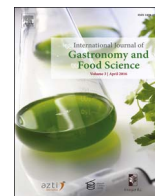




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## Review article

## The psychology of condiments: A review

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## ABSTRACT

Condiments and sauces constitute a ubiquitous presence on dinner tables the world over. Yet, that said, they have received surprisingly little serious scientific attention from researchers interested in gastronomy and food science. Here, I take a closer look at the psychology behind our choice of condiments, both when selecting what to purchase on the supermarket shelf, and when deciding which condiment(s) will best compliment a particular dish. Not only do condiments enhance the taste/flavour of a dish (e.g., they often contain flavour-enhancing elements such as salt and umami), but they may also be used to add some colour/textural interest to whatever is being consumed. And, as argued in this review, the actual taste experience (of the condiment/sauce) is often determined as much by the packaging/branding as by the product itself. Indeed, condiments are amongst the strongest and best-loved brands in the marketplace. Hence studying what has allowed them to be so successful for so long likely holds some important lessons for the design of many other food and beverage categories as well. This review of the literature is targeted at those working in the manufacturing/marketing of condiments.

## Introduction

Pretty much wherever people go out to eat, excepting perhaps the high end restaurant,<sup>1</sup> there will be a selection of condiments, sauces, and seasonings on the table. This ever-present accompaniment to meal times has, though, been seemingly neglected by researchers interested in gastronomy and food science. To illustrate the point, condiments hardly get a mention in the near 900 pages of McGee's classic (1984/2004) volume, *McGee on food and cooking*. As far as I can tell, all the great man has to say regarding condiments is the following "...many of them foods preserved and transformed by fermentation: sour and aromatic vinegar, salty and savory soy sauce and fish sauce, salty and sour pickles, pungent and sour mustard, sweet and sour and fruity ketchup."<sup>2</sup> A similar point is made by Tom Nealon when he notes that: "In Reay Tannahill's pioneering study *Food in History*, the index shows exactly zero mentions of condiments."<sup>3</sup> Nevertheless, one can find out plenty about the psychology and marketing of food and drink from a cursory, or better still a careful, look at what is going on in the condiments aisle/shelf. In fact, it can be argued that there is much more competition in the condiment aisle currently than for many other categories of food/beverage product. As such, the multisensory design standards for condiment packaging etc. often tend to be much higher/

better than elsewhere in the supermarket aisles.

This literature review is targeted at those involved in the manufacture/marketing of condiments. It starts by reviewing the literature, such as it is, on the condiments category as a whole, and the relevant individual differences in preference. The following sections then trace the consumer journey with branded condiments, starting with the selection of the product from the supermarket shelf (where visual cues are pretty much the only thing that is important), though getting the product home and using it, when all sensory aspects of the packaging (i.e., its feel, sound, visual appearance etc.) matter. Thereafter, those factors that may affect the taste/flavour of the condiment are considered, and a link is made to the results of blind taste tests. The review ends by taking a look into the near future, with a brief summary of augmented reality (AR) enhanced product design/innovation, and the connecting of condiments with the growing trend of personalization.

Cookbooks generally distinguish between seasonings and condiments. The former referring primarily to those herbs, spices, and herb/spice mixes that are used during the preparation of food, while the latter, by contrast, tends to consist of a combination of ingredients (often including spices) added by the consumer at the point of consumption.<sup>4</sup> According to one commentator, the term 'condiment' comes "from L. *condimentum* "spice, seasoning, sauce," from *condire*

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<sup>1</sup> Spence, C. (2017). *Gastrophysics: The new science of eating*. London, UK: Viking Penguin.

<sup>2</sup> McGee, H. (1984/2004, p. 581). McGee on food and cooking: The science and lore of the kitchen (rev. ed.). New York, NY: Scribner.

<sup>3</sup> Nealon, T. (2010). De condimentis (1). *HiloBrow*, September 7th. <http://hilobrow.com/2010/09/07/de-condimentis-1/>.

<sup>4</sup> Sherman, P. W., & Billing, J. (1999). Darwinian gastronomy: Why we use spices. Spices taste good because they are good for us. *BioScience*, **49**, 453–463. See also Smith, A. F. (May 1st, 2007). *The Oxford companion to American food and drink*. Oxford, UK: Oxford University Press..

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“to preserve, pickle, season” (variant of *condere* “to put away, store”). As its etymology suggests, a condiment must have a shelf life — which, until recently, means it was vinegar-, salt-, or sugar-based. Also, it must be at least slightly more complicated, and moister, than a seasoning.<sup>5</sup> That said, definitions vary with some including salt, pepper, or even cheese as condiments. Some use the term interchangeably with ‘seasoning’, while others use a much more restrictive definition. Personally, I find myself in agreement with Farrell’s definition of condiments as: “prepared food compound[s], containing one or more spices”, which are added to food after it has been prepared, and includes mustards, ketchups, and mint sauce.<sup>6</sup>

Condiments have a long history in cuisine: Think here only of the garam and fish sauce of ancient Greece and Rome. According to Tom Nealon: “it turns out that *Apicius*, the cookbook compiled from 4th/5th-century Roman cuisine, boasts an entire section devoted to condiments (*De Condimentis*).<sup>7</sup> Other very popular condiments include the Indian chutneys and the North American ketchup (once known as catsup) in the 20th Century.<sup>8</sup> Soy sauce also deserves a mention given how popular it is across parts of Asia. In recent years, spicy condiments have also grown in popularity in many western countries. So, for example, in the 1980s, spicy salsas apparently surpassed ketchup in the US in terms of their popularity, due to the major influence of Mexican cuisine.<sup>9</sup> Meanwhile, in the UK, spicy sauces have recently been growing in popularity with the rise of a range of exotic barbecue, *piri piri*, and chilli sauces.<sup>10</sup>

## Why do condiments exist?

More fundamentally, one might ask why condiments are such a common feature of dining tables around the world (both now and over recent centuries), and why there is still so much difference in the kinds of condiments that those from different countries/cultures reach for to spice-up/season their food. One answer here is that salt and umami, which are a common feature of many condiments, play an important role as flavour enhancers.<sup>11</sup> Some have even gone so far as to argue that tomato ketchup is an ‘überfood’, given that it typically touches, at least four of the basic tastes, salt, sweet, sour, and umami.<sup>12</sup> Of course, the bright colour shouldn’t be neglected either in helping to add some visual interest to a dish. Branston pickle and piccalilli both add some crunch (providing both textural and sonic interest) due to the presence of preserved vegetables. Condiments like ketchup, being very familiar to so many of us, can also play an important role in helping children to eat their vegetables.<sup>13</sup> Returning to the second question posed at the

start of this section, it perhaps makes sense to consider cultural differences in condiments as a natural consequence of the well-established cultural differences in taste/cuisine.

## Individual differences

Ultimately, though, the existence of condiments is probably also an acknowledgement of the very different worlds of taste in which we all live.<sup>14</sup> It is, for instance, well-known that some people have more of a sweet tooth than others.<sup>15</sup> There is also the oft-discussed difference between super-tasters and non-tasters (the former often argued to have more taste-buds on their tongue and enhanced taste perception, especially of bitter-tasting foods).<sup>16</sup> Condiments allow the consumer/diner to personalize the taste/flavour of their food (at least to a certain extent). In fact, one could turn this around and wonder why it is that condiments aren’t even more ubiquitous than they are given the very different taste worlds in which we all live. Of course, these individual differences not only affect people’s food preferences, they also affect people’s preferences for condiments and sauces. For instance, Harold Moskowitz has conducted some very successful (and much publicized) commercial research for the food industry, segmenting consumers in terms of their preference for different sensory profiles in food (e.g., segmenting different groups of likers of smooth vs. chunky textured pasta sauces).<sup>17</sup> I return to a consideration of personalization and the condiment category toward the end of this piece. Having briefly considered the context of the condiment category, I want now, in the sections that follow, to trace the consumer journey with respect to condiments, looking at the various factors, both product intrinsic (such as the colour of the product) and product extrinsic (such as the colour, weight, feel, and even sound of the packaging) that can meaningfully affect the consumer’s experience.

## Capturing customer attention in-store & conveying meaning

### *On the colour of condiments (and their packaging)*

Like any other food or beverage product, condiments are experienced through all of the consumer’s/customer’s senses — e.g., taste obviously, but also smell, sight, sound, and touch. For a start, just think about the bright and distinctive colour of the product itself, not to mention its packaging. What one sees being played out are the twin battles of, on the one hand, trying to capture the shopper’s attention on the store shelf while, at the same time, making sure to correctly signal the type, or flavour, of product to the customer. No one, after all, wants to get home to find that they accidentally picked-up a jar of mustard when what they were really after was ketchup! Relevant here is the suggestion that 90% of the food and beverage brands that one finds in the supermarket use colour to convey relevant product information.<sup>18</sup>

(footnote continued)

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<sup>15</sup> Reed, D. R., & McDaniel, A. H. (2006). The human sweet tooth. *BMC Oral Health*, **6**(Suppl 1): S17. doi: 10.1186/1472-6831-6-S1-S17.

<sup>16</sup> Miller, I. J., & Reedy, D. P. (1990). Variations in human taste bud density and taste intensity perception. *Physiology and Behaviour*, **47**, 1213–1219; Though see Garneau, N. L., Nuessle, T. M., Sloan, M. M., Santorico, S. A., Coughlin, B. C., & Hayes, J. E. (2014). Crowdsourcing taste research: Genetic and phenotypic predictors of bitter taste perception as a model. *Frontiers of Integrative Neuroscience*, **8**:33. doi:10.3389/fnint.2014.00033.

<sup>17</sup> Gladwell, M. (2009). The ketchup conundrum: Mustard now comes in dozens of varieties. Why has ketchup stayed the same? In *What the dog saw and other conundrums* (pp. 32–50). USA: Little, Brown, & Company. Also published in the **September 6<sup>th</sup>**, 2004, issue of *The New Yorker*. <http://www.newyorker.com/magazine/2004/09/06/the-ketchup-conundrum>.

<sup>18</sup> Garber, L. L., Jr., Hyatt, E. M., & Starr, R. G., Jr. (2001). Placing food colour experimentation into a valid consumer context. *Journal of Food Products Marketing*, **7**(3), 3–24.

<sup>5</sup> Nealon (2010).

<sup>6</sup> Farrell, K. T. (1990, p. 291). *Spices, condiments and seasonings* (2nd Ed.). MA, USA: Aspen Publishers.

<sup>7</sup> Apicius (1936). *Cooking and dining in Imperial Rome* (c. 1st Century; translated by J. D. Vehling). University of Chicago Press, Chicago.

<sup>8</sup> Soniak, M. (2012). What’s the difference between ketchup and catsup? *Mental Floss*, **January 5th**. <http://mentalfloss.com/article/29649/whats-difference-between-ketchup-and-catsup>; Jurafsky, D. (2014). *The language of food: A linguist reads the menu*. New York, NY: Norton.

<sup>9</sup> McGee, H. (1984/2004, p. 418).

<sup>10</sup> Naylor, T. (2015). Tomato ketchup: The best and worst-taste test. *The Guardian*, **November 25th**. <https://www.theguardian.com/lifeandstyle/2015/nov/25/tomato-ketchup-the-best-and-worst-taste-text>.

<sup>11</sup> Breslin, P. A. S., & Beauchamp, G. K. (1997). Salt enhances flavour by suppressing bitterness. *Nature*, **387**, 563; See also Suwankanit, C., Dermiki, M., Kennedy, O. B., & Methven, L. (2013). *Umami: Suppressed by all other tastes but itself an enhancer of salty and sweet perception*. Poster presented at 10th Pangborn Sensory Science Symposium (11–15th August 2013, Rio de Janeiro, Brazil).

<sup>12</sup> Rozin, E. (1988). Ketchup and the collective unconscious. *Journal of Gastronomy*, **4**(2), 45–56; Vilgis, T. (2012). Ketchup as tasty soft matter: The case of xanthan gum. In C. Vega, J. Ubbink, & E. van der Linden (Eds.), *The kitchen as laboratory: Reflections on the science of food and cooking* (pp. 143–147). New York, NY: Columbia University Press.

<sup>13</sup> Cf. Pliner, P., & Stallberg-White, C. (2000). “Pass the ketchup, please”: Familiar flavors increase children’s willingness to taste novel foods. *Appetite*, **34**, 95–103; Rozin,

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