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Influence of teaware on subjective ratings of, and taste expectations concerning, tea

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Highlights

- Two studies conducted to examine people's expectations of tea when presented in different teaware.
- Teaware influenced expected bitterness and astringency of tea.
- Teaware also affected pleasantness ratings of tea when there was no price information .
- Price information affected pleasantness ratings and eliminated teaware effects.
- Ethnic congruence between products and contextual cues affected product ratings.

Abstract

Two studies were conducted in order to investigate the influence of teaware on consumers' subjective ratings of, and taste expectations concerning, one of the world's most popular beverages, namely tea. In Study 1, 100 Chinese participants and 100 participants from the USA viewed online photographs of Chinese brand and British brand green tea presented in either Chinese or British tea sets. The participants then rated their feelings about, taste expectations concerning, and willingness-to-pay for, each cup of tea. In Study 2, 65 Chinese participants also viewed these photos with either a high or low price label for each cup of tea. The results of both studies consistently revealed that the teaware influenced Chinese participants' bitterness and astringency ratings concerning their tea expectations; whereas no such effects were found for the USA participants. Moreover, the teaware also influenced Chinese participants' pleasantness ratings of tea when no price information was provided, but not when price information was presented. Collectively, these findings highlight the influence of the visual appearance of the receptacle on the subjective ratings of, and taste expectations concerning, tea. These results also compare the influence of product-extrinsic and contextual cues on consumers' taste expectations.

Keywords: expectation; receptacle; price; green tea; cross-cultural

INTRODUCTION

Product characteristics can be classified into those attributes that are intrinsic and those that are extrinsic (Asioli et al., 2017; Olson & Jacoby, 1972). Consumers' perception, or ratings, of numerous different foods and drinks are influenced by a variety of product-extrinsic cues. These product-extrinsic cues include price (Almenberg & Dreber, 2011; Plassmann, O'Doherty, Shiv, & Rangel, 2008), product name (Silva et al., 2017), brand (Guinard, Uotani, & Schlich, 2001; McClure et al., 2004), region of origin (Claret et al., 2012; Hoegg & Alba, 2007), ethical or organic labels (Sörqvist et al., 2013), and ingredient information (Lee, Frederick, & Ariely, 2006), all of which can help set consumers' expectations concerning the product experience (Plassmann & Wager, 2014). For instance, consumers generate expectations concerning the quality of the products based on their price (Huber & McCann, 1982) and/or the pleasure that they expect to derive from consumption (Alba & Williams, 2012; Higgs, 2016). Typically, they also enjoy the same products more when they are labelled with a higher price than with a lower price (Goldstein et al. 2008; Plassmann et al. 2008; Plassmann & Weber, 2015).

The packaging that a food or drink product is marketed and purchased in can also be considered a product-extrinsic attribute (Skaczkowski, Durkin, Kashima, & Wakefield, 2016; Velasco & Spence, 2019), and has been shown to influence consumers' perception of, and expectations concerning, the products (for a review, see Spence & Velasco, 2018). By contrast, the receptacles in which a drink or food is

served, is more often considered a contextual cue than as a product-extrinsic cue. Consumers' perception of foods and drinks can also be influenced by a range of contextual factors such as cutlery or tableware (Michel, Velasco, & Spence, 2015; see Spence, Harrar, & Piqueras-Fiszman, 2012, for a review). Similar to the effect of price, consumers can also generate expectations about the quality of products based on the quality of their containers (Kimura, Tamaki, Tokunaga, Mukawa, & Wada, 2018; Krishna & Morrin, 2008). Numerous studies have documented that receptacles can influence consumers' perception of the drinks (for reviews, see Spence, 2011; Spence & Wan, 2015). For instance, the shape of the receptacle used to serve the drinks has been demonstrated to influence the perceived aroma/odour of the wine (Cliff, 2011; Hummel, Delwiche, Schmidt, & Hüttenbrink, 2003; Vilanova, Vidal, & Cortés, 2008), as well as the perceived and expected taste of coffee (Carvalho & Spence, 2018; Van Doorn et al., 2017; see Spence & Carvahlo, 2019, for a recent review), and the actual taste of beer (Mirabito, Oliphant, Van Doorn, Watson, & Spence, 2017) or soda (Cavazzana, Larsson, Hoffmann, Hummel, & Haehner, 2017).

Importantly, consumers like alcoholic drinks, soda, or hot tea more (Raudenbush, Meyer, Eppich, Corley, & Petterson, 2002; Schifferstein, 2009; Wan, Zhou, Woods, & Spence, 2015) when presented in receptacles that are considered congruent (or appropriate) to the drinks. Consumers have also been shown to be willing to pay more for the same drink when served in such a receptacle (Wan et al., 2015). However, to date, very few studies have been conducted in order to investigate the influence of

receptacles (but as one type of contextual cues) on the subjective ratings of, or expectations concerning, tea. Tea is a globally popular beverage (Macfarlane & Macfarlane, 2004; Sartor, 2007), and is purported to have a number of health benefits (Mandel, Amit, Kalafon, Reznichenko, & Youdim, 2008; Thielecke & Boschmann, 2009). Drinking tea is not only an integral part of many people's daily life, but also represents a certain lifestyle in some countries such as China and the UK which are well known for their unique and distinctive tea cultures (Blofeld, 1985; Li, 1993). Generally speaking, tea often has certain level astringency and bitterness (Cho, Chung, Kim, & Kim, 2005; Drobna, Wismer, & Goonewardene, 2004; Huang, Huang, & Wan, 2019; Lee & Chambers, 2007). The sensory properties of the same type of tea differ depending on the country of origin (Lee et al., 2008, 2010), the water (Dos, Ayhan, & Sumnu, 2005), as well as many details of the tea-making process (Lee et al., 2013). The receptacles and utensils used to prepare and serve tea also vary based on the type of tea and the cultural setting (Blofeld, 1985). The tea beverage can be prepared by brewing dried leaves of the tea plant (or a tea bag) in hot water (Li, 1993), in a teapot, or directly in a teacup or mug. A teacup set to serve Chinese tea to an individual consists of a cup (without handle), a matching plate (saucer), and sometimes a matching cover; whereas a teacup set to serve British tea consists of a cup (with a small handle) and a matching saucer.

The present study was therefore conducted in order to investigate the influence of teaware, as well as its interaction with price cues, on consumers' subjective ratings of,

and their taste expectations concerning, tea (Tu, Yang, & Ma, 2015). In Study 1, Chinese and British brand green tea beverages were presented in a Chinese or British tea set, with the type of tea being labelled explicitly. We therefore investigated the influence of teaware on participants' subjective ratings of, taste expectations concerning, and willingness-to-pay (WTP) for, a cup of tea. We chose to test participants from two countries who have been exposed to both Chinese and British tea in their daily life, including participants from mainland China who are much more familiar with Chinese tea than with British tea (Wan et al., 2014), and the participants from the USA who are potentially more familiar with British tea than with Chinese tea (Patton, 2011). Therefore, we were also interested in possible cross-cultural differences between Chinese participants and those from the USA in terms of their responses to the same images of tea beverages. In Study 2, we again presented Chinese and British brand green tea in either Chinese or British tea sets, but this time labelled them with either a high or low price, determined on the basis of the WTP data from Study 1. We therefore examined whether teaware and price interact to influence Chinese participants' perception of, and taste expectations concerning, tea. We chose to use the online testing methodology in both studies in order to be able to obtain a multi-national pool of participants in Study 1, and to simulate the situation with challenges (e.g., lack of actual consumption of the tea) that online marketing practice often faces (Woods et al., 2015).

STUDY 1

The purpose of the present study was twofold. First, we investigated the influence of receptacle on the subjective ratings of, taste expectation concerning, and WTP for, the green tea beverages. Second, we investigated the presence of any cross-cultural differences between Chinese participants and those from the USA.

Methods

Participants

A total of 100 participants from mainland China (mean age = 20.71 ± 2.00 years, ranging from 18 to 27 years; 50 male and 50 female) and 100 participants from the USA (mean age = 23.13 ± 2.78 years, ranging from 18 to 27 years; 60 male and 40 female) took part in the first study. The Chinese participants were recruited from the subject pool of the psychology department of Tsinghua University, Beijing, China; whereas the participants from the USA were recruited via the website of Prolific (www.prolific.ac). All of the participants reported having normal or corrected-to-normal vision without colour blindness. The present series of experiments was approved by the Ethics Committee of the Psychology Department of Tsinghua University. The participants gave their written informed consent electronically prior to the start of the study and were monetarily compensated for their time and participation. We used the G*Power software to estimate the sample size, and the results revealed that a sample of 100 participants for each group can detect the effects with $\eta_p^2 \geq 0.19$ (statistical power = 0.95).

Materials

The experiment was conducted online at www.qualtrics.com. The participants from China and the USA took part in the Chinese and English versions of the study, respectively. As shown in Figure 1, photos (200 pixels wide × 150 pixels high) of Chinese brand green tea (Jinghua brand, Green Tea, Beijing Ershang Group Ltd., Beijing, China, http://www.bjfood.com.cn) and British brand green tea (Twinings brand, Pure Green Tea, Twinings. Ltd., London, UK, http://www.twinings.com) were shown to the participants, with the type of tea labelled below each picture. Two different types of receptacles were used to present each type of green tea, including a white British tea set (including a 210-ml cup and saucer) and a white-coloured Chinese tea set (including a 240-ml cup, saucer, and cover) with blue patterns of entangled floral branch.

INSERT FIGURE 1 ABOUT HERE

In order to prepare the photos, the tea beverages were prepared in the same way as in Wan et al.'s (2014) study of colour-flavour associations in tea. Specifically, we first used an electronic kettle to heat purified water to boiling point (i.e., 100℃) and

then let the water cool to approximately 85℃. Next, each cup of tea was made by mixing 120 ml of the water in a water glass with a tea bag. Each tea bag was left to stand in the water for 3 minutes and stirred twice before being removed from the water. The tea was then left to cool down to room temperature before the photos were taken.

Design and procedure

A 2 (Tea: Chinese or British brand green tea) × 2 (Receptacle: Chinese or British tea set) × 2 (Group: participants from China or the USA) mixed-design was used, with Tea and Receptacle manipulated within-participants while Group was manipulated between-participants. The pictures were presented in a random order, with one picture on each page. During each trial, the participants were shown one picture and asked to rate pleasantness, familiarity, drink-receptacle congruency, and their expectations concerning the taste of the tea beverage on 7-point scales. Similar to the studies of Chinese tea by Wan et al. (2014) and Huang et al. (2019), we also asked the participants to rate their expectations concerning the bitterness, astringency, sweetness, saltiness, and sourness of the tea. They were also asked to indicate their willingness to pay for each cup of tea by specifying the amount of money they would like to pay for it, with Chinese participants using the units of Chinese Yuan (CNY) and the USA participants using in the units of USD. At the end of the study, the participants were asked to indicate the frequency with which they drank tea in their daily life (‘everyday’, ‘often’, ‘occasionally’, or ‘never’). The percentages of

participants who considered the frequency with which they drank tea as ‘every day’, ‘often’, ‘occasionally’, and ‘never’ in their daily life were 8%, 18%, 69%, and 5% for Chinese participants, respectively, and 13%, 36%, 42%, and 9% for the participants from the USA, respectively.

Results and discussion

Subjective ratings

Mean scores of pleasantness, familiarity, and drink-receptacle congruency ratings are shown in Figure 2. In the present and the following studies, we used SPSS 23 software (Statistical Product and Service Solutions, IBM) to conduct all the data analyses. We first performed 2 (Tea: Chinese of British brand green tea) × 2 (Receptacle: Chinese or British tea set) × 2 (Group: Chinese or the USA participants) mixed-design analysis of variance (ANOVAs) on the data (see Table 1 for a summary of the results). The results revealed a significant main effect of Tea on all three measures, and a significant main effect of Receptacle on the pleasantness scores, but they were qualified by significant interaction terms between Tea and Receptacle for all three measures. As can be seen in Table 1, the results also revealed a significant main effect of Group on the drink-receptacle congruency scores, with Chinese participants rating the teaware as more congruent with the drink than did the participants from the USA (4.7 vs. 4.3). Moreover, the results also revealed a

significant interaction between Receptacle and Group on the familiarity scores, and a significant interaction between Tea and Group on all three measures. None of other main or interaction effects was significant.

INSERT FIGURE 2 & TABLE 1 ABOUT HERE

In order to interpret the significant Tea × Receptacle interaction terms on all three measures, the data from the two groups of participants was combined and a one-way repeated-measure ANOVA was performed for each type of tea with Receptacle as the independent factor. The results revealed that Chinese brand green tea was rated as more pleasant when shown in the Chinese tea set than when shown in the British tea set (5.2 vs. 4.6), F (1, 199) = 27.25, $p < 0.001$, $\eta_p^2 = 0.12$; whereas no such difference was observed for the British brand green tea (4.4 vs. 4.6), F (1, 199) = 1.43, $p = 0.23$. Moreover, British brand green tea was rated as being more familiar when shown in a British tea set than when shown in a Chinese tea set (4.2 vs. 3.8), F (1, 199) = 8.23, $p = 0.005$, $\eta_p^2 = 0.04$; whereas no such effect was found for the Chinese brand green tea (4.7 vs. 4.6), F (1, 199) = 0.92, $p = 0.34$. Most importantly, Chinese brand green tea was considered to be more congruent with the Chinese tea set than with the British tea set (5.2 vs. 4.4), F (1, 199) = 26.83, $p < 0.001$, $\eta_p^2 = 0.12$; whereas the British brand

green tea was considered more congruent with the British tea set than with the Chinese tea set (4.7 vs. 3.8), F (1, 199) = 23.74, $p < 0.001$, $\eta_p^2 = 0.11$.

In order to interpret the significant Tea × Receptacle interaction terms on all three measures, we combined the data from the two different receptacles and performed one-way repeated-measures ANOVAs for each group of participants with Tea as the independent factor. The results revealed that the Chinese participants thought that the Chinese tea looked more pleasant (5.1 vs. 4.3), more familiar (5.1 vs. 3.7), and more congruent with the receptacles (5.2 vs. 4.2) than British brand green tea, all Fs > 63.84, ps < 0.001, $\eta_p^2 > 0.39$; whereas the participants from the USA gave comparable ratings for the two types of tea, all Fs < 1.15, ps < 0.28. Similarly, we also combined the data of different types of tea and performed a one-way repeated ANOVA for each group's familiarity scores with Receptacle as the independent variable in order to interpret the significant Receptacle × Group interaction. The results revealed that the Chinese participants were more familiar with the Chinese tea set than with the British tea set (4.5 vs. 4.3), F (1, 99) = 5.17, p = 0.03, $\eta_p^2 = 0.05$; whereas the participants from the USA were more familiar with the British tea set than with the Chinese tea set (4.5 vs. 4.0), F (1, 199) = 10.91, p = 0.01, $\eta_p^2 = 0.10$.

In summary, these results revealed that the same cup of Chinese brand green tea was rated as looking more pleasant when served in a Chinese tea set than when it was presented in a British tea set, whereas the same cup of British brand green tea was rated as being more familiar when it was served in a British tea set than when served

in a Chinese tea set. These results therefore suggest an association between a given type of tea and a certain receptacle type, and demonstrate how ethnic congruence (Zellner, Geller, Lyons, Pyper, & Riaz, 2017; see also Yeoh & North, 2010) of product attributes and contextual cues influences consumers' subjective ratings of products without actual consumption. Ratings of the congruency between drinks and receptacles may influence the "appropriateness" and "inappropriateness" between context and content in the mind of the participants, and therefore affect their subjective ratings (Wan et al., 2015).

Taste expectations

Participants' taste expectations, including their ratings of bitterness, astringency, sweetness, saltiness, and sourness, are shown in Figure 3. The results of the Tea × Receptacle × Group mixed-design ANOVAs on these data are also summarized in Table 1. As for bitterness, astringency, and sweetness scores, the results revealed a significant main effect of Tea, with participants expecting the British brand green tea to be more bitter (3.6 vs. 3.3), more astringent (3.5 vs. 3.3), and sweeter (3.5 vs. 3.2) than the Chinese brand green tea; the results also revealed a significant main effect of Receptacle on these three measures, but all of them were qualified by significant Receptacle × Group interactions. As far as the saltiness and sourness ratings are concerned, the results revealed a significant main effect of Tea on both measures, but both were qualified by significant Tea × Group interactions. The main effect of Group

was significant on astringency and sourness scores, with the USA participants scoring higher than Chinese participants on both measures.

INSERT FIGURE 3 ABOUT HERE

In order to interpret the significant Tea × Group interactions on the saltiness and sourness ratings, we combined the data concerning different receptacles and performed one-way repeated-measure ANOVAs for each group of participants with Tea as the independent factor. The results revealed that Chinese participants expected the British brand green tea to be somewhat saltier (2.4 vs. 1.9) and sourer (2.5 vs. 2.1) than the Chinese brand green tea, both Fs > 20.82, ps < 0.001, $\eta_p^2 > 0.17$; whereas no such effects were found for the participants fom the USA, both Fs < 1.53, ps > 0.22.

In order to interpret the significant Receptacle × Group interactions on the bitterness, astringency, and sweetness ratings, the data from the different types of tea were combined and a one-way repeated-measure ANOVA was performed for each group of participants with Receptacle as the independent factor. The results revealed that the Chinese participants expected the tea to taste more bitter (3.7 vs. 3.1), more astringent (3.4 vs. 3.0), but less sweet (3.0 vs. 3.4) when served in the Chinese tea set than when served in the British tea set, all Fs > 8.02, ps < 0.01, $\eta_p^2 > 0.07$; whereas no such effects were found for British participants, all Fs < 0.69, ps > 0.41.

In summary, these results revealed that the Chinese participants expected the same cup of tea to taste more bitter, more astringent, and less sweet when presented in a Chinese tea set than when served in a British tea set instead. By contrast, the USA participants did not generate different taste expectations as a function of whether the same cup of tea was served in different receptacles. Moreover, Chinese participants expected British brand green tea to be saltier and sourer than Chinese brand green tea, whereas no such effects were found amongst the USA participants. Taken together, these results therefore suggest a cross-cultural difference in the influence of teaware, such that Chinese participants would appear to be influenced in their expectations concerning the taste of tea beverages whereas the USA participants were not.

WTP results

Mean WTP scores are summarized in Table 2. Considering that Chinese participants and those from the USA indicated their WTP in different currencies and the substantial difference in the market price for tea brands in these two countries, we conducted a Tea × Receptacle repeated-measure ANOVA on the WTP scores for each group. As for the Chinese participants, the results revealed a significant main effect of Tea, F (1, 99) = 5.75, p = 0.018, η_p^2 = 0.06, a significant main effect of Receptacle, F (1, 99) = 9.83, p = 0.002, η_p^2 = 0.09, and a significant interaction term, F (1, 99) = 9.50, p = 0.003, η_p^2 = 0.09. Subsequent one-way repeated-measure ANOVAs revealed

that the Chinese participants were willing to pay significantly more for a cup of Chinese brand green tea when it was presented in a Chinese tea set than in a British tea set, F (1, 99) = 13.12, $p < 0.001$, $\eta_p^2 = 0.12$. By contrast, the receptacle did not influence the Chinese participants' WTP for the British brand green tea, and none of the main or interaction effects was significant for the group of participants from the USA, all Fs < 1.09, ps > 0.30.

INSERT TABLE 2 ABOUT HERE

In summary, the results revealed that Chinese participants' WTP were willing to pay 20% more for a cup of Chinese brand green tea when it was served in a Chinese tea set than when exactly the same cup of tea was served in a British tea set instead. By contrast, no such differences were found for the USA participants. The results of the Chinese participants suggests that they may be sensitive to the association between receptacle and the price of tea, so the next study was conducted on a new group of Chinese participants in order to examine the interaction between teaware and price. Moreover, it should also be noted that our Chinese participants gave Chinese tea more positive ratings than British tea in terms of pleasantness and congruency with receptacles; whereas the USA participants did not show such significant ratings in their ratings of two types of tea. These between-groups differences may be

attributed to the influence of the participants' cultural backgrounds (Cervellon & Dubé, 2005; Tiu Wright, Nancarrow, & Kwok, 2001). Alternatively, it is also possible that our Chinese participants tend to give more positive ratings to, and were willing to pay higher price for, Chinese brand tea than British brand tea because of the halo effect (see also Apaolaza, Hartmann, Echebarria, & Barrutia, 2017; Apaolaza, Hartmann, López, Barrutia, & Echebarria, 2014). Specifically, consumers may show more positive affective responses (e.g., affinity), cognitive bias in favour of, and behavioural preference toward, domestic products over imported products, a phenomenon referred to as a tendency toward consumer ethnocentrism (Sharma, 2015; Shimp & Sharma, 1987). In order to rule out the latter possibility, the participants' ethnocentrism tendency was also measured in the next study.

STUDY 2

The purpose of Study 2 was to examine whether, and if so, how the receptacle (as contextual information) and price interact to influence the participants' subjective ratings of, and taste expectations concerning, different types of tea.

Methods

A total of 65 new participants (M = 21.4 ± 1.9 years, ranging from 18 to 25 years; 33 male) from mainland China took part in the present study. We used the G*Power

software to estimate the sample size, and the results revealed that a sample of 65 participants can detect the effects with $\eta_p^2 \geq 0.26$ (statistic power = 0.95). All aspects of the methods were the same as those of Study 1 except for the following differences. First, in order to control for the influence of the cover in the Chinese tea set, we used the same methods as described in Study 1, taking photos of Chinese and British brand green tea served in a Chinese tea set without the cover (see Figure 4 for illustrations). These two photos and the two photos of British tea sets used in Study 1 were all adjusted to the same size (230 pixels wide × 177 pixels high) and shown to the participants. When a photo was displayed, the type of tea and the price for this cup of tea were labelled below the photo. The price label was either 5 or 30 CNY (approximately 0.75 or 4.48 USD, respectively, at the time of the study). Second, a 2 (Tea: Chinese or British brand green tea) × 2 (Receptacle: Chinese or British tea set) × 2 (Price: low or high) within-participants design was used.

INSERT FIGURE 4 ABOUT HERE

At the end of the survey, the participants were asked to complete the Chinese version of the consumer ethnocentrism tendency scale developed by Shimp and Sharma (1987). This scale consists of seventeen items that assessed the participants' attitudes towards domestic- and foreign-made products. The participants were asked

to rate the extent to which they agree or disagree with each item on a 7-point Likert scale that ranges from strong disagree to strong agree. Each participant's responses to the 17 items were averaged to obtain the consumer ethnocentrism score (ranging from 1 to 7), with higher scores indicating a greater tendency toward consumer ethnocentrism.

Results and discussion

Mean pleasantness and familiarity scores are shown in Figure 5. We first performed 2 (Tea: Chinese of British brand green tea) × 2 (Receptacle: Chinese or British tea set) × 2 (Price: low or high) repeated-measure ANOVAs on these data. The results are summarized in Table 3. They reveal a significant main effect of Tea on both measures, with the participants expecting the Chinese brand green tea to be more pleasant and familiar than the British brand green tea. The results also revealed a significant main effect of Price on pleasantness scores, with high-priced tea being rated as more pleasant than the low-priced tea.

INSERT FIGURE 5 & TABLE 3 ABOUT HERE

The participants' taste expectations, including bitterness, astringency, sweetness, saltiness, and sourness, are also summarized in Table 4. As can be seen in Table 3, the Tea × Receptacle × Price repeated-measure ANOVAs on these data revealed a significant main effect of Tea on the bitterness, astringency, saltiness, and sourness scores. These results suggest that the participants expected the British brand green tea to be bitterer, more astringent, saltier, and sourer than the Chinese brand green tea. The results also revealed a significant main effect of Receptacle on bitterness and astringency scores, thus suggesting that the participants expected the same tea to taste more bitter and be more astringent when served in a Chinese tea set than when it was presented in a British tea set. Moreover, the results also revealed a three-way interaction on sourness scores. In order to interpret this interaction, one-way repeated measures were performed for each type of tea served in each type of receptacle. However, the results revealed no significant main effect of Price, all Fs < 3.15, ps >.08.

INSERT TABLE 4 ABOUT HERE

Finally, we calculated each participant's mean pleasantness ratings of Chinese and British brand tea, and calculated the difference between the pleasantness ratings of these two types of tea for each participant. This difference score was not

significantly correlated with the participants' scores (M = 2.4 ± 1.0) on the consumer ethnocentrism tendency scale, $r = 0.06$, $p = 0.65$.

In summary, there are three major findings to emerge from the analysis of the data from Experiment 2. First, the type of tea and price both influenced subjective ratings of tea. On the one hand, the Chinese participants tested in Experiment 2 considered Chinese brand green tea to be more pleasant than British brand green tea. This result was consistent with the findings reported with another group of Chinese participants in Study 1, and was not significantly correlated with the consumer's tendency toward ethnocentrism. Collectively, these results suggest that the between-groups differences we found for Chinese participants and those from the USA in terms of their pleasantness ratings of the stimuli may not be simply attributed to the halo effect. On the other hand, the participants in the present study also considered higher-priced tea to look more pleasant than the lower-priced tea, and these two prices were approximately three and a half times the amount of money that the Chinese participants in Study 1 reported being willing to pay, respectively. This result with tea is in line with the literature suggesting that price influences consumers' perception and subjective ratings of various different food and drink products (Plassmann et al., 2008, 2015). It would therefore appear that consumers generate expectations about the quality of the products based on their prices (Huber & McCann 1982), and such marketing-based expectancy effects are often referred to as marketing placebo effects (Shiv, Carmon, & Ariely, 2005).

Second, once again, the results of the present study revealed that both the type of tea and the receptacle used to serve the tea influenced the participants' taste expectations. Despite some discrepancies in the results concerning sweetness expectations and so on, the Chinese participants in both experiments expected that the British brand green tea would be saltier and sourer than the Chinese brand green tea, and expected the same cup of tea to taste more bitter and more astringent when it was served in a Chinese tea set than when it was served in a British tea set. These results therefore suggest the robustness of the influence of teaware on Chinese participants' taste expectations concerning tea.

Third, the results of the present study revealed no interaction between price and the type of tea or teaware, thus suggesting that the participants did not integrate these different types of information when making their judgments. Moreover, the results of the present study also failed to reveal any interaction between the type of tea and receptacle on the participants' subjective ratings, thus contrasting with the results of Study 1. These results will be further discussed in the General Discussion.

GENERAL DISCUSSION

Influence of teaware on subjective ratings and taste expectations

Taken together, two major findings emerged from the present study. First, the results revealed that the type of tea and the type of receptacle interacted to influence

the participants' pleasantness ratings of tea when no price information was provided (as in our Study 1 and a majority of previous studies), whereas the type of tea and price independently influenced their pleasantness ratings (as in in Study 2) with the influence of receptacle being absent. Collectively, these results suggest that the participants may rely more on price than contextual cues when forming their judgment of the food or drink product. Therefore, marketing-based placebo effects (Plassmann & Weber, 2015; Shiv et al., 2005) may be a stronger, or better, heuristic cue than contextual factors such as cutlery or tableware (Spence et al., 2012) when consumers are forming subjective ratings of food or drink products before actual consumption. The absence of any interaction between price and the type of tea or teaware suggests that the participants did not integrate price (as a form of product-extrinsic information) with product-intrinsic or contextual information. The interaction between the type of tea and teaware on participants' subjective ratings was significant in Study 1 while being absent in Study 2, thus suggesting that the presence of price information may even undermine the participants' integration of product-intrinsic and contextual cues.

Second, the results of both studies revealed that the teaware in which the tea was presented influenced Chinese participants' taste expectations concerning tea. By contrast, we did not find such patterns in the results of the USA participants in Study 1, thus indicative of cross-cultural differences. These results are in line with Zhang and Seo's (2015) findings that Chinese participants' visual attention toward foods is

more likely to be influenced by the containers to serve foods, compared to Western participants. Recently, Hansen (in press) has demonstrated that the crossmodal influence of visual information on taste perception was modulated by whether the participants construe a situation more concretely (low-level) or more abstractly (high-level). Specifically, the colour of the drink or of the receptacle could exert greater influence on the participants' taste perception when they were primed with a high-level construal than with a low-level construal. Taken together with these findings, our results about the cross-cultural differences in receptacle-based taste expectations provide more empirical evidence for linking food-related behaviours to fundamental differences in thinking style and construal level (see also Henrich, 2014; Talhelm et al., 2014).

Tea is one type of beverage characterized with certain level of astringent and bitter taste (Cho et al., 2005; Drobna et al., 2004; Huang et al., 2019; Lee & Chambers, 2007). Specifically, our Chinese participants expected the same cup of tea to taste more bitter and astringent when it was served in a Chinese tea set than when it was served in a British tea set, regardless of its type or price. One possibility here is that the difference in the colour (blue patterned vs. white) or shape (a cup without or with a handle) may have influenced the participants' taste expectations. Both the colour and shape of receptacles has been shown to influence how participants perceive, evaluate, and consume drinks (for reviews, see Spence, 2018; Spence & Wan, 2015), and transfer from the perception of, and feelings about, the sensory attribute of the

containers/receptacles to those of the contents is referred to as sensation transference (see Skaczkowski et al., 2016; Spence & Wan, 2015, for reviews). As illustrated in Figure 1, the blue patterns of entangled floral branch on the Chinese tea sets may influence the participants' perception of the tea colour by providing different contrast (i.e., the perceived colour difference) between the tea beverages and teaware, compared to the white-coloured British tea set. Lyman (1989) suggested that the colour contrast between receptacles and content, rather than the colour of the receptacles themselves, determines consumers' expectations and perception (see also Schifferstein, Howell, & Pont, 2016). Alternatively, it is also possible that an individual's prior history of tasting tea from different sets of tea receptacles might lead to different expectations (see also Robinson, Blissett, & Higgs, 2013). For instance, our Chinese participants might associate these receptacles with certain types of tea that they have experienced in daily life and hence rely, consciously or otherwise, on their previous experience to generate expectations, even though we only presented green tea in the present study.

By contrast, the results of Study 2 revealed no significant influence of price on the participants' taste expectations. Here, though, it should be borne in mind that many other product-extrinsic cues have been shown to influence consumers' sensory expectations concerning the products, such as, for instance, the name of the product, the presence of sensory descriptions and/or ingredient labels (for a comprehensive review, see Piqueras-Fiszman & Spence, 2015). That being said, the findings of the

present study revealed no such effect of price on sensory expectation concerning tea. Our results therefore suggest that the marketing-based placebo effect based on price might only result in abstract expectation (such as higher-priced products being better-quality or more pleasant) without any concrete sensory expectations, and differentiate price from linguistic information in terms of influence on consumers' expectations.

Managerial implications

The results of Study 1 demonstrate that the ethnic congruence between product attributes and contextual cues can influence consumers' pleasantness and familiarity ratings of drink products without their actually having to consume them. One possible implication of these findings may be to show food imagery on product packaging (for a comprehensive review, see Simmonds & Spence, 2019), or online advertising, such as presenting an image of Chinese tea presented in a Chinese tea set or British Tea served in a British tea set on the front of tea packaging. However, Bell and colleagues (1994) showed the ethnic décor of the restaurant (as another type of contextual cues) influenced customers' food selection, but the influence of ethnic décor on the perceived ethnicity of cuisines was confounded by other factors. It is possible that the ethnicity of contextual cues is more explicitly delivered via labels in the present study, and the difference between two types of products (Chinese or British brand green tea) was also substantial in terms of the colour of tea beverages

(see also Wan et al., 2014). Alternatively, it is also possible that the receptacles or containers used to serve drinks or food (as immediate contextual cues) may exert a greater influence than ambient factors such as room décor (see Spence, 2017, for a review). It will also be interesting to compare the influence of other product-extrinsic (such as packaging), product-intrinsic (such as colour), and contextual cues on consumers' expectations and experience of products in future studies (see also Matthews, Simmonds, & Spence, in press; Wang et al., 2019).

Limitations and future direction

As with any study, there are also certain limitations as far as the interpretation and generalizability of the present findings are concerned. First, the sample size for both Studies 1 and 2 was relatively small, and the participants from two countries in Study 1 were not completely matched in terms of the demographic factors and recruitment process. Therefore, cautions are called for if one tries to apply the results of the present study to a more general population, and the present study conducted with the small sample sizes may be considered as an exploratory study that can potentially inspire future research conducted with much larger and more representative samples. Second, we only studied the expectations of participants concerning tea beverages after viewing the products in the present study. In future research, it would also be interesting to examine the participants' ratings of the tea

beverages after they have actually tasted the tea as well to see how expectations and experience line-up and how participants resolve any discrepancy between the two (see Piqueras-Fiszman & Spence, 2015). Third, considering that the Chinese and British tea sets used in the present study differ from each other in terms of their shape and colour, it is difficult to differentiate the effects of these two factors. For instance, Masson and colleagues (2016) demonstrated that their participants sorted coffee cups on the basis of whether they had handles or not, thus suggesting the importance of such simple visual elements (affordances) on the participants' evaluation of containers (see also Van Doorn et al., 2017). Similarly, the Chinese and British tea sets used in the present study also differed from each other in terms of the presence of a handle. Fourth, the influence of receptacle on taste expectations may require a certain level of familiarity with the receptacle (Choi & Lee, 2019; Giacalone et al., 2015), as our USA participants' taste expectations were not as sensitive as our Chinese participants to the teaware being used. Therefore, in future research, it will be important to ask the participants about their experience with a certain receptacle (e.g., whether they have seen or used this receptacle in their daily life), and the participants' drink-receptacle associations from past experience may be also used to predict their responses to a familiar receptacle with novel or unfamiliar drinks in it. Fifth, it will also be interesting to study the possible moderating role of consumers' everyday tea consumption habits in future research.

CONCLUSIONS

In conclusion, the findings of the present study demonstrated the influence of the receptacle on the subjective ratings of, and taste expectations concerning, tea, and examined the influence of product-extrinsic and contextual cues on consumers. Once again, the present study provides further evidence concerning the influence of receptacles on the perception of beverages, and reveals further cross-cultural differences in the perception of beverages (also see Wan et al., 2016). Similar to wine and coffee (e.g., see Spence & Carvalho, 2019; Spence & Wan, 2015), teaware may also need to be carefully designed in order to accommodate the drinking experiences of different types of tea. Considering that China is one of the largest countries for tea plantations, production, and consumption worldwide, the findings of the present study are relevant to international marketing or online marketing of tea. The teaware used to present the tea (e.g., on product packaging; see Simmonds & Spence, 2019) can help potential Chinese customers to generate expectations concerning the quality of the tea even if they are merely looking at a photo of a cup of tea (such as viewing online advertisements). Our findings also highlight the importance of choosing the "appropriate" receptacles in which to serve the drinks to increase the perceived authenticity of ethnic themes in restaurants, in order to enhance consumer satisfaction (Ebster & Guist, 2004), motivate repurchase intention (Tsai & Lu, 2012), and facilitate cross-cultural communication (Wood & Munoz, 2007). The online testing methodology used here allowed us to reach participants from the USA who would

never have the chance to take part in the present study in laboratory setting, and thus enabled us to generate research hypotheses for follow-up laboratory-based studies.

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Tables

Table 1. The results of ANOVAs conducted on the data collected in Study 1.

Effect	Measure	*df*	*F*	η_p^2	Measure	*df*	*F*	η_p^2
Tea	Pleasantness	1,198	36.39***	0.16	Bitterness	1,198	8.73**	0.04
	Familiarity	1,198	39.72***	0.17	Astringency	1,198	10.22**	0.05
	Congruency	1,198	40.34***	0.17	Sweetness	1,198	9.09**	0.04
					Saltiness		8.57**	0.04
					Sourness		7.11**	0.04
Receptacle	Pleasantness	1,198	6.66*	0.03	Bitterness	1,198	17.45***	0.08
	Familiarity	1,198	1.55	-	Astringency	1,198	5.18*	0.03
	Congruency	1,198	0.01	-	Sweetness	1,198	6.10*	0.03
					Saltiness		1.18	-
					Sourness		0.01	-
Group	Pleasantness	1,198	0.31	-	Bitterness	1,198	2.17	-
	Familiarity	1,198	0.86	-	Astringency	1,198	6.31*	0.03
	Congruency	1,198	8.24*	0.04	Sweetness	1,198	2.23	-
					Saltiness		2.78	-
					Sourness		6.75*	0.03
Tea	Pleasantness	1,198	21.62***	0.10	Bitterness	1,198	1.39	-
×	Familiarity	1,198	7.34**	0.04	Astringency	1,198	0.33	-
Receptacle	Congruency	1,198	47.56***	0.19	Sweetness	1,198	0.46	-
					Saltiness		0.28	-
					Sourness		0.39	-
Tea	Pleasantness	1,198	26.48***	0.12	Bitterness	1,198	0.14	-
×	Familiarity	1,198	53.09***	0.21	Astringency	1,198	2.87	-
Group	Congruency	1,198	23.12***	0.11	Sweetness	1,198	1.91	-
					Saltiness		19.79***	0.09
					Sourness		10.93**	0.05
Receptacle	Pleasantness	1,198	2.36	-	Bitterness	1,198	10.47**	0.05
×	Familiarity	1,198	16.04***	0.08	Astringency	1,198	12.64***	0.06
Group	Congruency	1,198	0.03	-	Sweetness	1,198	2.85	-
					Saltiness		0.32	-
					Sourness		0.07	-
Tea	Pleasantness	1,198	1.09	-	Bitterness	1,198	0.12	-
×	Familiarity	1,198	0.75	-	Astringency	1,198	0.00	-
Receptacle	Congruency	1,198	3.63	-	Sweetness	1,198	0.56	-

×	Saltiness	1.21	-
Group	Sourness	1.88	-

Note: * $p < .05$, ** $p < .01$, and *** $p < .001$.

Table 2. The mean willingness-to-pay (WTP) scores in USD (with SDs in parentheses) given by the two groups of participants in Study 1.

Group	Chinese brand green tea		British brand green tea	
	Chinese tea set	British tea set	Chinese tea set	British tea set
Chinese	1.8 (±1.3)	1.5 (±1.2)	1.5 (±1.2)	1.5 (±1.1)
The USA	2.8 (±1.4)	2.5 (±1.5)	2.9 (±1.9)	4.5 (±19.7)

Note: Chinese participants were asked to indicate their WTP in Chinese Yuan. 1 USD was equal to approximately 6.7 CNY at the time of the study.

Table 3. The results of ANOVAs conducted on the data collected in Study 2.

Effect	Measure	*df*	*F*	η_p^2	Measure	*df*	*F*	η_p^2
Tea	Pleasantness	1,64	26.72***	0.30	Bitterness	1,64	9.43**	0.13
	Familiarity	1,64	35.08***	0.35	Astringency	1,64	5.55*	0.08
					Sweetness	1,64	0.52	-
					Saltiness	1,64	15.24***	0.19
					Sourness	1,64	13.12**	0.17
Receptacle	Pleasantness	1,64	0.29	-	Bitterness	1,64	16.23***	0.20
	Familiarity	1,64	1.21	-	Astringency	1,64	14.40***	0.18
					Sweetness	1,64	0.41	-
					Saltiness	1,64	2.56	-
					Sourness	1,64	0.10	-
Price	Pleasantness	1,64	25.70***	0.29	Bitterness	1,64	0.16	-
	Familiarity	1,64	0.10	-	Astringency	1,64	2.15	-
					Sweetness	1,64	1.05	-
					Saltiness	1,64	0.46	-
					Sourness	1,64	0.63	-
Tea	Pleasantness	1,64	0.57	-	Bitterness	1,64	0.57	-
×	Familiarity	1,64	2.50	-	Astringency	1,64	1.73	-
Receptacle					Sweetness	1,64	2.53	-
					Saltiness	1,64	0.04	-
					Sourness	1,64	1.03	-
Tea	Pleasantness	1,64	0.00	-	Bitterness	1,64	0.30	-
×	Familiarity	1,64	0.13	-	Astringency	1,64	2.08	-
Price					Sweetness	1,64	0.64	-
					Saltiness	1,64	0.21	-
					Sourness	1,64	0.12	-
Receptacle	Pleasantness	1,64	1.36	-	Bitterness	1,64	0.32	-
×	Familiarity	1,64	1.11	-	Astringency	1,64	0.02	-
Price					Sweetness	1,64	0.33	-
					Saltiness	1,64	0.14	-
					Sourness	1,64	0.18	-
Tea	Pleasantness	1,64	0.09	-	Bitterness	1,64	0.53	-
×	Familiarity	1,64	0.73	-	Astringency	1,64	2.01	-
Receptacle					Sweetness	1,64	0.04	-
×					Saltiness	1,64	0.18	-
Price					Sourness	1,64	5.31*	0.08

Note: * $p < .05$, ** $p < .01$, and *** $p < .001$.

Table 4. Mean scores of expected tastes (with SDs in parentheses) in Study 2.

Price	Low (0.75 USD)				High (4.48 USD)			
Receptacle	Chinese		British		Chinese		British	
Tea	Chinese	British	Chinese	British	Chinese	British	Chinese	British
Bitterness	2.9 (±1.3)	3.1 (±1.5)	2.5 (±1.3)	2.9 (±1.2)	2.9 (±1.3)	3.2 (±1.3)	2.6 (±1.3)	3.0 (±1.5)
Astringency	3.0 (±1.4)	3.0 (±1.4)	2.5 (±1.3)	2.9 (±1.3)	2.7 (±1.2)	3.1 (±1.4)	2.4 (±1.0)	2.7 (±1.2)
Sweetness	2.8 (±1.4)	2.8 (±1.5)	2.7 (±1.3)	3.0 (±1.5)	2.9 (±1.4)	2.8 (±1.3)	2.9 (±1.5)	3.0 (±1.5)
Saltiness	1.7 (±1.1)	1.9 (±1.1)	1.6 (±1.0)	1.9 (±1.3)	1.6 (±0.8)	1.9 (±1.2)	1.6 (±0.8)	1.8 (±0.9)
Sourness	2.1 (±1.4)	2.1 (±1.1)	1.9 (±1.1)	2.3 (±1.2)	1.8 (±1.0)	2.2 (±1.3)	1.9 (±1.1)	2.1 (±1.1)

Figures

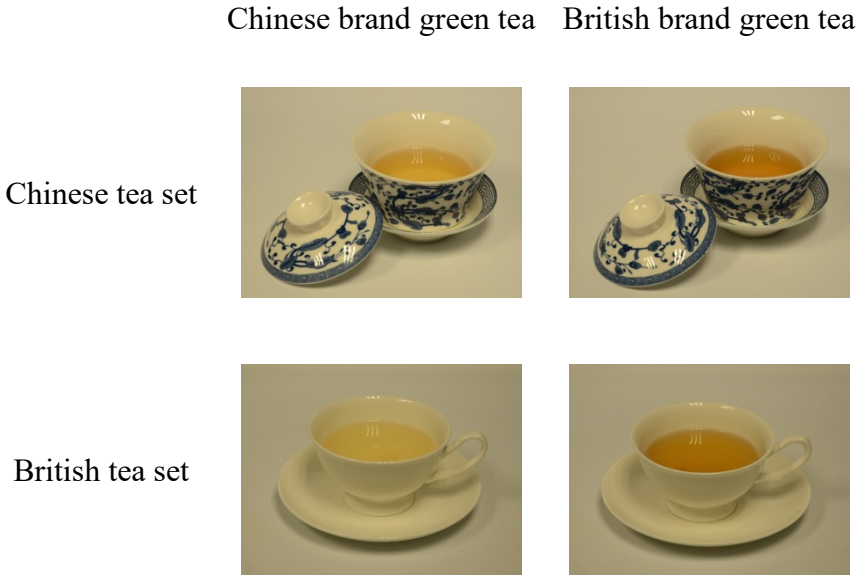


Figure 1. Two types of tea were shown in two types of tea sets in Study 1.

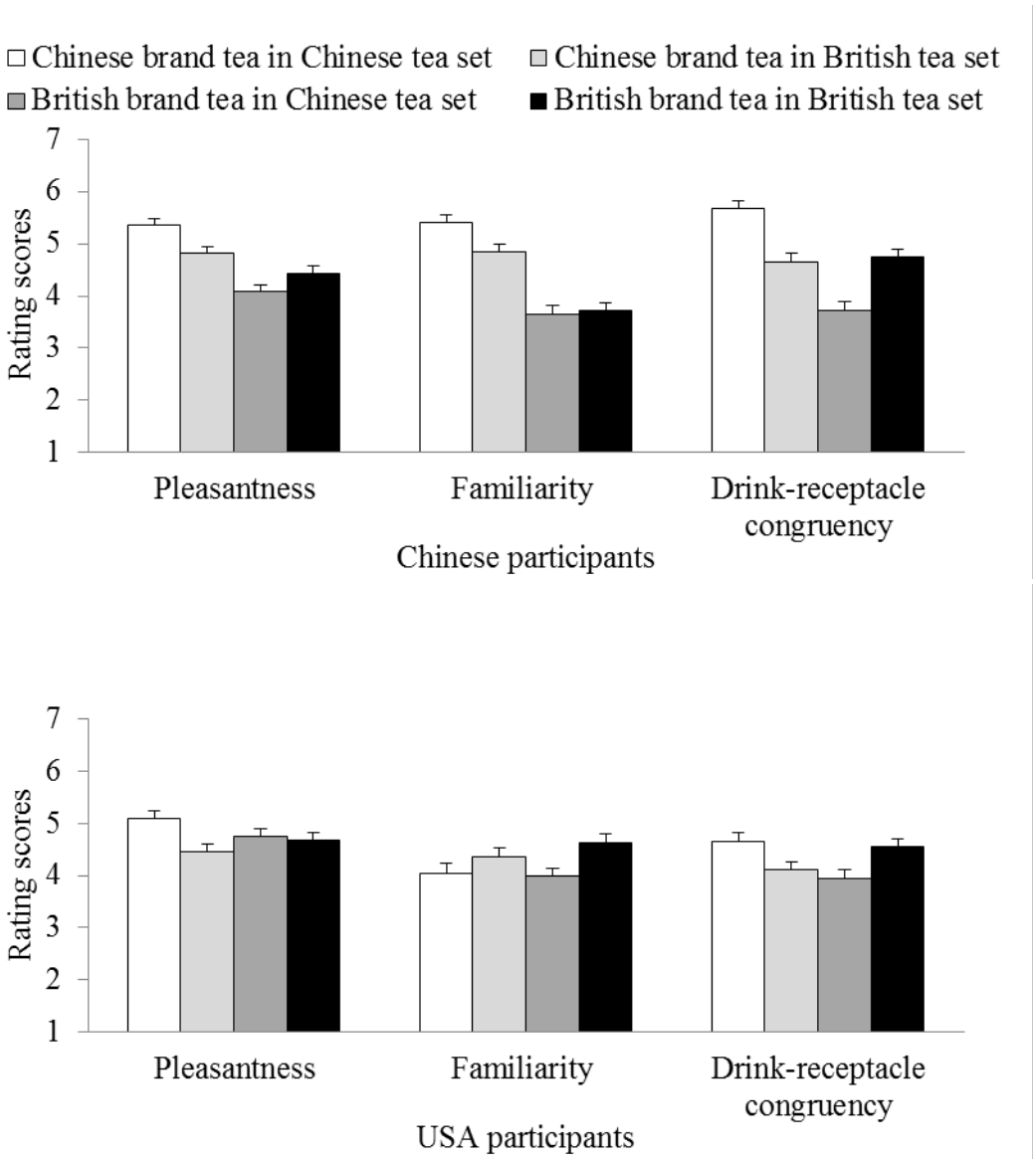


Figure 2. Mean scores of pleasantness, familiarity, and drink-receptacle congruency given by 100 Chinese participants and 100 participants from the USA in Study 1. Error bars show the standard errors of the means.

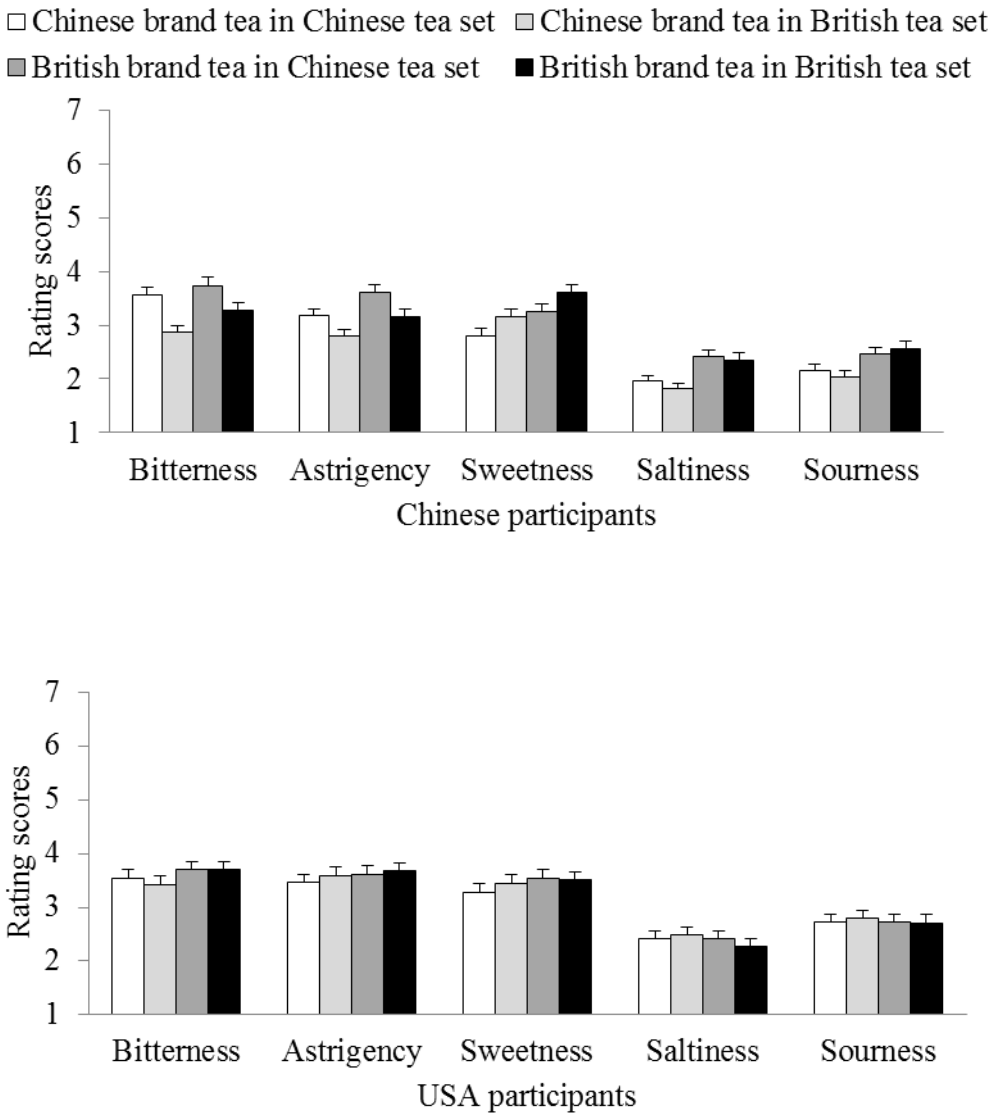
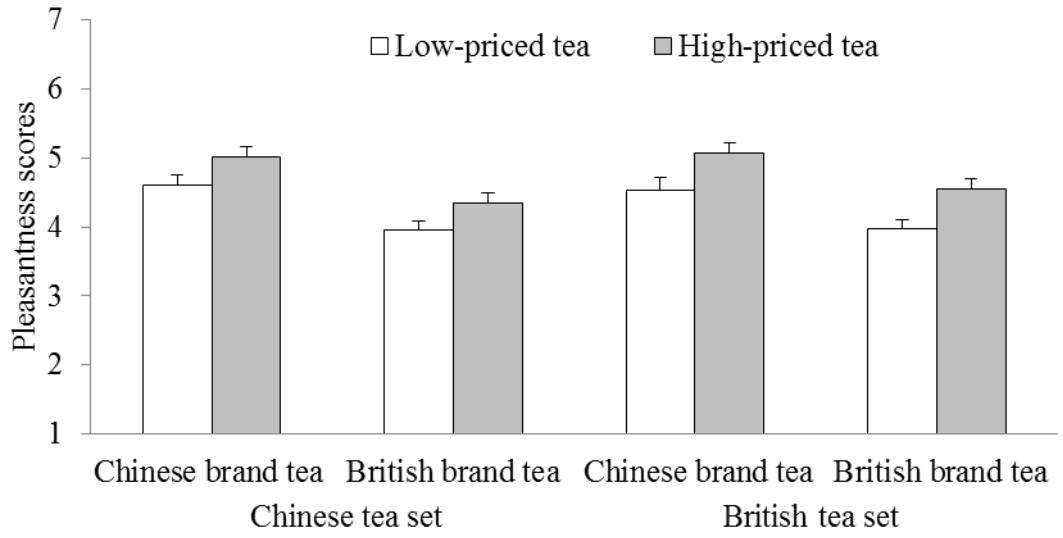


Figure 3. Mean scores of expected bitterness, astringency, sweetness, saltiness, and sourness given by 100 Chinese participants and 100 participants from the USA in Study 1. Error bars show the standard errors of the means.

Chinese brand green tea British brand green tea

Figure 4. The two types of tea shown to participants in the Chinese tea set without covers in Study 2.



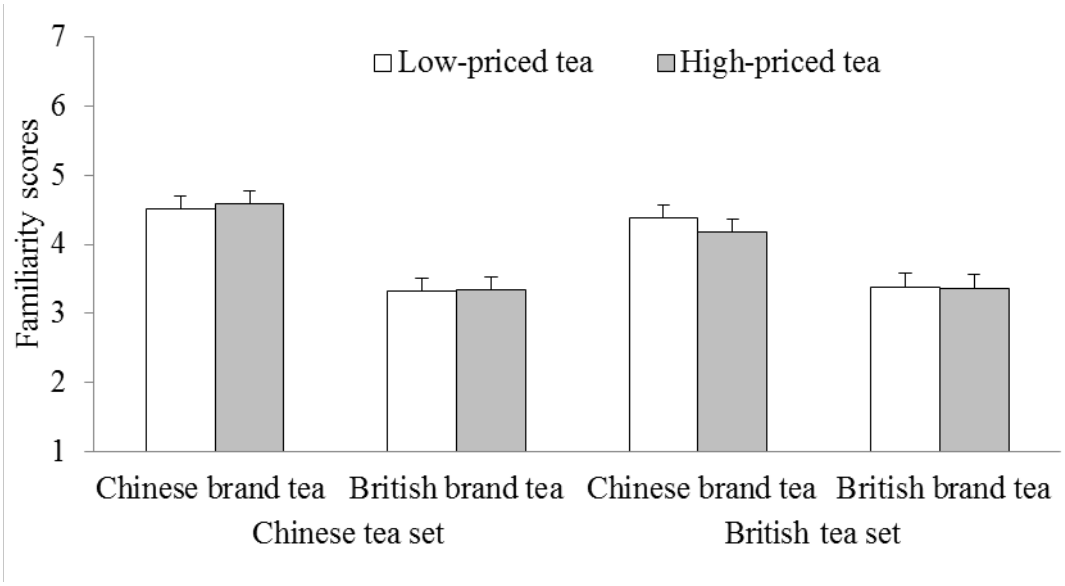


Figure 5. Mean pleasantness and familiarity scores in Study 2 (N = 65). Error bars show the standard errors of the means.