Seeing Red? The Role of Font Color, Size, and Sale Sign Location in Retail Garden Center Displays[1]

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Abstract

The goal of this study was to better understand consumers' likelihood to buy a plant when the word "sale" was presented in red font on a white sign, with a range of font sizes, showing an equivalent discounted price in three ways (dollar amount, 25% percent off, and buy-3-get-1-free), with the sale sign location either on the left or right side of the display. Researchers constructed a partial factorial design with three plant types producing 16 images for the study. They recruited 154 subjects from two states. Results of the rating-based conjoint study revealed that plant type comprised 45% of the purchase decision, which was consistent with prior research. Price (23.8%) was the next most important factor in likely to buy followed by sale font size. Sale sign location and sale font color were similar and third and fourth, respectively, in relative importance. The synergistic effect of sale font size and color indicate that when red fonts were used for the word "sale" they should be larger than other font sizes and placed to the right in the display. Consumer gaze appeared to move from left to right as though study participants "read" the display. Results showed the red font had greater attention-grabbing power on the right side of the display and when it appeared in a larger or smaller font size.

Index words: consumer, eye-tracking, price, survey, signage.

Species used in this study: Pepper [*Capsicum annuum* L. (*C. frutescens*)], parsley *Petroselinum crispum* J. Hill, petunia (*Petunia* x *hybrida* Juss.), rosemary *Rosmarinus officinalis* L., sage (*Salvia officinalis* L.), tomato (*Solanum lycopersicum L.)*.

Significance to the Horticulture Industry

Sale signs are part of the array of signs merchandisers use to stimulate sales in the retail setting. More often than not, the word "sale" appears in red font color on a white background, but visual measures demonstrating the effectiveness of a red font color in capturing visual attention or eliciting purchase intention has not be thoroughly investigated. Researchers investigated the effect of font color for the word "sale" (red versus black) and font size (25% smaller, identical, or 25% larger than other font on the sign) and showing an equivalent sale price in three ways (dollar amount, 25% percent off, and buy-3-get-1-free), with the sale sign location varied (left v. right in display). There was a synergistic effect between sale font color, sale font size, and sale sign location. Findings suggest that when a red font is used for the word "sale" it should be larger than other font sizes and the sale sign should be placed to the right of the display. As study participants appeared to read the display from left to right, the red font had greater attention-grabbing power on the right side of the display and when sale appeared in a larger or smaller font size. No one way of conveying the sale offer (in terms of dollar amount, percentage, or buy one get one free) had a greater/lesser impact on likely to buy, so regional conventions may be most effective.

Introduction

Discounting products is a popular promotion activity which has increased over the years (Darke and Chung 2005). As part of the discounting strategy, sale signs bring attention to the discounted items, which helps to increase demand (Anderson and Simester 1998, Banerjee 2009) and influence value perceptions (Compeau and Grewal 1998). Transaction utility theory (TUT) suggests that the perception of the discount size is cognitively manipulated by raising the expectation of the regular or non-sale price item to make the discount size appear more favorable (Thaler 1985). Thus, the discount is perceived as providing greater economic transactional utility. Several studies have produced evidence to support the theory (Lichtenstein and Bearden 1989, Urbany et al. 1988). However, sale discounts may not always work in the marketer's favor. Customers may judge the product to have inferior quality when discounted, especially when product quality may be hard to directly judge. Results from these studies suggest that consumers tend to use price as an indication of quality, which may not facilitate purchase. In other words, the use of the word "sale" may not always promote product purchases.

Sale prices. In an effort to attract visual attention and stimulate sales, communicating price as "regular" and "sale" has been studied through the lens of comparative pricing (Choi and Coulter 2012). Substantial work supports the notion that consumers evaluate prices relatively and not absolutely (Coulter and Norberg 2009, Thomas and Morwitz 2005). For example, an item with a regular price of $69 and a sale price of $34.49 is a 50% discount. Grewal

[1]Received for publication May 27, 2020; in revised form July 23, 2020. The authors gratefully acknowledge the financial support of the Horticultural Research Institute, Metro Detroit Flower Growers Association, and Western Michigan Greenhouse Association. Faculty salary support was from USDA NIFA Hatch Project MICL 02589. The authors also thank Lynne Sage for her data handling and analyses, and Dr. Marco Palma for the use of the Human Behavior Laboratory at Texas A&M University.

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et al. (1998) found that for price discounts, the individual's internal reference price, and their perception of brand quality, greatly affected perceived value, and that perceived value positively influenced likelihood to buy.

Consumers are not always rational and may not compute the math for a sale discount but can have different perceptions about the sale price. How the price is "framed" influences sale perceptions (Gonzalez et al. 2016). In other words, the way the price is stated (as a percentage off versus a dollar amount) may affect purchases. Monetary cash discounts are preferred over freebies (getting extra products or related products), and discounting preferences (e.g. freebies versus discounts) vary little by age group studied (Banerjee 2009). However, multiple unit pricing versus percentage discounts has not been well investigated. Coulter and Norberg (2009) found that the greater the perception of price discount, the greater the value perception, but the physical distance between the original and sale prices on a sign influences the magnitude of the value perception. In other words, prices separated by great physical distance also had a greater perceived value difference.

Additionally, purchase intention increases with discounts on products with a high brand reputation, but purchase intentions are less predictable for products with lower brand reputation (Kukar-Kinney and Carlson 2015). Studies using unbranded products including many edible and ornamental transplants have not been conducted.

Signage. In 2017, retailers spent $10.4 billion on point of purchase marketing communications with an expected annual growth rate of 5.6% until 2026 (MarketWatch 2019). Despite the significant financial investment in this type of advertising, few empirical studies examine how consumers respond to in-store signs or their effectiveness in motivating purchase. Anderson and Simester (2001) indicated the use of a greater number of sale signs in the retail store increased demand to a point, but demand slowed as the number of sales signs increased when one-third or more of the products in the store were discounted.

Font color and size. Research showed that retail stores with predominant background colors at opposite ends of the spectrum (red and blue) were perceived as more active or busy environments (Crowley 1993). Furthermore, the use of red in the store can help stimulate impulse purchases of merchandise (Crowley 1993). Puccinelli et al. (2013) reported that men perceived greater price savings in advertisements when prices were shown in red versus black. That same study also showed that red prices led participants to be less price conscious and more likely to evoke pleasure from getting a good deal. However, the effectiveness of the word "sale" in red versus other colors has not been thoroughly studied.

In Puškarević et al. (2016), consumer attitude towards advertisements with different typeface figurations were evaluated. Findings showed that consumers paid more visual attention to a more figurative typeface (versus less figurative) but did not account for font size. Pieters and Wedel (2004) found a large, positive effect (accounting for 17% of the variation) in gaze duration when a larger font size was used, indicating larger font sizes attracted attention faster. Yet, Wedel and Pieters neither reported how much larger or smaller font sizes were, nor the extent to which these differed from other font sizes in the advertisement. Use of a larger font size in relation to other fonts in the display may attract attention faster compared to the other font sizes.

Eye-tracking. Eye movement is an objective indicator of visual attention, which reflects decision-making processes and choice (Behe et al. 2013, Behe et al. 2015, Behe et al. 2017, Huddleston et al. 2018, Milosavljevic et al. 2012, Mundel et al. 2018). Two measures in particular can help guide researchers to a better understanding of what specifically consumers focus on. These measures are time to first fixation (TTFF) and total fixation duration (TFD). TTFF indicates the attention capturing effect of an item or area of interest (AOI), such as a sign or area on a sign. The lower the TTFF the more attention-grabbing power the area or item has. TFD is a measure of the attention-staying power of the AOI and is the combination of fixation counts or looks at that area and the length of time spent looking at that particular area. Thus, the ability of an area to attract (TTFF) and hold (TFD) attention are two key measures of the use of that information in a purchase decision.

Eye-tracking equipment has been utilized in many studies, providing insight into purchase decisions. Huddleston et al. (2018) conducted a review of retail studies incorporating eye-tracking technology and called for more investigations including signage. Researchers have documented a positive relationship between visual attention and product choice (Behe et al. 2013, Behe et al. 2016, Clement et al. 2013, Van der Laan et al. 2015), which was strengthened by the consumers' level of product involvement or interest (Behe et al. 2015). Consumers who made an actual product choice spent more time looking at all aspects of a display (product, price, and signage information), with attention to an information sign demonstrating the most significant relationship to product choice (Behe et al. 2015). Time spent looking at product information was the strongest motivator of a consumer's likelihood to buy in a study using plant displays as stimuli (Huddleston et al. 2015). The results from these previous studies indicate that visual attention to retail sign information influences the likelihood that a consumer will buy a product. The goal of this investigation was to better understand the role of "sale" font size (relative to other information expressed in a written manner on signs), "sale" font color and three variations of the presentation of sale price on consumers' decision to purchase a plant from a display.

Materials and Methods

To ascertain consumer response to a variety of plausible sale merchandising scenarios, displays of flowering annuals [color-varied petunias petunia (*Petunia* x *hybrida* Juss.), vegetables {tomato (*Solanum lycopersicum* L.) and pepper [*Capsicum annum* L. (*C. frutescens*)]}, and assorted herb transplants [*Petroselinum crispum* J. Hill), (*Rosmarinus officinalis* L.), sage (*Salvia officinalis* L.)] were created and photographed to provide digital images for

Fig. 1. Example of one stimulus of tomato and pepper (vegetable) transplants indicating the word sale in red font located to the right of the display. The font size for the word sale is 25% smaller than that of the other font in the display. The price is listed in the quantity format "buy 3 get 1 free". Likelihood to buy scale was measured using the 11-point Juster scale, shown at the bottom of the image.

the eye-tracking portion of the study (Figure 1). Displays were on a bench-top back-dropped by a translucent polycarbonate wall and contained 3 steel sign holders each with blank white signs measuring 8.5 by 11 inches. The signs were evenly spaced toward the back of the bench to create distinct visual areas of interest (AOIs) to capture eye-tracking measures.

Digital text using Calibri font was added to the blank signs. To reduce participant fatigue, researchers created a partial factorial design of a 2 ("sale" font colors) by 3 ("sale" font sizes) by 2 (sale sign locations) by 3 (sale price expressions of the same dollar discount) by 3 (plant types) using SPSS (Version 25.0. Armonk, NY: IBM Corp.) conjoint design program. However, each participant saw a randomization of only 16 stimuli. The attributes were two font colors for the word "sale" (black or red) while all other text appeared in black on the white background; three font sizes for the word "sale", (25% larger than the other font size used in the display, a moderately-sized font equal for all additional text in the display, and font size 25% smaller than the moderate font); two sale sign locations (left or right with product identification always appearing on the middle sign); and three ways to communicate an identical sale price (sale price expressed as a dollar amount, 25% percent off, or Buy 3 Get 1) for three plant types (herbs, petunias, and vegetable transplants).

Researchers selected two geographically dispersed research sites to collect data. Subjects (64) were recruited in College Station, TX on October 2-10, 2018. Then, 90 subjects were recruited in East Lansing, MI, on December 3-6, 2018. Both sites screened and recruited through paid research pools after the protocol and surveys were approved by the ethics committee involving human subjects research. Qualified recruits in both states were not legally blind in either eye, did not wear bifocal or trifocal lenses, and were at least 18 years of age. Researchers obtained 154 useful responses after removing incomplete and/or poor visual data, with 90 collected in Michigan and 64 collected in Texas.

After completing the informed consent process, the participant was paid a $20 incentive, escorted to an eye-tracker station, seated in front of the eye-tracker, and the instrument was calibrated to the participant's eyes. Instructions were included in the self-paced stimuli presentation. The instructions asked respondents to imagine it was spring of that year and pretend they were buying plants for the current year. Subjects were asked "How likely you are to buy an item from the display?", based on the Juster rating scale of 0 (not at all likely to purchase) to 10 (certain to buy) (Brennan and Esselmont 1994). After viewing 16 display images, participants completed an online survey with questions that queried the number and type of plants purchased in the six months prior to the survey, how much they spent on those plants, and demographic characteristics including age, gender, number of adults and children in the household, household income, and education level.

In College Station, Texas, researchers used Spectrum and Tobii Pro X2 (Tobii Pro, Reston, VA) eye-trackers set to 60 Hz in conjunction with iMotions 7.1 software (iMotions Inc., Copenhagen, Denmark). At the Michigan State University site in East Lansing, researchers used a

Table 1. **Demographic frequency comparisons of Michigan (MI) and Texas (TX) samples to overall mean and standard deviations by Chi-square test for equal proportions[z,y]. In the case of frequencies less than 5, the Fisher's Exact Test was used.**

Demographic Variables (Categorical)	Mean (SD) or %		
		By State	
	Overall	MI	TX
	N=154	N=90	N=64
Gender (M=0; F=1)	0.621 (0.487)	0.697 (0.462)	0.516 (0.504)
Male	37.9%	30.3%	48.4%
Female	62.1%	69.7%	51.6%
		Chi-sq = 5.1819, p = **0.0228**	
Education - (0/1)	0.58 (0.5)	0.48 (0.5)	0.71 (0.46)
Less than 4 yr degree plus	42.5%	52.2%	28.6%
4 yr college degree or more	57.5%	47.8%	71.4%
		Chi-sq = 8.4834, p = **0.0036**	
Ethnicity	0.636 (0.483)	0.667 (0.474)	0.594 (0.495)
Not Caucasian/White	36.4%	33.3%	40.6%
Caucasian/White	63.6%	66.7%	59.4%
		Chi-sq = 0.8594, p = 0.3539	

[z]Significant differences at α=0.05 are shown in bold. Overall means and standard deviations are also presented.

[y]Data analyses were generated using the CHISQ and TESTP options in the TABLES statement of the FREQ procedure of SAS Software (SAS for Windows, v 9.4, SAS Institute Inc.).

Tobii Pro X1 Light eye-tracker and a Tobii Pro X2, with a 30 Hz sampling rate, and Tobii Pro Studio software. For both locations, identical images and AOIs were drawn around the signs in the display. Images were shown in a randomized order to each subject. Researchers exported two key visual metrics: time to first fixation (TTFF) and total fixation duration (TFD) both measured to 1/100 second. After visual metric export into a Microsoft Excel spreadsheet, the data sets were analyzed using SAS Software for Windows (Cary, NC).

Results and Discussion

Demographics. The samples from MI and TX varied slightly by gender and education (Table 1). Proportionately, MI respondents were predominately female (69.7%), whereas Texans were nearly equal by gender (51.6% female). Nearly 25% more Texas participants had a 4-year college degree or more compared to Michigan respondents. On average, respondents from both states averaged 63.6% white.

Michigan participants were almost nine years younger and had slightly more (0.46) adults per household compared to the Texas participants (Table 2). However, the number of children in the households from both states were similar. There was no difference by household income (overall average $89,420). The survey listed 14 types of plants (e.g. annuals, perennials, interior foliage, etc.) participants may have purchased in the six months prior to the survey. Results showed that participants from both states purchased a similar number (average of 2.3) of plants and spent a similar amount on plants (average of $82.92).

In TX and MI, participants were reflective of individuals across the country who participated in gardening activities (Cohen and Baldwin 2018). However, without published standard deviations, mean differences between the current samples and the national study could not be made (Cohen and Baldwin 2018).

Conjoint Analysis. Results from the choice-based conjoint ratings showed that of the five attributes included in the study, plant type had the greatest influence on LTB (Table 3). This finding was consistent with other studies where plant type was the primary contributor to LTB (Behe et al. 2018, Behe et al. 2017, Behe et al. 2013, Getter et al. 2016). Second in terms of relative importance was how the sale price was conveyed, which comprised 23.8% of the decision to purchase. This was not surprising since the focus of the study was discounted products. The prominence of sale pricing likely contributed to the high relative importance (23.8%) of price on LTB in comparison to other choice-based conjoint studies (Behe et al. 2018, Behe et al. 2017, Behe et al. 2016, Behe et al. 2013).

Third most important was the font size of the word "sale" followed by font color for the word "sale" and sale sign location, each contributing approximately 8% to the purchase decision (Table 3). Given the recent popularity of growing fresh vegetables (Cohen and Baldwin, 2018), it was not surprising that vegetable transplants were preferred over herbs and petunias. We found one minor difference when comparing the relative importance of each attribute by state. Texans and Michiganders had a similar relative

Table 2. **Demographic mean and standard deviation comparisons of the overall sample and by state for households (HH) in Michigan (MI) and Texas (TX) respondents[z].**

Demographic Variables (Continuous)	Mean (SD)			
	All	By State		
	Subjects (N=154)	MI (N=90)	TX (N=64)	F, p
Age (years old)	32.3 (15.5)	26.3 b (10.1)	40.7 a (17.7)	41.95, **<.0001**
Adults in HH (18 or over)	2.7 (1.2)	3.0 a (1.2)	2.4 b (1.0)	7.04, **0.0088**
Children in HH (under 18)	0.4 (0.8)	0.4 (0.8)	0.4 (0.8)	0.87, 0.3573
HH Income ($, 000)	87.4 (64.3)	87.2 (64.5)	87.5 (64.6)	0.03, 0.8653
Number of plant types purchased	2.3 (1.5)	2.2 (1.5)	2.3 (1.6)	0.05, 0.8322
Spent on plants (USD)	82.92 (106.11)	73.11 (96.54)	96.68 (117.68)	3.82, 0.0529

[z]Different lowercase letters within rows indicate significant differences of means (shown in bold) at α =.05. Statistics generated using the MEANS and GLIMMIX procedures of SAS Software (SAS for Windows, v 9.4, SAS Institute Inc.).

Table 3. **Attribute relative importance means and standard errors (S.E,) and attribute utility score means and S.E. from a choice-based conjoint analysis of the likeliness to buy ratings (0-10 Juster scale) of consumers from Michigan and Texas for 16 sale sign stimuli[z].**

		Mean (S.E.) Relative Importance			
		All	By State		
Attribute	**Level**	**Subjects (N=154)**	**MI (N=90)**	**TX (N=64)**	**(DF) F, *p***
Plant type		45.19 a (21.57)	46.19 A (21.31)	43.78 a (22.03)	(1, 152) 0.47, 0.4957
Price		23.80 b (16.66)	23.23 B (15.95)	24.60 b (17.70)	(1, 152) 0.25, 0.6174
Font size		14.39 c (8.34)	14.26 C (8.25)	14.57 c (8.53)	(1, 152) 0.05, 0.8193
Font color		8.53 d (7.97)	8.64 D (7.38)	8.37 c (8.78)	(1, 152) 0.04, 0.8349
Sign location		8.09 d (7.54)	7.68 D (6.60)	8.68 c (8.72)	(1, 152) 0.66, 0.4163
	(DF) F, *p:*	(4, 765) 196.87, <**.0001**	(4, 445) 129.98, <**.0001**	(4, 315) 68.69, <**.0001**	

		Mean (S.E.) Utility Score			
		All	By State		
Attribute	**Level**	**Subjects***	**MI**	**TX**	**(DF) F, *p***
Plant type	vegetable	0.3980 A (0.0995)	0.3208 A (0.1325)	0.5065 A (0.1505)	(1, 152) 0.84, 0.3595
	petunia	-0.1312 B (0.1151)	0.0319 AB (0.1629)	-0.3607 BC (0.1527)	(1, 152) 2.86, 0.0930
	herb	-0.2668 B (0.0937)	-0.3528 B (0.1248)	-0.1458 ABC (0.1414)	(1, 152) 1.19, 0.2780
Price	percent	0.1006 AB (0.0495)	0.0815 AB (0.0576)	0.1276 ABC (0.0879)	(1, 152) 2.86, 0.0930
	b3g1	-0.0471 B (0.0706)	0.0731 AB a (0.0756)	-0.2161 BC (0.1303)	(1, 152) 4.17, **0.0430**
	dollar	-0.0536 B (0.0495)	-0.1546 AB b (0.0565)	0.0885 ABC (0.0862)	(1, 152) 6.05, **0.0150**
Font sizes	between	0.0611 AB (0.0307)	-0.0065 AB b (0.0414)	0.1563 AB (0.0430)	(1, 152) 7.10, **0.0086**
	larger	-0.0249 B (0.0350)	0.0019 AB (0.0409)	-0.0625 BC (0.0617)	(1, 152) 0.82, 0.3672
	smaller	-0.0363 B (0.0280)	0.0046 AB (0.0320)	-0.0938 C (0.0497)	(1, 152) 3.03, 0.0836
Font color	red	0.0142 B (0.0237)	-0.0132 AB (0.0290)	0.0527 ABC (0.0397)	(1, 152) 1.89, 0.1710
	black	-0.0142 B (0.0237)	0.0132 AB (0.0290)	-0.0527 BC (0.0397)	(1, 152) 1.89, 0.1710
Sign location	left	0.0353 B (0.0245)	0.0326 AB (0.0293)	0.0391 ABC (0.0426)	(1, 152) 0.02, 0.8978
	right	-0.0353 B (0.0245)	-0.0326 AB (0.0293)	-0.0391 BC (0.0426)	(1, 152) 0.02, 0.8978
	(DF) F, *p*:	(12, 1302) 3.19, **0.0002**	(12, 754.1) 1.93, **0.0284**	(12, 531.3) 3.65**, <.0001**	

[z]Different uppercase letters within columns and lowercase letters within rows indicate significant differences of means (shown in bold) by the Tukey-Kramer adjustment at α =.05. Utility and Importance values, and analyses of variance were generated using the TRANSREG and GLIMMIX procedures of SAS software, respectively. (SAS for Windows, v 9.4, SAS Institute Inc.).

importance for font size, color, and sale sign location. However, Michigan participants had a lower relative importance rating for sale font color and sale sign location compared to sale font size.

Next, researchers examined the utility scores for the various levels of each attribute (Table 3). Vegetable transplants were preferred over both herbs and petunias. In terms of conveying the sale price, there were some differences by state. Michiganders expressed greater utility for the sale price stated as buy-3-get-1-free (B3G1) whereas the Texans had a slightly higher utility for the dollar price. This may reflect some regional conventions; some retailers may communicate sale price by percentage versus a dollar amount versus quantity (e.g. B3G1). The moderate font size evoked a greater LTB (had a higher utility score) for the Texans while the larger and smaller font sizes evoked a greater LTB Michiganders.

Table 4. **Effect of sale sign location, sale font color and sale font size on likeliness to buy (LTB) using the 11-point Juster scale[z].**

Sale sign attribute			LTB (0-10)	
Location	**Font color**	**Font**	**Mean (SE)**	**(DF) F, p**
left			5.107 (0.083)	(1, 110) 0.25, 0.6176
right			5.048 (0.083)	
	black		5.068 (0.083)	(1, 110) 0.03, 0.8715
	red		5.087 (0.083)	
		between	5.111 (0.111)	(2, 220) 0.09, 0.9107
		larger	5.069 (0.112)	
		smaller	5.052 (0.079)	

[z]Different letters within columns and sections indicate significant differences of means at α =.05. Data analyses were generated using the GLIMMIX procedure of SAS software. (SAS for Windows, v 9.4, SAS Institute Inc.).

We found no significant main effects of sale sign location, font color, or font size on LTB (Table 4) yet there were three significant interactions. When "sale" appeared in black on the left sign it evoked a greater LTB compared to appearing on the right sign (Fig. 2). Alternatively, when sale appeared on the right sign in red it evoked a slightly greater LTB compared to the left sign. Furthermore, when "sale" appeared in the same size font in black, it evoked a greater LTB compared to larger or smaller font sizes (Fig. 3). However, when "sale" appeared in red, the larger and smaller fonts evoked a greater LTB compared to the identical sized font (Fig. 3). Figure 4 shows that when the "sale" word was smaller, participants were both just as likely and less LTB if "sale" appeared on the left. Yet, if "sale" is shown in an identical font, participants were more LTB if that appeared on the left compared to the right. Yet, when "sale" was larger, they were slightly more LTB if the sale sign appeared on the right. It appears that the combination of differences (smaller or larger font and red font color) influences LTB more so than either difference alone. The highest LTB was for vegetables, priced at 25% off, using a red font color, with a moderate font size placed to the left of the display. The lowest LTB was for herbs,

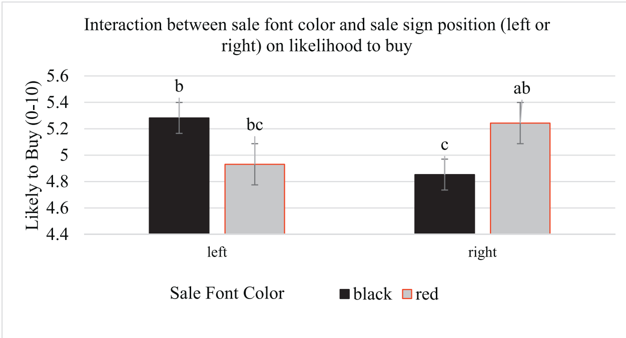

Fig. 2. **Mean and standard error showing interaction between sale font color (red v. black) and sale sign position (left v. right) on likelihood to buy measured with 11-point Juster scale. df (1, 110), F=11.00, p=0.0012. Data analysis was generated using the GLIMMIX procedure of SAS software. (SAS for Windows, v 9.4, SAS Institute Inc.).**

with the sale price conveyed as a dollar amount, in black with a smaller font placed to the left of the display. Examining the combination of effects from Figures 2, 3, and 4, the greatest LTB would be elicited when the "sale" sign appears in a different font size, in red, and on the right side of the display.

For all participants, font size and color and location were relatively small influences on LTB but significant, nonetheless. Michiganders were more LTB when the font size was larger or the same size as the other font size used in the display while Texans found greater utility in a font the same size. Perhaps a greater size difference in the fonts may have evoked clearer preferences for larger or smaller font sizes. We also found some minor geographic differences for the utility of how price was conveyed. Perhaps Texans see a sale conveyed more often as a dollar amount (compared to a percentage off or multiple unit deal as B3G1) ,which may be part of the reason why they were slightly more LTB when the sale price was presented that way.

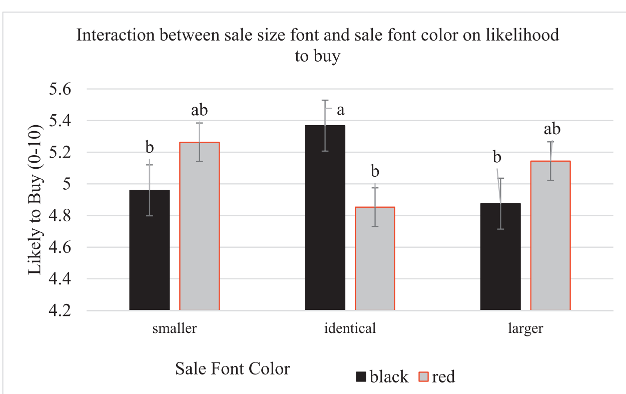

Fig. 3. **Mean and standard error showing interaction between sale font color (red v. black) and "sale" font size (25% smaller, identical, or 25% larger compared to other font on sign) on likelihood to buy measured with 11-point Juster scale. df (2, 220), F=4.75, p=0.0095. Data analysis was generated using the GLIMMIX procedure of SAS software. (SAS for Windows, v 9.4, SAS Institute Inc.).**

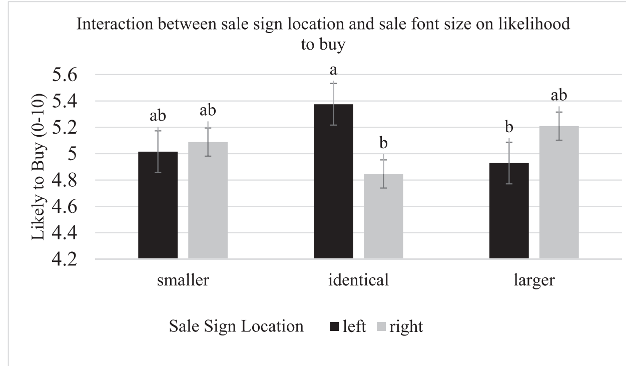

Fig. 4. **Mean and standard error showing interaction between sale sign location (left v. right) and sale size font (25% smaller, identical, or 25% larger compared to other font on sign) on likelihood to buy measured with 11-point Juster scale. df (2,220), F=3.71, p=0.0260. Data analysis was generated using the GLIMMIX procedure of SAS software. (SAS for Windows, v 9.4, SAS Institute Inc.).**

Visual metrics. The first look (TTFF) was 12% faster to a sale sign on the left compared to a sale sign on the right (Table 5). However, the overall length of gaze (TFD) did not differ between sale sign placement left versus right. There was no difference in attracting attention (TTFF) by font color but there was a difference by length of gaze (TFD). The length of gaze (TFD) was 5% longer on sale signs with a red font compared to a black font. So, red was not more effective in attracting attention (TTFF) than black but the red font color did hold attention slightly longer (6.5%). Larger and identical font sizes were seen 5.4% faster (TTFF) compared to smaller fonts. This finding is similar to Pieters and Wedel (2004), who showed that larger font sizes attracted more attention.

The interactions between LTB and font size and color were novel findings. Visual attention was faster to a larger font size in red on the right compared to red or black font on the left (Figure 5). Also, "sale" in a similar font to other text was seen fastest (lower TTFF) on the left compared to larger or smaller fonts (Figure 6). Yet, there was no

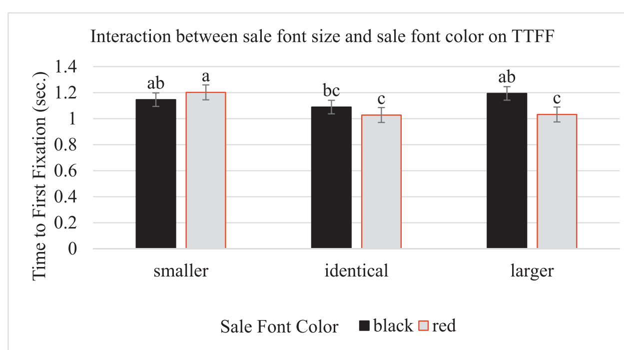

Fig. 5. **Mean and standard error showing interaction between sale font color (red v. black) and sale font size (25% smaller, identical, or 25% larger compared to other font) on time to first fixation (measured in seconds). df (2, 220) F=4.07, p=0.0184. Data analysis was generated using the GLIMMIX procedure of SAS software. (SAS for Windows, v 9.4, SAS Institute Inc.).**

Table 5. **Effect of sale sign location, font color and font relative font size on time to two visual metrics: time to first fixation (TTFF) and total fixation duration (TFD) measured in seconds[z].**

Sale sign attribute			TTFF (sec)		TFD (sec)	
Location	Font color	Font	Mean (SE)	(DF) F, p	Mean (SE)	(DF) F, p
left			1.045 B (0.020)	(1, 110) 18.93, <**0.0001**	0.541 (0.012)	(1, 110) 0.17, 0.6787
right			1.184 A (0.025)		0.548 (0.012)	
	black		1.142 (0.023)	(1, 110) 3.25, 0.0741	0.526 B (0.011)	(1, 110) 4.88, **0.0292**
	red		1.084 (0.022)		0.563 A (0.013)	
		between	1.057 B (0.027)	(2, 220) 5.24, **0.0060**	0.532 (0.016)	(2, 220) 1.79, 0.1699
		larger	1.109 AB (0.031)		0.537 (0.016)	
		smaller	1.173 A (0.024)		0.564 (0.012)	

[z]Different letters within columns and sections indicate significant differences of means at $\alpha = .05$. Data analyses were generated using the GLIMMIX procedure of SAS software. (SAS for Windows, v 9.4, SAS Institute Inc.).

difference in TTFF when "sale" appeared in a larger font on the right compared to the left.

It was the visual metrics that showed the clearest story about how to convey sale promotions by attracting attention and evoking LTB. Study participants appeared to "read" the display with signs to the left capturing visual attention (lower TTFF) more quickly than signs to the right of the display. Although the red "sale" did not capture attention faster than the word in black, it did hold attention slightly longer, giving subjects a longer time about which to think about the deal. Consistent with Pieters and Wedel (2004), larger fonts captured visual attention faster than the smaller font size.

The interactions for the visual metrics also indicate a synergistic effect of the font size and color. The use of red "sale" was more effective in capturing attention (lower TTFF) when the word was the same or a smaller size compared to other text on the sign. But when the word "sale" was the same size as other fonts in the display, it was seen faster (lower TTFF) on the left.

Recommendations. Offering an item on sale can stimulate the desirability of a product (Anderson and Simester 1998, Banerjee 2009). The goal of this study was to better understand consumers' likelihood to buy when the word "sale" was presented in red (versus black) font color on a sign with a white background with a range of font sizes (25% smaller, identical, or 25% larger than other text on the sign) showing an equivalent sale price in three ways (dollar amount, 25% percent off, or B3G1) with the sale sign location varied (left v. right in display).

Given the relative utility of price to LTB, our results suggest some potential modifications when creating signage. The synergistic effect of font size and color indicate that when red fonts are used for the word "sale" they should be larger than other font sizes in the sign and placed to the right of the display. As customers "read" the display from left to right, the red font has greater attention-grabbing power on the right and in a different font size. The sale offer itself may be presented in a regionally appropriate way. With minor differences in LTB for the way the sale is conveyed, more research may be merited to detect and identify regional preferences.

The limitations of this study are similar to other laboratory studies. The use of real plants with which customers could interact may produce different results and increase external validity. A wider variety of plant types, including woody plants, may also influence findings. More geographic diversity may produce different findings as well.

Fig. 6. **Interaction between typeface size of the word "sale" and sale sign position on time to first fixation for 16 choice-based conjoint images. Font size was either 25% smaller, identical, or 25% larger compared to the other font on the signs. df (2, 220) F=2.87, p=0.0590. Data analysis was generated using the GLIMMIX procedure of SAS software. (SAS for Windows, v 9.4, SAS Institute Inc.).**

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