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Norm Sensitivity and Preferences for Credence Attributes Elicited in Experimental Auctions:  
The Case of Animal Welfare Information and WTP for Ice Cream

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*Selected Paper prepared for presentation at the 2017 Agricultural & Applied Economics Association Annual Meeting, Chicago, Illinois, July 30-August 1*

# Norm Sensitivity and Preferences for Credence Attributes Elicited in Experimental Auctions: The Case of Animal Welfare Information and WTP for Ice Cream

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## Introduction

Contemporary economic research now recognizes the unique strengths and valuable insights of experimental methods in their ability to test decision and/or game theoretic models and to examine institutional policies and procedures in a controlled environment. Experimental auctions, in particular, have become an increasingly popular value-elicitation method due to the advantages inherent to isolating the effect of information provision. However, traditional models used to analyze auction data assume fixed preferences and tend to ignore the potential impact of external factors imported into the laboratory setting, such as social norms, on bidding behavior. Social norms are socially constructed agreements regarding appropriate or inappropriate behavior (Fehr and Schmidt 1999). Norm sensitivity may influence behavior in social settings, including auctions, especially where individuals differ in the degree to which they suffer from violating social rules. This work evaluates changes in willingness to pay bids after an information treatment containing social norming language, as it pertains to animal welfare standards in the dairy industry, and examines correlation with more generalizable sensitivity around rule-following behavior.

### *An Economic Theory of Social Norms*

Economics is fundamentally defined by its study of the allocation of resources and by its emphasis on cost-benefit analysis as a tool for evaluating allocation decisions. An important assumption of this framework is the idea that rational people respond to incentives that impose additional costs or benefits on the decision framework. In this view, economists must consider how incentives shape all types of social interactions that affect the allocation of resources. One category of incentive-based interactions is those driven by social norms.

Social scientists across many disciplines acknowledge that social norms impact decision making in many important social and economic domains. Norms have an “informational influence”, whereby the appropriate or norm-compliant behavior is promoted by learning of what others believe, thinking about what others are going to do, or by observing others’ actions directly (Berkowitz 1972). In psychology, the classic experiments showing this type of influence involve observing how an individual’s judgment of the length of a line segment varies depending on the responses of other confederates (Deutsch and Gerard 1955; Asch 1956).

In an economic context, norm-compliance must exist within a model of rationality. When people obey norms, the outcome in mind is to avoid the disapproval of other people. Thus, norm-compliant behavior is subject to cost-benefit analysis supported by the threat of social sanctions that make it rational to obey the norm. The incentives presented in the form of sanctions need not be externally exposed, as when norms are internalized they are followed even when violation would be unobserved. Elster (1989) illustrates with the following example:

“When there is a norm to do X, there is usually a "meta-norm" to sanction people who fail to do X, perhaps even a norm to sanction people who fail to sanction people who fail to do X. As long as the cost of expressing disapproval is less than the cost of receiving disapproval for not expressing it, it is in one's rational self-interest to express it.”

Therefore, it might be argued that social norms are utility maximizing in that they help people to economize on decision costs. Integrating norm-compliance into the existing utility framework can help explain observed social behaviors in experimental settings.

### *Norm-dependent Utility in Experimental Settings*

Decades of economic research provide evidence of human sociality in laboratory experiments. Subjects display preferences for egalitarian outcomes, cooperative strategies, and reciprocal behavior even if it is in opposition to the assumptions of the underlying maximization model. The literature also suggests that small changes to the decision

environment and choice set can radically alter the nature and degree of observed social preferences under a norm-dependent utility framework (For a review of the vast literature on this topic see Camerer 2003).

Across different social contexts, preferences that guide norm following behavior remain prevalent, meaning norm dependent utility becomes a constant factor in the way individuals make their choices (Kimbrough 2015). This approach posits that norms are not fundamentally context-dependent, therefore yielding heterogeneous outcomes. If we can measure sensitivity to social norms, even without an existing theoretical model of how they vary across context, we can improve our understanding of preferences that may be socially-driven. Of particular interest to this research team are socially-driven preferences for food products exhibiting varying degrees of animal welfare production standards.

### *Socially-driven Preferences for Food Production Attributes*

Research has found that consumers are more likely to pay price premiums on food products with alternative production attributes if they are altruistically motivated (Sunding 2003) and that there could be extra-utility obtained from the satisfaction of social preferences related to consumption of food products with normative dimensions (Lusk and Norwood 2009). This aligns with a norm-dependent utility framework incorporating moralistic and ethical behavior dimensions.

This study complements and extends the work of Napolitano et al. (2008) and Elbakidze et al. (2012) examining the effect of information about animal welfare on consumer willingness to pay for dairy products. Napolitano et al. (2008) find that information about animal welfare, as it relates to cleanliness and freedom of movement, is a major determinant of consumer willingness to pay for yogurt. Elbakidze et al. (2012) find similar results extended to four different dairy products. Both studies employ experimental auction methodologies.

Due to the advantage of experimental auction methods in isolating the effect of information provision, they have become an increasingly popular avenue for investigating consumer preferences. Their use spans different informational settings across many economic sub-disciplines. A robust literature exists on the design, implementation and evaluation of experimental auctions with a variety of non-market valuation applications (Lusk and Shogren 2007).

To empirically test the effect of information about animal welfare on potentially socially-driven preferences for dairy products, this experimental work employs a rule-following task prior to eliciting willingness to pay through an auction mechanism. The rule following task, adapted from Kimbrough and Vostroknutov (2015), measures preferences for following rules, which is associated with norm-compliant behavior. Therefore, if we believe that preferences for following rules/norms carries over from context to context, those who suffer most disutility from violating rules should exhibit higher proclivity towards norm-compliant behaviors more generally.

### **Experimental Design & Procedures**

University students were recruited for participation in the experiment, informing this work, involving the following general phases:

- 1) Participants complete a survey designed to gather information on demographics and other control variables, such as prior knowledge and general perceptions of dairy industry practices.
- 2) Participants engage in a rule-following task similar to that described in Kimbrough and Vostroknutov (2015).
- 3) Participants submit bids for one serving of ice cream from a well-known regional brand in an experimental auction. Best practices are employed in auction methodology according to the most recent literature.
- 4) Participants are provided generalized negative information about animal welfare practices in the dairy industry, framed to include social preferences and perceptions regarding these practices.
- 5) Participants submit a second round of bids for one serving of ice cream, following the same procedures as the first round of bidding.

## Recruitment & Survey

Subjects were recruited in Fall 2016 through means of flyers and class-based incentives. A link to a website where the subjects could register for the time and date of participation was provided on the flyer. There was also a non-specified cash incentive mentioned.

Upon arrival, subjects were immediately instructed to sit at a desk to read and sign informed consent. At this time, participants were assigned a personal identification number to maintain anonymity for the remainder of the experiment. After all the subjects signed the form, instructions were read aloud on how to proceed to the survey portion of the experiment.

Participants were instructed by the experimenter to complete an online survey that contained questions on demographics, existing knowledge about the dairy industry and individual dairy product consumption habits. Table 1 describes the demographics of the participants recruited for the experiment.

Table 1: Demographics

<b>Sample Size</b>	<b>116</b>
<b>Age (Mean)</b>	20.41
<b>Gender (% Male)</b>	48.28 %
<b>P.O.C. (% Self-Identify)</b>	17.24 %
<b>Liberal (% Self-Identify)</b>	25 %
<b>Frequency of Consumption (0-3)</b>	2.20
<b>Diversity of Consumption (0-6)</b>	3.70

Demographic indicators were collected based on self-identification, including age, gender, ethnicity, and liberal political ideology. Consumption frequency was elicited to include consumption of dairy products never (0), less than once a week (1), several times per week (2), and every day (3). Consumption diversity required participants to select all of the dairy products that they consume out of six choices: milk, creamer, butter, yogurt, cheese, and ice cream.

### *Rule-following Task*

After all participants completed the online survey, the experiment entered the second phase involving a rule-following task.

Kimbrough and Vostroknutov (2015) developed a rule-following task to measure preferences for following rules and norms. Specifically, they told subjects to follow a rule when doing so yielded no monetary benefits, but rather imposed monetary costs proportional to the time spent following the rule. Additionally, breaking the rule came with no monetary cost. A continuous distribution of rule-following proclivity was measured after the independent task, and participants then sorted (without their knowledge) according to norm sensitivity in the next phase of the experiment. In the second phase, Kimbrough and Vostroknutov collected data from social games (public goods, trust, dictator, ultimatum) which are not confounded with contextual cues from the rule-following activity. The authors found that assortatively matched high rule-following groups have different outcomes in the social games than those assortatively matched by low rule-following tendencies.

The rule-following task used for the purposes of this work was adapted from that developed by Kimbrough and Vostroknutov (2015). Participants were read aloud instructions for this phase of the experiment. Each participant was tasked with crossing a series of four simulated streets. A visual representation of a familiar crosswalk sign (including a countdown timer) was projected on the screen at the front of the room. In the simulation, it was assumed that each participant experienced 2 seconds of “walking time” between cross-walks. At each cross-walk the sign read “DON’T WALK” for a total of ten seconds before changing to a symbol for “WALK”.



Figure 1. Cross-walk signs seen by participants

Subjects were endowed with \$5 at the beginning of this phase of the experiment. For each second that passed while completing the task, \$0.10 was deducted from this endowment. Participants were told that the general rule, similar to real-life, was to wait until the sign indicated the symbol for “WALK” to cross the street. Participants were asked to mark on a sheet of paper how long they chose to wait at each cross-walk sign. Thus, a participant that chose to wait the full ten seconds at each cross-walk would take 50 seconds to complete this task, depleting their endowment. A participant that chose never to wait at any cross-walk sign would take 10 seconds to complete this task (in “walking time”), maximizing their earnings at \$4.00, which accounts for the \$5.00 endowment less the \$1.00 cost associated with “walking time”. It was expected that most participants would exhibit behavior in between these two extremes, earning somewhere between \$0.00 and \$4.00 in Phase 2 of the experiment. Table 2 outlines the timing of the rule-following task.

Table 2. Timing of rule-following task

<b>START</b>	Walk Sign	<b>Crosswalk #1</b>	(Walk Sign)	<b>Crosswalk #2</b>	Walk Sign	<b>Crosswalk #3</b>	Walk Sign	<b>Crosswalk #4</b>	Walk Sign	<b>END</b>
<b>Time</b>	2 sec	10 sec	2 sec	10 sec	2 sec	10 sec	2 sec	10 sec	2 sec	

Each participant’s completion time (minimum of 10 seconds, maximum of 50 seconds) was used as a continuous variable indicator of “rule-following proclivity” for subsequent analysis. The longer a subject took to complete the task, the more they followed the rule, despite the cost associated with it.

### *Experimental Auction*

At the conclusion of the rule-following activity, the experiment entered its third phase during which auction instructions were read aloud with an emphasis on the non-hypothetical nature of the auction outcome. The auction mechanism chosen for this experiment was the traditional second-price (Vickrey) auction, in which the highest bidder wins the product and pays the second highest price. The Vickrey auction is incentive-compatible and should therefore produce behavior in which each participant bids their true value for the product being auctioned.

The product available for purchase was a single cup of Ben & Jerry’s ice cream. Each participant was endowed with an additional \$5.00 for this phase of the experiment, then randomly assigned to a group of 4-6 people against whom they would be anonymously bidding in all subsequent rounds. Participants submitted bids, via bid sheets, in a practice round followed by five consecutive rounds with feedback on the second highest price provided between rounds. At the conclusion of all five rounds, one round was selected as binding for payment with the aid of an online random number generator.

Each participant that bid the highest bid from their randomly assigned group in the binding round won the auction and paid the second highest bid in their group that round in exchange for one cup of Ben and Jerry’s ice cream. The winning participant kept the difference between the \$5.00 endowment and the price paid for the ice cream. All other non-winning participants kept the \$5.00 endowment and did not purchase any ice cream. Note, these transactions were delayed until the end of the entire experiment.

### *Information Treatment on Animal Welfare Standards*

Immediately following the first auction, subjects were provided information in the format of a digital media clip followed by several “norming” statements, regarding social preferences and perceptions of dairy industry animal welfare practices

projected onto the front screen. The digital media clip (2:32 minutes) was produced and aired by ABC News in 2010. It involved graphic (hidden camera) footage suggesting dairy cows may be subjected to cruel practices such as crowded and filthy living conditions, perpetual impregnation, and tail docking. The norming statements included:

- How dairy cows are treated is important to many people and influences their purchase decisions.
- Many people believe the animal welfare standards currently in place are not providing adequate care for dairy cows.
- Many people believe the dairy industry need to change its animal welfare standards.

Literature reflects that animal welfare practices can have a significant effect on willingness to pay for dairy products. For example, Napolitano et. al. (2008) conduct a similar experiment using information given on yogurt labels to the consumers. These labels contained material pertaining to the standards that the dairy cows were subjected to, measured on a five-point scale (from very poor to very good). From there, consumers refocused their WTP to the trend of their expectations of the yogurt. Napolitano concludes that with higher quality dairy goods, WTP will always decrease when there is information regarding negative treatment of dairy cows and always increase when there is positive information concerning dairy cow welfare.

Lusk and Norwood (2008) run a series of similar experiments in which various valuation methods to elicit willingness to pay for animal welfare attributes are examined. One of these experiments uses a hybrid auction valuation method, linking valuation to utility through a mathematical relationship, to elicit willingness to pay for pork and eggs. Over time, this hybrid model produced consistent results. Consumers were willing to pay more for both eggs and pork that were pasture raised as opposed to eggs and pork subjected to permanent confinement.

In a similar experiment, Lusk and Norwood (2011a) continue using auctions to value animal welfare attributes. They determined that producers will not recognize increased animal welfare as productive even when proper treatment yields larger quantities of that good. Farmers tend to ignore that increasing welfare would increase productivity of the marginal animal while instead primarily focusing on maximizing profits by minimizing the costs of inputs. They conclude that many consumers are unaware of the current practices of farming industries. However, when informed, the willingness to pay for these goods associated with appropriate animal welfare surpasses what they actually cost in the market.

In a third study, Lusk and Norwood (2011b) explain that animal welfare is a growing concern among consumers, although determined to be partly motivated by personal benefit. Consumers often associate higher standards of care with higher quality goods. Thus, willingness to pay increases when animal welfare attributes valued are improved. On the other hand, Lusk and Norwood consider the idea that even those who do not consume meat would increase their willingness to pay to see higher welfare standards implemented. Thus, human utility of non-meat/dairy eaters can also be affected when choices are made concerning animal welfare practices.

## **Preliminary Results**

The researchers hypothesized that participants with a greater degree of sensitivity to social norms would exhibit amplified bid decreases as a result of the negative information treatment than those less sensitive to norming. Therefore, participants that exhibit high rule-following proclivity, as measured in the first experimental task, are expected to decrease their bids for ice cream by a larger magnitude than those with low rule-following proclivity, as a result of the negative information treatment about animal welfare standards.

## Rule-Following Distribution

Figure 2: Distribution of Total Wait Time at Cross Walks

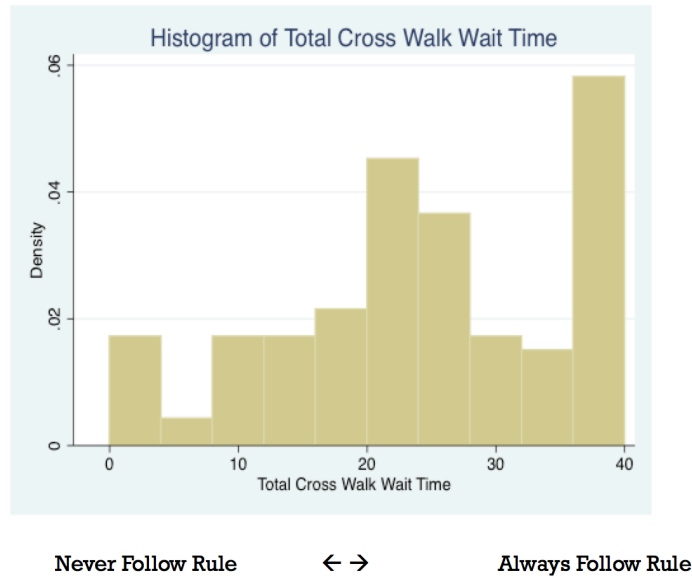


Figure 2 indicates the distribution of wait times for all 116 participants. Each subject's total wait time was determined by a series of four choices they made about how long to wait at a "DON'T WALK" sign before crossing each street in the experimental simulation, ranging from 0 seconds to 40 seconds. The average total wait time for all participants was 24 seconds. Seven participants chose never to wait at any cross-walk, yielding a total wait time of 0 seconds. Twenty participants chose to wait the full ten seconds at each of the four cross-walks, yielding a total wait time of 40 seconds.

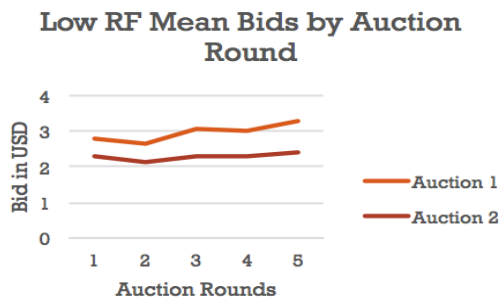
### *Willingness to Pay for Ice Cream*

Figure 3 shows the mean bid for both auctions (pre and post information treatment) for each of three categories of rule following proclivity. The categories of rule-following proclivity were determined by a range of total wait time, such that Low RF (0-20 seconds), Mid RF (20-30 seconds), and High RF (30-40 seconds). Due to the inclusion of price-feedback, bids increased slightly over rounds, but remain relatively stable. The data indicate that on average, all participants decreased their bids on ice cream following the negative information treatment.

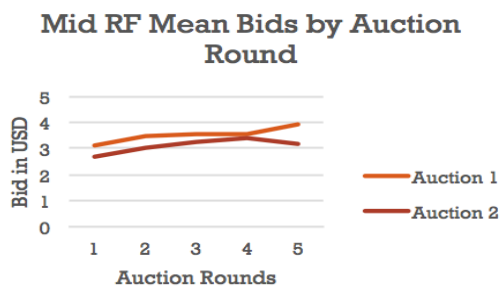
Table 3 outlines the average wait time and magnitude of bid decrease, as a percentage difference between the subject's bid in the auction pre-information treatment and their bid in the auction post-information treatment. Figure 4 represents the average decrease in bids in a histogram.



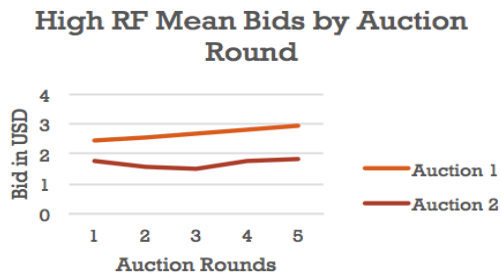
Figure 3: Mean Bids Over Rounds by Rule Following Proclivity



**Low RF**  
**Total Wait Time < 20 sec**



**Mid RF**  
**Total Wait Time < 30 sec**

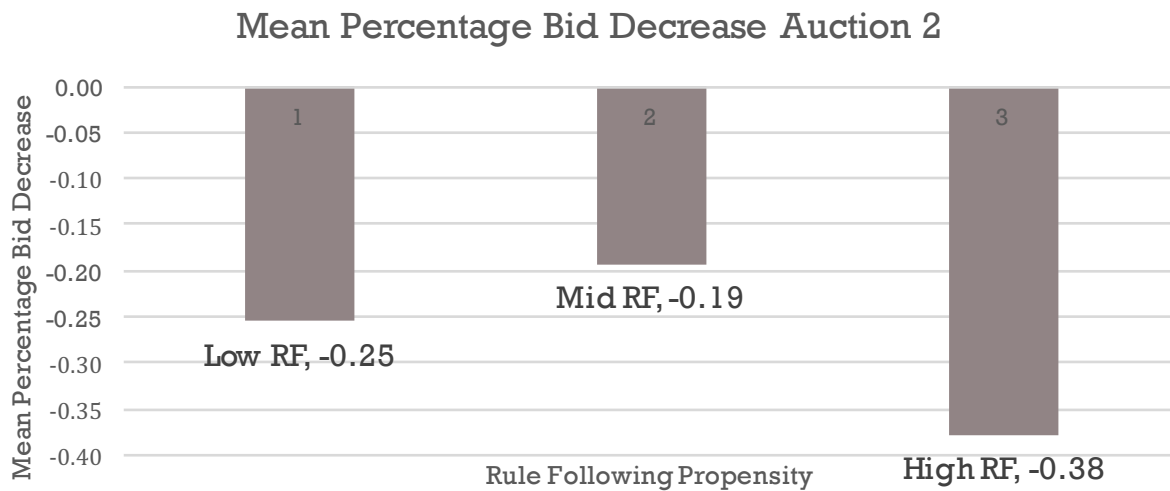


**High RF**  
**Total Wait Time ≤ 40 sec**

Table 3. Average Wait Time and Bid Decrease for Three Rule-Following Proclivities

RF Propensity	N	Wait Time Mean	Mean Bid Decrease (%)	WTP = \$0 in Auction 2	WTP No Change
<b>Low RF (<math>0 \leq CW &lt; 20</math>)</b>	36	10.47	-25%	19.4%	25%
<b>Mid RF (<math>20 \leq CW &lt; 30</math>)</b>	44	23.61	-19%	2.2%	27%
<b>High RF (<math>30 \leq CW \leq 40</math>)</b>	36	37.9	-38%	19.4%	25%

Figure 4: Mean Percentage Bid Decrease Post-Information Treatment



When participants are grouped into three rule-following proclivities, the subjects with the highest rule-following proclivity (wait time between 30-40 seconds) exhibit the largest percentage bid decrease of 38%. The subjects with the lowest rule-following proclivity (wait time less than 20 seconds) exhibit the second-highest percentage bid decrease of 25%. All three groups had about a quarter of participants who did not change their bid after the information treatment. The highest and lowest rule-following groups had roughly 20% of their participants bid zero following the information treatment.

An unexpected outcome from this grouping was that the participants with mid-level rule-following behavior (between 20-30 seconds) exhibited the smallest bid decrease and also had a negligible percentage of participants bid zero after the information treatment. This unusual result led the researchers to examine participant behavior again, accounting for extreme rule-following behavior for those that never waited (0 seconds) and those that always waited (40 seconds).

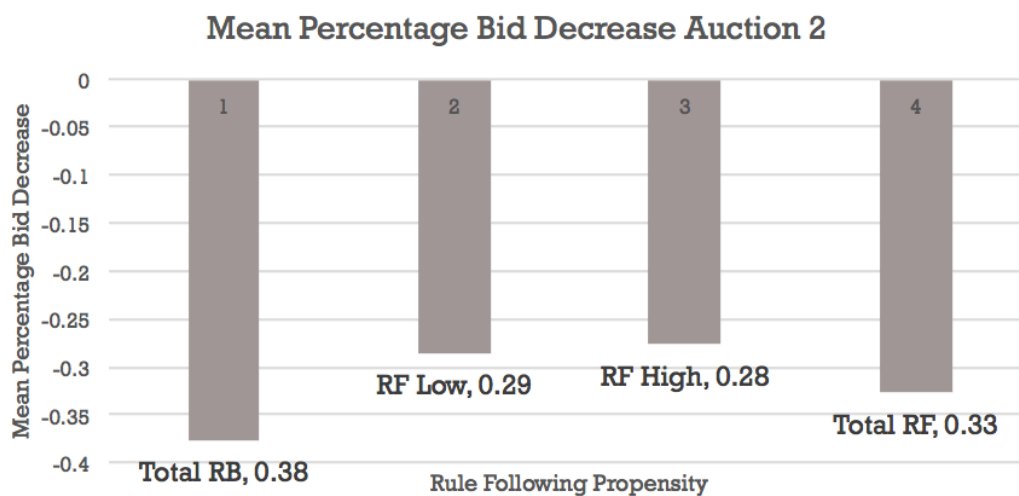
Four categories of rule-following proclivity were re-defined by a range of total wait time, such that Total Rule Breakers never waited at any cross walk (0 seconds), Rule Breakers followed the rule less than the average wait time of 24 seconds (1 – 24 seconds), Rule Followers followed the rule more than the average wait time of 24 seconds (25 – 39 seconds) and Total Rule Followers waited the full time at every cross walk (40 seconds).

Table 4 outlines the average wait time and magnitude of bid decrease, as a percentage difference between the subject’s bid in the auction pre-information treatment and their bid in the auction post-information treatment. Figure 5 represents the average decrease in bids in a histogram.

Table 4. Average Wait Time and Bid Decrease for Four Rule-Following Proclivities

RF Propensity	N	Wait Time Mean	Mean Bid Decrease (%)	WTP = \$0 in Auction 2 % (n)	WTP No Change % (n)
<b>Total Rule Breakers (CW = 0)</b>	7	0	-38%	15% (1)	29% (2)
<b>Rule Breakers (1 &lt; CW ≤ 24)</b>	56	17.57	-29%	12.5% (7)	21% (12)
<b>Rule Followers (25 &lt; CW &lt; 39)</b>	29	30.44	-28%	14% (4)	31% (9)
<b>Total Rule Followers (CW = 40)</b>	20	40	-33%	15% (3)	20% (4)

Figure 5: Mean Percentage Bid Decrease Auction 2



When participants are grouped into four rule-following proclivities, the Total Rule Breakers exhibit the largest percentage bid decrease of 38%. The Total Rule Followers exhibit the second-highest percentage bid decrease of 33%. The participants that did not exhibit extreme rule-following behavior in either direction exhibited the lowest percentage bid decrease of 28-29%.

## Interpretation, Questions and Future Directions

Participants with high proclivity towards rule-following appear to exhibit a larger percentage bid decrease on average as a result of a negative information treatment with a social-norming context than those with mid-level rule-following behavior. However, people with especially low rule-following proclivity appear to exhibit the highest percentage bid decrease. Additional econometric analysis will be employed to explore these effects further using a statistical model. Yet, two important questions remain to be explored:

- 1) A colleague suggested the presence of the “moral compensation effect” in which participants faced with two or more tasks in an experimental setting, each with a perceived moral component, may compensate for “immoral” behavior in one task with exaggerated “moral” behavior in the other.

In the context of this experiment, this suggests that perhaps those subjects considered Total Rule Breakers understood their decision to never wait at any cross walk to be an “immoral” one. Perhaps they compensated for this “immoral” behavior by decreasing their bids by a larger percentage following a negative information treatment. The potential presence of the moral compensation effect suggests a significant bias in the form of the observer-expectancy effect. That is, a bias introduced into the experiment because the participant understands that there is an expectation on behalf of the researcher, although not explicitly stated, that a negative information treatment should decrease bids.

- 2) Further, questions arise around the necessity of making a distinction between “social” and “moral” norms.

Charness and Schram (2013) define each accordingly:

*A social norm exists when individuals seek approval from their peers, and thus this type of norm requires a common consensus on what is the most social appropriate behavior.*

*A moral norm exists when individuals follow a rule in order to avoid internal emotional reaction, and thus this type of norm requires introspection.*

In the context of this experiment, it could be argued that the rule-following task is eliciting preferences for social norms, while the auction bids are eliciting preferences for moral norms. The literature is undecided on the extent to which these two types of norms are related when applied to observed behaviors. Moreover, there are many in the experimental psychology academic community who deny the importance of a distinction between the two.

The team plans to run additional experiments, incorporating several new treatments:

- Negative versus Positive Information Treatment
- Participants Sorted Versus No Sorting
- Rule Explicit Versus Inferred

Furthermore, the team would like to examine this effect in the absence of a specific context. Thus, a similar design would be employed utilizing induced value auctions.

The application of experimental economics to food choices is well-researched and the foundational methods of value elicitation fairly routine. This work aims to challenge the existing set of methods by stimulating conversation surrounding the assumption of fixed preferences. Specifically, it is anticipated that this work will inspire fresh discussion about the impact of the decision environment on food choice regarding the role of social norms in laboratory-based value-elicitation. The primary hypothesis driving this research is that individuals with a high proclivity for rule-following behavior may be especially sensitive to social-norming introduced through laboratory-based information treatments; the implications of which are not only relevant to methodological practice, but also to food policy designed to provide the consumer with information at point of purchase, such as labeling and certification.

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