Available online at www.centmapress.org

INTERNATIONAL JOURNAL ON FOOD SYSTEM DYNAMICS

Int. J. Food System Dynamics 12 (1), 2021, 19-36

DOI: http://dx.doi.org/10.18461/ijfsd.v12i1.73

The Impact of a Visual Cheap Talk Script in an Online Choice Experiment

Jade Ellis, Karen L. Delong, Kimberly L. Jensen, and Andrew P. Griffith

Department of Agricultural and Resource Economics
University of Tennessee, 302 Morgan Hall, 2621 Morgan Circle, Knoxville, TN 37996-4518, USA
jellis47@vols.utk.edu; kdelong39@utk.edu; kjensen@utk.edu; agriff14@utk.edu.

Received August 2020, accepted December 2020, available online February 2021

ABSTRACT

Hypothetical bias causes willingness to pay (WTP) values to be inaccurate and is a prevalent issue in choice experiments. Research has shown that a "cheap talk" script may reduce hypothetical bias; however, it is uncertain which cheap talk script format is the best at controlling hypothetical bias. Therefore, we conduct a choice experiment using a between-subjects design in which half of the participants saw a "visual" cheap talk script and half saw a "text" cheap talk script prior to the choice sets. Random parameter logit model results indicate hypothetical bias was more prevalent when participants saw the visual cheap talk script compared to the more conventional text cheap talk script. Text learners also appeared to be less prone to hypothetical bias than visual learners.

Keywords: *Cheap talk, willingness to pay, visual and verbal learners*

1 Introduction

Several approaches exist for eliciting consumer willingness to pay (WTP) for products including choice experiments (e.g., Merritt et al., 2018; Syrengelas, DeLong, Grebitus, & Nayga, et al., 2018; Lewis, Grebitus, Colson, & Hu, 2017; Lewis, Grebitus, & Nayga, 2016a), experimental auctions (e.g., Lewis, Grebitus, & Nayga, 2016b), and the contingent valuation method (Dobbs et al., 2016). However, it is possible for WTP to be overstated in hypothetical situations since consumers are not actually bound by their decisions to purchase the products in question (Andor, Frondel, and Vance, 2017). This overstatement is referred to as hypothetical bias.

Cummings and Taylor (1999) refer to hypothetical bias as the difference between real and hypothetical valuation. Andor, Frondel, and Vance (2017) also state that WTP estimates in hypothetical situations are substantially overstated. Techniques including cheap talk scripts (Cummings and Taylor, 1999; Tonsor and Shupp, 2011), consequentiality (Herriges, Kling, Liu, & Tobias, 2010; Vossler, Doyon, & Rondeau; Lewis et al., 2016a) and honesty priming (de-Magistris, Gracia and Nayga, 2013) have been developed to help reduce or eliminate hypothetical bias. Non-hypothetical experiments are ideal; however, hypothetical choice experiments are preferred due to time commitments and added expenses associated with non-hypothetical choice experiments (de-Magistris, Gracia and Nayga, 2013).

Cummings and Taylor (1999) were among the first to use a cheap talk script to reduce hypothetical bias, and Tonsor and Shupp (2011) were the first to assess a cheap talk script's effectiveness in an online choice experiment. However, there is limited literature studying the effects of the presentation format of a cheap talk script in an online choice experiment. While research has been conducted examining differences in cheap talk length on WTP estimates (Silva et al. 2011; Ladenburg, Bonnichsen, and Dahlgaard, 2011), research was not located examining how a visual oriented cheap talk script affects consumer WTP. Since previous research has found visual compared to verbal attributes can impact consumer preferences in choice experiments (e.g., Mueller, Lockshin, and Louviere, 2010; Bateman et al., 2009; Shr et al., 2019; Tarfasa et al., 2017), we expect visual versus verbal presentation format of the cheap talk script to also have an impact on consumer WTP.

In this study, we analyze the difference between a visual cheap talk script compared to a verbal (text) cheap talk script in an online choice experiment. We utilize a between-subjects design in which half of the participants in an online choice experiment see a strictly text cheap talk script (Text Treatment) and half of the participants see a more visual oriented cheap talk script (Visual Treatment) prior to choice set completion. Since previous research suggests that hypothetical bias typically results in participants overstating their WTP (Andor, Frondel, and Vance, 2017; Tonsor and Shupp, 2011; Ladenburg, Bonnichsen, and Dahlgaard, 2011; Carlsson et al., 2005; Lusk 2003), we assume that the treatment with the lower WTP estimates is associated with less hypothetical bias. Research found that visual attributes in a choice experiment were likely associated with less hypothetical bias (Bateman et al., 2009; Tarfasa et al, 2017; Shr et al., 2019). Thus, we hypothesize that the Visual Treatment WTP will be lower than the Text Treatment WTP and, thus, hypothetical bias will be reduced in the Visual Treatment, as hypothesized in (a):

(a) H_0: Visual Treatment WTP < Text Treatment WTP.

Since learning style is also associated with differences in cognitive abilities (e.g., Richardson, 1977; Mayer and Massa, 2003), we further hypothesize that participants will have lower WTP estimates (reduced hypothetical bias) when the cheap talk script is presented in the format associated with their preferred learning style. For example, if a participant considers themselves to be a visual learner, it is hypothesized their WTP estimates will be lower when they see a visual cheap talk script compared to a text cheap talk script. This is because we assume that visual and verbal learners will best respond to a cheap talk script that is presented in the way in which they best learn. Massa and Mayer (2006) also hypothesized that visual learners would learn better using pictorial help screens and verbal learners would learn better using text help screens. However, they did not find evidence to support their hypothesis. Nonetheless, for the Visual Treatment, we hypothesize the following in hypothesis (b):

(b) H_0: In the Visual Treatment, Visual learners WTP< Text learners WTP.

Alternatively, our hypothesis (c) within the Text Treatment is

(c) H_0: In the Text Treatment, Text learners WTP< Visual learners WTP.

The remainder of the manuscript is organized as follows. First, we further review the literature on hypothetical bias and visual versus verbal learners. Next, we discuss our methods and finally we present our results, discussion, and conclusions.

2 Literature Review

2.1 Controlling for Hypothetical Bias

Cheap talk, consequentiality and honesty priming have all been suggested as ways to control hypothetical bias when estimating WTP. Policy consequentiality posits that survey participants believe their results may affect an outcome (Lewis et al., 2016; Vossler et al., 2012). Vossler, Doyon, and Rondeau (2012) used policy consequentiality to determine consumer WTP for different tree row planting scenarios through a field experiment. They found policy consequentiality to be more important than the "real versus hypothetical" distinction when gauging the criterion validity of surveys. Lewis, Grebitus, and Nayga (2016) examined consumer WTP for domestic and foreign sugar and genetically modified labeled sugar using policy consequentiality through an online choice experiment. Their results showed that when survey respondents found their responses as consequential, they were more likely to choose a product in the choice set.

Honesty priming was assessed by de-Magistris et al. (2013) to determine whether it could be used as a technique to mitigate or eliminate hypothetical bias in choice experiments. Honesty priming is similar to the social psychology technique solemn oath, which is a mechanism to ask participants to "provide honest answers prior to participating in a second-price auction" (de-Magistris et al., 2013). Targeting consumers who were the primary food buyer of their household, the survey split respondents into two treatments: hypothetical choice experiment and non-hypothetical choice experiment. This was done to see if the honesty priming actually mitigated the hypothetical bias. Honesty priming was found to reduce hypothetical bias in hypothetical choice experiments, however, values from the hypothetical choice experiment were not statistically different from the non-hypothetical choice experiment (de-Magistris et al., 2013). Cummings and Taylor (1999) refer to a cheap talk script as a way of mitigating hypothetical bias. Lusk (2003) interprets a cheap talk script, in the context relevant to our study, as a "nonbinding communication between a researcher and survey respondent prior to administration of a hypothetical WTP question". The cheap talk script in this study is used as an *ex ante* correction approach, meaning it is applied before the choice experiment. Cheap talk scripts were initially implemented by Cummings and Taylor (1999). Using four public goods, which were contributions to four different non-profit environmental organizations, they found that cheap talk reduced hypothetical bias in three of the goods. Cummings and Taylor examined this issue using the contingent valuation method with three different treatments (non-hypothetical treatment, hypothetical treatment, and hypothetical with cheap talk treatment) to determine if there was a significant difference between each treatment. The hypothetical treatment and hypothetical with cheap talk treatments were found to be significantly different. Meanwhile, the hypothetical treatment with cheap talk was not found to be significantly different from the non-hypothetical treatment.

Lusk (2003) used cheap talk prior to a conventional value elicitation technique to determine the WTP for golden rice, however, the cheap talk script did not reduce WTP for experienced/knowledgeable consumers, who were those who knew about golden rice and genetically modified foods. However, the cheap talk script significantly reduced WTP for unknowledgeable consumers. Therefore, Lusk could not conclude that the cheap talk effectively removed hypothetical bias. Champ, Moore, and Bishop (2009) also found knowledgeable respondents in their study to be less sensitive to the cheap talk script.

Carlsson et al. (2005) studied the effects of a cheap talk script on the marginal WTP in a choice experiment through a mail survey mailed to consumers, and found seven of the ten attributes of beef and chicken tested were significantly less valued when the cheap talk script was used. They concluded that choice experiments may suffer from hypothetical bias and that inclusion of a cheap talk script prior to a choice experiment can decrease the degree of inflated WTP values (Carlsson et al., 2005).

The first known assessment of a cheap talk script in an online choice experiment setting was studied by Tonsor and Shupp (2011). Comparing hypothetical WTP from respondents who received the cheap talk information and those who did not, Tonsor and Shupp (2011) found that cheap talk scripts produce more reliable estimates, such as narrower confidence intervals. They also found that the cheap talk scripts worked better on respondents who were unfamiliar with the attribute being evaluated (Tonsor and Shupp, 2011).

Silva et al. (2011) tested a generic, short, and neutral cheap talk script in a field experiment to elicit retail consumer's WTP. The cheap talk they used is different than previous cheap talk scripts, because they used a generic script that didn't refer to the product; made it shorter to be more appropriate for a field experiment; and did not use "higher" or "overstate" to avoid bias from a certain side (Silva et al., 2011). Their results indicate that hypothetical bias was present, and their cheap talk script eliminated hypothetical bias. Ladenburg, Bonnichsen, and Dahlgaard (2011) also tested the effectiveness of a short cheap talk script in their study and found the script did reduce WTP, but it did not affect it in a significant way.

2.2 Visual versus Verbal Learners

Richardson (1977) presented the verbalizer-visualizer questionnaire, which measures individual differences based on visual versus verbal cognitive styles. The visualizer-verbalizer hypothesis states that some people are better at processing words (verbal learner) while some people are better at processing pictures (visual learner) (Mayer and Massa, 2003). Plass et al. (1998) examined individual differences in learning preferences between visualizers versus verbalizers. Riding (2001) considers a major dimension of cognitive style is that of visual versus verbal learners. Mayer and Massa (2003) examined the hypothesis of visual versus verbal learners using 14 cognitive measures. Using factor analysis, they found these measures loaded into one of four factors: cognitive style, learning preference, spatial ability, and general achievement. Massa and Mayer (2006) provided individuals lessons using text help screens (text group) or illustration help screens (pictorial group) to prepare them for a learning test. However, they found no evidence that visual or verbal learners performed differently on the learning test regardless of how they received lessons.

Bateman et al. (2009) used a split-sample experiment to compare standard choice set presentation format to one that was combined with virtual reality (VR) visualizations of the attributes. They found that consumer preferences in the VR treatment were less variable and exhibited a significant reduction in the difference between willingness to accept and WTP values. They concluded that the VR treatment reduced participant judgement error. Shr et al. (2019) examined how images influence survey responses. Particularly, they used a split-sample choice experiment to determine how image versus text attribute representation impacted consumer preferences. They found that respondents ignored fewer attributes when both images and text were provided. Tarfasa et al. (2017) used a split-sample choice experiment approach where half of the participants were provided with visual aids. They found that the visual aids helped to increase attention to the choice experiment characteristics.

Mueller, Lockshin, and Louviere (2010) used best-worst scaling and a discrete choice experiment (DCE) to evaluate the difference in visual and verbal attributes on wine packaging. They found that visual attributes were less important than verbal attributes in their best-worst scaling experiment. However, in their DCE they found that visual packaging cues had higher variance than verbal cues. More recently, Rihn, Wei, and Khachatryan (2019) found when considering eco-labels, logos captured more visual attention of participants (as measured by eye tracking) than text labels. Further, the visual attention to the logos increased respondents' bids for the eco-labels, while visual attention to the text decreased their bids. We contribute to this literature by examining how the visual versus verbal format of a cheap talk script impacts consumer WTP for steak. We accomplish this by separating participants into either a visual cheap talk treatment (Visual Treatment) or a verbal (text) cheap talk treatment (Text Treatment). Within each treatment, we further evaluate differences between visual and verbal learners' WTP estimates for various steak attributes.

3 Methods and Procedures

3.1 Survey Design

An online choice experiment using Qualtics was used to obtain consumer WTP for USDA Choice boneless ribeye steaks consisting of labels related to a hypothetical Tennessee Certified Beef (TCB) Program. Each survey participant was a Tennessee resident over the age of 18, the primary purchaser of beef in their household, and consumed steak. A between-subjects design was utilized in which half of the participants were sorted into a Text Treatment and half of the participants were sorted into a Visual Treatment. In the Text Treatment, participants saw the following cheap talk script following Tonsor and Schupp (2011), prior to the TCB choice sets:

"The experience from previous similar surveys is that people often state a higher willingness to pay than what one is actually willing to pay for the good. For instance, a recent study asked people whether they would purchase a new food product similar to the one you are about to be asked about. This purchase was hypothetical (as it will be for you) in that no one actually had to pay money when they indicated a willingness to purchase. In the study, 80% of people said they would buy the new product, but when a grocery store actually stocked the product, only 43% of people actually bought the new product when they had to pay for it. This difference (43% vs. 80%) is what we refer to as hypothetical bias.

Accordingly, it is important that you make each of your upcoming selections like you would if you were actually facing these exact choices in a store, i.e., noting that buying a product means that you would have less money available for other purchases."

Participants in the Visual Treatment saw the cheap talk script shown in Figure 1. This methodology was utilized since the goal of this study is to determine if the cheap talk script presentation format causes differences in WTP estimates.

(While the choices you are about to make are purely hypothetical, please make your choices as though you are at a store and you actually have to pay money for these products. Remember, buying a product means that you would have less money available for other purchases).

Figure 1. Visual Cheap Talk Script

After choice set completion, participants answered demographic information and completed the Santa Barbara Learning Style Questionnaire (Mayer and Massa, 2003). The Santa Barbara Learning Style Questionnaire was used to distinguish between visual and verbal (text) learners in our study. A 7-point Likert scale question on this scale asked participants to indicate their level of agreement or disagreement that they prefer to learn verbally (1=strongly disagree to 7=strongly agree). We used this question to separate our sample into "verbal (text)" and "visual" learners. A score of four on this scale corresponds to a participant who "neither agrees or disagrees" that they prefer to learn verbally. Thus, we considered those with a score of four or lower visual learners. If an individual had a score of five on the scale, they slightly agreed that they preferred to learn verbally, with a score of six they moderately agreed, and with a score of seven they strongly agreed that they preferred to learn verbally. Thus, participants who had a score of five or higher on this scale were considered to be "verbal (text)" learners, while participants who had a score of four or lower on this scale were considered to be "visual" learners.

3.2 Choice Set Design

Table 1 shows the attribute and attribute levels for the USDA Choice boneless ribeye steak choice set. Price levels ranged from \$5.99/lb to \$11.99/lb. The price levels were chosen based on the USDA National Retail Report for Beef (2016) Southeast Region average prices for boneless ribeye steaks at the time the survey was launched. Other attributes included Tennessee Certified Beef (TCB), Master Quality Raised Beef (MQRB), and quality assurances (Merritt et al. 2018). The design was such that each steak would have a price, would either be labeled as TCB beef or not contain this label, would be labeled as MQRB or not have this label and would carry one of the three quality assurance labels (Certified Angus Beef, grass-fed, no hormones administered) or not carry a quality assurance label. Thus, each steak contained a price and up to three other labels.

Figure 2 shows how the choice set was presented to participants. The participant could choose one of two steaks or choose "neither" product in the choice set. The steak attributes appeared next to the photo of the steak. Several other researchers have presented choice set attributes using this type of format (Lusk, Roosen and Fox, 2003; Loureiro and Umberger, 2007; Gao and Schroeder 2009; Lim et al. 2013).

Table 1.
Attribute Description and Levels for USDA Choice Boneless Ribeye Beef Steak

Attributes	**Attribute Levels**
Price	$5.99/lb
	$7.99/lb
	$9.99/lb
	$11.99/lb
Tennessee Certified Beef	Tennessee Certified Beef
	No Tennessee Certified Beef Label Present
Master Quality Raised Beef	Master Quality Raised Beef
	No Master Quality Raised Beef Label Present
Quality Assurance	Certified Angus Beef
	Grass-fed
	No hormones administered
	No Quality Assurance Label Present

Note: Price levels were based on the average weighted price for each beef product obtained from the National Retail Report for beef from the USDA at the time the survey was launched

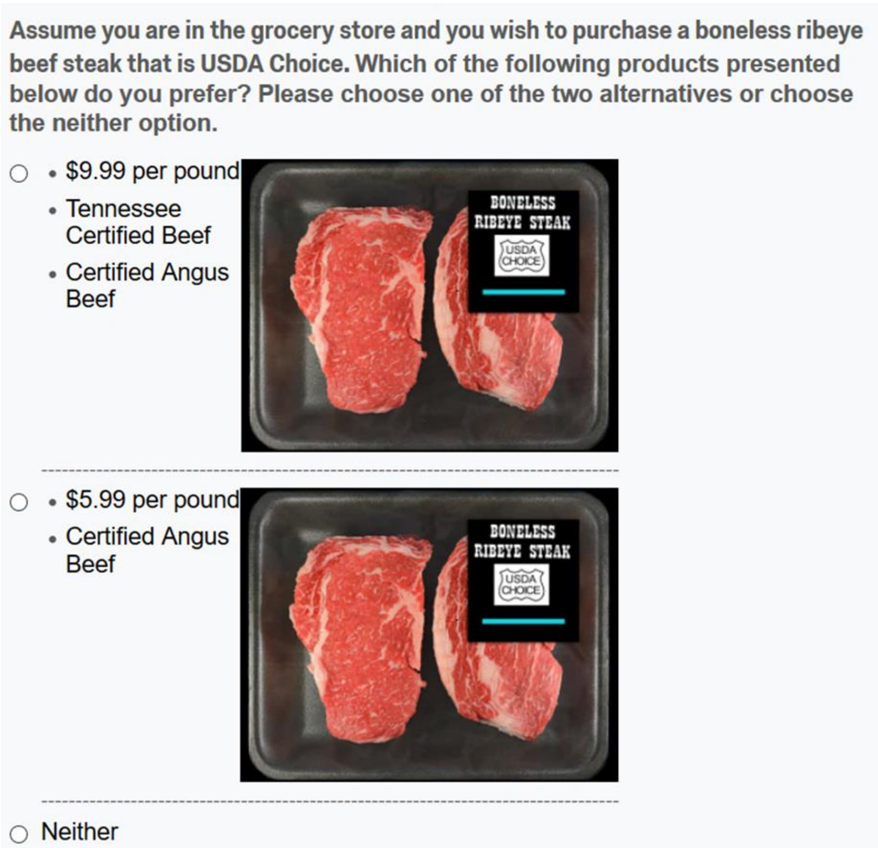


Figure 2. Choice Set Example

Survey wording and content pretesting occurred from April through August 2016 with 20 undergraduate and graduate students at the *Omitted for Review* University. A sequential-stage approach following Scarpa, Campbell, and Hutchinson (2007) and Scarpa et al. (2013) was used to develop the choice set design. First, an Ngene orthogonal design with interaction terms was developed (ChoiceMetrics, 2016). In September 2016, a soft launch of the survey using 80 Tennessee consumers took place through a

Qualtrics panel. Survey participants answered the choice sets that were developed using the Ngene orthogonal design. The data collected from this soft launch was used to estimate a random parameter logit (RPL) model with interaction terms. The estimated coefficients from the RPL model were then used as priors to estimate an Ngene efficient design with interaction terms (ChoiceMetrics, 2016). The design chosen was the most efficient given the number of choice sets and blocks based on minimizing D-error (ChoiceMetrics, 2016).

The survey contained two blocks and twelve choice sets within each block. To avoid fatigue effects, only twelve choice set questions were seen by each participant (Savage and Waldman, 2008). The choice sets were randomized to avoid ordering effects (Loureiro and Umberger, 2007). Following random utility theory, it is assumed that all survey participants in each choice set chose the product that maximizes their utility given their budget (Adamowicz et al., 1998).

3.3 Model Estimation

Random utility models are used to estimate the factors that impact consumer choices. They allow the utility a consumer receives from either choosing an item or not choosing an item to be estimated (McFadden, 1974). Random utility theory was used in this study to determine Tennessee consumer's preferences for TCB, CAB, MQRB, GF, and NH beef. A linear random utility framework was applied to determine the utility each survey participant received from each beef alternative *j,* within each choice set, *c.* Survey participants *n* (1,….,*n*) faced at total of 12 choice sets, *c*, regarding USDA Choice boneless ribeye steaks. Following Train (2009), the utility maximizing equation for each individual *n* for each beef attribute *j* in each choice set, *c*, can be represented by:

$$(1)\ U_{njc} = \beta_n X_{njc} + \varepsilon_{njc}$$

where X_{njc} are the observed attributes that relate to alternative *j* and decision maker *n* for each choice set, *c*, β_n is a vector of coefficients of these variables for individual, *n*, which represents the consumer's tastes, and ε_{njc} is a random error term that is independent and identically distributed (iid) extreme value (Train, 2009).

To estimate the model, the random parameters logit model (RPL), also known as a mixed logit model, was used to calculate the parameter estimates for the non-interaction and interaction terms. The RPL model was used due to the fact it "allows for correlation in unobserved factors over time, random taste variation, and unrestricted substitution patterns" (Revelt and Train, 1998; Train, 2009). It also allows for taste heterogeneity in preferences across consumers by "specifying the attribute coefficients as random, which reflects heterogeneity of individual consumer's preferences" (Revelt and Train, 1998). Due to the likelihood that there is unobserved heterogeneity present in Tennessee consumer preferences for steak carrying different attribute labels, a RPL model was chosen for this study.

The following expands equation (1) to include the beef attributes being evaluated in this study:

$$\begin{aligned}(2)\ U_{njc} = {} & \beta_0 Price_{njc} + \beta_1 TCB_{njc} + \beta_2 CAB_{njc} + \beta_3 MQRB_{njc} + \beta_4 GF_{njc} + \beta_5 NH_{njc} \\ & + \beta_6 TCB_{njc} * CAB_{njc} + \beta_7 TCB_{njc} * MQRB_{njc} + \beta_8 TCB_{njc} * GF_{njc} \\ & + \beta_9 TCB_{njc} * NH_{njc} + \beta_{10} NEITHER_{njc} + \varepsilon_{njc}\end{aligned}$$

where *Price* represents the price of one beef alternative *j*, *TCB* represents the dummy variable equal to one if the beef alternative *j* was labeled as TCB and zero if it was not, *CAB* represents the dummy variable equal to one if the beef alternative *j* was labeled as CAB and zero otherwise, *GF* represents the dummy variable equal to one if the beef alternative *j* was labeled as grass fed and zero otherwise, *NH* represents the dummy variable equal to one if the beef alternative *j* was labeled as NH, and zero otherwise, and *MQRB* represents the dummy variable equal to one if the beef alternative *j* was labeled as MQRB and zero otherwise. This equation includes the interactions between *TCB* and each of the other possible attributes. An example of an interaction variable would be *TCB * GF* which represents the dummy variable equal to one if the beef alternative *j* was labeled as both TCB and GF, and zero if it was not. *Neither* is the dummy variable that is equal to one if the participant chose the alternative specific constant option and zero otherwise. This equation was also used in the (Merritt et al., 2018) study.

3.4 Willingness to Pay Estimation

WTP estimates for non-interaction terms were calculated using the following equation:

$$(3)\ WTP_{non-interaction} = \frac{\beta_k}{-\beta_0}$$

where β_k is the specific attribute such as TCB or MQRB, and β_0 is the price coefficient. The variance equation for the non-interaction WTP was obtained through Daly, Hess, and De Jong (2012). The non-interaction variance was calculated using the following equation:

$$(4)\ \sigma^2_{non-interactions} = \left(\frac{\beta_1}{\beta_0}\right)^2 \left(\frac{\omega_{11}}{\beta_1^2} + \frac{\omega_{00}}{\beta_0^2} - 2\frac{\omega_{10}}{\beta_1\beta_0}\right)$$

where β_1 is the parameter of the attribute, β_0 is the respective parameter's price, ω_{11} is the variance of the parameter estimate, ω_{00} is the variance of the price, and ω_{10} is the covariance of the price and the specific attribute coefficient. The square root to equation (2) is the standard error of the non-interaction WTP, and was used to determine the WTP estimate's statistical significance using the t-test ratio. The 95% confidence interval was calculated by adding and subtracting the standard error multiplied by the 95% critical value of 1.96 from the WTP estimates.

The WTP estimates for the interaction terms (i.e. TCB and CAB) were calculated using the following equation:

$$(5)\ WTP_{interaction} = (\beta_1 + \beta_2 + \beta_d / -\beta_0)$$

where β_1 and β_2 are the coefficients of attributes one and two, respectively, β_d is the coefficient of the interaction term of attributes one and two, and β_0 is the coefficient of the price. The interaction variance equation used follows from Syrengelas et al. (2017):

$$(6)\ \left(\frac{1}{\beta_0}\right)^2 * (\omega_{11} + \omega_{22} + \omega_{dd} + 2 * (\omega_{21} + \omega_{d1} + \omega_{d2})) + \left(-\frac{1}{\beta_0}\right) * \left(\frac{\beta_1 + \beta_2 + \beta_{d)}}{-\beta_0}\right) * (2 * (\omega_{01} + \omega_{02} + \omega_{0d})) + \left(\frac{\beta_1 + \beta_2 + \beta_d}{-\beta^2}\right)^2 * \omega_{00}$$

where β_0 is the coefficient of the price, ω_{11} is the variance of attribute one, ω_{22} is the variance of attribute two, ω_{dd} is the variance of the interaction coefficient of attributes one and two, ω_{d1} is the covariance of the interaction term and attribute one, ω_{d2} is the covariance of the interaction term and attribute two, β_1 and β_2 are the coefficients of attribute one and two, respectively, β_d is the coefficient of the interaction term of attribute one and two, ω_{01} is the covariance of price and attribute one, ω_{02} is the covariance of price and attribute two, ω_{0d} is the covariance of the price and the interaction coefficient, and ω_{00} is the variance of the price. The square root of equation (4) is the standard error of the interaction WTP, and is used to estimate the statistical significance of the WTP. The 95% confidence interval is calculated by adding and subtracting the standard error multiplied by the 95% critical value of 1.96 from the WTP estimates.

4 Results and Discussion

4.1 Sample Description

Participants completed the survey in September 2016. A total of 204 participants were in both the Text and the Visual Treatment. On average, participants were about 75% female, 42 years old, 30% had a bachelor's degree or higher, average household income was about $44,000, and the average household size was about three individuals (Table 2).

Table 2.
Sample Demographics for the Visual and Text Treatment by Visual and Text Learner

	Text Treatment			Visual Treatment			
Variable	Full Sample (n =204)	Text Learner (n=129)	Visual Learner (n=75)	Full Sample (n=204)	Text Learner (n=114)	Visual Learner (n=83)	U.S. Population[1]
Gender *(% Female)*	78.9	78.7	78.7	70.9	75.4	64.3	50.8
Age	42.0	43.3	40.2	41.7	41.7	41.7	37.9
Education *(% Bachelor degree or higher)*	27.0	24.4	32.0	32.2	30.5	34.5	30.9
Household Income	$43,000	$42,000	$44,000	$44,000	$43,000	$44,000	$57,652
Household Size	3.0	3.1	2.8	3.0	2.9	3.1	2.6

1U.S. Census Bureau, 2018

Note: There were no significant differences in demographics between the full samples of the Visual and Text Treatments or the Text and Visual Leaners within each treatment at the 5% level using a t-test.

While the percentage female is higher than the U.S. average, this is expected since we required the survey to be answered by the household's primary shopper. The means of participant demographics across the Text and Visual Treatments were not significantly different from each other at the 5% level of significance using t-tests.

Within the Text Treatment, there were 129 text learners and 75 visual learners. Within the Visual Treatment, there were 118 text learners and 85 visual learners. The means of demographics across the two treatments (Visual and Text) were not significantly different at the 5% level of significance. Thus, if differences exist in WTP between the two treatments, these differences are not likely caused by differences in demographics between visual and text learners.

4.2 Text and Visual Treatment Results and Discussion

The RPL model results for the Visual and Text Treatments are shown in Table A1 in the appendix.

In both treatments, results show that an increase in price has a negative and significant impact on consumer utility, which is expected. Across both treatments, consumers had positive utility associated with all of the individual labels on the steak.

WTP estimates for the Text and Visual Treatments are shown in Table A2 in the appendix.

In both treatments, consumers were willing to pay significantly more for all attributes compared to the unlabeled steak. The highest WTP for an individual attribute was the TCB attribute followed by NH. In the Visual Treatment, consumers were willing to pay $3.01/pound more for steak labeled TCB than unlabeled steak, and $2.65/pound more for steak labeled NH than unlabeled steak. In the Text Treatment, consumers were willing to pay $2.42/pound more for TCB than unlabeled steak and $2.35/pound more for NH steak. In general, consumers who saw the verbal (text) cheap talk script (Text Treatment) had a lower WTP for all attributes than consumers who saw the visual cheap talk script (Visual Treatment) except for the MQRB attribute (Figure 3).

Following Allison's (1999) Wald Chi Squared Test, only the grass-fed attribute and the TCB and CAB interaction attribute were significantly lower in the Text Treatment than in the Visual Treatment. Together, these results suggest that consumers who saw the visual cheap talk script had generally higher WTP estimates than individuals who saw the verbal (text) cheap talk script. Therefore, the text cheap talk script, which was adopted from Tonsor and Schupp (2011), appears to perform the best at lowering WTP estimates, which could suggest it is better than the visual cheap talk treatment at reducing hypothetical bias.

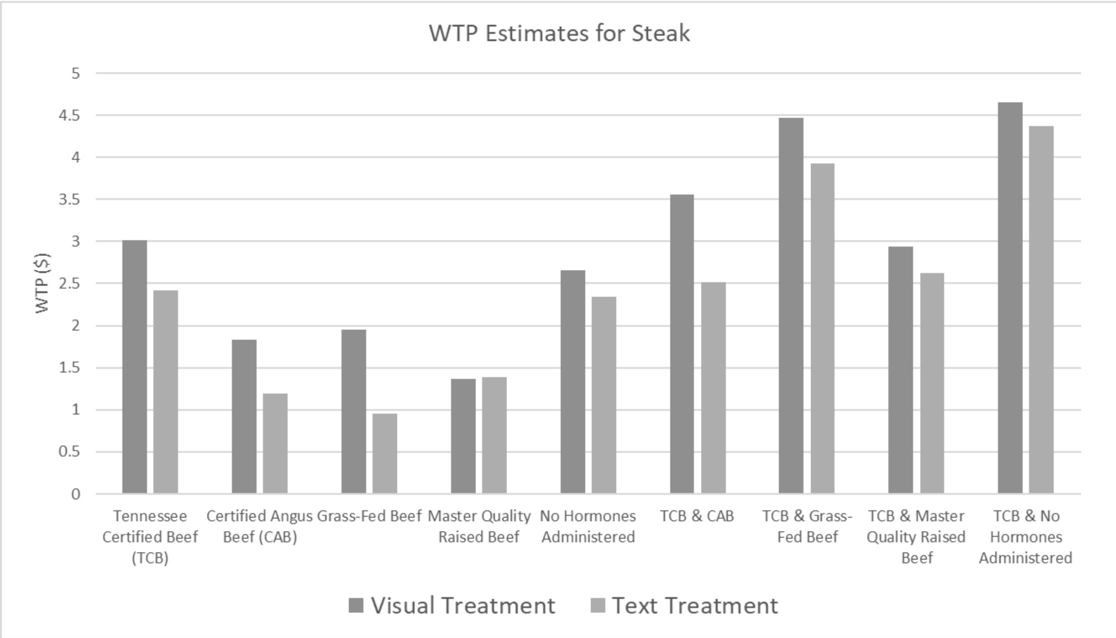


Figure 3. Willingness to Pay Estimates for Steak for Visual and Text Cheap Talk Treatments

Ultimately, we do not find evidence to support our hypothesis (a). Instead, opposite of our hypothesis, we find evidence that the Text Treatment WTP is actually lower than the Visual Treatment WTP. Thus, we find evidence that a text cheap talk script is better at reducing hypothetical bias than the more visual orientated cheap talk script. This finding is opposite to the literature which suggests that using visual attributes in choice experiments results in more realistic WTP values (e.g., Bateman et al., 2009; Tarfasa et al, 2017; Shr et al., 2019). However, those studies were not evaluating the effectiveness of cheap talk scripts. Instead, they were examining the presentation format of the choice set attributes. It is possible that when participants read the totality of the cheap talk script when it is strictly text, they spend more time and attention on the text, and thus, it resonates better with them while making their choices. This explanation is supported by Rhin Wei, and Khachatryan's (2019) finding that visual attention to text was associated with lower bids for eco-labels.

4.3 Text and Visual Treatment by Visual versus Text Learner Results and Discussion

Table A3 in the appendix presents the RPL results of the Text and Visual Treatments further divided by whether the consumers identified themselves as visual or verbal (text) learners.

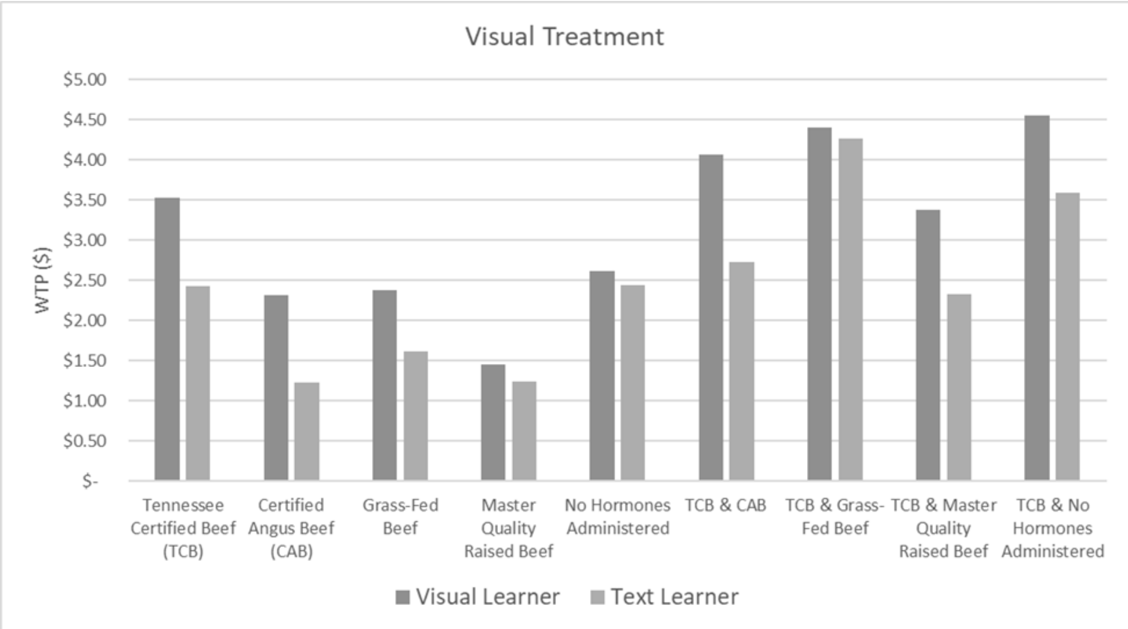
In all models, price had a negative and significant impact on consumer utility, which is expected. In all models, consumers had positive utility associated with all of the individual labels on the steak.

WTP estimates for the Text and Visual Treatment separated by learner style are presented in Table A4 in the appendix and Figure 4.

Consumers were willing to pay more for all attributes compared to unlabeled steak. The two most valued non-interaction labels were TCB and NH across all learner styles in both treatments. Our hypothesis (b) for the Visual Treatment was that visual learners would have reduced WTP estimates than text learners since the cheap talk script was presented in the way they prefer to learn. However, this was not the case among any attributes since all visual learners had increased WTP estimates for all attributes compared to text learners (Figure 4). However, only the TCB and CAB interaction attribute was significantly lower among text learners than visual learners. Ultimately, we do not have any evidence to support our hypothesis that visual learners would have reduced hypothetical bias within the Visual Treatment. We based our hypothesis on work done by Massa and Mayer (2006) who hypothesized that individuals would learn better when provided help screens presented to them in their preferred learning format (visual or verbal). However, their experiments also did not yield support for their hypothesis.

Our hypothesis (c) for the Text Treatment was that text learners would have reduced WTP estimates than visual learners since the cheap talk script was presented in the way they prefer to learn, which again follows Massa and Mayer (2006)'s hypothesis. For six of the nine labeling scenarios, this was the case.

However, only the grass-fed label had a significantly lower WTP estimate among text learners than visual learners within the Text Treatment. Therefore, we do have evidence to support this hypothesis. This is counter to Massa and Mayer (2006) who did not find evidence to support their hypothesis regarding text learners performing better when given text help screens.



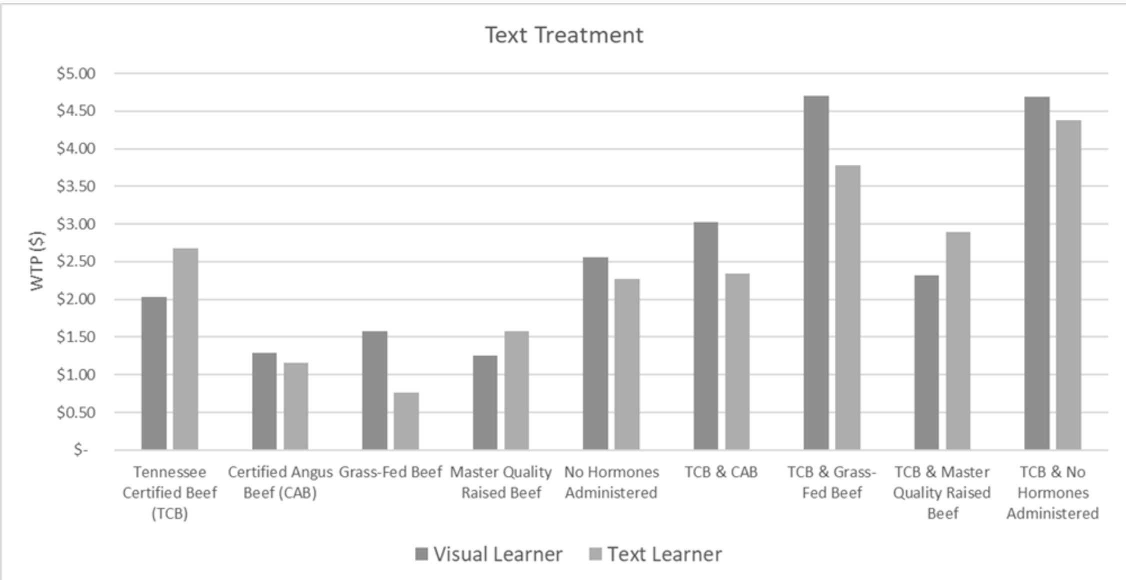


Figure 4. Willingness to pay estimates for Visual (Top Panel) and Text Treatments (Bottom Panel) by Visual versus Text Learners

Overall, a pattern did emerge that text learners had lower WTP estimates regardless of their assigned treatment. This could be associated with the fact that text learners might spend more time reading text which could lower their WTP estimates and hypothetical bias. This is similar to what Rhin Wei, and Khachatryan (2019) found regarding how more visual attention to text was associated with lower bids for eco-labels. While this result could reflect more time spent reading the text, we did not measure time spent reading the cheap talk script in our study. However, this could be an avenue of future research.

5 Conclusions

Hypothetical bias is the tendency of participants to overstate their true WTP in a survey situation. Typically, in an online choice experiment, this results in WTP estimates being higher than they would be if participants were actually purchasing the products in question. It has been shown that when attributes are presented in a more visual format, the WTP estimates have less hypothetical bias (e.g., Bateman et al., 2009; Tarfasa et al, 2017; Shr et al., 2019). Therefore, we examined if a more visual cheap talk script would also help to reduce hypothetical bias. We also examined if there was less hypothetical bias when cheap talk scripts were presented to consumers in the format they were most comfortable learning in, since previous research has also postulated this (Massa and Mayer, 2006).

We did not find evidence to support our hypothesis that a visual cheap talk script would reduce hypothetical bias. In fact, we found the opposite, that the text cheap talk script was associated with lower WTP values (reduced hypothetical bias) than the visual cheap talk script. We also found that visual learners had higher WTP estimates when they saw a visual cheap talk script, which was contrary to our hypothesis. However, as hypothesized, we did find that text learners had lower WTP estimates when they saw the text cheap talk script.

Ultimately, we found that text learners had lower WTP estimates when they saw both the visual and text cheap talk script. This may suggest that text learners are less prone to hypothetical bias. Future research should further examine this result. If it is confirmed that text learners are less prone to hypothetical bias, perhaps online hypothetical choice experiments should focus on recruiting those who are verbal (text) learners. Surveys could begin by having a screening question in which they utilize the Santa Barbara Learning Style Questionnaire (Mayer and Massa, 2003) to screen out participants who prefer to learn visually compared to verbally (text). However, this could present a problem since visual learners are still part of the consumer market and it would not be good to exclude them. The result that text learners had lower WTP estimates could also be related to the time they spent reading the cheap talk script. Future research using eye tracking could further explore the amount of attention visual and verbal learners spend on the cheap talk script to investigate if this causes differences in WTP estimates.

Further important, our results indicate that the conventional text cheap talk script was superior to the visual cheap talk script at lowering WTP estimates. Therefore, as standard practice currently, online choice experiments should continue to use the text cheap talk script since we found it best at lowering WTP estimates. These results are beneficial to researchers who conduct online choice experiments. Our results provide guidance for how to control for hypothetical bias in an online choice experiment.

Our research, however, is not without limitations. For example, we did not compare our hypothetical choice experiment results to a non-hypothetical treatment. Instead, we assumed higher WTP estimates indicated hypothetical bias. To further validate our research, one should conduct an experiment that includes a non-hypothetical, incentive compatible treatment. Therefore, the WTP estimates from the hypothetical visual and text cheap talk scripts could be directly compared to the non-hypothetical treatment. This would control for the possibility that hypothetical bias isn't strictly associated with higher WTP estimates.

Acknowledgement

Data for this study was funded by a grant from the U.S. Department of Agriculture, Agricultural Marketing Service's Federal and State Marketing Improvement Program, grant number A16-0315-002.

References

Adamowicz, W., Boxall, P., Williams, M., and Louviere, J. (1998). Stated preference approaches for measuring passive use values: Choice experiments and contingent valuation. *American Journal of Agricultural Economics,* **80**: 12.

Allison, P. D. (1999). "Comparing logit and probit coefficients across groups". *Sociological Methods & Research*, **28**(2): 186-208.

Andor, M. A., Frondel, M., and Vance, C. (2017). Mitigating hypothetical bias: evidence on the effects of correctives from a large field study. *Environmental and Resource Economics*, **68**(3): 777-796.

Bateman, I. J., Day, B. H., Jones, A. P., and Jude, S. (2009). Reducing gain–loss asymmetry: a virtual reality choice experiment valuing land use change. *Journal of Environmental Economics and Management*, **58**(1): 106-118.

Carlsson, F., Frykblom, P., and Lagerkvist, C. Johan (2005). Using cheap talk as a test of validity in choice experiments. *Economics Letters,* **89**(2): 147–152.

Champ, P.A., Moore, R., and Bishop, R.C. (2009). A comparison of approaches to mitigate hypothetical bias. *Agricultural and Resource Economics Review,* **38**(2): 166–180. ChoiceMetrics. (2016). "ChoiceMetrics." Available at: http://www.choicemetrics.com/features.html [Accessed July 11, 2018].

Cummings, R.G., Taylor, L.O. (1999). Unbiased value estimates for environmental goods: A cheap talk design for the contingent valuation method. *American Economic Review,* **89**(3): 649–665.

Daly, A., Hess, S., and de Jong, G. (2012). Calculating errors for measures derived from choice modelling estimates. *Transportation Research Part B: Methodological,* **46**(2): 333–341.

Dobbs, L. M., Jensen, K. L., Leffew, M. B., English, B. C., Lambert, D. M., and Clark. C. D.(2016). Consumer willingness to pay for Tennessee beef. *Journal of Food Distribution Research,* **47**(2): 38–61.

Gao, Z., Schroeder, T. C. (2009). Effects of label information on consumer willingness-to-pay for food attributes. *American Journal of Agricultural Economics*, **91**(3): 795-809.

Herriges, J., Kling, C., Liu, C. C., and Tobias, J. (2010). What are the consequences of consequentiality?. *Journal of Environmental Economics and Management*, **59**(1): 67-81. Doi:10.1016/j.jeem.2009.03.004

Ladenburg, J., Dahlgaard, J.O., and Bonnichsen, O. (2011). Testing the effect of a short cheap talk script in choice experiments. *Nationaløkonomisk Tidsskrif,* **149**: 25-54.

Lim, K. H., Hu, W., Maynard, L. J., and Goddard, E. (2013). US consumers' preference and willingness to pay for country-of-origin-labeled beef steak and food safety enhancements. *Canadian Journal of Agricultural Economics*, **61**(1): 93-118.

Lewis, K.E., Grebitus, C., Colson, G., and Hu, W. (2017). German and British consumerwillingness to pay for beef labeled with food safety attributes. *Journal of Agricultural Economics*, **68**(2): 451-470. https://doi.org/10.1111/1477-9552.12187

Lewis, K.E., Grebitus, C., and Nayga, R.M. (2016a). U.S. consumers' preferences for imported and genetically modified sugar: Examining policy consequentiality in a choice experiment. *Journal of Behavioral and Experimental Economics,* **65**: 1–8.

Lewis, K.E., Grebitus, C., and Nayga, R. Jr. (2016b). The importance of taste in experimental auctions: Consumers' valuation of calorie and sweetener labeling of soft drinks. *Agricultural Economics*, **47**: 47-57. https://doi.org/10.1111/agec.12208

Loureiro, M.L., Umberger, W.J. (2007). A choice experiment model for beef: What US consumer responses tell us about relative preferences for food safety, country-of-origin labeling and traceability. *Food Policy*, **32**(4): 496–514.

Lusk, J.L. (2003). Effects of cheap talk on consumer willingness-to-pay for golden rice. *American Journal of Agricultural Economics,* **85**(4): 840–856.

Lusk, J. L., Roosen, J., and Fox, J. A. (2003). Demand for beef from cattle administered growth hormones or fed genetically modified corn: A comparison of consumers in France, Germany, the United Kingdom, and the United States. *American Journal of Agricultural Economics*, **85**(1): 16-29.

de-Magistris, T., Gracia, A., and Nayga, R.M. (2013). On the use of honesty priming tasks to mitigate hypothetical bias in choice experiments. *American Journal of Agricultural Economics,* **95**(5): 1136–1154.

Mayer, R. E., Massa, L. J. (2003). Three facets of visual and verbal learners: Cognitive ability, cognitive style, and learning preference. *Journal of Educational Psychology*, **95**(4): 833.

Massa, L. J., Mayer, R. E. (2006). Testing the ATI hypothesis: Should multimedia instruction accommodate verbalizer-visualizer cognitive style?. *Learning and Individual Differences*, **16**(4): 321-335.

McFadden, D.(1974). Conditional Logit Analysis of Qualitative Choce Behavior. In *Frontiers in Econometrics*. New York: Academic Press, pp. 105–142. Available at: https://eml.berkeley.edu/reprints/mcfadden/zarembka.pdf [Accessed May 22, 2018].

Merritt, M. G., DeLong, K. L., Griffith, A. P., and Jensen, K. L. (2018). Consumer willingness topay for Tennessee certified beef. *Journal of Agricultural and Applied Economics,* ***50***(2): 233–254. doi:10.1017/aae.2017.35

Mueller, S., Lockshin, L., and Louviere, J.J. (2010). What you see may not be what you get:Asking consumers what matters may not reflect what they choose. *Marketing Letters,* **21**(4): 335–350.

Plass, J. L., Chun, D. M., Mayer, R. E., and Leutner, D. (1998). Supporting visual and verbal learning preferences in a second-language multimedia learning environment. *Journal of Educational Psychology,* **90**(1): 25-36.

Revelt, D., Train, K. (1998). Mixed logit with repeated choices: Households' choices of appliance efficiency level. *Review of Economics and Statistics,* **80**(4): 647–657.

Richardson, A. (1977). Verbalizer-visualizer: A cognitive style dimension. *Journal of Mental Imagery,* **1**(1): 109-125.

Riding, R. J. (2001). The nature and effects of cognitive style. In R. J. Sternberg & L. Zhang (Eds.), Perspectives on thinking, learning, and cognitive styles (pp. 47–72). Mahwah, NJ: Erlbaum.

Rihn, A., & Khachatryan, H. (2019). Text vs. logo: Does eco-label format influence consumers' visual attention and willingness-to-pay for fruit plants? An experimental auction approach. *Journal of Behavioral and Experimental Economics,* **82**: 101452.

Savage, S.J., Waldman, D.M. (2008). Learning and fatigue during choice experiments: a comparison of online and mail survey modes. *Journal of Applied Econometrics,* **23**(3): 351–371.

Scarpa, R., Campbell, D., and Hutchinson, W.G. (2007). Benefit estimates for landscape improvements: Sequential Bayesian design and respondents' rationality in a choice experiment. *Land Economics,* **83**(4): 617–634.

Scarpa, R., Zanoli, R., Bruschi, V., and Naspetti, S. (2013). Inferred and stated attribute non-attendance in food choice experiments. *American Journal of Agricultural Economics,* **95**(1): 165–180.

Shr, Y. H. J., Ready, R., Orland, B., and Echols, S. (2019). How do visual representations influence survey responses? Evidence from a choice experiment on landscape attributes of green infrastructure. *Ecological Economics*, **156**: 375-386.

Silva, A., Nayga, R.M., Campbell B.L., and Park, J.L. (2011). Revisiting cheap talk with new evidence from a field experiment. *Journal of Agricultural and Resource Economics,* **36**(2): 280–291.

Syrengelas, K.G., DeLong, K.L., Grebitus, C., and Nayga, R.M. Jr. (2018). Is the natural label misleading? Examining consumer preferences for natural beef. *Applied Economic Perspectives and Policy*, **40**(3): 445-460. https://doi.org/10.1093/aepp/ppx042

Tarfasa, S., Brouwer, R., Sheremet, O., and Bouma, J. (2017). Informing water harvesting technology contract design using choice experiments. *Water Resources Research*, **53**(10): 8211-8225.

Tonsor, G.T., R.S. Shupp. (2011). Cheap talk scripts and online choice experiments: Looking beyond the mean. *American Journal of Agricultural Economics,* **93**(4): 1015–1031.

Train, K.E. (2009). *Discrete Choice Methods with Simulation*. Cambridge University Press.

Vossler, C.A., M. Doyon, and Rondeau, D. (2012). Truth in consequentiality: Theory and field evidence on discrete choice experiments. *American Economic Journal: Microeconomics,* **4**(4): 145–171

United States Census Bureau. (2018). "Quick Facts." Accessed March 29, 2019. Available at http://www.census.gov/quickfacts

Appendix

Table A1.
Visual and Text Cheap Talk Script Treatment Parameter Estimates

Labels	Text Treatment	Visual Treatment
Random Parameters in Utility Functions		
TCB	1.23***	1.72***
CAB	0.60***	1.05***
Grass-Fed	0.48**	1.12***
MQRB	0.71***	0.78***
No Hormones Administered	1.19***	1.52***
TCB & CAB	-0.56**	-0.74**
TCB & Grass-Fed	0.29	-0.28
TCB & MQRB	-0.60***	-0.82***
TCB & No Hormones Administered	-0.20	-0.58*
No Choice Option	-7.07***	-7.03***
Nonrandom Parameters in Utility Functions		
Price	-0.51***	-0.57***
Standard Deviation of RPs		
TCB	0.95***	1.06***
CAB	0.50**	0.59***
Grass-Fed	0.79***	1.19***
MQRB	0.18	0.08
No Hormones Administered	1.93***	2.41***
TCB & CAB	0.30	0.20
TCB & Grass-Fed	0.13	0.44*
TCB & MQRB	0.26	0.37
TCB & No Hormones Administered	0.65	1.09
No Choice Option	3.42***	3.47***
Observations	2,448	2,448
Participants	204	204
Log likelihood	-1,715	-1,689
McFadden Pseudo R-squared	0.36	0.37
AIC/N	1.41	1.40

***, **, * indicate significance at the 1%, 5%, and 10% level respectively

Table A2.
Willingness to Pay Estimates ($/lb) and Confidence Intervals by Treatment

Labels	Text Treatment[a]	Visual Treatment[a]	WTP Difference
TCB	$2.42***	$3.01***	-$0.59
	(1.65, 3.19)	(1.82, 4.20)	
CAB	$1.19***	$1.83***	-$0.64
	(0.42, 1.96)	(1.12, 2.54)	
Grass-Fed	$0.95***	$1.95***	-$1.00***
	(0.17, 1.73)	(1.18, 2.73)	
MQRB	$1.39***	$1.37***	$0.02
	(0.90, 1.88)	(1.02, 1.71)	
No Hormones Administered	$2.35***	$2.65***	-$0.31
	(1.54, 3.15)	(1.53, 3.78)	
TCB & CAB	$2.51***	$3.56***	-$1.04***
	(1.78, 3.25)	(2.90, 4.22)	
TCB & Grass-Fed	$3.93***	$4.47***	-$0.54
	(3.03, 4.83)	(3.67, 4.47)	
TCB & MQRB	$2.62***	$2.94***	-$0.32
	(1.77, 3.47)	(2.18, 2.94)	
TCB & No Hormones Administered	$4.37***	$4.65***	-$0.28
	(3.21, 5.54)	(3.63, 4.65)	

Notes: [a]95% Confidence Intervals calculated by the delta method present in parenthesis below WTP estimates. ***, **, * indicate significance at the 1%, 5%, and 10% level respectively. WTP treatment difference $Wald\ Chi^2$ test statistics present in parenthesis below WTP difference (Allison 1999)

Table A3.

Text and Visual Treatment Parameter Estimates by Visual and Text Learners

	Text Treatment			**Visual Treatment**	
Labels	Text	Visual		Text	Visual
	Learners	Learners		Learners	Learners
Random Parameters					
TCB	1.61***	0.83***		1.43***	2.15***
CAB	0.69***	0.53*		0.72***	1.41***
Grass-Fed	0.46*	0.64**		0.95***	1.45***
MQRB	0.94***	0.51***		0.73***	0.89***
No Hormones Administered	1.36***	1.04***		1.44***	1.59***
TCB & CAB	-0.90**	-0.12		-0.55	-1.08**
TCB & Grass-Fed	0.21	0.44		0.13	-0.91**
TCB & MQRB	-0.81***	-0.39		-0.79**	-0.98***
TCB & No Hormones Administered	-0.35	0.41		-0.75	-0.97*
No Choice Option	-8.17***	-6.24***		-7.34***	-6.86***
Nonrandom Parameters					
Price	-0.60***	-0.41***		-0.57***	-0.61***
Standard Deviation of RPs					
TCB	1.38***	0.46**		0.59**	1.13***
CAB	0.22	0.69**		0.10	0.76***
Grass-Fed	0.62	0.53		1.55***	1.23***
MQRB	0.44	0.14		0.01	0.14
No Hormones Administered	2.33***	1.28***		2.28***	2.24***
TCB & CAB	0.52	0.77**		1.30***	0.72*
TCB & Grass-Fed	0.34	0.06		0.29	0.25
TCB & MQRB	0.22	0.17		1.28***	0.83*
TCB & No Hormones Administered	0.98	0.60		1.87	0.39
No Choice Option	4.08***	2.99***		3.55***	3.20***
Observations	1,548	900		1,368	996
Participants	129	75		114	83
Log likelihood	-1,023	-672		-938	-679
McFadden Pseudo R-squared	0.40	0.32		0.38	0.38
AIC/N	1.35	1.54		1.40	1.40
***, **, * indicate significance at the 1%, 5%, and 10% level respectively					

Table A4.

Willingness to Pay Estimates and Confidence Intervals for Text and Visual Treatment by Cheap Talk Script

	Visual Treatment[a]		WTP	Text Treatment[a]		WTP
Labels	**Text Learner**	**Visual Learner**	**Difference**	**Text Learner**	**Visual Learner**	**Difference**
TCB	$2.43***	$3.53***	-$1.10	$2.68	$2.04***	$0.64
	(1.04, 3.82)	(1.01, 6.04)		(1.14, 4.21)	(0.87, 3.20)	
CAB	$1.22***	$ 2.31***	-$1.09	$1.16	$1.29***	-$0.14
	(0.54, 1.91)	(0.76, 3.86)		(0.56, 1.66)	(0.51, 2.08)	
Grass-Fed	$1.62***	$2.37***	-$0.75	$0.76	$1.58***	-$0.82**
	(0.59, 2.64)	(0.61, 4.13)		(0.36, 0.76)	(0.63, 2.53)	
MQRB	$1.24***	$1.45***	-$0.21	$1.57	$1.25***	$0.32
	(0.79, 1.69)	(0.82, 2.09)		(1.00, 1.57)	(0.79, 1.72)	
No Hormones	$2.44***	$2.61***	-$0.18	$2.27	$ 2.55***	-$0.28
	(0.81, 4.06)	(0.65, 4.57)		(0.79, 2.27)	(1.08, 4.03)	
TCB & CAB	$2.73***	$4.06***	-$1.33***	$2.34	$3.02***	-$0.68
	(1.80, 3.66)	(2.98, 5.14)		(1.49, 3.19)	(1.64, 4.41)	
TCB & Grass-Fed	$4.27***	$4.40***	-$0.13	$3.78	$4.71***	-$0.92
	(2.85, 5.69)	(3.06, 5.74)		(2.62, 4.94)	(3.11, 6.31)	
TCB & MQRB	$2.33***	$3.38***	-$1.05	$2.90	$2.32***	$0.58
	(1.07, 3.59)	(2.08, 4.68)		(1.85, 3.95)	(0.77, 3.87)	
TCB & No Hormones	$3.59***	$4.55***	-$0.96	$4.37	$4.69***	-$0.32
	(1.88, 5.31)	(2.91, 6.19)		(2.94, 5.80)	(2.72, 6.67)	

Notes: [a]95% Confidence intervals were calculated by the delta method and are presented in parenthesis below WTP estimates. ***, **, * indicate significance at the 1%, 5%, and 10% level respectively. WTP treatment difference $Wald\ Chi^2$ test statistics present in parenthesis below WTP difference (Allison 1999).