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LOWER BUFFET PRICES LEAD TO LESS TASTE SATISFACTION

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ABSTRACT

A field experiment was conducted to assess how diners' taste evaluations change based on how much they paid for an all-you-can-eat (AYCE) buffet. Diners at an AYCE restaurant were either charged \$4 or \$8 for an Italian lunch buffet. Their taste evaluation of each piece of pizza consumed was taken along with other measures of behavior and self-perceptions. Their ratings were analyzed using 2×3 mixed design analysis of variance (ANOVA). Diners who paid \$4 for their buffet rated their initial piece of pizza as less tasty, less satisfactory and less enjoyable. A downward trend was exhibited for each of these measures with each additional piece (P = 0.02). Those who paid \$8 did not experience the same decrement in taste, satisfaction and enjoyment. Paying less for an AYCE experience may face the unintended consequence of food that is both less enjoyable and rapidly declining in taste and enjoyability. In a sense, AYCE customers get what they pay for.

PRACTICAL APPLICATIONS

This study demonstrates that when eating in a less expensive all-you-can-eat (AYCE) buffet, people find the food less tasty. Such a consequence means a less enjoyable experience for the consumers, which may have implications for repeat purchase. By employing a low-price strategy, AYCE restaurants can attract the initial business of customers. However, these customers may end up evaluating the food unfavorably. As a result, the low-price strategy may not be as profitable in the long term. This study has implications for both consumers and restaurants.

INTRODUCTION

All-you-can-eat (AYCE) restaurants or buffets were first introduced in the 1970s (Auchmutey 2002) and continues to grow in popularity (Oyewole 2013). AYCE restaurants or buffets charge a fixed price for access to a variety of food, and then allow customers to consume as much food as they wish at no additional charge (Nahata et al. 1999). While much of the recent literature investigates the influences on quantity consumed at an AYCE buffet (Levitsky et al. 2004; Lassen et al. 2006; Wansink and Payne 2008; Kral et al. 2009; Just and Wansink 2011; Tepper et al. 2011), an overlooked area of importance is how the amount eaten and the pricing of the buffets influence one's taste evaluation and sensory experience. Knowing how one's taste experience changes over the course of a buffet meal could be useful both for diners and for buffet owners. It could help diners to determine whether they wish to visit a buffet - whether it is

worth the price and the calories – or when to stop eating should they choose to go. For buffet owners, it could be helpful to determine how to offer the most valued experience for potential diners.

We hypothesize that the price of the buffet could help set customer taste expectations (Wansink 2004), which have been generally shown to influence ex post taste evaluations. Moreover, we hypothesize that as one consumes more, their taste evaluations may decrease. Sensory-specific satiety has been shown to gradually decrease one's enjoyment of food independent of how much one has eaten (Rolls *et al.* 1981; Vickers and Holton 1998). For this reason, we suspect that one's general evaluation of food will decrease with each additional unit of food.

Previous studies of taste relationships in a buffet setting have been conducted with recruited subjects in artificial laboratory situations where food is offered without any charge (Raghunathan *et al.* 2006; Wansink and van Ittersum

2012). One study was conducted in a field setting, but participants were still restricted to just one type of food (Just and Wansink 2011). Such treatments limit the external validity of their results by creating relatively unnatural eating environments. As a result, it has been difficult to assess how pricing impacts one's taste evaluation and experience in a realistically encountered AYCE situation. This field study is designed to overcome these shortcomings.

BACKGROUND

The primary literature studying eating behaviors within an AYCE setting has focused on the potential for overeating and contributions to obesity. Eating environments offering easy access to a variety of energy dense and highly palatable foods are associated with overeating, weight gain (Peregrin 2001; Young and Nestle 2002; Norton et al. 2006; Duerksen et al. 2007; Brondel et al. 2009; Moore et al. 2009; Tepper et al. 2011) and obesity (Casey et al. 2008; Wansink and Shimizu 2013). Wansink and Payne (2008), for example, showed that obese patrons of Chinese buffets were more likely to sit closer to the serving area, face the buffet, serve themselves immediately and to take large plates. Additionally, Levitsky et al. (2004) reported that eating at an AYCE dining hall accounted for 20% of weight gain among college freshman. Tepper et al. (2011) documented that, compared with a fixed menu, energy intake of participants in a buffet setting was an average of 270 kcal (by 56%) higher. In this study, we focus quantity consumed only insofar as it may impact taste evaluations.

Many cues, such as temperature, food aromas, interior decorating, layout, food quality, service quality and price, influence a consumer's restaurant evaluations, dining experience, satisfaction and revisit intentions (e.g., Johns and Pine 2002; Chow et al. 2007; Law et al. 2008; Hyun 2010; Hyun and Kang, 2014). Consumers' taste evaluations are not purely objective either. These evaluations can be affected by environmental cues (Krishna 2012; Spence 2012) such as perceptions of healthiness/unhealthiness of the food (Raghunathan et al. 2006), food labeling (Wansink et al. 2001), lighting and music (Wansink and van Ittersum 2012), descriptions of the food (Tuorila and Cardello 2002), food presentation (Zellner et al. 2014), package design, brand names and price (Deliza and MacFie 1996; Okamoto and Dan 2013). The literature supposes that in some situations when such cues may be more reliable, people tend to use cognitive shortcuts such as an environmental cue to determine quality (Wilson and Brekke 1994; Wansink et al. 2000; Zellner and Durlach 2003; Srinivasan et al. 2004). A brand name, retail outlet and country of origin, or price are some of the key extrinsic cues that people use to evaluate the quality of a product or service (Dodds 1991; Kardes et al. 2004).

Price as an extrinsic cue has long been shown to influence food consumption often through the simple impact on budget. Thus, as the price decreases, one can afford more and thus purchases more. For example, French et al. (1997) reported an increase in the consumption of low-fat snacks when their prices are reduced relative to other snacks. Similarly, reducing the price of fruit and salad by 50% led to an increase in their sales (Jeffery et al. 1994). Horgen and Brownell (2002) reported that price decreases have a more powerful effect on healthy food consumption than healthrelated messages. In some econometric studies, it is suggested that lower food prices lead to increased energy intake (Finkelstein et al. 2005; Drewnowski 2007). However, prices can have different impacts in a setting where additional consumption does not increase the cost such as an AYCE buffet. Just and Wansink (2011) reported that people eat more in high-price conditions in an AYCE restaurant. This appeared to be due to the patron's desire to get their money's worth from consumption.

Price is also known to influence consumer evaluations in many contexts (Andaleeb and Conway 2006; Kim *et al.* 2006; Law *et al.* 2008). In general, the theory is that consumers use price as a predictor of quality prior to purchase (Leavitt 1954; Monroe 1976; Rao and Monroe 1988; Dickson and Sawyer 1990; Manrai *et al.* 1998; Glitsch 2000; Bredahl 2003; Mattila and O'Neill 2003; Kardes *et al.* 2004; Verdu-Jover *et al.* 2004; Raab *et al.* 2009; Yim *et al.* 2014). For example, consumers may infer quality from price, if they are unmotivated or unable to process available product-related information (Suri and Monroe 2003; Kardes *et al.* 2004). Yan and Sengupta (2011) and Bornemann and Homburg (2011) documented the reliance on price for making quality inferences when one has not had direct experience with a product.

The ex ante quality evaluation set up expectations that influence and enhance product experience, with higher prices leading to better evaluations (Shiv et al. 2005; Plassmann et al. 2008; Gneezy and Gneezy 2010). There is some debate, however, regarding the positive correlation between price and quality. Indeed, some find that high quality expectations can lead consumers to be more discerning and critical and therefore more apt to be disappointed (Riesz 1979; Geistfeld 1982). There is a rich body of research about the price-perceived quality heuristic and how price may indirectly influence product evaluations (e.g., Leavitt 1954; McConnell D. 1968; Stafford and Enis 1969; Dodds et al. 1991; Volckner and Hofmann 2007; Kirchler et al. 2010). The majority of the empirical literature finds that the higher the prices, the higher the quality perceptions (Rao and Monroe 1988; Lichtenstein and Ridgway 1993; Lee and Lou 1996; Volckner and Hofmann 2007; Veale and Quester 2009; Kirchler et al. 2010). On the contrary, some studies documented various findings about the price–quality relationship in specific conditions such as the availability of other information like brand names (Gardner 1971), intrinsic information cues (Chang and Wildt 1994) or cultural self-construal influences – interdependent versus independent cultural thinking styles (Lalvani and Shavitt 2013). Yan *et al.*, (2014) – documented the consumer usage of price information for quality judgments even when package sizes differed substantially.

Extrinsic cues, such as price, can often be more influential on quality evaluations than sensory perceptions (Pechmann and Ratneshwar 1992; Richardson et al. 1994; Prescott et al. 2004; Verdu-Jover et al. 2004). Thus, how much one has paid for food might be a primary influence on one's sensory evaluation of taste. For example, a lower quality orange juice can be favored over a better objective quality if the price of the higher quality orange juice is significantly lower (Pechmann and Ratneshwar 1992). Veale and Quester (2009) found that consumers are influenced more by price than taste when evaluating the quality of wine. Similarly, women give wine higher taste ratings when it is more expensive (Almenberg and Dreber 2010). Wine that is thought to be more expensive is also associated with greater stimulation of the pleasure centers of the brain (Plassmann et al. 2008). In general, menu prices are used by consumers as a signal of restaurant quality (Hardesty et al. 2007; Kim and Jang 2013).

Our reading of the literature leads us to hypothesize that one would rate pizza from an \$8 pizza buffet as tasting better than the same pizza at a \$4 buffet. However, the rating profile of additional slices of pizza as one continues to eat is unclear. If one has paid a relatively high amount for the pizza, it may be that cognitive dissonance might prevent him or her from decreasing his or her taste evaluation in order to believe they had gotten their money's worth. This issue of how price interacts with the declining ratings of food (or other items) is to our knowledge a new area of research.

METHODS

To make accurate comparisons across different price conditions, it was necessary to find an AYCE restaurant where diners could unobtrusively be served and observed in a natural manner that addressed the three key weaknesses of prior work mentioned in the introduction: (1) past studies were conducted with recruited subjects in artificial laboratory situations; (2) there was generally no charge for the food; and (3) there was typically only one food offered. To accomplish this, the researchers cooperated with Aiello's Italian Restaurant, an AYCE restaurant midway between Syracuse and Binghamton, New York. The restaurant had an AYCE luncheon buffet served on weekdays, where they

served the conventional foods offered at such buffets: pizza, salad, breadsticks, pasta and soup. The study was conducted during lunch buffet hours for a 2-week period in the spring. When walking from the restaurant parking lot to the door, patrons were asked to participate in a short survey related to the restaurant and then given a flyer. In this between-subjects randomized block design, one group was given a flier that promoted the \$8 buffet and offered a free beverage. The second group was given the same flier and the free beverage, but was informed the buffet cost \$4. Neither price was advertised as a special deal, nor was the regular buffet price posted elsewhere. Thus, patrons unfamiliar with the restaurant were likely to consider the price on the flyer as the true price of the buffet.

After agreeing and providing informed consent, participants were asked two open-ended restaurant-selection questions which were intended to distract them from the true purpose of the study (Bradburn *et al.* 2004): (1) "What other places did you consider for lunch?" and (2) "Why did you choose this restaurant?" They were then thanked and given the flier and asked if they would answer a short series of questions when they finished their meal.

People who arrived in groups (such as those who arrived in the same car) were all assigned to the same condition. Groups were assigned to conditions in alternating order. That is, the first group was offered the \$4 buffet and a drink, whereas the second group was offered the \$8 buffet and the drink. The data were collected from 11:00 a.m. to 1:30 p.m., and the weather was overcast and chilly or rainy through each of the days of the study.

Of the 139 participants (72 groups), 6 people who were younger than 18 years old were eliminated. Eleven other participants did not complete the relevant questions on the survey. Thus, usable and complete data were collected from 122 people. Of the 139 total participants, 8 were dining alone, 52 arrived in a group of 2 diners, 43 in either a group of 3 or 4, and 30 arrived in a group of 5 or more. Diners served themselves pizza, salad, pasta, breadsticks and soup, and could return to the buffet as often as they wanted. The modal number of pieces of pizza taken was three.

As diners completed their meal, they were intercepted after they paid at the cash register following the meal, and each was given a short questionnaire that asked for demographic information along with a variety of questions asking how much they believed they ate, and their taste and quality evaluations of the pizza. Other than questions involving numerical estimates, most questions asked their agreement with a number of statements on 9-point Likert scales (1 = "strongly disagree"; 9 = "strongly agree"). The specific wording for each Likert question appears in Table 2. Demographics of the two conditions are provided in Table 1.

\$4 buffet (n = 62)\$8 buffet (n = 60)F-test (P value) **Demographics** 44.16 (18.99) 46.08 (14.46) 0.42 (0.52) Gender (male percent) 47.9 57.4 68.52 (3.95) 67.91 (3.93) 0.76 (0.37) Height Weight 182.31 (48.41) 0.03 (0.87) 180.84 (48.37) Number in group 1.34 (0.25) 3.00 (1.55) 3.28 (1.29) Other potential utility measures 6.64 (2.06) I was hungry when I came in 6.62 (1.85) 0.00 (0.95) I am hungry now 1.88 (1.34) 1.85 (1.75) 0.01 (0.91)

TABLE 1. DEMOGRAPHIC CHARACTERISTICS AND POTENTIAL UTILITY MEASURES OF THE SAMPLE

	\$4 buffet (n = 62)	\$8 buffet (n = 60)	F-test (P value)
Taste, satisfaction and enjoyment			
The pizza, in general, tasted really great	6.89 (1.39)	7.44 (1.60)	4.24 (0.04)
The first piece of pizza I ate tasted really great	7.08 (1.30)	7.45 (1.60)	1.97 (0.16)
The first piece of pizza I ate was very satisfying	7.08 (1.37)	7.34 (1.70)	0.82 (0.37)
The first piece of pizza I ate was very enjoyable	7.05 (1.40)	7.47 (1.55)	2.40 (0.12)
The middle piece of pizza I ate tasted really great	6.68 (1.49)	7.97 (1.21)	15.42 (0.00)
The middle piece of pizza I ate was very satisfying	6.68 (1.49)	7.97 (1.21)	14.69 (0.00)
The middle piece of pizza I ate was very enjoyable	6.64 (1.48)	7.81 (1.22)	12.48 (0.00)
The last piece of pizza I ate tasted really great	6.15 (1.89)	7.58 (1.39)	15.16 (0.00)
The last piece of pizza I ate was very satisfying	6.16 (1.87)	7.41 (1.55)	10.99 (0.00)
The last piece of pizza I ate was very enjoyable	5.98 (1.86)	7.45 (1.52)	15.60 (0.00)

TABLE 2. HOW PRICING OF ALL-YOU-CAN-EAT BUFFET INFLUENCE CONSUMPTION, TASTE, SATISFACTION AND ENJOYMENT

Note: All scaled questions are measured on a Likert scale, with 1 = strongly disagree and 9 = strongly agree. Standard deviations are shown in parentheses.

RESULTS

From Table 1, we find no significant difference based on demographics (P > 0.05) and beginning hunger levels between the two treatments (P > 0.05), suggesting successful randomization. Recall the two basic hypotheses of our study: (1) diners will generally evaluate the taste of pizza as better when paying more for the buffet and (2) their ratings will decrease with each subsequent piece of pizza they eat. Table 2 displays the results of the taste, satisfaction and enjoyability evaluations. The general taste evaluation of pizza eaten was lower for the \$4 diners than the \$8 diners (6.89 versus 7.44; F[1,122] = 4.24; P = 0.04).

According to Table 2, when analyzing individual responses in general, those paying high price for the buffet not only evaluate the general taste of the pizza higher but also find the middle and last pieces of pizza more tasty, more satisfying and more enjoyable (P < 0.00).

When examining diners who ate at least three pieces of pizza, there was a significant effect of the price paid on the taste evaluation of pizza. Results revealed that the higher the price paid, the better the taste evaluations are. Additionally, taste evaluations decline with each piece of pizza eaten (see Table 3). The first piece is rated significantly more tasty than the second piece (F[1,35] = 10.16, P = 0.00, r = 0.47); the first piece is significantly more tasty than the third piece

TABLE 3. MAIN AND INTERACTION EFFECTS OF PRICE PAID AND PIECES CONSUMED ON PIZZA TASTE, SATISFACTION AND ENJOYMENT

								Effect of Price × Pieces						
	Effect of price paid		Effect of pieces consumed			\$4		\$8						
	\$4	\$8	F-test (P value)	1st piece	2nd piece	3rd piece	F-test (P value)	1st piece	2nd piece	3rd piece	1st piece	2nd piece	3rd piece	F-test (P value)
Pizza taste evaluations	6.84	8.00	7.15 (0.00)	7.77	7.36	7.13	11.09 (0.00)	7.43	6.71	6.38	8.13	8.00	7.88	4.38 (0.02)
Pizza satisfaction ratings	6.89	7.79	3.41 (0.07)	7.63	7.33	7.07	7.06 (0.00)	7.50	6.79	6.39	7.75	7.88	7.76	7.70 (0.00)
Pizza enjoyment ratings	6.67	7.78	6.82 (0.01)	7.55	7.21	6.91	7.10 (0.00)	7.28	6.61	6.11	7.82	7.82	7.71	4.85 (0.02)

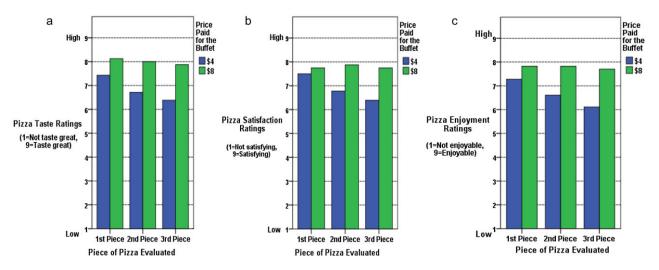


FIG. 1. (A) PIZZA TASTE RATINGS OF HIGH-PRICE VERSUS LOW-PRICE PAYERS BY PIECE OF PIZZA, (B) PIZZA SATISFACTION RATINGS OF HIGH-PRICE VERSUS LOW-PRICE PAYERS BY PIECE OF PIZZA AND (C) PIZZA ENJOYMENT RATINGS OF HIGH-PRICE VERSUS LOW-PRICE PAYERS BY PIECE OF PIZZA OF PIZZA PRICE PAYERS BY PIECE PAYERS

(F[1,35] = 14.10, P = 0.00, r = 0.54); and the second piece is significantly more tasty than the third piece (F[1,35] = 4.63,P = 0.03, r = 0.35) with moderate to high effect sizes¹ (Field 2005). Similar patterns were found for pizza satisfaction and pizza enjoyment evaluations. Pizza satisfaction and enjoyment also decreases significantly with each piece of pizza eaten (see Table 3). The decline in satisfaction is significant between first piece and second piece (F[1,32] = 5.57,P = 0.02, r = 0.39); and first piece and third piece (F[1,32] = 8.01, P = 0.00, r = 0.45); and second piece and third piece (F[1,32] = 5.95, P = 0.02, r = 0.40). Also, the decline in enjoyment is significant between first and third piece (F[1,33] = 8.46, P = 0.00, r = 0.45); second piece and third piece (F[1,33] = 10.72, P = 0.00, r = 0.50); although the effect is not significant between first piece and second piece, there is a moderate level effect size (F[1,33] = 3.77,P = 0.06, r = 0.32).

As can be seen from Fig. 1a, there was also a significant interaction effect between the taste evaluation of each piece of pizza eaten and price paid for the buffet. Taste evaluations for each piece of pizza significantly differ between high-price payers and low-price payers (see Table 3). Among those who paid \$8 for their buffet, not only were the ratings significantly higher, but they did not decay much over the first three pieces of pizza. The \$4 group shows a significantly greater decline in taste evaluation relative to the \$8 group based on their first and third piece (F[1,35] = 5.33, P = 0.02, r = 0.36), first and second piece (F[1,35] = 5.00, P = 0.03, r = 0.35), and second and third piece (F[1,35] = 0.95, P = 0.33, r = 0.17) evaluations with moderate effect sizes

(see Fig. 1a). Moreover, Fig. 1b,c shows a significant interaction effect between the satisfaction and enjoyment evaluations of each piece of pizza eaten and price paid for the buffet. This shows that just like the taste evaluations, satisfaction and enjoyment evaluations for each piece of pizza also differ between high-price payers and low-price payers. Among those who paid \$8 for their buffet, the ratings for pizza satisfaction and pizza enjoyment are significantly higher. For pizza satisfaction evaluations, the \$4 group shows a significantly steeper decline in evaluation relative to the \$8 group based on their first and third piece (F[1,32] = 8.01, P = 0.00, r = 0.45), first and second piece (F[1,32] = 11.20, P = 0.00, r = 0.51), and second and third piece (F[1,32] = 1.57, P = 0.21, r = 0.22) evaluations (see Fig. 1b). Also, for pizza enjoyment evaluations, the \$4 group shows significantly larger decline relative to the \$8 group based on their first and third piece (F[1,33] = 5.64, P = 0.02,r = 0.39), first and second piece (F[1,33] = 3.77, P = 0.06, r = 0.32), and second and third piece (F[1,33] = 4.11,P = 0.05, r = 0.33) evaluations (see Fig. 1c).

GENERAL DISCUSSION

By offering a fixed price, AYCE buffets can be seen as an attractive option by many consumers. The researchers present results that show low-cost AYCE buffets can lead customers to a less desirable experience. This research could draw attention to two important findings. First, the findings suggest that the higher the price people pay for AYCE buffet, the more they will like their food in terms of taste, satisfaction and enjoyment. Second, the study results show that with each subsequent piece of pizza, the gap in taste,

 $^{^{1}} r = \sqrt{[F(1,df_{R})/(F(1,df_{R}) + df_{R})]}.$

satisfaction and enjoyment evaluations grew. Consistent with the fundamental economic concept of declining marginal utility of consumption, all quality evaluations declined with each additional slice of pizza consumed. The effect of each additional piece eaten on the taste, satisfaction and enjoyment evaluations is more extreme for customers paying a lower price. In other words, the less people pay for an AYCE buffet, the more their taste, satisfaction and enjoyment evaluations will decrease with each additional piece of pizza they consume. Given the sample size, these findings are somewhat preliminary and should be viewed in light of the limitations described in the following section.

This study shows us that when eating in a low-priced AYCE buffet, people may find the foods less tasty. For the consumers, this kind of a consequence means having a less enjoyable experience. On the contrary, unfavorable customer evaluations could reduce repeat business in the long term. Although AYCE restaurants may employ a low-price strategy in order to attract the business of customers, when considering the possibility that these customers end up evaluating the food unfavorably, the low-price strategy may not be as profitable in the long term. More work must be done to determine how these taste ratings eventually impact return business in the future. The key in this relationship may be whether the cost or the experience is more salient in the consumer's memory of the experience.

LIMITATIONS AND FUTURE RESEARCH

The study confirms that pricing can influence taste evaluations in the context of our field study. However, it is not exempt from some limitations. Foremost among these is the implementation of our treatments. While the flyers could give the impression that the prices advertised are the regular price to an inexperienced customer, it is unclear whether it would have the same impact on more experienced customers. For them, it may be viewed as a special discounted price. Unfortunately, we did not obtain reliable measures of their prior price expectation or prior patronage. Thus, one must be careful when interpreting the amount paid in this context as the perceived price. Additionally, it would be desirable to replicate this study with a larger sample size, and in a wider variety of locations. As is, the study must be interpreted as a pilot project yielding tentative results that are subject to the usual need for replication.

This study was conducted in a restaurant that only serves an AYCE buffet. Because there are no other dining options over lunch, we can generally assume that patrons were going to choose the buffet no matter which price was charged, reducing potential selection effects. A selection effect may remain if one was unaware of the buffet offering and would have rejected the higher price buffet. Given the low cost of even the \$8 buffet, we consider this unlikely. One of the

consequences of our decision to conduct this study in an AYCE diner is that our sample may not be representative of the population as a whole. The treatment effect might be different if infrequent buffet diners were recruited. Additionally, it is unclear whether these results would generalize to situations in which patrons had access to a broader variety of foods. If consumers had the opportunity to switch to consumption of other items when taste and satisfaction ratings began to decline, this could impact the rate of decline in each of the attribute ratings. Ostensibly such behavior could help preserve marginal utility over the course of the meal. Further research must be performed to examine the implications in more general consumption settings including full service restaurants.

Although an AYCE buffet gives insightful results about the relation between pricing and taste evaluations, future work could extend this study to pay per slice sales or other more common modes of sale. Examining the taste and pricing relationship at different and broader price levels could also give fruitful results. The available variety of foods on the buffet complicates the interpretation of our results slightly as consumers could opt for alternative foods if their evaluation declined enough. Because the study was conducted in one location, and in one restaurant type with the diners who have a higher propensity toward AYCE buffets, care must be taken in generalizing our findings. Future research can help extend these results to a broader set of applications.

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