

Aesthetic plating and motivation in context

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ABSTRACT

Previous research has suggested that people prefer balanced over unbalanced plating compositions. Importantly, though, the question remains as to whether plating balance influences consumers' associations of plating with approach and avoidance motivation. In the present research, we study how plating balance influence people's aesthetic evaluations and approach and avoidance associations. In addition, based on the idea that context can influence aesthetic evaluations, we manipulate whether the different plates are presented in regular dining or high-end restaurant scenarios. Throughout two experiments we extend previous findings suggesting that plating balance influences aesthetic pleasure. We find that balanced plates are considered more aesthetically pleasing than unbalanced plates. Furthermore, we demonstrate that people associate balanced plates more (less) strongly with approach (avoidance) words relative to unbalanced plates. Notably, our analysis failed to reveal an effect of plating context on either aesthetic pleasure or approach and avoidance ratings. This suggests that balance may be a robust feature in aesthetic plating when it comes to its influence on these variables.

Introduction

Since many choices, including food choices, are made relatively automatically, based on routinized behaviour or bodily signals, and information seems to have limited effect on behaviour (Veflen et al., 2020; Olsen et al., 2014; Marteau et al., 2012), we aim to investigate how subtle cues such as plating aesthetics, may influence peoples approach and avoidance motivation toward the food. By developing an understanding of how plating compositions influence people's motivational associations, one may inform how to nudge people toward approaching or avoiding specific food options, in contexts as diverse as hospitals, work canteens, and restaurants in which the food is plated. In particular, the aim of this study is to investigate how balance in plating influences aesthetic pleasure and approach and avoidance motivation under two different scenarios, namely, a regular canteen and a high-end restaurant.

Approach - avoidance motivation

Two general motivational systems underlie behaviour according to Gray (1982): a behavioural inhibition system (BIS) and a behavioural activation system (BAS). While BIS, according to Gray, is sensitive to signals of punishment, non-reward, and novelty, BAS is sensitive to

reward, non-punishment and escape from punishment (cf. Carver and White, 1994). While BIS inhibits movement towards goals and correlates with negative feelings as fear and anxiety, BAS activates movement towards goals and correlates with positive feelings as hope and happiness. These two motivation systems are often referred to as approach and avoidance motivations (Elliot et al., 2013). Approach motivation links to concepts such as appetite, reward and incentive, and avoidance motivation links to concepts such as aversion, punishment, and threat.

Motivation is of specific relevance in the context of food consumption. We all have to eat to survive but eating can also harm us. Many studies have therefor investigated approach-avoidance motivation in relation to food. Automatic action tendencies towards cues of unhealthy substances have been measured by reaction time tasks such as the Approach-Avoidance task (AAT) where the respondents move a stimulus on a computer screen by pulling or pushing a joystick towards or away from oneself. Results from Lender et al. (2018), for instance, revealed a robust approach bias towards chocolate. By evaluating 50 participants, varying in hunger state (hungry vs not hungry), Piqueras-Fiszman et al. (2014) found that the not-hungry group performed avoidance (vs. approach) movement faster, and that their approach movement towards positive (vs. negative) foods were significantly faster. Positive foods were pictures of cinnamon buns, tortilla chips and chocolate, while negative foods were pictures of partly rotten or spoiled food (e.g. bread

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products with some mold).

Dickson et al. (2018) investigated the effect of approach-avoidance training on behaviour. Although they found a positive effect from training on the speed for avoidance responses to chocolate images, they found no training effect on consumption of chocolate. Neither did Krishna and Eden (2018). After conducting four experiments, they concluded “that explicit training of approach and avoidance reaction to soft drinks is not an effective procedure to modify immediate consumption of that drink”. They ended their article by stating that since training does not work, and habitual consumption of sugary and fatty food is a major risk factor for developing several chronic diseases, we need to find new intervention methods for approach and avoidance of food (Krishna and Eden, 2018). In this paper, we aim to investigate the role that subtle cues associated with plating aesthetics have on people’s approach and avoidance motivations.

Plating aesthetics

Visual aesthetics of objects influence our behaviour. For example, what we see on the plate creates expectations of taste, flavor, liking, and healthiness (Hagen, 20202; Spence and Piqueras-Fiszman, 2014; Spence et al., 2014; Zellner et al., 2014). We eat with our eyes and even subtle changes in the visual presentation of a dish can affect our perceptions of it (Michel et al., 2014; Michel et al., 2015; Rowley and Spence, 2018; Spence et al., 2016; Woods et al., 2016; Youssef et al., 2015). Inspired by empirical aesthetics and the research from the visual arts, food consumer behaviour researchers have investigated how varying features such as complexity, colour, and balance on the plate influence peoples’ evaluations of attractiveness, liking, and willingness to pay (Michel et al., 2015). Zellner et al. (2011) found that people like neatly presented food more than messy food. A clear preference for balanced over unbalanced plating is also found consistently in many studies (Michel et al., 2015; Velasco et al. 2016; Zellner et al., 2010; Zellner et al., 2011). Balanced food arrangements are rated as more attractive (Zellner et al., 2011; Velasco et al., 2016) and tend to lead to higher willingness to pay for the food, than unbalanced arrangements (Michel et al., 2015; Velasco et al., 2016; Roque et al., 2018).

This bias towards centred items, which make centred items on a plate better liked than offset, fits into decades of research on aesthetics highlighting a clear preference for balance and symmetry² (Palmer et al., 2013). Although, it is not fully understood why people prefer balance and centricity, the ease of processing, which trigger positive feelings, has been proposed as one possible explanation (Velasco et al., 2020). Here, we move one step further and assess the relationship between balance and the pleasure associated with processing a plating composition, or aesthetic pleasure, as conceived by Blijlevens et al. (2017). Considering the aforesaid research on the relationship between balance and preference, we expected to find a similar pattern in this study and formulated the following hypothesis:

H1. Balanced plating will be more aesthetically pleasing than unbalanced plating.

How balanced plating may influence approach-avoidance motivation is not fully understood. It is perhaps worth mentioning here that this

² Here, it is important to indicate that balance and symmetry are not the same, though they are highly related. Whereas balance is a “... perceptual phenomena based on balancing the visual weight of objects in a page” (Lai et al., 2010, p. 43) or as a function of a frame, symmetry, or more specifically reflectional symmetry, refers to the extent to which the sides of an object divided by a central axis reflect each other (Turoman et al., 2018). In the present research, we will refer to each of these consistently with the corresponding research that we cite when we mention them. Notably, given their relationship, we capitalize on the research on symmetry to inspire our study of balance.

is also a broader question in the field of neuroaesthetics, where it has been suggested that studies investigating preferred visual product features correlations with approach and avoidance motivation are still missing (Chatterjee and Vartanian, 2014; see also Velasco et al., 2016a, b). Although, diners find a balanced plate more attractive, it is not certain that they are more likely to approach it (compared to an unbalanced plate). One of the few studies investigating how balance influence goal-driven consumer behaviours, found that participants associated balanced packages more often with approach words than products with an unbalanced design element (Velasco et al., 2020). The authors argued that balanced packages signal higher quality than their unbalanced counterparts and explained this by referring to evolutionary biology. In nature, symmetry, for instance, signals higher phenotypic and genotypic make-up than asymmetry (Little, 2014), which makes people more inclined to approach symmetrical and avoid asymmetrical objects. Based on the argument that symmetry signals quality (compared to asymmetry) and that consumers’ approach quality (and avoid less good quality), we proposed the following hypothesis:

H2. Balanced plating is more strongly associated with approach motivation than unbalanced plating.

H3. Unbalanced plating is more strongly associated with avoidance motivation than balanced plating.

Context

One of the questions raised in the literature on plating aesthetics, is the effect of context in aesthetic evaluations (Velasco et al., 2016a,b). We do not know if context will influence the effect of balanced plating on, say, liking and willingness to pay. One of the studies pointing towards this was developed by Michel et al. (2015a,b), who suggested that research should investigate how liking for certain kind of plating may be influenced by contextual factors.

The growing trend in high-end restaurants to position elements on a plate in an unbalanced, asymmetrical fashion (Spence et al., 2014), together with the finding that food acceptance vary according to the match between the restaurant and the food (Garcia-Segovia et al., 2015; Roque et al., 2018), makes it interesting and relevant to investigate the effect of context. While people normally prefer balanced over unbalanced plating presentations (Velasco et al., 2016a), we propose that preference for balanced compositions may be influenced by context (see also Lender et al., 2018, for a study that questions the universality of the relationship between symmetry and preference). We suggest that restaurant context (high vs. casual) will influence consumers’ aesthetic evaluations of food plating varying in balance. We hypothesised that unbalanced compositions would be more aesthetically pleasing in a high-end dining context given that they would signal a certain level of rarity and novelty, relative to more regular dining contexts. Given that balance appears to be prevalent in nature (Treder, 2010), one may expect that people in more exclusive contexts, may be more attracted to less common features, perhaps those that signal a certain level of rarity. With this in mind, we proposed the following hypothesis:

H4. Unbalanced plating will be more aesthetically pleasing in a high-end dining context than in a casual restaurant.

We also proposed that balance would influence people’s approach and avoidance associations in the previously mentioned contexts. While balance is usually preferred over unbalance, we argue that since unbalanced plating may be perceived as a result of a chefs creativity and be a better match within a high-end restaurant than at a casual restaurant, unbalanced plating is likely to create less avoidance and more approach associations in high-end restaurants (compared to a casual restaurant). The following hypothesis were stated:

H5. Unbalanced plating will have less effect on avoidance motivation in a high-end restaurant than in a casual restaurant.

H6. Unbalanced plating will have larger effect on approach motivation in a high-end restaurant than in a casual restaurant.

Considering the different hypothesis presented, our manuscript targets three contributions. First, although people tend to prefer balance and symmetry over unbalance and asymmetry, the universality of this finding has been questioned and, as mentioned before, there are reasons to believe that food context may influence the role of balance in aesthetic pleasure. As such, studying context is an important venue for research on plating balance and aesthetic pleasure. Second, we aim to further replicate previous studies for cumulative knowledge building in the context of plating and aesthetic pleasures. Finally, although researchers have studied preference toward balance and symmetry in plating contexts (e.g., Velasco et al., 2016a,b), to the best of our knowledge, no research focuses on aesthetic pleasure and approach and avoidance associations. Importantly, research from aesthetic science has pointed out that there is a need to understand how it is that aesthetic pleasure may lead to different approach and avoidance responses (e.g., Chatterjee and Vartanian, 2014). This is what we will investigate in this study.

Experiment 1

Methods and materials

Participants. 158 participants (125 females, 33 males), aged 19–62 (*Mean age* = 33.94, *SD* = 8.77) were recruited from Prolific Academic (<https://www.prolific.ac/>). The experiment was programmed on Qualtrics (<http://qualtrics.com/>). Altogether, it lasted for approximately 15 min. Both experiments presented were assessed and approved by the School's ethical committee.

Materials. The stimuli consisted of 10 images of foods in three different plating formats: centred on the plate, off the centre to the left, and off the centre to the right (see Fig. 1, for an example, and osf.io/4we3g/ to access all stimuli). The different foods were extracted from The FoodCast Research Image Database (Foroni et al., 2013). The food images included: toasted bread with tomatoes (TF_017), squid (TF_019), mussels (TF_042), gnocchi with cheese (TF_064), goulash (TF_067), caprian salad (TF_071), potato and green bean salad (TF_072), frankfurter and provolone salad (TF_074), pork with vegetables (TF_079), stew with potatoes and carrots (TF_138). The centred and the off-centred versions of the dishes were created in PowerPoint software by overlapping the image of the food on a prototypical white plate. In the centred plating stimuli, the food images were centred on the plate. In the off-centred plating stimuli, the food images were placed at different distances from the centre of the plate, in order to prevent the images from looking unrealistically placed on the plate. On average, the off-the-centred food images centre were located at a 9.33% (*SD* = 1.98%) distance from the centre of the plate. All images were fitted to a

600 x 600 px.

The experiment involved two context manipulations. In the casual dining context, the participants were told: “A casual dining restaurant (i.e., a restaurant that appeals to casual and regular customers) is going through the process of deciding how to plate their food. You will see multiple dishes, one by one, and will be asked to evaluate them on a series of attributes”. In the high-end restaurant context, the participants were instructed as follows: “A high-end restaurant (i.e., a restaurant that appeals to sophisticated and discerning customers) is going through the process of deciding how to plate their food. You will see multiple dishes, one by one, and will be asked to evaluate them on a series of attributes”.

Procedure. The experiment followed a 2 x 3 mixed experimental design with context (casual vs. high-end) as between-participant factor and balance (centred, unbalanced left, and unbalanced right) as within-participant factor. In total, each context group were presented with thirty stimuli, comprising the balanced, unbalanced left, and unbalanced right dishes. Before the experiment started, the participants were given the general instructions of the study (“We are interested in understanding how people evaluate different dishes of food. If you decide to take part, we will show you several pictures of food dishes and will ask you to respond to a few questions about them”) and were asked to sign a standard consent before taking part in the study. Next, they were asked to report their gender and age. Right after that, half of the participants were assigned to the casual and the other half to the high-end restaurant and were given the corresponding instructions.

Once the participants read the above-mentioned instructions, they were presented with the thirty stimuli, one by one, in random order. The participants were asked the 5-item Aesthetic Pleasure in Design Scale (Blijlevens et al., 2017). In particular, the participants answered to the extent to which they agreed with the following items, in 100-point visual analogue scales (VAS): 1. This dish is beautiful, 2. This is an attractive dish, 3. This dish is pleasing to see, 4. This dish is nice to see, 5. I like to look at this dish. The participants were also asked to respond to a series of questions on similar visual analogue scales (VAS), associated with the extent to which they thought they would approach or avoid the dish, including: 1. I'm very likely to eat this dish, 2. I am very likely to come up with an excuse for not eating this dish, 3. Eating this dish can harm me, 4. Eating this dish is not safe. These approach avoidance motivation measures, earlier been used to measure risk behaviour (See Veflen, Scholderer, Langsrud, 2020), capture both the negative dread factor (avoidance) and the positive attitude factor (approach). Although, other factors than risk perception, e.g. social norms, influences risk behaviour, perceptions of risk do correlate with approach/avoidance motivation. Dread (Eating this dish can harm me, Eating this dish is not safe) and strategies to avoid harm (I am very likely to come up with an excuse for not eating this) signals avoidance motivation, while positive attitudes (I'm very likely to eat this dish) signals approach motivation. Note that before each group of items, the participants were reminded about the context condition with the statements “Consider this dish for a



Fig. 1. Examples of stimuli used in the present research: A) centred food, B) off the centre left, and C) off the centre right.

high-end/casual restaurant (i.e., a restaurant that appeals to sophisticated and discerning customers) and indicate the extent to which you agree with the following statements”.

Analysis. Given that our hypothesis was directed at balance and context, the data (available here: osf.io/4we3g/) were aggregated as a function of these variables. Such data were analysed by means of a 2 x 2 mixed design analysis of variance (ANOVA) as implemented in the R package {rstatix}.

Results and discussion

A single index of aesthetic evaluation was computed by aggregating the items of the Aesthetic Pleasure in Design Scale (Cronbach alpha = .99). The results of the mixed design ANOVAs for this and the other items are presented in Table 1 (see Fig. 2, for a visual summary of the results).

Overall, the participants evaluated the balanced dishes ($M = 40.73$, $SD = 29.34$) as more aesthetically pleasing than the unbalanced dishes ($M = 36.10$, $SD = 28.34$), supporting H1. In addition, the participants reported that they would be slightly less likely to come up with an excuse for not eating the balanced ($M = 31.07$, $SD = 34.94$) vs. unbalanced dishes ($M = 32.72$, $SD = 35.59$). They also reported that they were more likely to eat the balanced ($M = 45.95$, $SD = 32.73$) vs. the unbalanced dishes ($M = 42.96$, $SD = 31.98$), indicating support for H2 and partly support for H3. In terms of the interaction between context and balance for harm, after applying the Holm correction for multiple comparisons, no significant differences were observed ($ps > .137$), showing no support for neither H4, H5, or H6.

Overall, the results of Experiment 1 replicate and extend previous findings by suggesting that people find balanced plating more aesthetically pleasing than unbalanced plating (e.g., Velasco et al., 2016). In addition, we found support for the idea that balanced plating evokes more approach-related associations relative to unbalanced plating. However, we did not find evidence in support for a difference in avoidance evaluations associated with different plating levels, nor for a differentiating role of context in consumers' aesthetic and approach and avoidance ratings.

Two possible limitations derived from Experiment 1. First, our context manipulation might have been relatively weak as the instructions were very similar in both conditions. In addition, whilst we captured certain aspects of approach and avoidance associations in the different scales, we did not use more standard measures of approach and avoidance. For that reason, in Experiment 2 we moved on to confirm our findings with some subtle changes in the methods that addressed such

Table 1

Mixed design ANOVAs in Experiment 1. We present the F and p values, and the generalized eta square as a measure of effect size (Bakeman, 2005). Significant results are highlighted in bold. Half of the participants ($n = 79$) were presented with the high-end context and the other half ($n = 79$) with the casual restaurant. For the different tests, $DFn = 1$ and $DFd = 156$.

Variable	Factors	F	p	ges
Aesthetic pleasure	Context	.06	.801	<.001
	Balance	37.73	<.001	.018
	Context x balance	1.27	.261	<.001
Harm	Context	.36	.551	.002
	Balance	1.84	.177	<.001
	Context x balance	4.33	.039	<.001
Not safe	Context	.351	.555	.002
	Balance	.180	.672	<.001
	Context x balance	.031	.860	<.001
Excuse	Context	0.07	.798	<.001
	Balance	7.60	.007	.002
	Context x balance	.04	.840	<.001
Likely to eat	Context	<.01	.958	<.001
	Balance	24.98	<.001	.007
	Context x balance	.36	.548	<.001

limitations.

Experiment 2

Methods and materials

Participants. 223 participants (144 females, 78 males, 1 preferred not to say), aged 18–75 (Mean age = 34.73, $SD = 12.42$) were recruited from Prolific Academic (<https://www.prolific.ac/>). The experiment was programmed on Qualtrics (<http://qualtrics.com/>). Altogether, it lasted for approximately 22 min.

Apparatus and materials. The stimuli used in this experiment were the same as in Experiment 2. Here, we also used two context manipulations. However, we made certain changes in order to make our manipulation more salient. In the casual dining context, the participants were told: “Consider this dish for a low-end restaurant (i.e., a restaurant that appeals to casual and regular customers) and indicate the extent to which you agree with the following statements”. In the high-end restaurant context, the participants were instructed as follows: “Consider this dish for a high-end restaurant (i.e., a high-end restaurant that appeals to sophisticated and discerning customers) and indicate the extent to which you agree with the following statements”. The words “low-end restaurant” and “high end restaurant” were highlighted in bold.

Procedure. This experiment also followed a 2 x 3 mixed design with dining context (high-end, low-end dining) as between-participant factor and plating symmetry (balanced, unbalanced left and right) as within-participant factor. Before the experiment started, the participants were given the general instructions of the study (“We are interested in understanding how people evaluate different dishes of food. If you decide to take part, we will show you several pictures of food dishes and will ask you to respond to a few questions about them”) and were asked to sign a standard consent form before taking part in the study. Next, they were asked to report their gender and age. Right after that, the participants were assigned to either of the contexts and given the corresponding instructions.

Once the participants read the above-mentioned instructions, they were presented with the thirty food pictures, one by one, in random order, as in Experiment 1. The participants were also asked the 5-item Aesthetic Pleasure in Design Scale (Blijlevens et al., 2017). In this experiment though, we included several scales associated with approach/avoidance concepts, namely, approach–avoid, advance–retreat, seek–escape, pursue–evade, and proceed–withdraw. These questions were inspired by previous research utilizing such words (Fetterman et al., 2013, who also noted that the approach and avoidance words do not differ in terms of number of letters) and studies where these words were used as anchors to study approach and avoidance associations (Velasco et al., 2016b, 2020). These questions were answered in 100-point VAS anchored with the aforesaid approach and avoidance words. Based on our literature review, we decided to ask the participants in each context group about whether they consider the dishes a good fit or not for the contexts. In addition, we included a question about their hunger level. Both fit and hunger questions were answered in 100-point VAS anchored with ‘not at all’ and ‘very much’.

Analysis. The data was aggregated as a function of balance. We also aggregated the data as a function of aesthetics and approach and avoidance scales. Such data was analysed by means of a 2 (high-end vs. low-end) x 2 (balanced vs. unbalanced) mixed design ANOVA as implemented in the R package {rstatix}.

Results and discussion

The participants hunger levels were similar in both context conditions, Welch t-statistic $t(219.92) = 1.09$, $p = .277$, Cohen's $D = 0.146$ (M high-end = 46.98, $SD = 27.69$, M casual = 43.00, $SD = 26.53$).

Single indexes of aesthetic evaluation and approach and avoidance

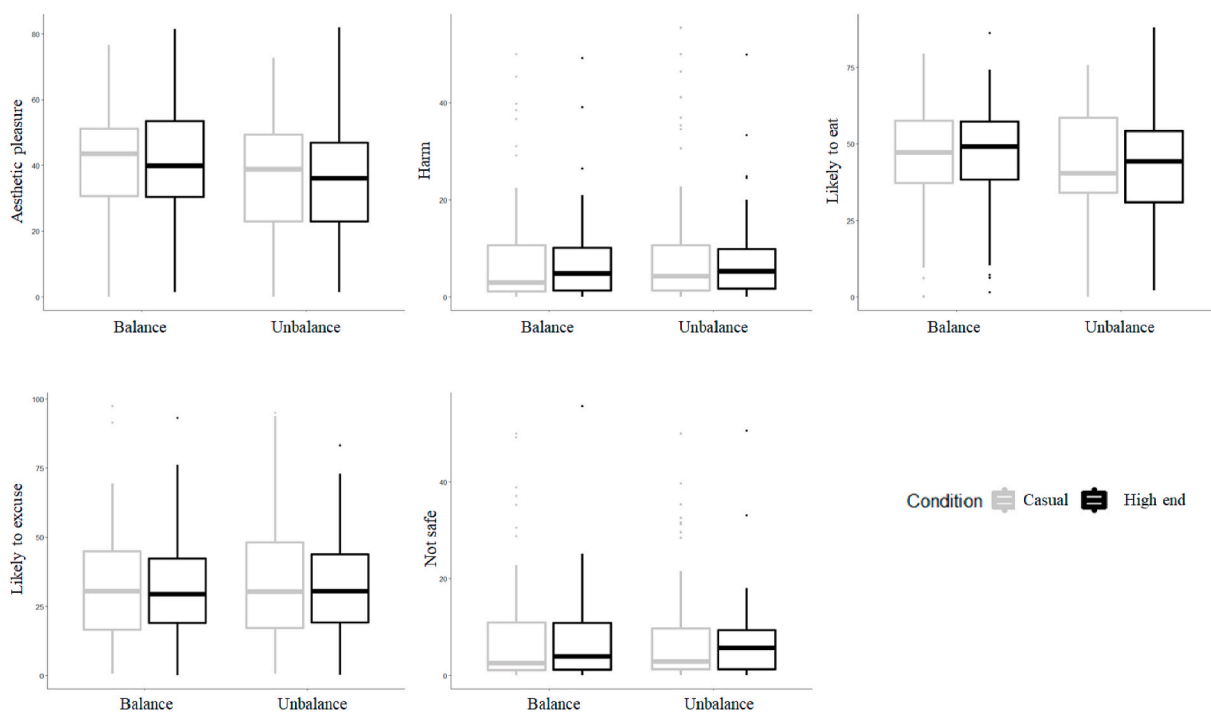


Fig. 2. Summary boxplots of the ratings in Experiment 1.

were computed (both Cronbach alphas > .99). The results of the ANOVAs in this experiment are presented in Table 2 (see Fig. 3, for a visual summary of the results).

The balanced dishes were evaluated as more aesthetically pleasing ($M = 37.29, SD = 28.96$), and associated more strongly with approach words ($M = 39.81, SD = 17.54$), than their unbalanced counterparts ($M = 33.86, SD = 27.69$ and $M = 36.89, SD = 17.10$, respectively). In addition, the balanced dishes were considered as a better fit ($M = 41.47, SD = 17.83$) for the contexts than the unbalanced dishes ($M = 38.17, SD = 17.66$).

These findings provide support for H1, H2, and H3. Importantly, however, even in light of the modifications introduced between Experiment 1 and 2, we did not find evidence in our data in support of H4, H5, and H6.

General discussion

The aim of this study was to investigate the role that subtle cues associated with plating aesthetics have on aesthetic pleasure and approach and avoidance associations. In addition, we also evaluated the role of context of two qualitatively different context, namely a causal/low-end restaurant vs. a high-end dining restaurant, on such variables. Our results extend previous results by suggesting that visual aesthetic

Table 2
Mixed design ANOVAs in Experiment 2. Approximately half of the participants were presented with the high-end context ($n = 110$) and approximately half with the casual restaurant ($n = 113$). For the different tests, $DFn = 1$ and $DFd = 221$.

Variable	Factors	F	p	ges
Aesthetic pleasure	Context	.68	.413	.003
	Balance	61.46	<.001	.010
	Context x balance	.008	.930	<.001
Approach and avoidance	Context	2.16	.143	.009
	Balance	42.36	<.001	.007
	Context x balance	.21	.651	<.001
Fit	Context	.807	.370	.003
	Balance	48.79	<.001	.009
	Context x balance	.288	.592	<.001

aspects of plating, in particular, balance, influence peoples aesthetic pleasure evaluations and approach and avoidance associations with the food.

While the positive link between balanced plating and liking of the dish has been found before (Michel et al., 2015; Velasco et al., 2016; Zellner et al., 2011), this is not the case for the link between balance in plating on the one hand, and aesthetic pleasure and approach-avoidance associations, on the other. This paper contributes, accordingly, to theory by demonstrating a positive link between balanced plating and pleasure and approach associations. These results are consistent with the research conducted by Velasco et al. (2020), who demonstrated that balanced packaging designs are more (less) often associated with approach (avoidance) words than unbalanced packaging design. In Study 1, we documented that balanced plating increases the stated likelihood of eating, decreases the stated likelihood of coming up with an excuse for not eating, and decreases the perceived likelihood that the food can harm you. The aesthetics of the plate seem to influence risk perception and the likelihood of developing a strategy to handle this risk. Balanced plates are perceived as less harmful than unbalanced plates and people are more likely to develop excuses for not eating a dish presented in an unbalanced way compared to a balanced plate that is more pleasing to look at.

One possible explanation for the finding that people are more (less) attracted toward, and find more (less) aesthetically pleasing the balanced (unbalanced) dishes, may be the fact that balance and symmetry appears to signal higher quality relative to unbalance and asymmetry, where quality is understood as phenotypic and genotypic make-up (Little, 2014). Indeed, one characteristic of symmetry is that it affects people’s hedonic, as well as their quality evaluations (Pombo and Velasco, 2019). Here, it is important to mention, though, that, overall, the participants considered the balanced plates as a better fit for both contexts, relative to the unbalanced dishes (Experiment 2). This raises an interesting question in relation to whether there might be a sort of situational appropriateness, and/or perhaps familiarity due to a frequent exposure, of balanced plates, relative to unbalanced plates, in dining contexts (cf. Giacalone et al., 2015; Giacalone and Jaeger, 2019). Future research may try to disentangle the effects of familiarity, perhaps

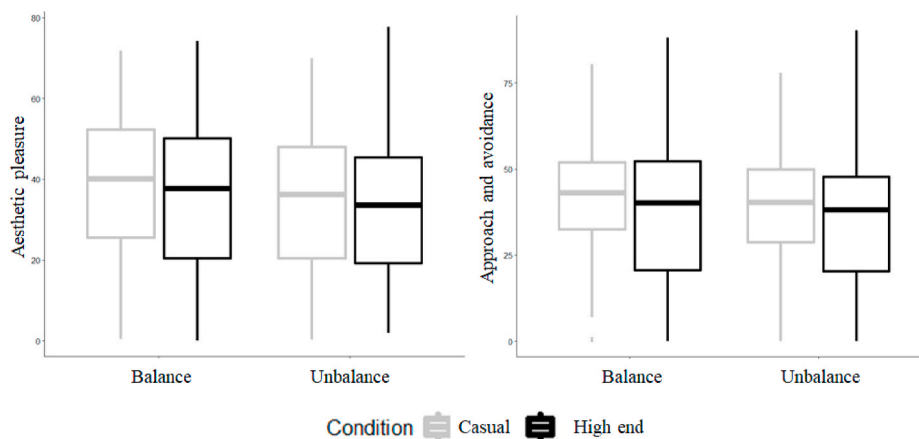


Fig. 3. Summary of ratings in Experiment 2.

also typicality, and situational appropriateness, from balance, when it comes to aesthetic pleasure and approach and avoidance associations with the food (see also Mayer and Landwehr, 2018).

Contrary to what we expected, based on the suggestions by Velasco et al. (2016), context did not affect consumer's aesthetic evaluations nor their associations with approach and avoidance words. We did not find any direct or interaction effects of context on the relationship between balanced plating and aesthetic pleasure or approach-avoidance associations with the dish. This is an interesting result that makes us reflect on why our hypotheses were not supported. Whether this lack of evidence is causal, or due to a limited context manipulation (e.g., participants were not actually present in the contexts) is not clear at present. One possibility is that the mixed design of the experiments might have influenced the expected effects. It has been suggested that the experimental design (within vs. between) influence consumer expectations toward food products (cf. Motoki and Velasco, 2021) such that within participant factors may lead to relative compatibility effects. What is more, it is possible that the subtle restaurants manipulation and longer experiment time might have influenced the expected effects. Future studies need to investigate this further with other manipulations of context, in particular, in light of the trend by many modernists chefs and high-end restaurants toward unbalanced plating (Styler and Lazarus, 2006; Velasco et al., 2016). Another angle to this involves segmenting consumers as a function to how often they visit high end restaurants. We hypothesised that unbalanced plating would be perceived more novel and better fitting in a high-end restaurant than a casual/low-end restaurant (cf. Edwards et al., 2003; Giacalone and Jaeger, 2019). Our hypothesis may, perhaps, hold for other, more novel, dishes than the one we included. Alternatively, it might be the case that unbalanced plates are perceived more novel than balanced plates, but that novelty is perceived riskier than the familiar (Gray, 1982) and therefore have a lower approach motivation independent of context.

Limitations, practical implications, and future research

One possible limitation of the present research involves the sort of experimental setting utilized. It may be the case that the context manipulation was not as strong to evoke the casual and high-end dining contexts, thus not capturing their effects on food evaluations. Another potential limitation may be associated with the dish stimuli utilized. Whilst we aimed to have diverse dishes in our stimuli set, it may have been the case that the dishes were biased toward specific dining contexts. Future research should undoubtedly aim at replicating the present study while operationalizing the manipulations differently, to develop a strong understanding of the relation plating aesthetics, context, and approach and avoidance associations. One additional limitation is associated with the way in which we measured people's approach and

avoidance associations. Whilst utilizing approach and avoidance words does provide one with an idea of the general relationships between the dish and context conditions and motivational categories, it may be the case that people's evaluations are based on affect. For that reason, future research should utilize other paradigms (e.g., indirect behavioural tasks) to capture approach and avoidance motivation and tried to control for preference while studying motivation (e.g., Piqueras-Fiszman et al., 2014).

It is worth mentioning that both experiments included more female than male participants. Although our studies are in line with previous research with more gender equal samples (Velasco et al. 2016, 2020), it is worth considering possible gender differences in future research. What is more, the images that we used in the present study are relatively simple and may not be fully representative of more realistic plated foods. Indeed, something that may point to this idea is the fact that, in both experiments, the images were typically rated around or below 50 in the aesthetically pleasing scale (something which may also act as a boundary condition for our results). Whilst this does not invalidate this approach to study aesthetic plating, in context, and its relationship to approach and avoidance associations, it does call for further research, perhaps in naturalistic dining settings (Michel et al., 2015a,b).

A natural extension of this research is to investigate the effect of the balance of the shape of the plate on approach and avoidance. Potentially, the effect found of balancing the dish can be found also when only the shape of the plate is unbalanced, and maybe an unsynchronised plate will fit better than a round plate in a high-end restaurant?

The findings of the present research may have practical implications for changing people's approach and avoidance associations with specific foods. It seems like a dish that is aesthetically pleasing to look at is more likely to be eaten than a less nice-looking dish (see also Michel et al., 2014). Perhaps, to increase consumption, be it of fish or vegetables served to kids at home or a dinner served to elderly with reduced appetite at institutions, the dish may be balanced on the plate. Balanced food that is aesthetically pleasing seems more likely to be approached, everything else being equal. Crucially, though, before these findings inform food design for behavioural change, further research should be considered in which both context (e.g., say school, work, or home, but also, for example, type of food) and individual differences (e.g., whether aesthetic plating is used to encourage or discourage consumption for children or the elderly) are studied (cf. IJzerman et al., 2020). Future studies should investigate the role of plating aesthetics on food consumption, as it may not only encourage consumption of desirable foods but perhaps also discourage consumption of undesirable foods. Will an unbalanced plate of highly liked food reduce consumption? This is a highly relevant question to investigate further.

Overall, this paper contributes to our understanding of balanced plating by documenting a positive effect of balanced plating on

approach motivation. A balanced plate increases the likelihood of eating, reduces the likelihood of coming up with an excuse for not eating and reduces the perceived harm. We also replicate the previous found effect from balanced plating on aesthetic pleasure associated with the dish. While we did not find support for our hypothesised context effect on balanced plating and aesthetic pleasure and approach-avoidance associations, we still believe there might be an effect that we did not manage to tease out. This study opens accordingly up an avenue of possibilities for new studies of plating aesthetics and approach-avoidance associations under different contexts. Especially does our underlying assumption of novelties positive influence on approach motivation, deserve more attention. Future studies need to include a wide range of manipulations that varies novelty both for the context and for the dishes to be tested. Since novelty can be perceived as a risk, something unfamiliar that awakes scepticism, future studies that include acceptance of novelty as a moderating factor when investigating approach and avoidance motivation to novel dishes in novel contexts are therefor asked for.

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