RUNNING HEAD: WOULD YOU TRUST AN AI CHEF?

Would you trust an AI chef?

Examining what people think when AI becomes creative with food

WORD COUNT: 2,995 WORDS

DATE: JUNE 2024

RESUBMITTED TO: *INTERNATIONAL JOURNAL OF GASTRONOMY AND FOOD SCIENCE (Short Communication)*

Conflict of Interest Statement: The authors confirm that they have no COI in relation to the publication of this manuscript.

ABSTRACT

This study explores people's trust in AI-generated food and drink recipes. AI's ability to create unique recipes with limited ingredients attracts users seeking tailored options, especially for specialized diets or ingredient combinations. The study compares trust in AI-generated versus traditional recipes and examines the impact of dish innovativeness. The results show no differences in trust between AI and traditional recipes for standard dishes, but a significantly lower trust in AI for innovative recipes. The perception of taste, smell, and willingness to try recipes were similar across AI and traditional sources. These findings illuminate current levels of trust in AI-generated recipes.

Keywords: Artificial Intelligence; LLM (Large Language Model); Trust; Food; Cooking.

Artificial Intelligence (AI) has made a noisy entrance into our daily lives, from the images we see on the internet, to the emails we receive, and even to the dishes that some of us make in the kitchen. It has been suggested that AI-powered recipe generators may soon be capable of augmenting human creativity when it comes to cooking. Apps are springing up that promise to make AI an indispensable kitchen tool with AI's unique strength in being flexible with inputs (e.g., Beshold, 2023; Hwang et al., 2023). Popular pioneering platforms such as DishGen provide both traditional recipes and highly-tailored recipes that transform traditional recipes based on the ingredients that the user has on hand (Heil & Harwell, 2024). Elsewhere, there are also tools such as Smart Cuisine that allow users to create AI-generated recipes using whatever ingredients they happen to have at hand (Kansaksiri et al., 2023). Even more impressively, these AI tools claim to optimize meal preparation and cooking practices with chat services for users to ask questions about food and nutrition. AI-generated recipes, just like any other revolutionary technology, may have the potential to become useful life tools, especially when inspiration or ingredients are limited (McMahon, 2023).

In a world in which AI is becoming more and more commonplace in our daily lives and even on our tables, it is important to understand people's level of trust in AI-generated content (Jacovi et al., 2021). On DishGen, one of the most popular AI recipe generators currently, recipes always come with disclaimers saying that the company "has not verified it for accuracy or safety" and that users

should make their own “best judgment when making AI-generated dishes” (Heli & Harwell, 2024). Therefore, it should perhaps not come as a surprise to find experts raising concerns about trust issues in relation to AI recipes. Despite the increasing use of AI as a daily culinary assistant, the level of trust users place in AI remains relatively underexplored, particularly given the rapidly evolving nature of the field. As has been mentioned previously, AI recipes are claimed to be most helpful when traditional recipes fail to accommodate users’ needs. Therefore, an outstanding question about AI recipes concerns the extent to which people trust AI for its instructions in making food or drinks, especially when the recipes happen to be innovative.

The concept of deception in AI-generated content adds complexity to these trust issues. For instance, the creation of an AI-generated cookbook without proper disclosure of its AI origins could mislead consumers, raising ethical questions about transparency and honesty in the culinary domain. In fact, AI-generated cookbooks are already starting to flood the market (cf. Brehaut, 2024). On the one hand, such deceptive practices can undermine the authenticity of AI-generated recipes and so erode public trust. On the other hand, the integration of AI into creative processes such as recipe development brings the issue of intellectual property rights to the fore. While recipes traditionally face fewer copyright challenges than other forms of content, the unique nature of AI-generated recipes perhaps necessitates a re-evaluation of ownership and originality. Given the typical non-disclosure of the foundational data used by AI models, the determination of copyright ownership for AI-generated content remains a contentious issue (Samuelson, 2023), necessitating the establishment of definitive guidelines to support future ethical innovation in this space.

Curiosity concerning AI-generated recipes extends to how the label “AI-generated” might affect people’s perception and enjoyment of the food’s taste, aroma, and flavour. People appreciate recipes created by renowned chefs (McBride & Flore, 2019). In this sense, the dishes created by chefs (i.e., the recipes that one finds in traditional cookbooks) are expected to be more delicious. Relevant here, the latest research has demonstrated the negative impact that labelling a food image as AI-generated can have on its visual appeal (Califano & Spence, 2024), and that of how sources of information influence people’s evaluation of content credibility (Bates et al., 2006; Dedeoglu, 2019; Westerman et al., 2014). A configuration of source credibility (i.e., authenticity and expertise) acts as a driver of consumers’ trust in AI influencers (Alboqami, 2023). Specifically, according to the results of a recent study by Liu and Lee (2024), people’s willingness to try food, as well as the anticipated pleasantness of its smell and taste, are lower when the content is delivered by AI influencers as compared to human influencers. Beyond issues of trust concerning AI-generated food

content, it is also worth considering whether people may simply express less interest in the taste and smell of AI-generated recipes.

To address the above-mentioned questions regarding AI recipes, the study reported here compared people's evaluation of recipes labelled as originating either from a cookbook (i.e., generated by human chefs) or from AI generators. Two types of recipes were included, namely traditional recipes and innovative recipes. In comparing how people evaluate traditional and innovative recipes produced either by human or by AI, the aim was to address how utility and creativity interacted in shaping people's perceived trust towards AI recipes. Additionally, we aimed to explore the perceived difficulty in making certain food and drinks following the recipes would influence people's evaluations of AI recipes. Specifically, our research questions focused on how these evaluations were reflected in the primary outcomes of the present study, namely people's trust, willingness to try out the recipes, and the anticipated pleasantness of smell and taste (i.e., flavour) of the resulting dish/cocktail.

The stimuli for this study consisted of recipes for a Negroni cocktail and a lasagna Bolognese, both featuring traditional and innovative variants. These dishes were chosen for their popularity in the UK (Godwin, 2014; Statista, 2022), where the study was conducted. The innovative versions included a white Negroni and a tomato-jam bacon lasagna. Four recipes were sourced from online platforms and standardized for comparable lengths between the classic and innovative versions. The participants were provided with these recipes along with images depicting the final dish or cocktail (see Supplementary Material for the recipes).

Data collection took place in February 2024 via Google Forms, involving 201 participants from the UK recruited through Prolific Academic. Participants, with a mean age of 43.7 years (SD = 13.5 years), were predominantly women (67%), omnivores (76%), and holding a university or post-graduate degree (67%). The sample size was determined based on *a priori* power analysis, ensuring a statistical power $(1 - \beta)$ of .85 with $\alpha = .05$, targeting a level of effect size $f(V)$ equal to 0.25 for a within-between interaction effect in a repeated-measures MANOVA.

To explore differences in trust in the guidelines, anticipated pleasantness of taste and smell, and willingness to use the recipe between those recipes sourced from a cookbook and those generated by AI, a mixed-factorial design was used. This design featured a between-participants factor: The participants were randomly assigned to conditions where the recipes were purportedly sourced from a cookbook or else were apparently generated by AI. Notably, despite experimental allocation, all of

the participants were presented with identical recipes. Additionally, two within-participants factors were considered: the type of recipe (traditional or innovative) and the item (drink or food, with the latter hypothesized as more complex to execute than the former). Therefore, each participant evaluated four recipes: two for a Negroni cocktail and two for a lasagna, in both traditional and innovative versions. While cocktail recipes were consistently presented first, the order of encountering traditional or innovative versions was randomized for each participant (see Figure 1 for the participants' flowchart).

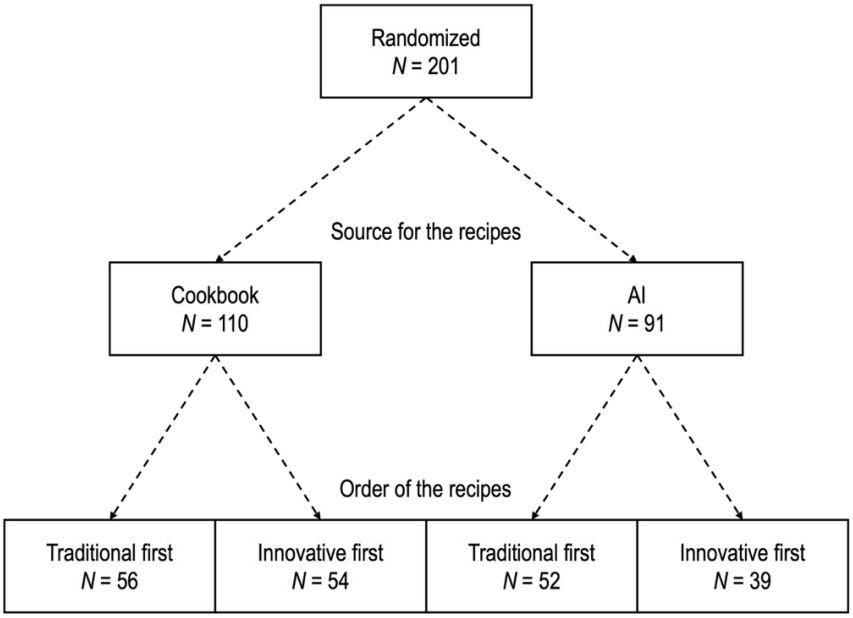

Figure 1. Participants' flowchart.

The online questionnaire had three main sections. Initially, the participants provided informed consent, acknowledging the confidentiality of their responses and the option to withdraw without justification. Ethics clearance for the study was obtained through a subcommittee of the University of Oxford [R85145/RE001].

In the second section, the participants were presented with a scenario where they were tasked with preparing a meal for a house gathering, featuring Negroni cocktails and lasagna. They were informed that they would encounter recipes generated either by AI or sourced from a cookbook, according to their experimental allocation. The participants then self-assessed their cooking and cocktail preparation expertise on a 5-point scale ranging from 1 ("None") to 5 ("Expert"). Subsequently, the second section presented the four recipes for evaluation. After each recipe, participants rated its originality, their confidence in successfully executing it, their trust in the

guidelines provided, the anticipated pleasantness of taste and smell, and their willingness to use the recipe for the proposed scenario. These ratings were collected on a 7-point scale. All questionnaire items are detailed in Table S1 (Supplementary Material).

The third and final section collected participants' sociodemographic information, including age, sex assigned at birth, education level, and dietary style. Additionally, participants completed the five items measuring the "innovation" dimension of the Food Related Lifestyle (Brunsø et al., 2021).

Randomization checks were performed using *t*-tests for independent samples and a χ^2 test to ensure homogeneity between the two experimental groups regarding sociodemographic characteristics, expertise in cooking and mixing drinks, and their propensity to experiment with new recipes (as measured by the "innovation" dimension of the Food Related Lifestyle by Brunsø et al., 2021). Additionally, manipulation checks were conducted using multiple *t*-tests for matched pairs to confirm that the recipes we hypothesized as being more innovative were indeed rated as such when compared to traditional ones, and to verify that cocktail recipes were perceived as simpler as compared to food recipes. Subsequently, a mixed-model ANOVA was conducted to examine the effects of recipe source (cookbook or AI) and its interactions with recipe characteristics (food/cocktail and traditional/innovative) on trust in the guidelines, anticipated pleasantness of taste and smell, and willingness to use the recipe. Of particular interest were the main effects of the between-participants factor and its interactions with the within-participants factors. We have further corrected the *p*-values of the ANOVA results for multiple outcomes analysis using a Bonferroni approach. Specifically, they were multiplied by four, reflecting the number of outcomes under study. All of the statistical analyses were performed using Stata 18.

Regarding the randomization checks, participants in the two experimental conditions were homogeneous in terms of their age (M in the "cookbook" condition = 43.19 years, SD = 14.05 years; M in the "AI-generated" condition = 44.26 years, SD = 12.94 years; $t(199) = 0.56$, $p = .577$), cooking and mixing expertise (M in the "cookbook" condition = 1.55, SD = 0.62; M in the "AI-generated" condition = 1.55, SD = 0.67; $t(199) = 0.10$, $p = .917$), propensity to experiment with new recipes (M in the "cookbook" condition = 3.61, SD = 0.91; M in the "AI-generated" condition = 3.69, SD = 0.87; $t(199) = 0.60$, $p = .550$), and sex assigned at birth ($\chi^2(1) = 1.21$, $p = .270$). Regarding the manipulation checks, the recipes hypothesized as more innovative were indeed perceived as being more original (M = 5.05, SD = 1.22) than the traditional ones (M = 3.66, SD = 1.54; $t(200) = 10.84$, $p < .001$). Additionally, the participants were less confident in their ability to successfully execute the two lasagna recipes (M = 4.86, SD = 1.40) as compared to the Negroni

recipes (M = 5.39, SD = 1.30; $t(200) = 5.16$, $p < .001$), confirming that the foods in the study were perceived as being more complex than the cocktails.

The results of the mixed-model ANOVA for trust in the provided guidelines revealed a significant main effect of the within-participants factor regarding the originality of the recipe ($F(1, 199) = 122.83$, $p < .001$), as well as its interaction with the recipe source ($F(1, 199) = 10.18$, $p = .007$). Figure 2 illustrates this interaction, indicating that while participants equally trusted the guidelines for traditional recipes, those recipes that were perceived as more innovative were trusted less when presented as AI-generated[1].

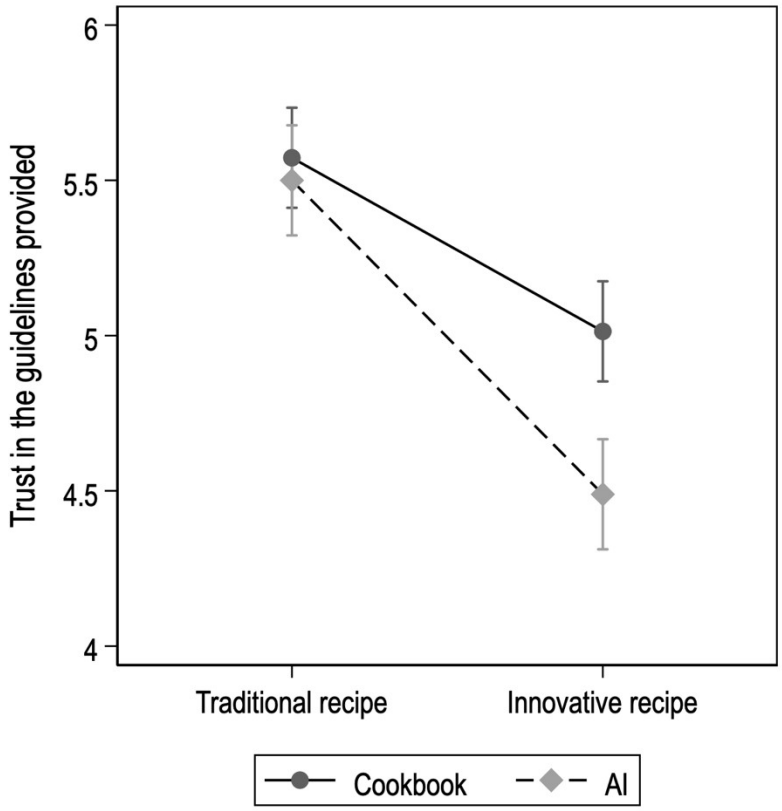

Figure 2. Interaction effect between recipe originality (traditional or innovative) and source (cookbook or AI) on trust in the guidelines provided (scale ranging from 1 to 7). Bars represent 98.75% CIs.

[1] We also conducted a follow-up replication of this analysis, but instead of using the food items as variables, we used the continuous scores previously used as manipulation checks. Specifically, the scores for confidence of successfully executing the recipe were used in place of the "food *vs* cocktail" factor, and the scores for perceived item originality were used instead of the "traditional *vs* innovative" factor. The results obtained were similar (see Supplementary Material).

Notably, although a significant main effect of the item (cocktail or food) was found ($F(1, 199) = 10.39$, $p = .006$), no significant interaction with the between-participants factor was observed, thus suggesting that while more innovative recipes were trusted less when presented as having been generated by AI, the perceived difficulty of the recipe did not moderate this relationship. Finally, no significant effects of the between-participants factor, nor of its interactions, regarding the anticipated pleasantness of taste and smell, and willingness to use the recipe were observed. However, these results are reported in Supplementary Material (Table S2).

The study reported here compared people's evaluations of four recipes sourced from a cookbook or purportedly AI-generated. The results revealed that for the traditional Negroni and lasagna recipes, there were no differences in people's trust towards guidelines that they believed to have come from a cookbook versus from AI-generated instructions. However, people's trust in the innovative versions of the recipes were significantly lower when the instructions were generated by AI than when originating from cookbooks, i.e., written by human chefs. These findings reveal for the first time how people may perceive the trustworthiness of AI-generated recipes. The results showed that the more innovative lasagna and Negroni recipes were trusted less when the recipes were provided by AI assistants. When it comes to food, chefs are generally trusted by consumers as they play an essential role in the preservation and dissemination of culinary traditions and knowledge (McBride & Flore, 2019). Therefore, when the recipes contain unknown steps and/or ingredients, instructions credited to human chefs appear to be more trustworthy than those from AI chefs. Furthermore, while chefs may suggest original steps or ingredients that are perceived as extravagant yet trustworthy, there is a possibility that when AI systems recommend similar recipes, they could be dismissed as 'hallucinations'—a term referring to the occasional nonsensical outputs from large language models (Ji et al., 2023). This finding questions the initial idea of introducing AI chefs into our kitchens, that is to augment creativity (Zoran, 2019) and saving food waste with limited ingredients at home (McMahon, 2023). In this sense, one might question whether the role of the AI chef should be calculating energy consumption and portion size instead of necessarily trying to be some kind of creative 'food artist' (Anonymous, 2023; Gill & Bowles, 2024). Although the same 'hallucinations' that can disrupt creative tasks may also intrude upon seemingly more computational activities, such as calorie counting, existing literature indicates a prevailing belief among individuals that contemporary AI systems excel in automated and analytical tasks rather than intuitive and empathetic ones (Huang & Rust, 2018; Kim et al., 2021).

Furthermore, the present study found that the perceived complexity of the recipes used did not significantly moderate participants' trust in AI-generated versus human-produced recipes. This

finding suggests that the critical factor influencing trust is the congruence of the recipe's steps and ingredients with the users' previous culinary experiences, rather than the complexity of executing the recipe itself. When we talk about interpersonal trust, we find that personal experiences in social interactions determine an individual's tendency to trust others (Schwerter & Zimmermann, 2020). Since AI-powered recipe generators are fairly new, it is understandable that people have not gained sufficient experience of them to build trust. However, just as ChatGPT was so fiercely resisted when it first started spreading globally, people are gradually building trust through successful experiences with AI-driven assistants. Therefore, we maintain a positive outlook concerning the potential of AI recipe assistants and how this new application will evolve in the near future.

Taken together, these tentative findings open the door to understanding human attitudes towards the role of AI in cooking. The current study investigated people's overall trust in AI-generated recipes. More specific aspects of the impact of AI in cooking still remain to be addressed. For example, how much people trust the role of AI in providing nutritional information for certain recipes as well as calculating food waste and calorie consumption are undoubtedly issues worth exploring further in the future. In addition, the current study found that the main issue with people's trust in the AI-generated recipes lies in the context of what are perceived to be more 'innovative' dishes. Since we compared AI recipes to cookbooks, which are presumably written by professional chefs, it is likely that people will instill a sense of trust in this source of information (Rupprecht et al., 2020; Wiener & Mowen, 1986). Another related potential factor is that people may perceive recipes in cookbooks as tested, whereas AI recipes are untested, and therefore have less trust in innovative recipes by AI. Future research could incorporate pre-testing factors to further understand people's trust in AI recipes. In addition, including more diverse food or drink choices as stimuli, such as recipes of cuisines from other cultures, may yield interesting results and help further test the generalizability of our findings. This is particularly relevant since we only used four recipes in total (i.e., two lasagna and two Negroni variations). It is also crucial to acknowledge the limitations of using a convenience sample in this study, as it does not ensure the external validity of the results. For instance, our sample had a higher prevalence of women and highly educated participants, who are not necessarily representative of the overall UK population. Furthermore, while this study did not target a specific audience, it will be interesting to see how chefs and others in the food industry perceive AI as a cooking assistant and whether it can really be used to enhance their culinary creativity (Gill & Bowles, 2024).

Acknowledgements

This research was funded in whole, or in part, by the UKRI [AH/L007053/1]. For the purpose of Open Access, the author has applied a CC BY public copyright licence to any Author Accepted Manuscript version arising from this submission.

References

Alboqami, H. (2023). Trust me, I'm an influencer! - Causal recipes for customer trust in artificial intelligence influencers in the retail industry. *Journal of Retailing and Consumer Services*, *72*: 103242. https://doi.org/10.1016/j.jretconser.2022.103242.

Anonymous. (2023, June 7). *Are AI Recipes Actually Any Good? I Put One to the Test.* Sugar Spun Run. https://sugarspunrun.com/are-ai-recipes-actually-any-good-i-put-one-to-the-test/.

Bates, B. R., Romina, S., Ahmed, R., & Hopson, D. (2006). The effect of source credibility on consumers' perceptions of the quality of health information on the internet. *Medical Informatics and the Internet in Medicine*, *31*(1), 45-52. https://doi.org/10.1080/14639230600552601.

Besold, T. (2023). From the kitchen into the wild: Chances and challenges for data-driven AI in 21st century gastronomy. *IEEE 39th International Conference on Data Engineering Workshops (ICDEW)*, Anaheim, CA (pp. 211-211). https://doi.org/10.1109/ICDEW58674.2023.00039.

Brehaut, L. (2024, March 22). *AI-generated cookbooks are flooding the market — and consumers have no idea before buying them*. National Post. https://nationalpost.com/life/food/ai-generated-books.

Brunsø, K., Birch, D., Memery, J., Temesi, Á., Lakner, Z., Lang, M., Dean, D., & Grunert, K. G. (2021). Core dimensions of food-related lifestyle: A new instrument for measuring food involvement, innovativeness and responsibility. *Food Quality and Preference*, *91*:104192. https://doi.org/10.1016/j.foodqual.2021.104192.

Califano, G., & Spence, C. (2024). Assessing the visual appeal of real/AI-generated food images. *Food Quality and Preference*, *116*:105149. https://doi.org/10.1016/j.foodqual.2024.105149.

Dedeoglu, B. B. (2019). Are information quality and source credibility really important for shared content on social media? The moderating role of gender. *International Journal of Contemporary Hospitality Management*, *31*(1), 513-534. https://doi.org/10.1108/IJCHM-10-2017-0691.

Gill, A., & Bowles, P. T. (2024, Feb 12). *Find out what happened when ChatGPT cooked dinner for TOM PARKER BOWLES.* Daily Mail. https://www.dailymail.co.uk/home/you/article-13046659/ChatGPT-TOM-PARKER-BOWLES-recipes.html.

Godwin, R. (2014, May 8). Spirit of the age: Why the Negroni is London's drink of the decade. *The Standard*. https://www.standard.co.uk/going-out/bars/spirit-of-the-age-why-the-negroni-is-londons-drink-of-the-decade-9336152.html

Heil, E., & Harwell, D. (2024, March 7). *AI recipes are everywhere — but can you trust them?* The Washington Post. https://www.washingtonpost.com/food/2024/03/07/ai-recipes-generative-instacart-food-photos/.

Huang, M. H., & Rust, R. T. (2018). Artificial intelligence in service. *Journal of Service Research*, *21*(2), 155-172. https://doi.org/10.1177/1094670517752459.

Hwang, A., Badreddine, S., Gifford, F., & Besold, T. R. (2023). Recipe 2.0: Information presentation for AI-supported culinary idea generation. In *Proceedings of the 14th International Conference on Computational Creativity (ICCC)*.

Jacovi, A., Marasović, A., Miller, T., & Goldberg, Y. (2021, March). Formalizing trust in artificial intelligence: Prerequisites, causes and goals of human trust in AI. In *Proceedings of the 2021 ACM*

Conference on Fairness, Accountability, and Transparency (pp. 624-635). https://doi.org/10.1145/3442188.3445923.

Ji, Z., Lee, N., Frieske, R., Yu, T., Su, D., Xu, Y., Ishii, E., Bang, Y. J., Madotto, A., & Fung, P. (2023). Survey of hallucination in natural language generation. *ACM Computing Surveys*. *55*(12), 1-38. https://doi.org/10.1145/3571730.

Kansaksiri, P., Panomkhet, P., & Tantisuwichwong, N. (2023). Smart cuisine: Generative recipe & ChatGPT powered nutrition assistance for sustainable cooking. *Procedia Computer Science*, *225*, 2028-2036. https://doi.org/10.1016/j.procs.2023.10.193.

Kim, J., Giroux, M., & Lee, J. C. (2021). When do you trust AI? The effect of number presentation detail on consumer trust and acceptance of AI recommendations. *Psychology & Marketing*, *38*(7), 1140-1155. https://doi.org/10.1002/mar.21498.

Liu, F., & Lee, Y. H. (2024). Virtually responsible? Attribution of responsibility toward human vs. virtual influencers and the mediating role of mind perception. *Journal of Retailing and Consumer Services*, *77*:103685. https://doi.org/10.1016/j.jretconser.2023.103685.

McBride, A. E., & Flore, R. (2019). The changing role of the chef: A dialogue. *International Journal of Gastronomy and Food Science*, *17*:100157. https://doi.org/10.1016/j.ijgfs.2019.100157.

McMahon, N. (2023, August 11). *I asked AI to conjure a recipe using fridge ingredients, and now I make it on repeat.* The Sydney Morning. https://www.smh.com.au/goodfood/recipes/will-ai-spell-the-death-of-cookbooks-we-put-chatgpt-to-the-recipe-test-20230810-p5dvg0.html.

Rupprecht, C. D., Fujiyoshi, L., McGreevy, S. R., & Tayasu, I. (2020). Trust me? Consumer trust in expert information on food product labels. *Food and Chemical Toxicology*, *137*:111170. https://doi.org/10.1016/j.fct.2020.111170

Samuelson, P. (2023). Generative AI meets copyright. *Science*, *381*(6654), 158-161. https://doi.org/10.1126/science.adi0656.

Schwerter, F., & Zimmermann, F. (2020). Determinants of trust: The role of personal experiences. *Games and Economic Behavior*, *122*, 413-425. https://doi.org/10.1016/j.geb.2020.05.002

Statista Search Department (December 15, 2022). Most popular Italian dishes in Great Britain (GB) as of Q3 2022. Statista. https://www.statista.com/statistics/1351857/most-popular-italian-dishes-in-great-britain/.

Westerman, D., Spence, P. R., & Van Der Heide, B. (2014). Social media as information source: Recency of updates and credibility of information. *Journal of Computer-Mediated Communication*, *19*(2), 171-183. https://doi.org/10.1111/jcc4.12041.

Wiener, J. L., & Mowen, J. C. (1986). Source credibility: On the independent effects of trust and expertise. *Advances in Consumer Research*, *13*(1), 306-310.

Zoran, A. (2019). Cooking with computer: The vision of digital gastronomy. *Proceedings of the IEEE*, *107*(8), 1467-1473. https://doi.org/10.1109/JPROC.2019.2925262.

Supplementary Material

Recipes used as stimuli

Negroni

Ingredients (1 serving):

- 1 ounce gin
- 1 ounce Campari
- 1 ounce sweet vermouth
- Garnish: orange peel

Steps:

1. Add the gin, Campari and sweet vermouth to a mixing glass filled with ice, and stir until well-chilled.
2. Strain into a rocks glass over a large ice cube.
3. Garnish with an orange peel.

White Negroni

Ingredients (1 serving):

- 1 1/2 ounces gin
- 1 ounce Lillet Blanc
- 1/2 ounce Suze gentian liqueur
- Garnish: lemon peel

Steps:

1. Add the gin, Lillet Blanc and Suze to a mixing glass with ice, and stir for until well-chilled.
2. Strain into a rocks glass over fresh ice.
3. Garnish with a lemon peel.

Lasagna Bolognese

Ingredients (6 servings):

- 12 ounces oven-ready lasagne
- 3 tablespoons extra-virgin olive oil
- 3 cups water
- 3 tablespoons butter
- 6 ounces chopped onions

- 9 ounces ground beef
- 1/4 cup tomato paste
- 3 tablespoons flour
- 2 3/4 ounces chopped celery
- 6 ounces ground pork
- Salt (as needed)
- 3/4 cup milk
- 3 ounces chopped carrots
- 6 tablespoons dry white wine
- Pepper (as needed)
- 3/4 cup Parmesan cheese

Steps:

1. Prep vegetables and brown meat: Finely mince onions, celery, and carrots. Sauté in olive oil until translucent. Add ground beef and pork, brown the meat, then deglaze with white wine until reduced.
2. Prepare béchamel sauce: Melt butter, whisk in flour to create a roux. Gradually add warm milk, whisking until thickened. Remove from heat.
3. Layer Lasagne: In a baking dish, layer béchamel, meat sauce, and uncooked lasagne sheets, repeating until ingredients are used up, ending with a layer of béchamel. Sprinkle parmesan cheese over the top.
4. Bake: Preheat oven to 350°F (175°C). Bake uncovered for 30-35 minutes, until golden brown and bubbling.
5. Rest and Serve: Let lasagne stand for 10-15 minutes before serving to set. Alternatively, cool, portion, and reheat individual servings as needed.

Tomato-Bacon Jam Lasagna

Ingredients (6 servings):

Tomato-Bacon Jam:

- 12 ounces bacon, minced or ¼ sliced
- 2 tablespoons minced garlic
- 2 tablespoons Dijon mustard
- 1 tablespoon brown sugar
- 1/2 teaspoon crushed red pepper flakes
- 1 bay leaf

- 1 pound 8 ounces yellow onion, ¼-in dice
- 2 pounds tomatoes, crushed or diced
- 1 tablespoon Worcestershire sauce
- 1/2 cup maple syrup
- 1/8 teaspoon ground black pepper

Lasagne Assembly:

- 6 sheets oven-ready lasagne sheets
- 9 ounces shredded Cheddar cheese
- 3 large tomatoes, sliced ¼ inch thick
- 1/2 cup panko breadcrumbs
- 1 tablespoon thyme leaves, fresh
- 1/2 tablespoon olive oil
- 1 1/2 quarts tomato-bacon jam

Steps:

1. Prepare tomato-bacon jam: Render bacon until crispy, then set aside. Sauté onion until softened, add garlic until aromatic. Stir in tomatoes, mustard, Worcestershire, sugar, maple syrup, pepper flakes, black pepper, and bay leaves. Simmer for 30 minutes, then stir in reserved bacon. Cool before use.
2. Preheat and Layer: Preheat oven to 375°F (190°C). Spread a layer of tomato-bacon jam in a baking dish. Layer lasagne sheets, tomatoes, tomato-bacon jam, and cheddar cheese, repeating three more times.
3. Bake covered: Cover dish with foil and bake for 50 minutes.
4. Prepare herbed panko: Mix panko, olive oil, and thyme leaves.
5. Final Bake and Serve: Remove foil, sprinkle herbed panko over lasagne, arrange remaining tomato slices. Bake uncovered for 10-15 minutes until golden brown. Rest for 30 minutes, then cut into 6 portions and serve.

Supplementary tables and figures

Table S1. Questions and items used in the study.

Question/Item	Range
How much experience do you have with cooking (Dish preparation)?	1 (“None”) – 5 (“Expert”)
How much experience do you have with mixing (Cocktail preparation)?	1 (“None”) – 5 (“Expert”)
How original does this recipe seem to you?	1 (“Not at all”) – 7 (“Extremely”)
How confident do you feel about successfully executing this recipe?	1 (“Not at all”) – 7 (“Extremely”)
To what extent do you trust the provided guidelines for this recipe?	1 (“Not at all”) – 7 (“Completely”)
How pleasant do you anticipate the taste of this drink/food to be?	1 (“Very unpleasant”) – 7 (“Very pleasant”)
How pleasant do you anticipate the smell of this drink/food to be?	1 (“Very unpleasant”) – 7 (“Very pleasant”)
How likely are you going to use this recipe to make Negroni/lasagna for your friends?	1 (“Very unlikely”) – 7 (“Very likely”)
I like to try new foods that I have never tasted before.	1 (“Strongly agree”) – 5 (“Strongly disagree”)
I love to try recipes from different countries.	1 (“Strongly agree”) – 5 (“Strongly disagree”)
Recipes and articles on food from other culinary traditions encourage me to experiment in the kitchen.	1 (“Strongly agree”) – 5 (“Strongly disagree”)
I like to try out new recipes.	1 (“Strongly agree”) – 5 (“Strongly disagree”)
I look for ways to prepare unusual meals.	1 (“Strongly agree”) – 5 (“Strongly disagree”)

Note: The last 5 items are from the “innovation” dimension of the Food Related Lifestyle (Brunsø et al., 2021).

Table S2. Full ANOVA results.

Dependent Variable	Independent variable	*F*	*p*	η^2
Trust in the guidelines	AI	3.97	.191	.020
	Innovative	122.83	< .001	.382
	Food	10.39	.006	.050
	AI × Innovative	10.18	.007	.049
	AI × Food	0.52	> .999	.003
	Innovative × Food	20.01	< .001	.091
	AI × Innovative × Food	0.00	> .999	< .001
Expected taste	AI	0.80	> .999	.004
	Innovative	94.63	< .001	.322
	Food	16.04	< .001	.075
	AI × Innovative	2.73	.400	.014
	AI × Food	0.94	.999	.005
	Innovative × Food	17.01	< .001	.079
	AI × Innovative × Food	0.11	> .999	.001
Expected smell	AI	0.72	> .999	.004
	Innovative	83.34	< .001	.295
	Food	28.46	< .001	.125
	AI × Innovative	2.90	.360	.014
	AI × Food	1.78	.736	.009
	Innovative × Food	22.27	< .001	.101
	AI × Innovative × Food	0.23	> .999	.001
Willingness to use recipe	AI	0.05	> .999	< .001
	Innovative	132.06	< .001	.399
	Food	0.91	> .999	.005
	AI × Innovative	3.01†	.340	.015
	AI × Food	0.02	> .999	< .001
	Innovative × Food	14.26	< .001	.067
	AI × Innovative × Food	0.51	> .999	.003

Note: *df*(1, 199) for each effect; reported *p*-values are Bonferroni-corrected.

Table S3. Replication of ANOVA results for "Trust in the guidelines" using a random-effects regression model, with continuous scores of item originality and confidence about successfully executing the recipe replacing experimental factors.

	Estimate	*SE*	*z*	*p*
AI	1.109	0.704	1.58	.461
Originality	0.278	0.091	3.06	.009
Confidence	0.621	0.084	7.38	< .001
AI × Originality	-0.440	0.136	-3.23	.005
AI × Confidence	-0.230	0.124	-1.86	.253
Originality × Confidence	-0.044	0.017	-2.64	.033
AI × Originality × Confidence	0.071	0.025	2.87	.016
(Intercept)	1.923	0.467	4.11	< .001

Note: Reported *p*-values are Bonferroni-corrected.