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4

5 **Blowing minds with exploding dish names/images: the effect of implied explosion on**  
6 **consumer behavior in a restaurant context**

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25  
26 **Declaration of competing interest**

27  
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# Blowing minds with exploding dish names/images: the effect of implied explosion on consumer behavior in a restaurant context

## Abstract:

Dish names and dish images can be widely found online, providing consumers with important information. Meanwhile, implied explosion (i.e., the perception of explosion induced by static stimuli) is increasingly utilized by real-world restaurants. The present research thus combines dish names, dish images, and implied explosion to examine the impact of implied explosion on various aspects of consumer behavior within a restaurant context. Three experiments demonstrated that exploding dish names and exploding dish images (i.e., dish names/dish images showing implied explosion) can create a more intense taste perception and a more favorable taste evaluation. Additionally, exploding dish images can enhance perceived dish liking and increase consumers' willingness to pay. The present research suggests that exploding dish names/dish images are subtle but effective communication tools for the tourism industry, helping to deliver a more stimulating perception and experience to consumers and to generate higher margins. By exploring the effects of implied explosion, we also introduce the implied motion concept to the tourism management literature.

**Key words:** Implied motion, dish names, dish images, sensory marketing, restaurant, dish perception, dish evaluation, willingness to pay

## Highlights:

- This research introduces implied motion to the tourism management literature
- This research explores implied explosion as a specific type of implied motion within a restaurant context
- This research examines the effect of exploding dish names/images on consumer behavior
- Exploding dish names/images give consumers a more stimulating perception
- Exploding dish names/images can yield higher margins for restaurants by increasing willingness to pay
- Implied explosion is a new option for restaurants to conduct sensory marketing online
- A data cleaning protocol is developed for online panels
- The significance of conceptual replications is highlighted

## 1. Introduction

Consumers frequently search for different information to form a composite perception for their decision-making (Frias et al., 2008). In a restaurant context, consumers increasingly rely on the Internet to search for restaurant information and help with their restaurant choices (Filieri et al., 2015; Litvin et al., 2005). As a result, consumers often exchange their restaurant reviews with others online, while restaurants create official websites and complementary social network homepages in order to reach their target markets (Bilgihan et al., 2016). Accordingly, the extant tourism literature examines consumer-generated reviews

69 extensively in the context of food tourism, restaurants, and the hospitality industry. Recent research, for  
70 instance, found that online textual reviews can impact consumers' decision-making, especially when they  
71 use mainstream language and display certain emotions (Wang et al., 2019). Taking this a further step, the  
72 reviews and ratings consumers assign to a restaurant are shown to be largely subjective, involving a  
73 "herding" effect moderated by various constructs such as temporal distance, experience valence, posting  
74 devices, reviewers' nationality, and cultural background (Li et al., 2021; Nakayama and Wan, 2018; Vu et  
75 al., 2019). With the rise of sensory marketing, emerging studies show that when consumers select and  
76 review a restaurant, information searching/sharing behaviors are primarily related to taste and other sensory  
77 information (Duarte Alonso et al., 2013; Li et al., 2019; Mehraliyev et al., 2020), probably because dining  
78 experiences are essentially multisensory (Cai et al., 2021; Piqueras-Fiszman and Spence, 2014).

79

80 While most research in the tourism literature focuses on textual reviews and numerical ratings, a  
81 limited stream of research has examined other types of information that are widely available online,  
82 frequently used by consumers, and can presumably signal sensory information. Dish names and dish  
83 images (largely conditioned by dish plating designed by restaurants) are important information that can be  
84 found at diverse online sources and are subsequently used by consumers to guide their restaurant choice.  
85 For example, restaurants typically detail their dishes on their website and include a special gallery to  
86 showcase their dining area and culinary creations. Dishes are also intentionally designed to encourage  
87 consumers to take photos so they can post their restaurant experience on social media and start an online  
88 discussion (Spence, 2017). Consumers, on the other hand, often upload dish images along with their  
89 reviews through different online channels, and these are subsequently used by other diners to make their  
90 restaurant choices (Oliveira and Casais, 2019). Moreover, dish names frequently mentioned by patrons are  
91 likely to be reiterated by potential consumers (Brewer and Sebby, 2021; Zhang et al., 2011). Furthermore,  
92 a growing number of studies suggest that dish names and dish images may embed restaurant-related  
93 sensory information (Zhao et al., 2018; Wansink et al., 2005). Unlike textual reviews and numerical ratings,  
94 for instance, dish names and dish images are more directly linked to dishes, giving consumers a more  
95 objective basis on which to elaborate the sensory aspects of the restaurant experience by themselves  
96 (Krishna, 2011). As a result, dish names and dish images have been shown to effectively communicate  
97 sensory aspects of a restaurant experience and to influence subsequent behavior (Michel et al., 2015;  
98 Youssef et al., 2015).

99

100 As to sensory aspects of food perception and restaurant experience, food research and the restaurant sector  
101 have been exploring the role of motion and dynamic information in shaping consumer behavior for many  
102 years. For instance, some upscale American restaurants display live fish *swimming around* in aquariums as  
103 an environmental cue to signal product quality (Campbell-Smith, 1970). Asian chefs frequently use

104 extremely fresh ingredients and special cooking methods to make foods *dance/move* on a plate (Mouritsen  
105 and Styrbæk, 2018; Spence, 2018), which indicates tastiness for certain Asian consumers. Nonetheless, the  
106 application of real motion is limited, as it is challenging and expensive for restaurants to create. Fortunately,  
107 a perception of motion can be statically induced. In other words, we have the general ability to extract  
108 dynamic states from static stimuli (i.e., implied motion, Aık et al., 2014; Shirai and Imura, 2014) by  
109 playing back motion-related memories in our mind (Elder and Krishna, 2012; Freyd, 1983). Compared to  
110 real motion, implied motion is easier to create and can be widely applied to different elements, presenting  
111 a new opportunity to infuse dynamism and enhance sensory perception. Recent marketing literature found  
112 that static images depicting beverages being poured into a glass or splashing in the air can evoke motion  
113 perception and consequently receive higher sensory ratings (Gvili et al., 2017), generating stronger  
114 purchase intention and more frequent choice (Yu et al., 2022). Taking this further, a growing body of  
115 marketing research has begun to explore how implied motion impacts sensory perception by taking specific  
116 motion types into account (e.g., implied upward motion, Van Rompay et al., 2014), suggesting that the  
117 effect of implied motion is largely determined by its type (Baxter and Ilicic, 2018). In line with emerging  
118 research on implied motion and the emphasis on its various types, pioneering restaurants and  
119 establishments have begun to explore a specific type of implied motion, namely, explosive motion, in the  
120 hope that implied explosion (i.e., the perception of explosion created by static stimuli) will enhance diners'  
121 perceptions, generate a more stimulating experience, and create more profit. To this end, restaurants create  
122 implied explosion using dish names and dish images. Chefs at the iconic Parisian brasserie, Source Infinie,  
123 for instance, bang tartare sauce onto a plat with a spoon, creating an explosive distribution of the condiment.  
124 Thus, the brasserie's signature fresh salmon tartare is served with an exploding sauce (Source Infinie, 2021),  
125 and its account managers have pinned the dish image on Tripadvisor as its homepage cover. Likewise,  
126 Michelin-starred chef, Jean-Franois Rouquette, tops olive oil ice cream with exploding chocolate chips to  
127 create a luxurious and intense experience at his renowned restaurant 'Pur' (iansheppard68, 2019). In  
128 addition, several dish (beverage) names, both new and traditional, imply explosion. The classic cocktail  
129 *depth charge*, for instance, is also widely known as a *bomb shot*. The popular street beverage sold by the  
130 chain store, Coco, is called *double cracker* of passion fruit (literally translated from "Bai Xiang Guo  
131 Shuang Xiang Pao") in mainland China. When reading these names, consumers will spontaneously  
132 visualize an explosion, either in the glass or in their mouth (Wyer et al., 2008). Thus, chefs have  
133 successfully created implied explosion in terms of visuals and texts, producing many exploding dish names  
134 and exploding dish images that can add to a restaurant experience. Despite the increasing use of exploding  
135 dish names and exploding dish images, their functionality has not been investigated to date. Given the  
136 growing popularity of implied explosion in real-world business and the emerging literature on implied  
137 motion and its specific types, investigating the effect of exploding dish names and exploding dish images  
138 is theoretically necessary and managerially relevant. First, a more scientific investigation can reveal the

139 benefits of implied explosion in a restaurant context. More importantly, exploring implied explosion as a  
140 specific type of implied motion can help to establish implied motion as a new research avenue in the  
141 tourism management literature and illustrate how consumer behavior is shaped by its specific types.

142 To fill this gap, the present research combines dish names, dish images, implied motion, and implied  
143 explosion in a restaurant context. Adopting an interdisciplinary method, a theoretical framework is  
144 proposed to introduce implied explosion and subsequently analyze its potential to communicate dishes'  
145 sensory information (i.e., perceived taste intensity, perceived taste liking) and to consequently shape  
146 downstream consumer behavior (i.e., perceived dish liking and willingness to pay (WTP)) when applied to  
147 dish names or dish images. More specifically, we adopt the following theoretical path: we first review the  
148 concept of implied motion and its implications in restaurant-related contexts. Following the  
149 conceptualization of implied motion, we move on to implied explosion as a specific case of implied motion  
150 and discuss how exploding dish names and exploding dish images can be created. We then analyze the  
151 effect of implied explosion on taste perception and its downstream effect on consumer behavior, mainly  
152 drawing on conceptual metaphors and the tourism/marketing literature. Through three conceptual  
153 replications, we find that exploding dish names and exploding dish images can generate a broad-spectrum  
154 positive effect on different aspects of consumer behavior, creating a win-win situation for both consumers  
155 and restaurants. The present research therefore suggests that as a specific implied motion type, implied  
156 explosion can help to signal rich sensory information, create a more stimulating perception for customers,  
157 and generate higher margins via exploding dish names and exploding dish images.

158 The rest of the paper is organized as follows. We first present an interdisciplinary literature review.  
159 Second, three conceptual replications are presented. In other words, the hypothesized effect of implied  
160 explosion is empirically investigated through three online experiments using both exploding dish names  
161 and exploding dish images. Finally, we present a general discussion that outlines both the theoretical and  
162 the managerial contributions. The research limitations and potential avenues for further research are also  
163 discussed.

## 164 165 **2. Literature review, conceptual framework, and hypotheses**

### 166 167 *2.1. Dish names and dish images*

168  
169 Dish names offer fundamental information about a restaurant and its offerings. They are displayed on  
170 physical menus, restaurant websites, review websites, and social media. Dish names provide rich  
171 information (e.g., ingredients, ethnicity/authenticity, sensory experience, geographic features, brand, and  
172 taste), highlight the sensory aspects of a dish, and generate food-related mental images (Piqueras-Fizman  
173 and Spence, 2015; Bacon and Krpan, 2018; Jacob et al., 2017). In addition, the visual and physical

174 presentation of dish names (i.e., font and weight of menu) can also impact restaurant perception and  
175 increase service quality expectations (Magnini and Kim, 2016). Consequently, an appropriate dish name  
176 can boost purchase intention, encourage dish consumption, and lead to higher sales for restaurants (Gavrieli  
177 et al., 2020; Gottschall et al., 2018; Papies, 2013; Wansink et al., 2001). Likewise, dish images are often  
178 uploaded online as supplementary information, facilitating consumers' choice of restaurant (Oliveira and  
179 Casais, 2019). Since humans have evolved to process visual stimuli rapidly and effortlessly (Zurawicki,  
180 2010), such images should communicate the sensory features of dishes, altering purchasing behavior  
181 naturally and efficiently. In line with this reasoning, recent research from various fields suggests that dish  
182 images play a vital role in shaping consumers' dish perception and hedonic evaluation (Hoegg and Alba,  
183 2007; Szocs and Lefebvre, 2017; Toet et al., 2019), actual dining experience (Michel et al., 2014), and  
184 purchase intention (Brewer and Shebby, 2021). Given that both dish names and dish images signal rich  
185 information about a restaurant, they lend themselves to communicating sensory experiences and impacting  
186 consumer behavior.

187

## 188 *2.2. Implied motion and consumer behavior*

189

190 Motion is part of almost every aspect of daily life and is critical for humans to function in the world  
191 (Oberzaucher and Grammer, 2008). Thus, relevant research suggests that humans are physically and  
192 psychologically attuned to detecting, processing, and deciphering information from motion (Bardi et al.,  
193 2011; Brasel and Hagtvedt, 2016; Lakoff and Johnson, 2008). While processing static visuals/verbals  
194 related to motion, we can mentally extract the corresponding dynamic state by using motion-related  
195 memories and recruiting the motor cortex (Cutting, 2002; Freyd, 1983; Kourtzi and Kanwisher, 2000;  
196 Moseley and Pulvermüller, 2014). As a result, we have the general ability to “see” motion from static  
197 stimuli containing motion-related information (i.e., implied motion, Shirai and Imura, 2014). Thus, in real-  
198 world practice, chefs, among others, have acknowledged the potential of implied motion in restaurant-  
199 related contexts. To give just a few examples, American chef, Michael Laiskonis, argues that implied  
200 motion can be created by changing the plating composition to make food presentation more appealing  
201 (Institute of Culinary Education, 2016), and Paris-based fine-dining restaurant, Boutary, often uses *wave-*  
202 *like* tableware to present its dishes (“Boutary gallery”). However, the benefits of implied motion reported  
203 by chefs are anecdotal. More scientific evidence on the effects of implied motion on consumer behavior  
204 comes from the marketing literature. For example, as motion requires processing priority, visuals  
205 displaying implied motion are found to attract/engage consumers and communicate persuasive messages  
206 (Cian et al., 2014; 2015a). In food-related contexts, emerging research indicates that implied motion can  
207 influence consumers' food evaluation. More specifically, while implied motion can communicate taste-  
208 related attributes and accordingly increase both food attractiveness and purchase intention (Gvili et al.,

209 2015; 2017; Li and Liu, 2022; Yu et al., 2022), it can also signal food healthiness (Amar et al., 2020). Thus,  
210 both the marketing literature and real-world restaurant practices suggest that implied motion can serve as  
211 a powerful tool to shape consumer behavior in food-related contexts.

212

### 213 *2.3 Implied explosion and consumer behavior*

214

215 Motion takes diverse forms. Some researchers thus approach motion from a physical perspective to reveal  
216 persuasive information specific to different forms of motion (Baxter and Ilicic, 2018). To this end, emerging  
217 research has begun to investigate implied motion in terms of direction, finding that different implied motion  
218 types, such as implied forward motion and implied upward motion, help to communicate abstract meanings  
219 such as modernity (Cian et al., 2014), the passing of time/events (Mead et al., 2020), and lightness (Van  
220 Rompay et al., 2014). Similarly, the authors of the present research note that motion can also be grouped  
221 in terms of energy; certain forms, such as floating, involve little energy release and are thus highly subtle  
222 and delicate, while other forms, especially explosion, are more flagrant, characterized by the sudden release  
223 of substantial energy (Keller et al., 2014). From a conceptual metaphor view, our cognitive system uses  
224 bodily experience to understand abstract information (Lakoff and Johnson, 1999). Thus, a unique message  
225 may derive from explosive motion since it offers a unique movement pattern and generates unique  
226 experiences. However, it is hard, if not impossible, to create real explosion on a dining table without leaving  
227 a mess. An alternative is to create explosion statically through dish names and dish images. Noticeably,  
228 explosion is a dynamic event that we frequently experience (Lieberman, 2010). Thus, according to the  
229 memory-based mechanism of implied motion (Elder and Krishna, 2012; Freyd, 1983), enough explosion-  
230 related memories should be obtained to help us perceive implied explosion from static stimuli. In other  
231 words, implied explosion is a specific and unique case of implied motion that can easily be created in a  
232 restaurant context. For instance, although implied motion can be created via different visual techniques  
233 (for a review, see Cutting, 2002), the most common way is to capture an instantaneous frame of an object  
234 in motion (Cian et al., 2014). Thus, implied explosion can be created by spreading sauce with a centrifugal  
235 splashing pattern to create an explosion-like impression, producing an exploding dish image as in the case  
236 of the Source Infinie (2021). On the other hand, as humans simulate a concept (e.g., explosion) when they  
237 read a text about it (for a review, see Barsalou, 2008), exploding dish names can be created by including  
238 detonation-related words in a dish name (e.g., explosion, bomb and cracker) (Farace et al., 2020; Wyer et  
239 al., 2008).

240

241 Since implied explosion is easy to create and can presumably signal unique information, it has gained  
242 increasing popularity among chefs worldwide. For instance, many western restaurants, including the afore-  
243 mentioned Parisian Source Infinie brasserie and Pur restaurant, occasionally design dishes with explosion-



244 like dish plating to add to their menu. Taking this a further step, some restaurants use implied explosion as  
245 a major aspect of their gastronomical creations. French Michelin-starred restaurant, IMA, for example,  
246 creates implied explosion by manipulating the distribution of sauces/powders for multiple dishes in a  
247 tasting menu. They also select tableware with explosion-like patterns to present their dishes. Accordingly,  
248 customers have written of “an explosion of flavors from the first bite!” on review websites when describing  
249 IMA’s exploding dishes (Vivagastronomia, 2018). Regarding exploding dish names, a traditional cooking  
250 method in China that relies on extremely high temperatures to create strong flavor is called “explosive stir-  
251 fry” (literally translated from “Bao Chao”) and the term is a prefix to many dish names in China, regardless  
252 of the region or style of cuisine. Similarly, OCF Singapore, a modern European cuisine restaurant, uses the  
253 word explosion directly for its refreshing entrée (“Tomato Tartare Explosion”) (Rach Ang, 2013). Despite  
254 its emerging use in restaurant contexts, the effect of implied explosion on dish perception and evaluation  
255 remains unclear, making it theoretically necessary and practically relevant to examine how implied  
256 explosion can help restaurants to communicate dining experiences and consequently impact consumer  
257 behavior.

258

#### 259 *2.4. Implied explosion and dish perception*

260

261 Specific types of motion generate different experiences, giving rise to unique meanings associated with the  
262 motion in question (Lakoff and Johnson, 1999; Shapiro, 2019). Notably, these messages produced by  
263 various experiences largely shape consumers’ product perception and decision-making in different ways  
264 (Cian et al., 2015b; Krishna et al., 2017), shedding light on the potential of distinct implied motion types  
265 to impact consumer behavior. More specifically, conceptual metaphor theory argues that when individuals  
266 regularly experience an activity and an abstract concept simultaneously, the activity and the concept will  
267 be linked at a conceptual level (Lakoff and Johnson, 2008; Lacey et al., 2012). Consequently, experiences  
268 related to the activity are often used to facilitate inferences about the corresponding abstract concept (Adu-  
269 Ampong, 2016; Belhassen, 2020). Following this metaphorical view, it has been shown that in countries  
270 where people usually write from left to right, implied forward motion (left →right) is conceptually linked  
271 to modernity and the passing of time and consequently produces differentiated evaluation and purchasing  
272 behavior (Cian et al., 2014; Mead et al., 2020). Similarly, implied upward motion is related to lightness,  
273 since light objects tend to move upward more easily (Van Rompay et al., 2014).

274

275 Regarding explosion, it is often experienced in everyday life as an intense type of motion. For example,  
276 people may experience explosion when blowing up a balloon, or watching a firework show or a movie.  
277 Whenever we encounter explosion, a unique experience is perceived. Consumers are therefore likely to  
278 take explosion as a heuristic way of understanding certain properties of a dish (e.g., taste intensity). Taking

279 this further, whenever we encounter explosion, we experience intense shock waves, intense sound, and  
280 even intense heat and luminance (Goel, 2015; Liberman, 2010). In this sense, explosion and sensory  
281 intensity can be conceptually linked, since people frequently experience explosion and intense sensorial  
282 input synchronously. Given that the perception of explosion can be activated by static stimuli, it is  
283 reasonable to expect sensory intensity to also be inferred from exploding dish names and exploding dish  
284 images. As the specific meaning of a conceptual link is also shaped by contexts (Kövecses, 2015), in a  
285 restaurant context where taste is the main criteria (Agapito et al., 2014), a dish's taste intensity can thus be  
286 highlighted by implied explosion. Hence, we hypothesize that:

287

288 **H1a:** Implied explosion will enhance perceived taste intensity

289

290 On the other hand, individuals may also use mental imagery to understand explosion-related meanings.  
291 When people process the explosion concept, they form a mental image of explosions (Barsalou, 2008;  
292 Williams, 1993). While “viewing” the imagined image, individuals extract the most prominent property of  
293 the imagined explosion with the help of explosion-related knowledge and situational information, and then  
294 utilize the extracted property to understand the abstract concept (i.e., taste intensity) within the context (El  
295 Refaie, 2015; Lakoff, 2014). Specifically, given that explosion is characterized by the sudden and rapid  
296 release of a large amount of energy (Keller et al., 2014; Goel, 2015), it is likely that consumers will imagine  
297 the explosion activity and subsequently discern the rapid release of considerable energy. Through this rapid  
298 release of energy, consumers in a restaurant context may infer that abundant taste has been released in the  
299 same way as energy is released in an explosion, potentially increasing perceived taste intensity. We  
300 therefore hypothesize that:

301

302 **H1b:** The effect of implied explosion on perceived taste intensity will be mediated by the perceived  
303 energy released

304

### 305 *2.5. Dish perception and dish evaluation*

306

307 It is well-established that consumers' evaluative behavior usually starts from the perception of desirable  
308 product attributes (O'keefe, 2015). The tourism literature suggests that a primary motivation for dining out  
309 in restaurants is the search for a hedonic experience, especially that of taste (Kim et al., 2020; Jun et al.,  
310 2014). As a result, when selecting a restaurant, consumers are likely to view taste intensity as a desirable  
311 attribute, at least to a certain extent, since intense taste in general gives consumers greater hedonic  
312 stimulation and sensory pleasure (Yeomans et al., 2007). The positive relationship between taste intensity  
313 and taste liking is also found in experiments conducted in well-controlled laboratories. For example, when

314 a simple glucose/citric acid solution is tasted, a positive relationship between taste intensity and  
315 pleasantness is observed (Moskowitz et al., 1975). Similarly, when a taste is complex and desirable,  
316 reported liking is positively related to taste intensity (Nguyen and Wismer, 2019; Schwieterman et al.,  
317 2014). Since gustatory experience often constitutes the most important aspect of a restaurant experience,  
318 the positive relationship between perceived taste intensity and perceived taste liking is liable to be  
319 generalized to a more complex restaurant setting. We thus hypothesize that:

320

321 **H2:** Perceived taste intensity will increase perceived taste liking

322

323 Once a critical product attribute has been appraised, consumers typically utilize it to evaluate the overall  
324 product (Brown and Dacin, 1997; Haase et al., 2020; Park et al., 2022). Consequently, apart from taste  
325 evaluation, dish evaluation is also an important aspect of consumers' reaction to a dish. Many professional  
326 gastronomy guides, such as the well-known French Michelin guide and China's emerging Black Pearl  
327 restaurant guide, take a dish's taste as a primary scoring criterion (Black Pearl restaurant guide; Michelin  
328 guide). Similarly, the significance of taste in forming consumers' dish evaluations has also been noted in  
329 the relevant literature. For instance, taste is found to be the dominant factor contributing to dining  
330 experience and overall dish evaluation for both average consumers and dining connoisseurs, although  
331 dining experience is grounded in a multisensory manner (Mehraliyev et al., 2020; Liu and Tse., 2018;  
332 Trubek 2008). Given the influence of taste in creating dish evaluation, a dish delivering a more desirable  
333 taste will also receive a more favorable evaluation. Therefore, we hypothesize that:

334

335 **H3:** Perceived taste liking will increase perceived dish liking

336

### 337 *2.6. Dish evaluation and willingness to pay*

338

339 In addition to consumers' perceptual and evaluative response, the way implied explosion influences  
340 consumers' behavioral intention, especially WTP, is of particular theoretical and managerial interest. WTP  
341 refers to the maximum price a buyer is willing to pay (Barber et al., 2012) and is a major factor in  
342 determining a restaurant's profitability, future growth, and overall performance (Sukhu et al., 2017). The  
343 hierarchy of effects model argues that consumers' purchase behavior is an outcome of product evaluation  
344 and related attitude (O'Shaughnessy and O'Shaughnessy, 2003). More specifically, consumers tend to pay  
345 more money for more positively evaluated products as the latter are likely to provide more values desired  
346 by consumers (Smith and Colgate, 2007). Accordingly, the role of product evaluation in shaping consumers'  
347 WTP has been repeatedly demonstrated in tourism-related settings (Ivanov and Webster, 2021) and in the  
348 marketing literature (Homburg et al., 2005). Recent experiments have further confirmed the effect of dish

349 evaluation on consumers' WTP in different restaurant settings, finding that dish evaluation has a stronger  
 350 impact when consumers visit a fine-dining restaurant (Parsa et al., 2017). Thus, in a restaurant context,  
 351 how much a consumer is ready to pay for a dish is largely determined by how much he/she likes the dish.  
 352 Thus, we hypothesize that:

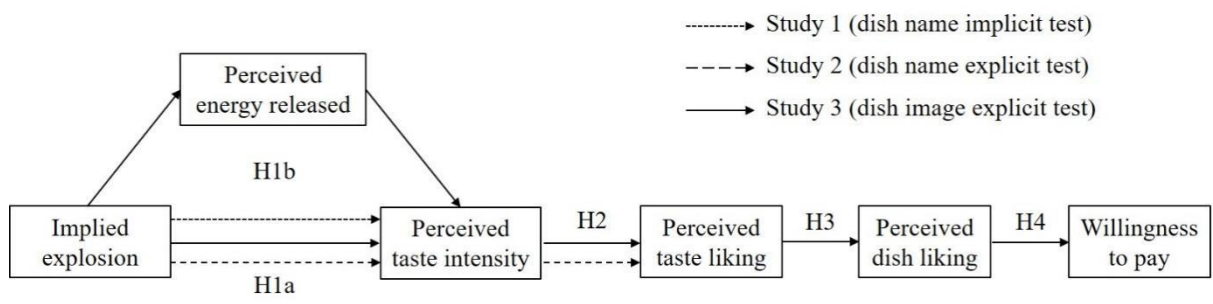
353  
 354 **H4:** Perceived dish liking will generate higher willingness to pay  
 355

356 **3. Experiment overview**

357  
 358 In Study 1, the authors implicitly examine the explosion-intensity link through a name-description  
 359 matching task (H1a). In Study 2, the authors replicate Study 1 using another set of dish names and examine  
 360 the effect of implied explosion on taste liking via an explicit test (H1a and H2). Study 3 further generalizes  
 361 the findings of previous experiments using exploding dish images, examining the underlying process of  
 362 the effect of implied explosion on taste intensity in greater detail (H1b). It also examines the downstream  
 363 effect on consumer behavior (H2, H3, and H4) through an explicit test. The three experiments thus  
 364 constitute conceptual replications by using different measurements (implicit vs. explicit), samples (British  
 365 vs. American), and stimuli (dessert name vs. fish soup name vs. dish image), thus broadening the  
 366 generalizability of the findings. Fig. 1. offers a theoretical summary and overview of the hypotheses  
 367 investigated in the three studies.

368 **Insert here Fig. 1.**

369  
 370 **Fig. 1.**  
 371 Conceptual framework and hypotheses



373  
 374  
 375 **4. Study 1 - Dish names with implied explosion (implicit test)**  
 376

377 Study 1 first investigates the hypothesized conceptual link between implied explosion and perceived taste  
378 intensity using a highly ecologically valid dish name stimuli and an implicit measurement.

379

#### 380 4.1. Participants

381

382 One hundred and forty-one UK citizens were recruited from Prolific. Prolific is a crowd-sourcing platform  
383 similar to Amazon Mechanical Turk (AMT). However, it offers more convenient access to a large pool of  
384 native UK participants compared to AMT and can generate better data quality (Eyal et al., 2022).  
385 Consequently, it has been increasingly used in marketing and tourism research (Chen et al., 2021; Grewal  
386 et al., 2021). To recruit UK citizens, participants were pre-screened in terms of nationality (i.e., British)  
387 and current country of residence (i.e., UK). Gender is automatically matched by Prolific. There have been  
388 increasing calls for data cleaning when participants are recruited from online panels (Chmielewski and  
389 Kucher, 2020; Ford, 2017), with multiple-step cleaning advocated for better control of noise in particular  
390 (Babin et al., 2016). We thus designed a multiple-step data cleaning protocol for the study, which is also  
391 applicable to other studies using online panel data and Qualtrics (Appendix A). As a result, 60 participants  
392 were excluded from the analysis, primarily due to a failed attention check, resulting in 81 valid responses  
393 (for the exclusion list, see Appendix B). The final valid sample consisted of 81 adults (50% women),  
394 ranging in age from 18 to 71 years ( $M_{age} = 34.79$ ,  $SD = 12.89$ ).

395

#### 396 4.2. Apparatus, materials, and pretests

397

398 Two different descriptions of a dessert and two corresponding dessert names were adapted from Youssef  
399 et al. (2015). With regards to the dessert description, two brief sentences were added at the end of the  
400 original description to prime intense vs. delicate taste perception, yielding two dessert descriptions (“This  
401 dessert includes smoked cox apple crème, cobb nuts, home-made curd, apple caviar & beetroot reduction.  
402 It provides you with *a very intense taste* (intense description)/*a very delicate taste* (delicate description”).  
403 Likewise, the original name “Taste of nature” was considered as a control name, while “*Exploding* taste of  
404 nature” was used for the exploding name (see Fig. 2). The original description and name were created for  
405 a dessert by professional chefs and were written in British English. Consequently, we believe that the  
406 intense/delicate descriptions as well as the exploding/control names provide high ecological validity for  
407 UK participants.

408

409 Two pretests were conducted to assess the effectiveness of the dessert description/dessert name  
410 manipulation. The first pretest ( $n = 36$ ) showed that the intense description indeed created a more intense  
411 taste perception compared to the delicate description ( $p = .000$ ). The second pretest ( $n = 40$ ) showed that

412 the exploding name effectively resulted in a higher perceived amount of explosion compared to the control  
 413 name ( $p = .004$ ) (for detailed measures, see Appendix D). Overall, the manipulations' effectiveness is  
 414 confirmed.

415

416 *4.3. Experiment design and procedure*

417

418 Study 1 adopted a between-subjects design (intense description condition vs. delicate description  
 419 condition). The experiment was administered online via Qualtrics. An implicit description-name matching  
 420 task was adapted from Romero and Biswas (2016). The implicit matching task is resistant to demand  
 421 characteristics (Greenwald et al., 2009), thereby reducing potential subject-related bias. Participants were  
 422 randomly assigned to either the intense description condition or the delicate description condition, which  
 423 was presented with both the control name and the exploding name. The order of the two dish names was  
 424 automatically randomized to control the order effect. In both conditions, participants were instructed to  
 425 read a description of a dessert dish and to select a dish name that best fit the dessert description (Fig. 2.).  
 426 At the end of the experiment, they were also asked general control questions, including age, gender, dining  
 427 frequency, cooking frequency, culinary knowledge, hunger level, general category liking (dessert), and  
 428 relevant work experience (for detailed measures, see Appendix E).

429

430 **Insert here Fig. 2.**

431

432 **Fig. 2.**

433 Task requested in Study 1

<p>A restaurant has created a new dessert. Its description is presented on the next page.          Please read the dish description below carefully and select a name that best fits the          description.</p>	
<p><b><u>Delicate description condition:</u></b>          "This dessert includes smoked cox apple          crème, cobb nuts, home-made curd, apple          caviar &amp; beetroot reduction. It provides you          with a very delicate taste."</p>	<p><b><u>Intense description condition:</u></b>          "This dessert includes smoked cox apple          crème, cobb nuts, home-made curd, apple          caviar &amp; beetroot reduction. It provides you          with a very intense taste."</p>
<p>Now please select a dish name that best fits the description:</p> <ul style="list-style-type: none"> <li>○ Exploding taste of nature</li> <li>○ Taste of nature</li> </ul>	
<p>General control variables</p>	

434

435 *4.4. Results*

436

#### 437 *4.4.1. Sample comparability*

438 The mean and standard deviations of individual variables (age, gender, dining frequency, cooking  
439 frequency, culinary knowledge, hunger level, general category liking (dessert), and relevant work  
440 experience) were compared to ensure that the two groups ( $n_{\text{intense}} = 39$ ;  $n_{\text{delicate}} = 42$ ) were comparable. No  
441 significant difference was found between the two groups with regard to these variables ( $p > .05$ ) (for more  
442 details, see Appendix F).

443

#### 444 *4.4.2. Hypothesis tests*

445 The description-name matching task implicitly examines the effect of implied explosion on perceived taste  
446 intensity. If explosion is indeed conceptually linked to taste intensity, individuals should process stimuli  
447 reflecting the existing explosion-intensity link more fluently, making participants more likely to select an  
448 intense (delicate) description for an exploding (control) dish name (Cian et al., 2014). Consistent with our  
449 prediction (H1a), the intense description was more frequently associated with an exploding name  
450 (Exploding taste of nature) vs. the control name (Taste of nature) (32% vs. 16%,  $X^2(1) = 25.91$ ,  $p = .000$ ).  
451 The results indicate that implied explosion is conceptually linked to perceived taste intensity, providing  
452 preliminary evidence for the hypothesized effect of implied explosion on perceived taste intensity.

453

### 454 **5. Study 2 – Dish names with implied explosion (explicit test)**

455

456 Study 2 has two objectives. First, it generalizes the findings of Study 1 by using fish soup names, explicit  
457 measurement, and American participants. Second, it investigates how an exploding dish name influences  
458 consumers' taste liking.

459

#### 460 *5.1. Participants*

461

462 One hundred and seventy American participants were recruited from Amazon Mechanical Turk (AMT) in  
463 terms of location (i.e., US). AMT provides access to more representative American participants with  
464 diverse demographic profiles (Minton et al., 2013; Wei and Zhang, 2019). Hence, it is widely used in  
465 tourism and marketing research (e.g., Ang et al., 2018; Zenker et al., 2021). An identical data cleaning  
466 protocol was applied as in Study 1 (Appendix A). As a result, 80 participants were excluded, primarily due  
467 to a failed attention check and VPN usage, generating 90 valid responses (for the exclusion list, see  
468 Appendix B). The final valid sample consisted of 90 adults (38% women) ranging in age from 22 to 69  
469 years ( $M_{\text{age}} = 38.38$ ,  $SD = 11.10$ ).

470

471 5.2. Apparatus, materials, and pretest

472

473 To enhance external validity, a fish soup (vs. dessert in Study 1) was selected to create dish names. Two  
474 versions of a fish soup name were devised. The control version did not contain implied explosion (“Chef’s  
475 signature fish soup: A taste of the sea in your mouth”), while the exploding version contained semantically  
476 implied explosion (“Chef’s signature fish soup: A taste of the sea *explodes* in your mouth”).

477

478 A pretest (n = 51) was conducted to assess the effectiveness of the dish name manipulation. It showed that  
479 the exploding fish soup name indeed resulted in a higher perceived amount of explosion compared to the  
480 control name ( $p = .026$ ) (for detailed measures, see Appendix D), confirming the effectiveness of the dish  
481 name manipulation.

482

483 5.3. Experimental design and procedure

484

485 A between-subjects design was adopted (control condition vs. exploding condition). The experiment was  
486 administered online via Qualtrics. Participants were randomly assigned to either the control condition or  
487 the exploding condition. In the control condition, the control version of the dish name was presented, while  
488 the exploding version of the dish name was presented in the exploding condition (Fig. 3). Participants were  
489 asked a number of questions according to the dish name. Specifically, they first indicated the perceived  
490 taste intensity and perceived taste liking (for detailed measures, see Appendix C). To control for potential  
491 differences between the two versions of the dish name, the participants were then asked to rate several dish  
492 name properties, including appropriateness, novelty, familiarity, and informativeness. At the end of the  
493 experiment, they were also asked several general control variable questions, including age, gender, dining  
494 frequency, cooking frequency, culinary knowledge, hunger level, general category liking (fish soup), and  
495 relevant work experience (for detailed measures, see Appendix E).

496

497

**Insert here Fig. 3.**

498

499 **Fig. 3.**

500 Task requested in Study 2

A restaurant has created a new dish. You can see its name below. This name is likely to appear on a menu later. Please read the dish name and answer some questions accordingly.	
<b><u>Control condition:</u></b> "Chef's signature fish soup:	<b><u>Exploding condition:</u></b> "Chef's signature fish soup:



A taste of the sea in your mouth"	A taste of the sea explodes in your mouth"
According to the dish name, what are your expectations for the dish's taste? (Perceived taste intensity; Perceived taste liking)	
Dish name property variables and general control variables	

501

502 *5.4. Results*

503

504 *5.4.1. Sample comparability*

505 The mean and standard deviations of evaluations of the dish name properties (appropriateness, novelty,  
506 familiarity, informativeness), and individual variables (age, gender, dining frequency, cooking frequency,  
507 culinary knowledge, hunger level, general category liking (fish soup), relevant work experience) were  
508 compared to ensure that the two groups ( $n_{\text{control}} = 45$ ;  $n_{\text{exploding}} = 45$ ) were comparable. There was no  
509 significant difference between the two groups with regard to these variables ( $p > .05$ ) (for more details, see  
510 Appendix F).

511

512 *5.4.2. Hypothesis tests*

513 Descriptive statistics of collected data are first estimated for dependent variables (see Appendix G).  
514 Subsequently, using an independent T test, the authors found a main effect of implied explosion on  
515 perceived taste intensity ( $M_{\text{control}} = 7.09$ ,  $SD = 1.41$ ,  $M_{\text{exploding}} = 7.81$ ,  $SD = 1.11$ ,  $t(88) = -2.67$ ,  $p = .009$ ).  
516 When exposed to the exploding condition, participants indicated a higher perceived taste intensity than in  
517 the control condition. Hence, H1a is supported. Moreover, the results of the linear regression indicate that  
518 perceived taste liking increases significantly and positively with perceived taste intensity ( $b = .248$ ,  $p = .018$ ,  
519 Adjusted  $R^2 = .05$ ). Thus, H2 is supported. However, the linear fit is only able to explain a small part of  
520 the variance of the data (Adjusted  $R^2 = .05$ ), meaning that only 5% of perceived taste liking is explained  
521 by perceived taste intensity.

522

523 *5.5. Discussion of Study 1 and Study 2*

524

525 Study 1 invited UK samples to participate in an implicit name-description matching task. The exploding  
526 dessert name is more frequently associated with the intense dessert description (vs. the delicate dessert  
527 description). Likewise, Study 2 recruited American participants and explicitly asked how they perceive the  
528 soup dish according to the different dish names. It found that an exploding dish name makes participants  
529 believe that a dish has a more intense taste. Moreover, perceived taste intensity significantly explains, but  
530 with a small effect size, the improvement in perceived taste liking. Overall, Study 1 and Study 2 suggest

531 that a dish name can significantly influence consumers' dish perception and evaluation. More importantly,  
532 an exploding dish name is found to enhance perceived taste intensity and to generate a more favorable  
533 evaluation. Moreover, the dish name and description used in Study 1 (e.g., "taste of nature", "crème",  
534 "hand-made curd", "caviar") reflects a fine-dining setting, while the soup name in Study 2 (e.g., "chef's  
535 signature fish soup") is more casual in style. Consequently, the results of Study 1 and Study 2 indicate that  
536 the effect of implied explosion on perceived taste intensity is robust, largely independent of diners' cultural  
537 backgrounds, dining contexts, and measurements.

538

539 Nevertheless, it remains unclear if the effects observed in Study 1 and Study 2 hold true when explosion is  
540 implied visually (i.e., dish image). Indeed, pictures of dishes are frequently found on restaurant websites,  
541 review websites, and diners' social media. Investigating the effect of visually implied explosion on  
542 consumers' reactions can therefore contribute to both theoretical understanding and managerial practice.  
543 Additionally, what process underlies the effect of implied explosion on taste intensity? How about the  
544 downstream effect of implied explosion on consumer reactions, especially WTP? These questions are  
545 addressed in Study 3, with exploding/control dish images as stimuli.

546

## 547 **6. Study 3 - Dish image with implied explosion (explicit test)**

548

549 Study 3 aims to generalize the findings of the previous experiments using dish images as stimuli. It also  
550 examines the proposed underlying mechanism of the effect of implied explosion on perceived taste  
551 intensity (i.e., perceived energy released) (H1b). In addition, it tests the downstream effect of visually  
552 implied explosion on perceived taste liking (H2), perceived dish liking (H3), and WTP (H4).

553

### 554 *6.1. Participants*

555

556 One hundred and ninety-one American participants were recruited from AMT in terms of location (i.e.,  
557 US), and an identical data cleaning procedure was conducted as in the previous experiments (Appendix A).  
558 As a result, 87 participants were excluded, primarily due to a failed attention check and VPN issue,  
559 generating 104 valid responses (for the exclusion list, see Appendix B). The final valid sample consisted  
560 of 104 adults (35% women), ranging in age from 23 to 61 years ( $M_{age} = 36.89$ ,  $SD = 8.84$ ).

561

### 562 *6.2. Apparatus, materials, and pretest*

563

564 Chocolate cake was chosen to create the dish image stimuli, since it is a common dessert that is widely  
565 served in restaurants. Two designs (exploding coulis vs. static coulis) were prepared and presented by the

566 authors on a white, 30 cm. porcelain plate. Identical types and similar amounts of ingredients were used  
567 for both designs. The two designs were placed on a beige linen tablecloth, with similar lighting conditions  
568 for the photo shoot. The two dish images were created with one featuring an exploding coulis (i.e.,  
569 exploding dish image) and the other featuring a static coulis (i.e., static dish image). All the other visual  
570 details apart from the coulis shapes were kept as similar as possible. Fig. 4 shows the dish images.

571

572 A pretest (n = 34) was conducted to assess the effectiveness of the dish image manipulation. It showed that  
573 the exploding dish image indeed results in a higher perceived amount of explosion compared to the control  
574 dish image ( $p = .05$ ) (for detailed measures, see Appendix D), confirming the effectiveness of the dish  
575 image manipulation.

576

### 577 *6.3. Experimental design and procedure*

578

579 A between-subject design was adopted (control condition vs. exploding condition). The experiment was  
580 administered online via Qualtrics. Participants were randomly assigned to either the control or the  
581 exploding condition. In the exploding condition, the exploding dish image was shown, while in the control  
582 condition, the static dish image was displayed (Fig. 4). In both conditions, the participants were instructed  
583 to look at a dessert image and to answer some questions accordingly. Following the instructions, they were  
584 then shown a dessert image and asked to rate perceived taste intensity and perceived taste liking. The  
585 participants were then asked to rate perceived dish liking and WTP. Subsequently, they were asked to  
586 indicate the amount of perceived energy released from the plating design (for detailed measures, see  
587 Appendix C). At the end of the experiment, they were also asked general control questions, including age,  
588 gender, dining frequency, cooking frequency, culinary knowledge, hunger level, general category liking  
589 (chocolate cake), and relevant work experience (for detailed measures, see Appendix E).

590



591 **Insert here Fig. 4.**

592

593 **Fig. 4.**

594 Task requested in Study 3

We want to know your opinions about the food plating design created for a dessert. You will see a picture of a dessert. Please look at the dessert picture and answer some questions.	
<b><u>Control condition:</u></b>	<b><u>Exploding condition:</u></b>

	
<p>According to the plating of this dessert, what are your expectations for the dessert's taste? (Perceived taste intensity; Perceived taste liking)</p> <p>How much do you like this dessert in general? (Perceived dish liking)</p> <p>How much (in US dollars) would you be ready to pay for this dessert in a restaurant? (WTP)</p> <p>For the following questions, please indicate to what extent you agree with the statements about the plating of this dessert. (Perceived energy released)</p>	
<p>General control variables</p>	

595

596 *6.4. Results*

597

598 *6.4.1. Sample comparability*

599 The mean and standard deviations of individual variables (age, gender, dining frequency, cooking  
600 frequency, culinary knowledge, hunger level, general category liking (chocolate cake), and relevant work  
601 experience) were compared to ensure that the two groups ( $n_{\text{control}} = 51$ ;  $n_{\text{exploding}} = 53$ ) were comparable. No  
602 significant difference was found between the two groups with regard to these variables ( $p > .05$ ) (for more  
603 details, see Appendix F).

604

605 *6.4.2. Hypothesis tests*

606 Descriptive statistics of collected data were first estimated for the dependent variables (see Appendix H).  
607 To test the mediating effect of perceived energy released on the relationship between implied explosion  
608 and perceived taste intensity, we used the PROCESS Mediation Model 4 (bootstrapping of 5000 resamples)  
609 (Hayes, 2017). We found that implied explosion had a positive impact on perceived energy released ( $b =$   
610  $1.10$ ,  $SE = .36$ ,  $p = .003$ ), and perceived energy released had a positive impact on perceived taste intensity  
611 ( $b = .54$ ,  $SE = .07$ ,  $p = .000$ ). The indirect effect of implied explosion on perceived taste intensity through  
612 energy released was significant and positive ( $b = .60$ ,  $SE = .23$ ,  $95\%CI = [.21; 1.16]$ ), while the direct effect  
613 of implied explosion on perceived taste intensity was not significant ( $b = -.28$ ,  $SE = .27$ ,  $p = .299$ ). Thus,  
614 H1b, which predicted that perceived energy released mediates the effect of implied explosion on perceived  
615 taste intensity, is supported, with the experiment revealing an “indirect-only mediation” (Zhao et al., 2010)  
616 (Fig. 5.).

617 As in Study 2, the results of the linear regression indicate that perceived taste liking increases

618 significantly and positively with perceived taste intensity ( $b = .74, p = .000, \text{Adjusted } R^2 = .54$ ). Thus, H2  
 619 is supported. In addition, the results of the linear regression indicate that perceived dish liking increases  
 620 significantly and positively with perceived taste liking ( $b = .75, p = .000, \text{Adjusted } R^2 = .57$ ). Consequently,  
 621 H3 is supported. Moreover, the results show that WTP increases significantly and positively with perceived  
 622 dish liking ( $b = .25, p = .013, \text{Adjusted } R^2 = .05$ ). Hence, H4 is also supported.

623

624 *6.5. Discussion of Study 3*

625

626 Using dessert image stimuli, Study 3 first replicated the effect of implied motion on perceived taste intensity,  
 627 generalizing this effect from dish name (i.e., semantically implied explosion) to dish image (i.e., visually  
 628 implied explosion). Likewise, the effect of perceived taste intensity on perceived taste liking was also  
 629 replicated. Moreover, perceived energy released was found to mediate the effect of implied explosion on  
 630 perceived taste intensity. Study 3 also revealed that an exploding dish image can generate a broad-spectrum  
 631 effect on perceived dish liking and WTP. Overall, exploding dish image was found to positively influence  
 632 different aspects of consumer behavior in a restaurant context.

633

634

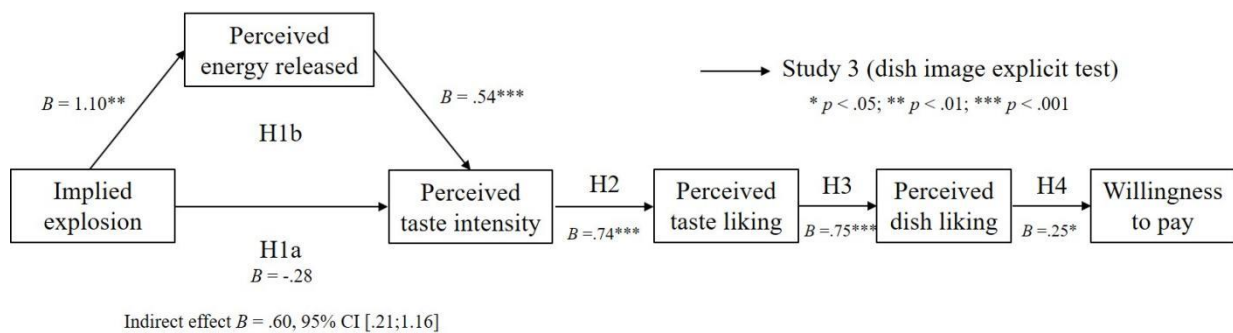
**Insert Figure 5 here**

635

636 **Fig. 5.**

637 Results of Study 3

638



639 The main results of all studies are summarized in a table, including sample size, effect size, and power (see  
 640 Appendix I).

641

642 **7. General discussion**

643

644 *7.1. Theoretical implications*

645 The present research contributes to the tourism literature in several ways. First, it shows the huge potential  
646 of dish names and dish images as a specific type of information, a factor largely under-investigated by the  
647 tourism literature. Consumers generally search for information online, especially online reviews, before  
648 deciding on a restaurant (Huifeng and Ha, 2021). Therefore, the tourism literature often concentrates on  
649 textual reviews and numerical ratings, leaving other types of information largely unexplored. However,  
650 tourism research has recently begun to explore how dish names and dish images influence consumer  
651 behavior. For example, coupling a dish image with a descriptive dish name is found to generate a more  
652 favorable attitude and prompt purchasing behavior, with dish image being more effective in influencing  
653 behavior (Hou et al., 2017; Chen et al., 2020). Consistent with these studies, the current research showed  
654 that consumers spontaneously extract a considerable amount of sensory information from dish names and  
655 dish images, which is subsequently used to develop dish evaluation and WTP, demonstrating that dish  
656 names and dish images provide a unique type of information that deserves further investigation in the  
657 tourism management literature. In addition, consumers' perceptual, evaluative, and behavioral responses  
658 are integrated into an overall model (Fig. 1), providing future research with a global framework to  
659 understand and analyze the way dish names and dish images influence consumer behavior.

660

661 Second, despite the increasing use of implied explosion in the real-world restaurant sector, its  
662 functionality remains uninvestigated. The present research found that implied explosion can enhance  
663 perceived taste intensity, perceived taste liking, and perceived dish liking, and increase consumers' WTP  
664 for a dish. In other words, the findings suggest that implied explosion can present consumers with a more  
665 stimulating perception, while yielding higher margins for restaurants, thus validating the benefits of implied  
666 explosion. Furthermore, communicating sensory information, especially taste, is difficult in online settings  
667 (Labrecque, 2020). Although some researchers have explored sensory-enabling technologies (SETs), such  
668 as virtual reality and augmented reality, to provide additional visual, tactile, and auditory information (e.g.,  
669 Alyahya and McLean, 2021; Park and Stangl, 2020), gustatory information cannot be easily provided  
670 online by recent SETs (Pelet et al., 2021). Nevertheless, gustation can be tickled online if marketers can  
671 encourage consumers to elaborate on taste by themselves (Krishna, 2011; Petit et al., 2019). Following this  
672 view, the current research demonstrated that consumers make taste-related inferences based on their  
673 explosion-related experience. Thus, implied explosion is an affordable yet effective tool to set gustatory  
674 perceptions, serving as an important complement to SETs in the restaurant sector to create a more  
675 multisensory presence online.

676

677 Third, for the first time, to the best of our knowledge, the present research reported a positive effect  
678 of dynamic information (i.e., implied explosion) on consumer behavior in a restaurant context. In a recent  
679 review, Spence (2018) discussed both the positive and the negative role of motion in dish/food presentation.

680 In particular, Spence case-studied three dish plating styles exhibiting motion, noting that Westerners display  
681 a largely negative reaction to dishes displaying *real life-like* motion (e.g., dancing squid sushi) due to an  
682 evoked fear of asphyxiation and increasing concern over animal welfare, often resulting in business failure.  
683 Following on from Spence's exploration of real life-like motion, the present study investigated *implied*  
684 *inanimate* explosion and found that implied explosion increases perceived taste intensity and generates  
685 multiple favorable downstream effects. Two factors may explain this phenomenon. First, implied explosion  
686 is less visually intrusive than real motion. Second, as implied explosion is not directly related to the animate  
687 (e.g., live squid), it is unlikely to evoke asphyxiation fear or animal welfare concerns. Implied inanimate  
688 motion, such as the implied explosion studied in the present research, thus provides researchers with a new  
689 lens to explore the potential of dynamic information in the restaurant sector. Taking this further, the present  
690 research suggests that future research should take diverse motion types into consideration when  
691 investigating implied motion, since different bodily experiences with various motion types can create  
692 distinctive understandings of motion and its related effects (Lakoff and Johnson, 2008). To this end, while  
693 prior research has addressed implied motion types in terms of different directions (Cian et al., 2014; Baxter  
694 and Ilicic, 2018; Van Rompay et al., 2014), the present study illustrates a new dimension (i.e., energy  
695 released) and explores a new type (i.e., implied explosion).

696

697 Fourth, while a growing body of tourism research has investigated restaurants from a strategic  
698 perspective (e.g., restaurant innovation, Lee et al., 2016; location selection, Chen and Tsai, 2016; board  
699 capital, Song et al., 2021; new business models, Kim et al., 2020), operational factors, such as dish names,  
700 dish images, and menu, have often been overlooked in the tourism literature, possibly because these factors  
701 are widely believed to be up to the chefs to decide on, or are informed by other industrial know-how.  
702 However, restaurant management should be investigated at both strategic and operational level in order to  
703 ascertain more innovative methods. Accordingly, recent tourism and marketing research has investigated  
704 how consumer behavior can be influenced at operational level in restaurant-related contexts (plating design,  
705 Szocs and Lefebvre, 2017; menu design, Magnini and Kim, 2016; Brewer and Shebby, 2021). Consistent  
706 with these studies, the current research shows that adding implied explosion to dish names and dish images  
707 can help to enhance consumer perceptions, evaluation, and WTP. It thus extends the tourism literature by  
708 demonstrating the critical role of operational factors in creating a win-win situation for both consumers  
709 and restaurants.

710

711 In addition, our study places conceptual replications under the spotlight and offers suggestions on  
712 how they can be conducted in tourism-related research. Conceptual replications refer to the academic  
713 endeavor to operationalize the same effect/concept in a different way to rule out the usually unexpected  
714 effect of systematic bias created by background factors (e.g., samples and stimuli) and to examine the

715 generalizability of findings (Feest, 2019; Lynch, 1982). As in other fields, such as psychology, marketing,  
716 and medicine (Crandall and Sherman, 2016; Lynch et al., 2015; Coiera et al., 2018), conceptual replications  
717 have been increasingly advocated in the tourism literature (Pike and Page, 2014; Suhartanto et al., 2020).  
718 In particular, since tourism faces greater complexity as a result of globalization (Wahab and Cooper, 2001;  
719 Gonzalez, 2008), it is of both theoretical and managerial interest to replicate findings with participants  
720 recruited from different countries or segments. Apart from new samples, new stimuli and new  
721 measurements are also needed to better characterize a phenomenon, validate a theory, and confirm the  
722 value of managerial implications (Maxwell et al., 2015; Machery, 2020). Consequently, we recommend  
723 establishing simple conceptual replications within a research project by conducting multiple studies and  
724 using new samples, new stimuli, and new methods/measurements. Following the call for conceptual  
725 replications, our research offers an example of how to conduct them in tourism research, using three  
726 experiments to create conceptual replications with different samples (UK participants vs. US participants),  
727 various stimuli (fine-dining dessert name/description vs. casual-dining soup name vs. dish image), and  
728 divergent paradigms and measurements (implicit matching task vs. explicit declarative measure). We thus  
729 found that the effect of implied explosion is robust, regardless of the participants' cultural profile,  
730 experimental context, type of stimuli, or specific task, providing researchers with brief guidance on how to  
731 consider and conduct conceptual replications in tourism research.

732

## 733 *7.2. Managerial implications*

734

735 This research explores implied explosion as a new technique to signal taste intensity, enhance food  
736 perception, and shape downstream behavior, providing practical insights for restaurants and various food-  
737 related contexts in the tourism industry. First, revenue and margin are critical to a restaurant's long-term  
738 survival and profitability (Raab et al., 2009). Traditionally, margins are increased by a demand-based  
739 pricing strategy (e.g., weekday price vs. weekend price; lunch price vs. dinner price), which is often  
740 considered as unfair by consumers (Kimes and Wirtz, 2002). Since exploding dish names/dish images can  
741 increase WTP, they give managers a way to grow their margins and profitability by communicating the  
742 dishes' values more clearly without sacrificing consumer satisfaction. Second, with the rise of food tourism,  
743 creating an intense and attractive perception of food matters, not only for restaurants, but also for food  
744 festivals and food-souvenir retailing (Chen et al., 2022; Ellis et al., 2018). Restaurant managers can thus  
745 collaborate with chefs to find clever and artful ways to create exploding dish names/dish plating that can  
746 generate positive effects both in situ (e.g., physical menu, plating design) and online (e.g., uploaded menu  
747 and dish gallery). Meanwhile, a menu placed on a table along with carefully designed plating may also  
748 incite customers to take photos and share different exploding elements with their friends. Additionally,  
749 implied explosion can also be used in various communication materials for tourism events, such as on food



750 festival posters and programs to signal the intensity of the upcoming experience to attract more visitors. It  
751 can also be used on promotional materials in souvenir food stores as well as on the packaging of products  
752 sold in these stores. As food souvenirs are often renowned for their traditional recipes, authentic ingredients,  
753 and flavorful tastes (Ho et al., 2021), implied explosion can highlight their intense and savory tastes. Third,  
754 the effect of implied explosion was reliably observed in two major Western countries (i.e., UK and US). It  
755 is very likely to generate a similar effect with consumers from more diverse cultural backgrounds, since  
756 different nationalities all experience explosion (therefore the explosion-intensity link) in a similar way.  
757 Thus, international chains in the tourism sector can recruit expert teams to design stimuli showing implied  
758 explosion in their headquarters, offering their regional branches a repertoire to rapidly develop their own  
759 communication practices, improve efficiency, and build a consistent brand image.

760

### 761 *7.3. Limitations and avenues for future research*

762

763 The present research also has certain limitations that need to be acknowledged, but which nonetheless  
764 provide opportunities for future tourism research. First, as we examined the impact of exploding dish  
765 names/dish images separately, potential interactions await further exploration. For example, since dish  
766 names and dish images are often displayed side by side (Brewer and Sebby, 2021), pairing an exploding  
767 dish name with an exploding dish image may trigger a stronger effect on consumer behavior due to  
768 heightened processing fluency (Torelli and Ahluwalia, 2012; Sunaga et al., 2016). Likewise, exploding  
769 dish names/dish images may interact with restaurant positioning. While many restaurants' gastronomic  
770 creations are designed to deliver stimulating and intense flavors, other restaurants may favor a lighter or  
771 more natural taste (Gault, 1995). Accordingly, exploding dish names/dish images may be more suitable for  
772 restaurants that offer a highly stimulating dining experience. Second, UK and US participants were  
773 recruited from online panels to create conceptual replications. However, these countries are relatively close  
774 in terms of culture and economy. Future research could replicate the present work with more distinctive  
775 samples, such as average Chinese participants or French dining connoisseurs. Third, while the present  
776 article examined the effect of implied explosion on taste perception in a restaurant context, implied  
777 explosion may signal the intensity of other sensory experiences in different tourism settings. An  
778 image/slogan featuring exploding lavender, for example, may indicate a travel experience with an intense  
779 floral fragrance during the blooming season. Fourth, future research could explore diverse types of implied  
780 motion in various tourism settings. Implied floating motion, for example, as a gentler type of implied  
781 motion, may help to signal delicacy/lightness for restaurants and relaxation/calmness for resorts, hotels,  
782 and SPA services.

783

784

	Procedure	Practice	Objective
General five-step protocol	Step 1: survey code check	A survey code is displayed at the end of the questionnaire. Participants are asked to copy it to the AMT/Prolific task page. The survey code is checked when the experiment ends	To control for incomplete questionnaires or answers that cheat
	Step 2: IP check	IP addresses were checked on IPHUB ( <a href="https://iphub.info">https://iphub.info</a> )	To remove non-target IP sources and check potential VPN/VPS addresses (i.e., fake geolocation) (Kennedy et al., 2020)
	Step 3: attention check	An attention check question is included in the questionnaire. Participants who failed the attention check question were excluded from the dataset	To control for inattention or random responses (Wang and Li, 2022; Mead et al., 2020)
	Step 4: bot and relevant ID check	Detection of bots and relevant ID was also turned on in Qualtrics and the returning results were taken into account during the cleaning process	To control for bot/script-based answers and prevent participants from doing the same or a related survey multiple times (Qualtrics1)
	Step 5: abnormal duration check	Participants who spent an extremely short time on the questionnaire were excluded	To check speeding-up behavior (Kees et al., 2017)
Device check specific to the present research	Step 6: portable device check	Meta information is recorded by Qualtrics. Portable devices such as smart phones and tablets were excluded	To avoid bias created by legibility issues on portable devices (Qualtrics2). Pretests showed that when opening 9-point scales on portable devices, the layout is sometimes inverted and often confusing.

789 **Appendix B.** Detailed data cleaning list

790

Study 1	
Sample size before cleaning	141
Failed attention check	49
Portable device	4
VPN or non-UK IP	3
Failed attention check and portable device	2
Failed attention check and abnormal duration	2
Total exclusion	60
Sample size after cleaning	81

791

Study 2	
Sample size before cleaning	170
VPN/non-US IP	24
Failed attention check	23
VPN/non-US IP and failed attention check	14
Abnormal duration	6
Bot	4
Failed attention and relevant ID	2
VPN/non-US IP and relevant ID	1
VPN/non-US IP, failed attention check and abnormal duration	1
VPN/non-US IP, failed attention check and bot	1
VPN/non-US IP and bot	1
Failed attention check and abnormal duration	1
Bot and abnormal duration	1
Portable device, failed attention check, abnormal	1
Total exclusion	80
Sample size after cleaning	90

792

Study 3	
Sample size before cleaning	191
VPN/non-US IP	31
Failed attention check	31
VPN/non-US IP and failed attention check	12
Failed attention check and bot	4
VPN/non-US IP and bot	3
Abnormal duration	2
Bot	1

Failed attention and relevant ID	1
VPN/non-US IP and relevant ID	1
Failed attention, relevant ID, and abnormal duration	1
Total exclusion	87
Sample size after cleaning	104

793

794

Construct	Item	Source
Perceived taste intensity	According to the [...], what are your expectations for the [...]’s taste? INT1: not intense at all - very intense INT2: not strong at all - very strong INT3: not powerful at all - very powerful (3-item, 9-point semantic differential, $\alpha = .883$ in Study 2 and $\alpha = .902$ in Study 3)	adapted from Pleyers, 2021
Perceived taste liking	According to the [...], what are your expectations for the [...]’s taste? I wouldn’t enjoy its taste at all - I would enjoy its taste very much (9-point semantic differential)	adapted from Zellner et al., 2011
Perceived dish liking	How much do you like this [...] in general? extremely dislike - extremely like (9-point semantic differential)	adapted from Piqueras-Fiszman et al., 2012
WTP	How much (in US dollars) would you be ready to pay for this dessert in a restaurant?	adapted from Michel et al., 2014
Perceived energy released	For the following questions, please indicate to what extent you agree with the statements about the plating of this dessert. ENE1: "In the plating of this dessert, I can see that a lot of energy is released." ENE2: "In the plating of this dessert, I can see that a lot of energy is rapidly released." ENE3: "In the plating of this dessert, I can see that a lot of energy is suddenly released." ENE4: "In the plating of this dessert, I can see that a lot of energy is released in a short time." strongly disagree - strongly agree (4-item, 9-point Likert scale, $\alpha = .934$ in Study 3)	adapted from Keller et al., 2014

801 **Appendix D. Pretests**

802

803 Pretest 1 (Study 1)

804 The sample consisted of 36 British adults (55% women) recruited from Prolific, ranging in age from 20 to  
805 58 years (Mage = 39.08, SD = 11.35). Participants were randomly assigned to either the Delicate  
806 description condition (n = 17) or the Intense description condition (n = 19). No significant difference was  
807 found between the two groups with regard to gender and age ( $p > .05$ ). Perceived taste intensity was  
808 measured with a 3-item (intense, strong, powerful), 9-point semantic differential,  $\alpha = .968$  (adapted from  
809 Pleyers, 2021).

810

811 Sample comparability

Control variables	value	df	P value
Gender	.089	1	.765
Age	-1.351	34	.186

812

813 T-test for comparison of means for 2 independent samples

	Condition	n	Mean	SD	t	df	P value
Perceived taste intensity	Delicate	17	5.66	2.04	-4.491	22.102	.000
	Intense	19	8.10	.95			

814

815

816 Pretest 2 (Study 1)

817 The sample consisted of 40 British adults (67% women) recruited from Prolific, ranging in age from 22 to  
818 70 years (Mage = 40.48, SD = 13.01). Participants were randomly assigned to either the Control condition  
819 (n = 22) or the Exploding condition (n = 18). No significant difference was found between the two groups  
820 with regard to gender and age ( $p > .05$ ). The perceived amount of explosion was measured with 1-item (not  
821 at all – a lot of, adapted from Cian et al., 2014).

822

823 Sample comparability

Control variables	value	df	P value
Gender	.609	1	.435
Age	-2.696	38	.100

824

825 T-test for comparison of means for 2 independent samples

	Condition	n	Mean	SD	t	df	P value
Perceived amount of explosion	Control	22	2.91	2.136	-3.158	30.601	.004
	Exploding	18	5.50	2.895			

826

827

828 Pretest 3 (Study 2)

829 The sample consisted of 51 American adults (40% women) recruited from AMT, ranging in age from 21  
830 to 54 years (Mage = 33.67, SD = 7.53). Participants were randomly assigned to either the Control condition  
831 (n = 26) or the Exploding condition (n = 25). No significant difference was found between the two groups  
832 with regard to gender and age ( $p > .05$ ). The perceived amount of explosion was measured with 1-item (not

833 at all – a lot of, adapted from Cian et al., 2014).

834

835 Sample comparability

Control variables	value	df	P value
Gender	.213	1	.645
Age	-.418	49	.678

836

837 T-test for comparison of means for 2 independent samples

	Condition	n	Mean	SD	t	df	P value
Perceived amount of explosion	Control	26	6.38	1.89	-2.29	49	.026
	Exploding	25	7.48	1.47			

838

839

840 Pretest 4 (Study 3)

841 The sample consisted of 34 American adults (33% women) recruited from AMT, ranging in age from 25  
842 to 63 years (Mage = 38.94, SD = 9.46). Participants were randomly assigned to either the Control condition  
843 (n = 17) or the Exploding condition (n = 17). No significant difference was found between the two groups  
844 with regard to gender and age ( $p > .05$ ). The perceived amount of explosion was measured with 1-item (not  
845 at all – a lot of, adapted from Cian et al., 2014).

846

847 Sample comparability

Control variables	value	df	P value
Gender	.134	1	.714
Age	-.683	32	.500

848

849 T-test for comparison of means for 2 independent samples

	Condition	n	Mean	SD	t	df	P value
Perceived amount of explosion	Control	17	5	2.91	-2.03	28.91	0.05
	Exploding	17	6.76	2.07			

850

851

852

853

Construct	Item
<b>General control variable</b>	
Age	How old are you? (please enter numbers)
Gender	What is your gender? <input type="radio"/> male <input type="radio"/> female <input type="radio"/> non-binary/third gender
Dining frequency	How often do you dine at a restaurant on average? <input type="radio"/> one or fewer times a year <input type="radio"/> two or more times a year <input type="radio"/> one or more times a month <input type="radio"/> one or more times a week
Cooking frequency	How often do you cook dishes by yourself? <input type="radio"/> never <input type="radio"/> sometimes <input type="radio"/> about half the time <input type="radio"/> most of the time <input type="radio"/> always
Culinary knowledge	To what extent do you agree with the following statement: "I know a lot about culinary practices" strongly disagree - strongly agree (9-point Likert scale)
Hunger level	How hungry are you right now? not hungry at all - very hungry (9-point semantic differential)
General category liking	How much do you like [...] in general? extremely dislike - extremely like (9-point semantic differential)
Work experience	Do you have any work experience in the following industries? -Hospitality industry -Restaurants in particular -Food industry -Marketing (binary: yes vs. no)
<b>Dish name property variable</b>	
Appropriateness	Please rate the dish name with respect to some common criteria. not appropriate at all - very appropriate (9-point semantic differential)
Novelty	~ not novel at all - very novel



	(9-point semantic differential)
Familiarity	~ not familiar to me at all - very familiar to me (9-point semantic differential)
Informativeness	~ not informative at all - very informative (9-point semantic differential)

856

857

858 **Appendix F. Sample comparability of main studies**

859

860 **Study 1. Sample comparability**

Control Variables	value	df	p value
<i>Chi square tests</i>			
Gender	2.768	1	.096
Dining frequency	4.918	3	.178
Cooking frequency	6.702	3	.082
Working experience in hospitality industry	.731	1	.393
Working experience in restaurants	.016	1	.899
Working experience in food industry	3.504	1	.061
Working experience in marketing	1.271	1	.260
<i>T tests</i>			
Age	1.427	79	.158
Culinary knowledge	-1.198	79	.235
Hunger level	-1170	79	.246
General category liking (dessert)	-342	79	.733

861

862 **Study 2. Sample comparability**

Control Variables	value	df	p value
<i>Chi square tests</i>			
Gender	.189	1	.664
Dining frequency	4.990	3	.173
Cooking frequency	1.679	3	.794
Working experience in hospitality industry	.421	1	.517
Working experience in restaurants	.741	1	.389
Working experience in food industry	.045	1	.832
Working experience in marketing	1.640	1	.200
<i>T tests</i>			
Dish name properties (Appropriate)	.658	88	.512
Dish name properties (Novel)	.395	88	.694
Dish name properties (Informative)	.672	88	.503
Dish name properties (Familiar)	.192	88	.848
Age	-.142	88	.888
Culinary knowledge	-.871	88	.386
Hunger level	-.349	88	.728
General category liking (fish soup)	.852	88	.397

863

864 **Study 3. Sample comparability**

Control Variables	value	df	p value
<i>Chi square tests</i>			
Gender	1.197	1	.274
Dining frequency	4.250	3	.236
Cooking frequency	2.441	3	.486
Working experience in hospitality industry	.610	1	.435
Working experience in restaurants	1.363	1	.243
Working experience in food industry	.324	1	.569
Working experience in marketing	.163	1	.686
<i>T tests</i>			
Age	3.848	102	.426
Culinary knowledge	-1.596	102	.114
Hunger level	-.045	102	.964
General category liking (chocolate cake)	-1.183	102	.240

865

866

867 **Appendix G.** Descriptive statistics for Study 2

868

Construct	Condition	Means	Standard deviations	Skewness	Kurtosis
Taste intensity	control	7.09	1.41	-.718	-.328
	exploding	7.81	1.11	-.878	.259
Taste liking	control	6.24	2.28	-.613	-.516
	exploding	6.02	2.57	-.798	-.483

869

870 **Appendix H.** Descriptive statistics for Study 3

871

Construct	Condition	Means	Standard deviations	Skewness	Kurtosis
Taste intensity	control	7.05	1.97	-1.444	1.816
	exploding	7.37	1.33	-.774	-.240
Taste liking	control	7.10	1.92	-1.184	1.118
	exploding	7.64	1.34	-.830	-.087
Dish liking	control	6.98	1.98	-1.393	1.344
	exploding	7.49	1.40	-.944	.669
WTP	control	11.43	9.49	1.202	1.014
	exploding	18.12	16.47	1.423	1.207
Energy released	control	6.20	2.37	-.998	-.275
	exploding	7.31	1.18	-1.114	1.567

872

873

874

Study	Hypotheses	Tests	Main results	Sample size	Effect size	Power*
<b>Study 1</b>	H1a Implied explosion => Perceived taste intensity	Chi-square test	$X^2(1) = 25.91, p = .000$	N = 81	w = .591 Large effect	.999
<b>Study 2</b>	H1a Implied explosion => Perceived taste intensity	Independent t-test	$t(88) = -2.67, p = .009$	N = 90 Control group n = 45 Exploding group n = 45	d = .567 Medium effect	.758
	H2 Perceived taste intensity => Perceived taste liking	Regression	b = .248, p = .018		f <sup>2</sup> = .064 Small effect	.666
<b>Study 3</b>	H1b Implied explosion => Perceived energy released => Perceived taste intensity	Mediation Process Model 4	Indirect effect b = .60, SE = .23, 95%CI = [.21; 1.16]	N = 104 Control group n = 51 Exploding group n = 53	f <sup>2</sup> = .600 Large effect	1.000
	H2 Perceived taste intensity => Perceived taste liking	Regression	b = .74, p = .000		f <sup>2</sup> = 1.237 Large effect	1.000
	H3 Perceived taste liking => Perceived dish liking	Regression	b = .75, p = .000		f <sup>2</sup> = 1.347 Large effect	1.000
	H4 Perceived dish liking => WTP	Regression	b = .25, p = .013		f <sup>2</sup> = .068 Small effect	.752

877 \* Observed power computed with G\*Power software 3.1.9.7. ( $\alpha$  err prob = .05)

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