



Does the visual composition of a dish influence the perception of portion size and hedonic preference?

Jessica Rowley, Charles Spence*

Crossmodal Research Laboratory, The University of Oxford, UK

ARTICLE INFO

Keywords:

Plating
Presentation
Stacking
Portion size estimation

ABSTRACT

We report two experiments designed to assess how the plating (i.e., visual composition) of a dish influences people's hedonic preferences and their perception of portion size. In Experiment 1 (conducted online; $N = 122$), we examined whether varying the orientation of the food on the plate (either vertically stacked or horizontally arrayed) would affect people's ratings of liking (of the visual arrangement), willingness-to-pay for the dish, artistic value (how artistic the dish looks), and perceived portion size. Experiment 2 ($N = 124$) extended this research to a naturalistic dining context, demonstrating the influence of both plating arrangement (horizontal vs. vertical) and centrality (centred vs. offset plating) on the same ratings. In both experiments, the plate of food was rated as constituting a larger portion when the elements were arrayed horizontally rather than stacked vertically. Additionally, the centrally-plated dessert was rated as a larger portion than the offset version of exactly the same dish. The food was also liked more and the participants/diners were willing to pay more for it when horizontally and/or centrally arranged. These results provide important guidelines for enhancing the visual arrangement of a dish, in order to increase enjoyment, and possibly also nudge consumers toward better food choices.

1. Introduction

Nowadays, many chefs are growing increasingly conscious/concerned about how their food looks. Indeed, together with the shear variation and ingenuity in the visual composition of dishes that one sees on sites such as Instagram's The Art of Plating, Apicius's 1st Century assertion that people eat first with their eyes would seem remarkable apposite (e.g., Apicius, 1936; Spence, 2015; Spence, Okajima, Cheok, Petit, & Michel, 2016). Currently, many chefs approach the plating of food in a natural manner, where the visual aspects of composition are refined through an intuitive and iterative process in the kitchen. As such, it becomes increasingly important to investigate empirically how differences in the visual arrangement of the food on the plate may influence a diner's expectations, and their subsequent evaluations (see Spence, Michel, Piqueras-Fiszman, & Deroy, 2014, for a review). Indeed, subtle changes in the visual composition of a dish may affect a diner's perception of its taste/flavour, how much the food is liked (e.g., Michel, Velasco, Gatti, & Spence, 2014; Zampollo, Kniffin, Wansink, & Shimizu, 2012; Zellner, Lankford, Ambrose, & Locher, 2010; Zellner, Loss, Zearfoss, & Remolina, 2014; Zellner et al., 2011) and even how much a diner is willing to pay for it (Michel, Velasco, Fraemohs, & Spence, 2015). Additionally, visual appearance cues have been shown

to influence people's judgments and decisions, such as evaluating and choosing the size of a portion of food (Aydinğlu & Krishna, 2011; Szocs & Lefebvre, 2017).

The aim of the two experiments reported here (one study conducted online, the other in a naturalistic dining environment) was to examine the visual composition of a plate of food on both people's subjective perception of the size of the portion and their hedonic preferences (i.e., how much they like the visual arrangement, their willingness-to-pay for a dish, and how artistic they believe the dish looks).

1.1. Visual arrangement and hedonic preferences

Research exploring food aesthetics has demonstrated that several important factors involved in the visual composition of a dish during plating may influence the consumer's evaluations of the food. Many of these factors are derived from novel culinary trends and guidelines established by chefs around the world. This includes recent trends by chefs toward asymmetric plating (i.e., when all of the edible elements are crowded onto just one side of the plate; see Spence, Piqueras-Fiszman, Michel, & Deroy, 2014; Spence & Piqueras-Fiszman, 2014; Styler, 2006; Velasco, Michel, Woods, & Spence, 2016) and the increasingly artistic representations of food that one sees more generally

* Corresponding author. Department of Experimental Psychology, University of Oxford, Oxford, OX1 3UD, UK.
E-mail address: charles.spence@psy.ox.ac.uk (C. Spence).

(see Spence et al., 2014, for a review).

In addition, research on the topic of visual aesthetics has consistently shown that the location of food on the plate influences both how it is perceived and how much people like it. For example, those items that occupy central locations tend to be preferred (see Michel et al., 2015; Palmer, Schloss, & Sammartino, 2013; Velasco et al., 2016), and preference for the composition decreases, the further away the items are moved from the centre (Palmer, Gardner, & Wickens, 2008). More specific manipulations to the position of the main item within a composition (together with the food colours used) can also influence a diner's perception, with colourful dishes where the main item is placed away from the diner being perceived as more creative, and liked significantly more, than off-centred monochrome dishes (Roque, Guastavino, Lafrairec, & Fernandez, 2018).

Spence et al. (2014) demonstrated that the artistic presentation of a salad, resulted in the dish being considered as significantly more artistic, more complex, and more liked than either a regular salad presentation or a neat presentation (with all three presentations containing the same ingredients). While, as one might perhaps expect, the intuitions of the successful chef often turn out to be preferred by the public at large (when assessed in scientific experiments), it is important to note that this is not always the case. When preferences for visual compositions are explored by drawing parallels with the aesthetics of the visual arts (see Spence, 2017b, for a review), it seems that some of these intuitions turn out to be less preferred. For instance, visually symmetrical compositions have been shown to be preferred over the unbalanced, or asymmetrical (Zellner et al., 2011), the latter currently popular amongst some chefs.

Subtle differences in plating can evidently influence consumers' aesthetic evaluations of a dish (Michel et al., 2014), their preferences (Zellner et al., 2011), and even how much they are willing to pay for it (Michel et al., 2015; Roque et al., 2018; Velasco et al., 2016). What the diner sees on a plate generates an array of expectations and subsequent evaluations concerning the taste, flavour, and enjoyment of a given dish (Piqueras-Fiszman & Spence, 2015; Spence & Piqueras-Fiszman, 2014).

Altering the arrangement of the food on the plate (either stacking the food vertically or spreading it out horizontally) been shown to influence the perception of portion size and the quantity of food consumed (Szocs & Lefebvre, 2017). According to the latter's findings, consumers actually perceive there to be less food but eat more when the elements are stacked vertically as compared to when the same food is presented flat (horizontally) against the surface of a plate. Previous research examining the influence of visual composition on hedonic preferences has typically relied on trends set by chefs, such as balance, the number of elements, and centrality (Roque et al., 2018; Woods, Michel, & Spence, 2016; Zellner et al., 2011). Although the impact of a food's visual orientation on health-related behaviours has been explored previously (Szocs & Lefebvre, 2017), no one has examined the influence of orientation (arrayed horizontally vs. stacked vertically) on people's *hedonic* preferences.

Stacking food is a popular plating technique (Choi, 2014), and both vertical food presentation and the more 'traditional' horizontal presentation are common plating techniques used in many restaurants (see Horwitz & Singley, 2004; Restaurant News, 2016). The two experiments reported here were designed to investigate how altering the plating of the food in a dish (contrasting a vertical vs. horizontal arrangement), influences consumers' hedonic preferences (including their liking of the visual presentation, their willingness-to-pay, and how artistic they rate the dish's appearance) as well as their subjective evaluations of portion size. Additionally, the second study was designed to explore whether the centrality of the food within a dish (whether the food is presented in an asymmetrical fashion or more traditionally centred in the middle of the plate) would influence portion size estimates and the viewer's hedonic evaluations of the food concerned. As such, this research attempts to offer further understanding concerning the link between a chef's intuitive principals for plating and the preferences of the consumers

whom they serve.

Importantly, the evaluation of food in real-consumption situations sometimes differs from what is seen when foods are only presented visually (Jimenez et al., 2015). Experiment 2 was therefore conducted in a naturalistic dining environment to further investigate the influence of orientation on consumer preferences in a real-world dining context.

Based on the above, several hypotheses were tested in the present study:

H1: Participants will associate stacked plating with increased liking, increased artistic value (as this style of plating is usually achieved by more experienced and proficient chefs; Choi, 2014), and an increased willingness-to-pay for the dish (as this style of plating can be directly linked to higher-end dining environments where prices may be inflated relative to other classes of establishment).

H2: Consumers will perceive a given volume of food as larger if the food is arrayed horizontally (rather than stacked vertically) since a horizontally presented portion presents a larger surface area visually. Given previous findings (Szocs & Lefebvre, 2017), our prediction was that equal volumes of food will be perceived as larger when arranged horizontally (vs. stacked vertically) on the plate.

H3: Diners will express a preference for the dish that is presented centrally, are will also be willing-to-pay more for it, and likely also rate it as more artistic than the same food when presented off-centre.

2. Experiment 1

The main aim of Experiment 1 was to examine the effects of manipulating the visual composition of plated food on perceived portion size, in an attempt to replicate Szocs and Lefebvre's (2017) findings. The same food elements were either stacked vertically in a tower or else spread-out horizontally over the plate. Experiment 1 also assessed whether these plating manipulations influenced people's liking for the visual presentation of the dish, their rating of its artistic value, and their willingness-to-pay (WTP).

2.1. Methods

Participants: An *a priori* power analysis was performed to determine the required sample size for this study. With an $\alpha = .05$ and power = 0.90, the projected sample size needed with this effect size (using G*Power 3.1 software; Faul, Erdfelder, Lang, & Buchner, 2007) was approximately $N = 84$ for the simple between-groups comparison. Thus, the proposed sample size of 122 was deemed more than adequate to address the main objective of this study. This increased sample size was chosen to allow for both expected attrition and also potentially to allow us to address the additional objectives of controlling for possible mediating factors.

One-hundred and twenty-two participants (63 males and 59 females) were recruited to take part in Experiment 1 using Amazon's Mechanical Turk (<https://www.mturk.com/>), an online academic platform for conducting experimental research. The participants, who ranged in age from 21 to 67 years ($M = 34$ years), received a payment of \$0.50 for taking part. Only those living in the USA were eligible. All of the participants gave their informed consent to take part in the study, which was approved by Oxford's University Medical Sciences Inter-Divisional Research Ethics Committee (approval #MS-R49180/RE001).

Design: A one-factor independent measures design was used, varying the way in which the food was presented (with the same food items either being stacked vertically or else spread out horizontally over the plate). The dependent variables included the estimated portion size, how much the visual arrangement was liked, how artistic the presentation looked, and the participant's WTP for the dish. The participants were randomly assigned to either condition.

Stimuli: Two versions of the same plate of food were created with identical elements varying solely in terms of their composition (i.e., with the elements in the dish stacked vertically vs. spread-out

Download English Version:

<https://daneshyari.com/en/article/7305292>

Download Persian Version:

<https://daneshyari.com/article/7305292>

[Daneshyari.com](https://daneshyari.com)