and 45 lines per page). In this sequence, there was one instance in every two consecutive lines where there were two letters “s” that were adjacent to each other. In this condition, the research assistant placed the chocolate tray in front of the participants and asked them “would you like some chocolates? For each sequence of 2 S’s that you find you can take one truffle.” In all three conditions, the research assistant counted the number of truffles taken after leaving the room, recording this amount and replenishing the truffles from the supply in her bag.

*Results and discussion.* All 60 participants took at least one truffle, hence making the testing of *H1* nonideal for this setup. That is, we fail to reject the null hypothesis that the number of people taking truffles is the same across conditions. The results show that the average number of truffles taken is different across the three conditions [ $F(2, 57) = 44.15, p < .001$ ]. Follow-up analysis revealed that the highest number of truffles was taken in the 1¢ condition (mean = 30), a lower number was taken in the effort condition (mean = 8.65), and the lowest number of truffles was taken in the free condition (mean = 1.5). All pairwise comparisons were significant at the  $p < .05$  level. Next, we examine the distributions of the individual level demands. As can be seen in Figure 2, participants in the free condition took very few truffles. Of the 20 participants in the free condition, 11 took only one truffle, eight took two, and one took three. In the other two conditions, no one took just one or two; in the 1¢ condition, the lowest number of truffles taken was 6, and in the effort condition, the lowest number of truffles taken was 3.

The comparison of the effort condition with the free and 1¢ conditions suggests three other important points. The first is that the social norms involved with zero price may be invoked when no exchange is explicitly mentioned—either monetary or effort based—and that when any of these types of exchanges are explicitly mentioned the social norms are reduced. Second, this comparison implies that transaction costs cannot explain the difference between the free and 1¢ conditions.

Given the results of the free and 1¢ conditions, one might suspect that the purchase quantity in the monetary cost condition could be due to the type of change that participants had on them. The “loose change problem” could affect behavior in two ways. First, if lack of appropriate change is an issue, people might be less inclined to buy in the 1¢ condition. In our case, we provided change in an attempt to overcome this potential issue. Second, if

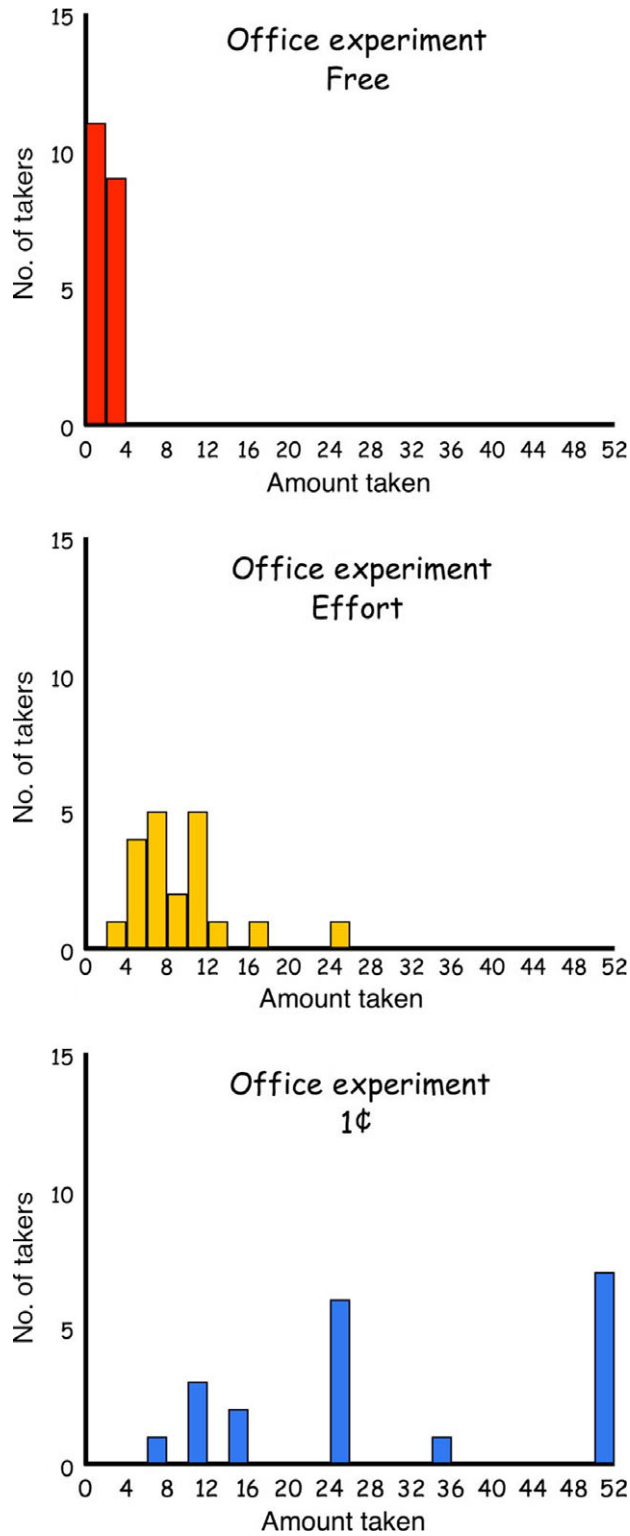


Figure 2. Experiment 2. Frequency distributions of the amount of Lindt truffles taken by individuals across the three conditions (Free, Effort, 1¢).

reaching for loose change or receiving change is considered an effort, then, conditional on reaching for change, it might affect demand positively (e.g., Kivetz & Simonson, 2002). As the effort condition involved no money, any explanation based on a particular coin denomination that the participant carried cannot account for the overall effect.

A third issue comes from the idea that “time is money.” It appears that effort was money equivalent but as the effort here is minimal, it may very well be that the real effect of the effort condition resulted from the time it took to perform the task, and that time, rather than the effort, has the money equivalent value to subjects.

The comparison of Experiment 2 with Experiment 1 suggests important insights. In Experiment 2, the mode at the One-Cent condition was for people to take the entire tray, followed by people taking half the tray. The fact that with the ethical and polite framings of Experiment 1, we only observed one person in that range suggests that framing of both politeness and ethics moved people away from doing so. Thus, while the One-Cent condition preserves the increased demand we observed in Experiment 1 relative to Free, we can say that framing moved people away from taking everything on the tray.

Further in Experiment 2, we saw that when exchanges were explicitly mentioned with the 1¢ price, inhibitions regarding taking more than one truffle disappeared. Hence, we can say that the social norms were “reduced.” However, with the framing of Experiment 1, it is not possible to say that social norms were reduced, although clearly they changed.

*Experiment 3: Starburst Experiment*

As referenced in Ariely (2009, pp. 107–109), Experiment 3 was conducted by setting up a booth at the student center at MIT. Experiment 3 used a somewhat less desirable candy (based on pretesting with the same MIT population)—Starburst Fruit Chews. The front of the booth was covered with a large sign that alternated twice between the following two messages: “Starbursts Fruit Chews for free,” and “Starbursts Fruit Chews for 1¢ each.” A research assistant was seated at the booth ready to provide change and replenish the Starbursts to make sure that there were 10 packets of Starbursts Fruit Chews on the main tray at all times. The number of Starbursts Fruit Chews taken by each participant and the duration for each treatment were recorded by the research assistant seated at the booth.

*Results and discussion.* Due to the naturalistic setting of this experiment, it is difficult to directly measure the number of people who did not want to take any Starbursts. Those who passed by and did not take a candy might have done so because they did not want any or because they did not notice the sign. Yet, one of the main goals of this experiment was to estimate the demand in terms of the number of people who wanted to partake (testing *H1*).

The rate of demand is the only dimension we can compare on. To estimate this type of demand, we assume that the rate at which students walked by the booth is the same across the conditions. This is a reasonable assumption given the randomization of the two conditions across time. We used participation (taking at least one unit) per unit of time as a measure of this type of demand (number of people who are interested in the offer).

As we wanted roughly 30 subjects per condition, this resulted in different exposure times over conditions. On average, in the 1¢ condition, we had one observation every 1.03 min, while in the free condition, one student took at least one Starbursts Fruit Chews every 0.29 min. The difference indicates that in the 1¢ condition, it took more than three times longer to get the same number of people to participate. These results support *H1* by showing that, as prices decrease from a low price to zero, more people demand the product.

As can be seen in Figure 3, the results are consistent with the findings of Experiments 1 and 2, with the average of Starbursts taken in the 1¢ condition (Mean = 3.45) being higher than the average in the free condition (Mean = 1.09); the difference is statistically significant [ $t(61) = 5.06, p < .001$ ]. Moreover, the average number of Starbursts taken in the free condition was not significantly different from one.

The research assistant seated at the booth also recorded whether the participants approached the booth alone or accompanied by at least one other person. As Figure 4 shows, being alone or with company did not influence behavior in the free condition. The results also show that the tendency to take multiple units of Starbursts in the 1¢ condition is higher when individuals are in the company of their friends. This suggests that the presence of friends can influence purchasing behavior (we cannot rule out that participants are taking more because there are more mouths to feed), but that such effects are weaker compared with the social norms generated in the free condition.

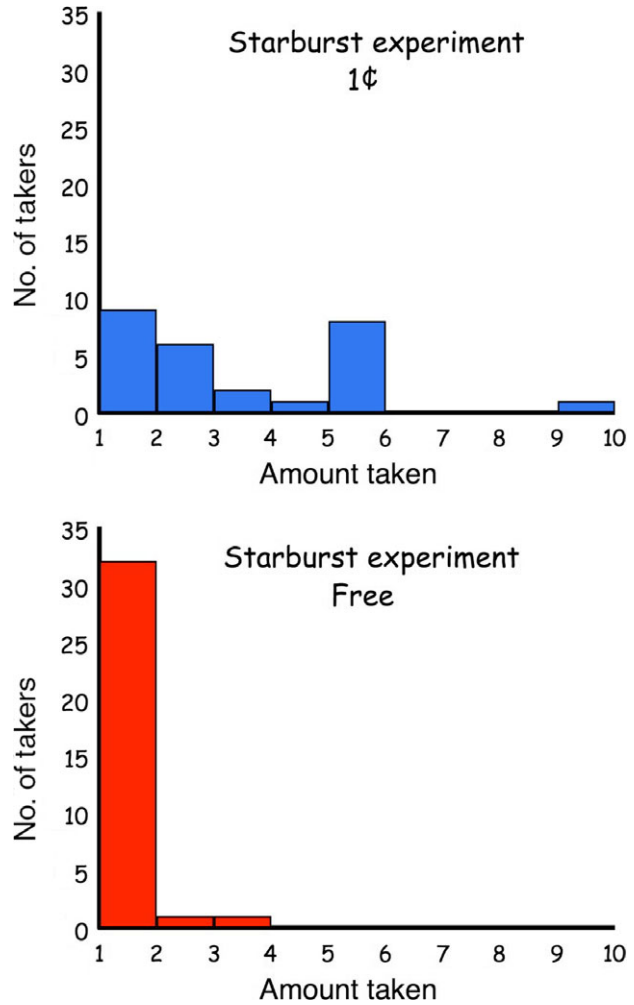


Figure 3. Experiment 3. Frequency distributions of the amount of starburst candy taken by individuals across the two conditions (Free, 1¢).

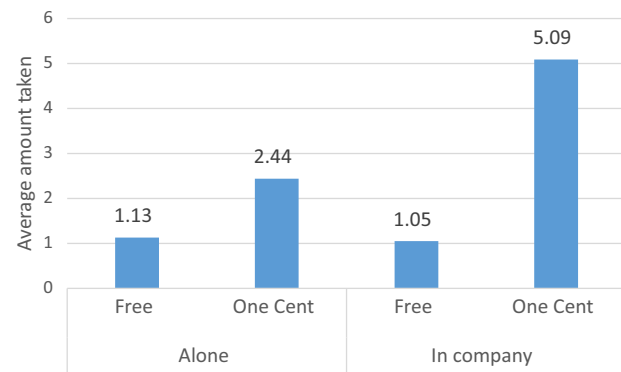


Figure 4. Experiment 3. Mean quantity of starburst candy taken across the two conditions (Free, 1¢), and whether the respondent was alone or in a group.

Experiment 4: Increasing Price Range Experiment

The results from Experiments 1–3 support the hypothesis (*H2*) that zero price limits the number of participants who take when no cost is involved. Thus, while the predictions of negative relationship between price and demand hold for the number of people demanding the good, they do not hold for the average quantity of the good demanded by these individuals.

The goal of Experiment 4, referenced in Ariely (2009, pp. 111–112), was to extend the range of prices in order to demonstrate that *H1* and *H2* hold when comparing low price to zero price, but not when comparing one positive price to another. For strictly positive prices, the expectation is that the standard economic theory holds—demand will decrease in price in terms of both the number of people demanding the good and the average individual demand (supporting *H1* but not *H2*).

Experiment 4 was conducted in the same setting as Experiment 3, but with Lindt chocolate truffles as the product of choice, and zero, 1¢, 5¢, and 10¢ as the prices manipulated between the conditions. The experiment involved 16 sessions of 20 min each (four sessions for each experimental condition) over a few days and in random order.

*Results and discussion.* Consistent with *H1*, as prices increased from zero price to 1 cent, from 1¢ to 5¢, and from 5¢ to 10¢, the number of individuals taking any positive amount of the truffles decreased (see Figure 5 top). More importantly, as prices increased, the average quantity taken showed a nonmonotonic relationship. Specifically, in line with *H2*, we see an increase in quantity taken as the price increased from zero price to 1¢ [ $t(121) = 18.44, p < .01$ ]. In contrast, we see a decrease in the quantity taken as the price increased from 1¢ to 5¢ [ $t(44) = 4.46, p < .001$ ], and a further albeit insignificant decrease from 5¢ to 10¢ [ $t(22) = 0.61, p = .55$ ].

A more careful examination of these results (see Figure 5 middle and bottom) illustrates that many more individuals took a single Lindt truffle when the price was zero compared with the other three prices (see Figure 5 middle). When we look at the number of participants who took more than a single Lindt truffle, we make two observations: First, very few individuals took more than a single truffle in the zero price condition, and second, the number of individuals who took a larger number of Lindt truffles dropped quickly as the price increased. Together these two effects caused the overall demand to be 106, 206, 52, and 22

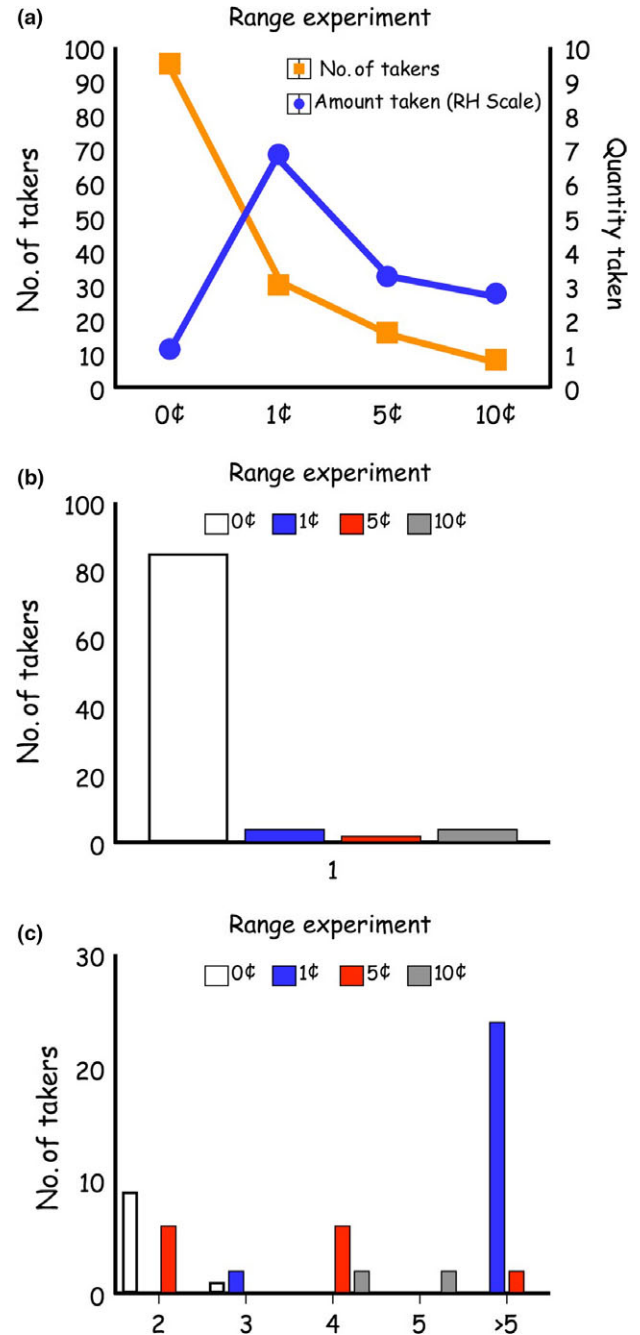


Figure 5. Experiment 4. (a) Number of takers and mean quantity of candy taken in the range experiment across the four conditions (Free, 1¢, 5¢, 10¢). (b) Frequency distributions of the number of individuals who took one truffle in the range experiment across the four conditions (Free, 1¢, 5¢, 10¢). (c) Frequency distributions of the number of individuals who took more than one truffle in the range experiment across the four conditions (Free, 1¢, 5¢, 10¢).

Lindt truffles in the zero price, 1¢, 5¢, and 10¢ conditions, respectively.

These results confirm *H1* and *H2* by showing that as prices decrease from a low price to zero



price, more people will demand the product, and at the same time, people demand a lower quantity of it. In particular, people are more likely to demand the socially acceptable quantity of one unit. Moreover, the results show that this differential effect for the two components of demands—number of takers and amount taken—is unique to the zero price. Across other small prices, both components of demands decrease as price increases. This pattern provides support for the argument that zero price, but not other small prices, invokes the social–moral relationship mode—creating a discontinuity in demand when the price is zero.

It is useful to consider the pricing implications in the presence of social norms. First, we note that our prices of 1¢, 5¢, and 10¢ per piece are all much lower than the retail price of a truffle (which is between 30 and 50 cents per truffle, depending on the size of the pack one buys). They are also lower than the cost to the retailer. Therefore, they all constitute deep discounts and fall under the domain of discount pricing if observed in the market. That said, they are all potential candidates as promotional prices to encourage trial. The effect of trial on subsequent purchase of chocolate confections is known to be important and large (Lammers, 1991). Promotional pricing is known to be effective for college students (Fisher et al., 2001). Thus, we can assess which of the four prices would be most effective as a tool to generate trial. As the overall demand was 106, 206, 52, and 22, a price of 1¢ generates nearly four times as much trial as a price of 5¢ and nearly 10 times as much trial as a price of 10¢. Thus, the implication is that in order to generate trial, one should select the minimum price that the market will consider as credible in moving the relationship mode from a social–moral relationship to a market exchange relationship. Even a small increase above that price is likely to result in a substantial drop in trial below that of zero price. In our case, the market accepted the 1¢ price as sufficient in moving the relationship toward a market relationship and yet attractive enough to make a purchase, but the market did not consider the 5-cent price sufficiently attractive for purchase, above that of free-sample trial.

#### *Experiment 5: Priming Transaction and Social Norms*

While the results of the experiments show a discontinuity in demand for the price of zero, it is important to note that the hypothesis (*H3*) is that this discontinuity is due to social norms and not to the price of zero in itself (Shampanier, Mazar, &

Ariely, 2007). Experiment 5 is intended to test this hypothesis. Specifically, the underlying hypothesis is that the effect of price is not independent of the priming of social norms. We expect a significant interaction effect between the price and the priming of norms. Specifically, we expect the interaction between a 1¢ price (which by itself moves the participant to a market frame of mind) and a monetary framing to be positive and significant.

In order to manipulate the norms associated with the interaction, in Experiment 5, we give subjects' tasks that are meant to prime either social–moral or transaction norms. Subjects are students sitting at the student union at MIT. They are approached by an experimenter and asked to participate in one of two descrambling tasks. The tasks (provided in Appendix) involve six sentences to be descrambled. Each sentence contains four out-of-order words. Subjects have to order the words to make a sensible sentence, using four of five words given to them. Each descrambled sentence has a unique solution. In the "M" descramble task, the six sentences prime the concept of money. For example, "I received a raise" and "I cashed a check." Such priming of money through descrambling tasks was used by Vohs, Mead, and Goode (2006), showing that subjects primed in this way exhibited reduced requests for help from others and reduced helpfulness toward others. In the "S" descramble task, the six sentences pertain to social values. For example, "community is very important" and "considering others is fulfilling." Such priming is intended to bring social considerations to the forefront in subjects' minds and to enhance social norms. Once the descrambling task is completed, subjects are presented with truffles priced at zero or 1¢. Subjects are unaware of the possibility of receiving truffles until after the descrambling task is completed.

*Results and discussion.* A total of 306 subjects participated in this study. Of these, 76, 82, 74, and 74 participated in the zero price with monetary priming treatment, zero price with social priming treatment, 1¢ price with monetary priming treatment, and 1¢ price with social priming treatment, respectively.

The results are presented in Figure 6. In both priming conditions, participants took more truffles on average in the 1¢ condition than in the zero price condition. Under monetary priming, the average demand was 1.24 versus 3.53 truffles for zero and 1¢ price, respectively [ $t(148) = 10.54, p < .001$ ]. Under social priming, the average demand was 1.13 versus 2.64 truffles for zero and 1¢ price, respectively [ $t(154) = 7.49, p < .001$ ].

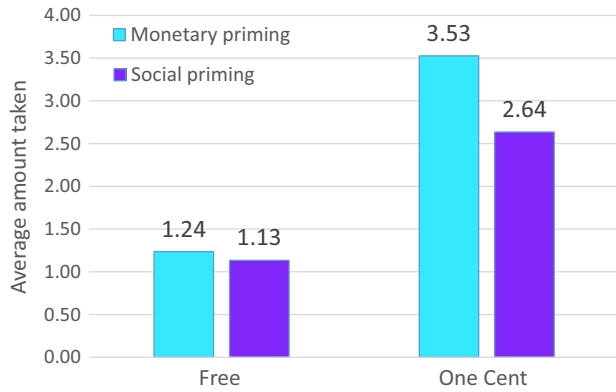


Figure 6. Experiment 5. Average amount of Lindt truffles taken by individuals in the priming experiment across the four conditions (Free × Monetary, 1¢ × Monetary, Free × Social, 1¢ × Social).

At a price 0, the monetary priming has a no statistically meaningful difference [ $t(156) = 1.36, p < .177$ ].

At a price of 1¢, the monetary priming has a significantly higher average number of truffles taken, 3.53 versus 2.64 for the social priming condition [ $t(146) = 3.03, p < .003$ ]. Here, social priming appears to be effective in reducing taking in an environment that would otherwise involve an exchange mind-set, in line with H3.

The analysis of variance in Table 3 shows the exact same pattern discussed earlier. The 1¢ condition increases truffles taken by approximately 1.50 truffles, and this effect is significant  $p < .0001$ . The monetary priming interacting with the 1¢ condition has an effect of approximately 0.79 truffles, and this effect is highly significant,  $p = .008$ . However, this effect does not extend to the zero price condition; the main effect is insignificant,  $p = .618$ .

In summary, Experiment 5 manipulated norms, showing that that cueing economic thinking increased the number of truffles taken at 1¢ but not at zero. This parallels the result in Experiment 3 where the presence of another person increased the number taken at 1¢ but not at zero, suggesting that the presence of others acts in a similar

manner to the priming manipulation. The findings confirm the hypothesis H3 that the discontinuity in demand is due to social norms and not to the price of zero in itself and further shows that the effect of price is not independent of the priming of social norms.

### Discussion

The results presented in this article show that, in our setting, people demand more at a price of 1¢ than at a price of zero. Clearly, a price of zero is only one example of a situational context that can flip social norms. We do not presume that examples are limited to a price of zero or to price effects in particular.

As indicated in the discussion of Experiment 1, priming of manners or morals in a market setting could lead some people to perceive the situation as a Pay-What-You-Want setting, a format which is increasingly being given prominence in the marketplace (Gneezy et al., 2010; Kim et al., 2009; Schmidt et al., 2014). In a Pay-What-You-Want setting, customers pay what they perceive to be the socially acceptable amount to pay. Tipping is a common example of a social norm that belongs in the Pay-What-You-Want classification. The cues that affect tipping are often related to the type of business, the social environment, and physical cues (Azar, 2004; Parrett, 2006; Post, 2004).

Hotels increasingly encourage guests to conserve energy and to reuse towels during hotel stays, and they prime social norms to achieve that (Baca-Motes et al., 2013; Goldstein et al., 2008). Likewise, establishments serving buffets engage in social pressure to encourage reduction in food waste by diners (Kallbekken & Sælen, 2013). Why not price the free amenities? Theory, with some exceptions discussed in Fruchter, Gerstner, and Dobson (2011), suggests that sellers ought to price these amenities. Our results show that if the seller introduces a low price on the free amenities, there might be an actual increase in demand for these amenities.

There are several interesting directions for future investigation. One is the issue of anonymity. We believe that complete anonymity, where there are no people around, may alleviate some of the social norms leading to the effects we get. Another important issue is whether the results hold with higher incentives. Theory prescribes that as people face greater incentives to deviate from social norms, they would. However, it remains an empirical question.

Table 3  
Experiment 5. Two-way Analysis of Variance, With the Number of Truffles Taken as the Dependent Variable

| Parameter           | Estimate | SE    | p-Value |
|---------------------|----------|-------|---------|
| Intercept           | 1.134    | 0.142 | <.0001  |
| One Cent            | 1.501    | 0.207 | <.0001  |
| Monetary            | 0.103    | 0.205 | 0.618   |
| One Cent × Monetary | 0.789    | 0.295 | 0.008   |

## Appendix

### The "M" Descramble Task

Please write one correct sentence using ONLY FOUR of the words in each line.

For example: went earlier she word swimming = she went swimming earlier

1. Received a raise blue I \_\_\_\_\_
2. I a cashed pen check \_\_\_\_\_
3. Has the capital line he \_\_\_\_\_
4. Received they large city profits \_\_\_\_\_
5. Over create mergers economies efficient \_\_\_\_\_
6. The helps walk competition economy \_\_\_\_\_

### The "S" Descramble Task

Please write one correct sentence using ONLY FOUR of the words in each line.

For example: went earlier she word swimming = she went swimming earlier

1. Is important community blue very \_\_\_\_\_
2. Considering is line fulfilling others \_\_\_\_\_
3. My family I line love \_\_\_\_\_
4. Received make meaningful life friends \_\_\_\_\_
5. Shared cake he his found \_\_\_\_\_
6. Creates important social volunteering progress \_\_\_\_\_

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