



## Experiments with AI and Mind Genomics: Vegetarian Restaurants, Synthetic Mind-Sets and New Vistas for Understanding Thoughts About Food

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### Abstract

The paper uses a novel application of artificial intelligence to explore a real-world problem, that of positing the existence of a new vegetarian restaurant as well as the existence of three, yet-to-be defined mind-sets of prospective patrons of this hypothetical restaurant. The AI is told only that there are three mind-sets of patrons. The AI is instructed to identify the messaging and underlying thoughts of the three mind-sets. The paper shows the ease with which AI can synthesize ideas about food and food service preferences of individuals, using simple requests that can be easily tailored to 'study' a topic.

**Keywords:** Artificial Intelligence; ChatGPT; NaCl

### Introduction

During the past two decades the topic of artificial intelligence has become increasingly popular, whether discussions about its feasibility [1], or even now the degree to which it can be applied [2]. The introduction of ChatGPT has made AI accessible to all people at a low price, further promoting what can only be called a stampede of investigations in many areas [3,4].

This paper emerges from the recognition that AI provides a new opportunity for an emerging science, Mind Genomics. The idea from the paper originated in an unexpected result, when working on Mind Genomics namely the creation of a prompt to AI that was far more detailed than expected, with the prompt producing simulated answers of much greater depth than hitherto had been the case.

Mind Genomics emerged from the combination of psychophysics, statistics and consumer research. The origin of Mind Genomics can be traced to psychophysics, which was first interested in the relation between the physical, measurable world, and the world of private sensory perception [5]. The effort was to create a way to measure subjective experience, much as a scientist might measure actual physical quantities. This effort led author HRM to expand

the basic experiment to studies of mixtures, first mixtures of simple tastants, chemicals like sucrose, NaCl, tartaric acid, and quinine [6]. Those early experiments morphed into studies of foods [7], where mixtures are a must, and then into mixtures of ideas [8]. The link with psychophysics evolved to the desire to measure the strengths of simple ideas by measuring responses to vignettes, combinations of ideas [9].

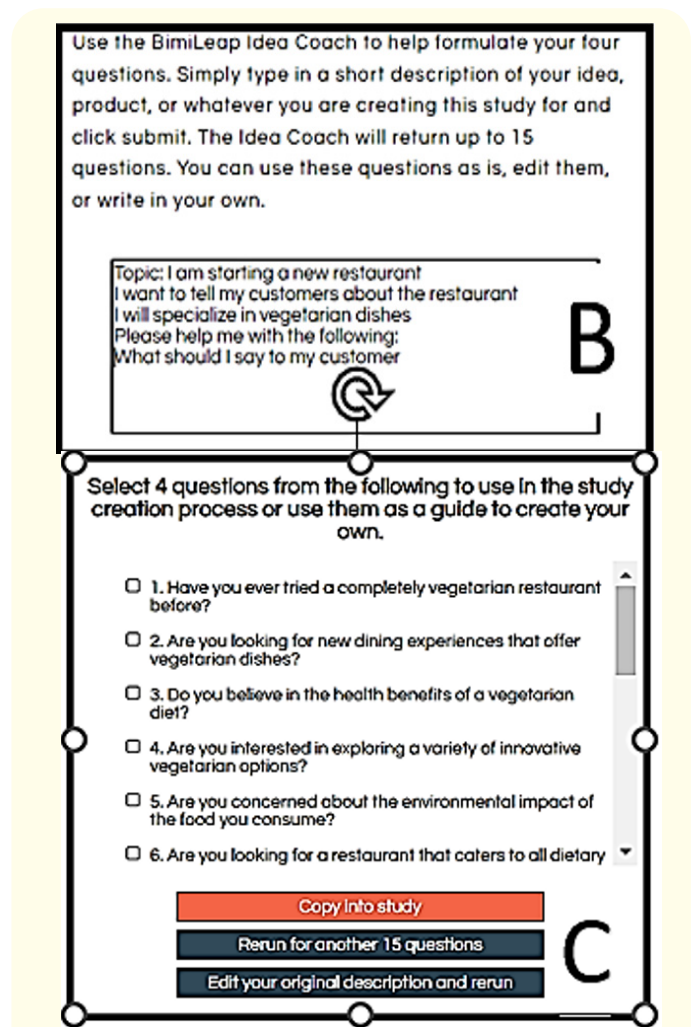
The links with experimental design drove the creation of a system which automatically combined separate ideas into the aforementioned vignettes, with the property that each set of combinations comprised precisely 24 vignettes, with each element or message appearing five times in the set of 24 and absent 19 times. The underlying 'novelty' of the approach was that each respondent evaluated a unique set of vignettes, and that each set of vignettes for a given individual sufficed for a complete statistical analysis using OLS [ordinary least squares] regression [10].

The final link was to consumer research, which focused on measuring the world 'as is', rather than creating experiment-based manipulations. It was the 'world of the ordinary', the world of the granular, which became important. Following this path, Mind Genomics veered away from experiments which changed the person, and towards experiments which mixed together ideas in novel ways.

The final part of the history relevant to the paper presented here comes from the creation of a templated system to do experiments, that system publicly available in [www.BimiLeap.com](http://www.BimiLeap.com). The entire process of BimiLeap, the platform for Mind Genomics, consisted of a set of screens to be filled out by the user [e.g., researcher, student], the experience with that screen, and the use of AI to help the user.

Figure 1 Panel A shows the screen requesting the user to think of four questions which tell a story about a topic. When confronted with this task, many users simply abandon the task, perhaps because today’s education does not stress critical thinking [11], and thus the focus on creating questions and later answers to those questions becomes stressful. Whatever the cause, the requirement to come up with four question led to distress, and that distress led to the incorporation of AI [Idea Coach] as an aid to provide questions and answers once the AI in Idea Coach was provided with a simple specification [Figure 1, Panel B]. The specification presented to Idea Coach, was not constrained to follow any form. Idea Coach was empowered by Chat GPT. The output as a series of questions which emerged as responses of Idea Coach. [Figure 1, Panel C]. The user was able to select questions, put the selected questions into the Mind Genomics study with or without editing, or even run the request again for more questions, and finally change the AI box, to create a slightly different question. The successful output was defined as the ability to received and incorporate four different questions.

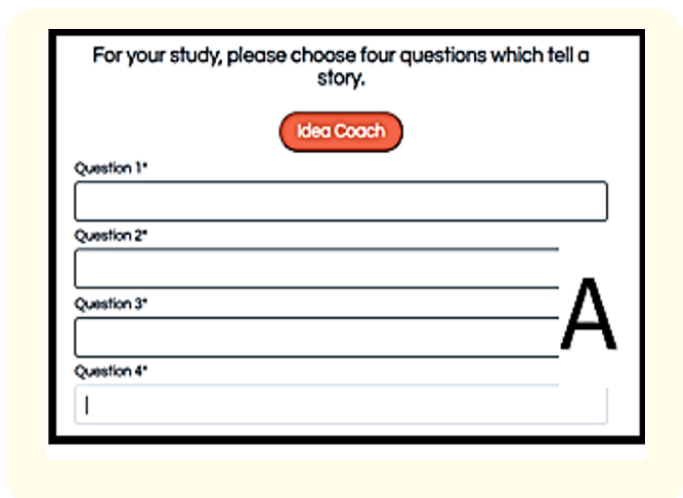
The approach presented schematically in Figure 1 led to a variety of different types of studies, ranging from foods and obesity [12,13] to economics [14] and grade school education [15], etc. The approach of presenting the AI with a specific scenario generated sets of 15 questions, with the ability to self-educate by repeating the request to provide questions and answers.



**Figure 1:** Schematic of the Mind Genomics process augmented by AI (Idea Coach). Panel A shows the screen with four questions. Panel B shows the Idea Coach input, written by the user. Panel C shows six of the 15 questions generated by Idea Coach using AI, and at the bottom of the panel, the instructions either to copy the question into the study (top), re-run the Idea Coach for another set of 15 questions [middle] or edit the request, and re-submit (bottom).

The remaining steps for Mind Genomics consisted of generating four answers to each question, creating a simple rating scale, and then executing the study with actual people, so-called respondents. Each respondent would be shown 24 combinations of the elements, each combination (called ‘vignette’) comprising a minimum of two elements and a maximum of four elements. These elements were answers to the questions, answers provided either by the user, or by Idea Coach.

The actual process, viz., the empirical study, collected the ratings of each respondent to the 24 vignettes. For each respondent, the vignettes were set up so that it would be straightforward and



statistically correct to do an individual-level analysis using OLS [ordinary least-squares] regression. The final step in the statistical analysis used k-means clustering [16] to separate the respondents into mutually exclusive groups. These clusters were called mind-sets. From many studies it became obvious that working with people in this manner would reveal clearly different, easy-to-interpret mind-sets [17].

Emerging again and again was the observation that using this simple method of testing combinations would reveal meaningful different groups of people. The interpretation of the groups

came from identifying the elements or answers in the study which scored highest for each cluster or mind-set. After the coefficients for the different clusters were sorted from high to low, the mind-set emerged clearly, and in most cases the name for the mind-set suggested itself from the commonality of the strong-performing elements. Table 1 shows an example from a study on joining a health club to maintain weight. The mind-sets or clusters are columns, the elements or answers are rows. The strong performing elements are shaded. It is these elements whose common meaning define the mind-sets.

	<b>Dependent variable = Fits ME (ratings 5 and 4 transformed to 100) Strong performing elements are shaded Coefficients 1 or lower are not shown</b>	<b>Total</b>	<b>Mind-Set 1 of 3</b>	<b>Mind-Set 2 of 3</b>	<b>Mind-Set 3 of 3</b>
	Base Size	120	52	32	36
	Mind-Set 1 (Focus on Better Living)				
B1	Emotion: Relieve low self-esteem and body dissatisfaction.	18	27	21	4
B2	Emotion: Improve mood and psychological well-being.	15	24	21	
B4	Emotion: Regain control over body and health.	17	24	20	3
B3	Emotion: Positive body image.	12	22	15	
C4	Possible problem: Pressure by societal beauty standards...experience body image dissatisfaction.	15	22		22
	Mind-Set 2 (Focus on Feeling Better about Oneself)				
D3	Obstacle: Maintain consistent motivation and discipline	10		22	17
B1	Emotion: Relieve low self-esteem and body dissatisfaction.	18	27	21	4
B2	Emotion: Improve mood and psychological well-being.	15	24	21	
	Mind-Set 3 (Focus on negatives, e.g., problems)				
A4	Required: Meet weight requirements for medical or professional reasons.	18	15	18	23
C4	Possible problem: Pressure by societal beauty standards...experience body image dissatisfaction.	15	22		22
D2	Obstacle: Hard to fit exercise into busy schedule	14	4	19	22
A1	Required: Improve overall health. reduce the risk of chronic diseases.	14	7	17	21
	Not strong for any mind-set				
A2	Required: Enhance physical appearance.. boost self-confidence.	14	11	17	16
A3	Required: Increase energy.. physical and mental health	12	6	14	17
C1	Possible problem: May create disordered eating patterns	15	19	5	19
C2	Possible problem: Obsession with achieving a specific body shape or size.	10	16		13
C3	Possible problem: Neglect mental health or self-care, in pursuit of weight loss.	13	19		19
D1	Obstacle: Hindered by cravings and food addictions	9		15	18
D4	Obstacle: Balance nutrition with taste preferences	12	4	16	20

**Table 1:** How three mind-sets differ in their reaction to different messages about joining a health club.

**Moving the paradigm to AI**

Up to this point, the Mind Genomics effort has focused primarily on the response of people to messages or ‘elements’, these messages combined into vignettes, the vignettes then evaluated by real

people. The ‘important’ information in Mind Genomics comes from identifying which specific messages drive strong reactions, and the nature of groups of respondents, real people, who are similar to each other in the pattern of their responses to these messages.

The underlying thinking about mind-sets has, up to now, focused on the assumption that mind-sets result from the way people think about a topic, not from who the people are. Thus, each of the empirical studies of a topic become interesting because it shows how people react to specific messages from empirical research, something up to then not really easy to predict, and then as a bonus shows the existence of interpretable patterns.

The introduction of AI to Mind Genomics at the start of the session through Idea Coach revealed the power of AI to understand the instructions given to it when setting up a set of questions. All that was needed was for the user to type in the relevant information, and within 10-30 seconds a set of 15 questions would emerge. Furthermore, the questions changed from iteration to iteration, and changed when the introductory prompt changed [see Figure 1, Panel B].

The important breakthrough motivating this paper came from efforts to get deeper experience with the request to the AI embed-

ded in the Idea Coach. This breakthrough was an unintended consequence, albeit as it turned out, a major positive one. Rather than simply providing the AI with a topic and a short writeup, the effort expanded a bit, with the request to provide both questions and answers when generating the initial output. That is, rather than asking people to answer simple questions, the effort was placed on requesting AI to provide a full answer.

Table 2 shows an example of this effort. The squib provided to Idea Coach is similar to the introductions provided to previous efforts, other than being more extensive. The more extensive information comprises statements about what the topic is [a new restaurant, specialize in vegetable dishes], and the specific requests in numbered steps [what to say, what will be thought, what will be done, who the customer is]. The results suggest a ‘deep understanding’ of the topic, an understanding that only a human being could have, or perhaps could express as well.

Topic [information provided to Idea Coach]
<b>I am starting a new restaurant</b>
<b>I want to tell my customers about the restaurant</b>
<b>I will specialize in vegetarian dishes</b>
<b>Please help me with the following:</b>
<b>1. What should I say to my customer</b>
<b>2. Why am I saying that to my customer</b>
<b>3. What is the customer thinking when I say that</b>
<b>4. What will the customer do as a next step</b>
<b>My customer is a normal weight woman, age 45</b>
AI [Idea Coach] returns with the following sentences to address the request
“Welcome to our restaurant! We pride ourselves in offering a wide variety of delicious vegetarian dishes.”
I am saying this to inform my customers about the main focus of our restaurant and set their expectations right from the start.
The customer may be thinking that this restaurant would be a great option for someone who prefers vegetarian or plant-based meals.
The customer may ask for more information regarding the vegetarian options available and seek recommendations from the staff.

**Table 2:** Request by a human being to AI-powered Idea Coach about a new restaurant [bold], and the response by AI in the form of four statements.

**Instructing AI to identify ‘mind-sets’ in the topic**

Table 2 suggests that it may be possible for AI to provide information that simulates what a human being might answer. The answers are precisely those emerging from the AI effort, without any editing. Given this promising start, the next step in this particular investigation dealt with the possibility of AI uncovering mind-sets. Up to now, the mind-sets were thought to comprise building blocks of meaning residing in people. There was nothing to suggest that these mind-sets have the properties of ‘primaries’, such as the red,

yellow and blue primaries of the color system [18]. Rather, the conclusions were that these mind-sets do exist, but need people help them emerge. At the same time, however, there was the belief that these mind-sets exist across the world, albeit in different proportions, depending on the population that is being tested. That latter hypothesis, that the mind-sets transcend location but vary in distribution, was taken from the world of color, where all colors are the combination of these primaries, albeit in different proportions.

Table 3 shows the introduction to the second experiment. The information provided to the Idea Coach is the same type as the introduction to the first experiment, except that the specifics of the person being addressed by the restaurant owner is not stat-

ed. Rather, the AI is told that there are three mind-sets of people who will provide the answers. Furthermore, the AI is instructed to ' Make the results easy to understand, and really show how these three mind-sets differ deeply in their answers to the same issue and questions'.

<p>Topic: [Provided to Idea Coach]</p> <p>I am starting a new restaurant</p> <p>I want to tell my customers about the restaurant</p> <p>I will specialize in vegetarian dishes</p> <p>Please help me with the following:</p> <ol style="list-style-type: none"> <li>1. What should I say to my customer</li> <li>2. Why am I saying that to my customer</li> <li>3. What is the customer thinking when I say that</li> <li>4. What will the customer do as a next step</li> </ol> <p>I want to know the answer for THREE MIND-SETS in this topic, groups of people who think about the same topic very differently from each other, but otherwise to the outside world look exactly the same.</p> <p>I want to limit my answers to each of the three mind-sets</p> <p>Make the results easy to understand, and really show how these three mind-sets differ deeply in their answers to the same issue and questions.</p>
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**Table 3:** Instruction squib provided to the AI embedded in Idea Coach.

The AI embedded in Idea Coach returns with three clearly distinct mind-sets, intuitively matching what a person might believe to be the case. Indeed, it is quite possible that Table 4 would fail the Turing Test. It appears virtually impossible to differentiate the 'thinking' returned by AI from the normal thinking that a researcher might have when doing this type of study. Indeed, the description of mind-sets in Table 4 are powerful, convincing, and dramatically different from each other.

After the AI returns the three mind-sets, the study can be halted, and the researcher can log out of the program. At that point, the AI embedded in Idea Coach 'summarizes' each iteration, using a series of prompts built into the system. This study presents the summarization from only one iteration, introduced by Table 4. The researcher may have done dozens of iterations with different types of information written in the squib in order to see how the AI would react when the input information was varied. Figure 1, Panel C shows the options to run the Idea Coach repeatedly, changing the squib if that is desired.

The first summarization appears in Table 5. The summarization shows the themes, and the perspectives emerging from the AI results. There are four different themes emerging. For each theme, the summarization into perspectives shows the positive aspects (plus), the negative aspects (minus), and the novel, unexpected aspects (interesting). Once again, the AI provides this material automatically, as support for the researcher.

Table 6 shows how AI provides a sense of the audiences who would be interested in the topic [viz., the new restaurant], then those who might have some doubts and see alternative aspects, and finally those who would oppose the new restaurant. As before, the AI returns both with the suggestion of WHO, and then explanation of WHY, making the summarization a resource for learning and for teaching critical thinking.

The final summarization by AI presents information about what is missing [viz., new questions to ask] as well as suggestions for innovative products, services, and experiences. These appear in Table 7.



<p>Mind-set 1: Health-conscious individuals</p> <p>What should I say to my customers: “Welcome to our new vegetarian restaurant, where we specialize in healthy and delicious plant-based dishes”.</p> <p>Why am I saying that to my customers: Health-conscious individuals are likely to prioritize nutritious food options, and emphasizing the focus on vegetarian dishes assures them the availability of healthy choices.</p> <p>What is the customer thinking when I say that: The customer is likely to appreciate the emphasis on vegetarian dishes and anticipate a menu with plenty of health-conscious options.</p> <p>What will the customer do as a next step: The customer is likely to explore the menu, looking for specific options that align with their dietary preferences and health goals.</p> <p>Mind-set 2: Environmentalists and sustainability advocates</p> <p>What should I say to my customers: “Welcome to our new restaurant committed to sustainability! We pride ourselves on offering a menu full of vegetarian dishes that have a lower environmental impact”.</p> <p>Why am I saying that to my customers: Environmentalists and sustainability advocates prioritize minimizing their ecological footprint. By highlighting the restaurant’s focus on vegetarian food, which typically requires fewer resources, it appeals to this group’s principles.</p> <p>What is the customer thinking when I say that: The customer is likely to acknowledge the restaurant’s commitment to sustainability and feel encouraged to support an environmentally friendly establishment.</p> <p>What will the customer do as a next step: The customer is likely to appreciate the restaurant’s mission and may inquire further about the sourcing of ingredients, eco-friendly practices, or take note of any sustainability certifications.</p> <p>Mind-set 3: Food enthusiasts and epicureans</p> <p>What should I say to my customers: “Welcome to our new restaurant, where we have curated a menu focused exclusively on vegetarian dishes that are bursting with flavors and unique combinations”.</p> <p>Why am I saying that to my customers: Food enthusiasts are passionate about exploring new tastes and culinary experiences. Emphasizing the unique flavors and combinations of vegetarian dishes helps capture their interest.</p> <p>What is the customer thinking when I say that: The customer is likely intrigued by the promise of unique and delicious vegetarian dishes, sparking their curiosity and anticipation for an enjoyable dining experience.</p> <p>What will the customer do as a next step: The customer is likely to study the menu, looking for interesting and inventive vegetarian dishes that they may have never experienced before, and gladly try them.</p> <p>Note: The questions provided above directly correspond to the three mind-sets mentioned.</p>
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**Table 4:** The three mind-sets created by AI, and returned in the Idea Coach summarization.

<p>Themes</p> <p>Theme 1: Targeted Marketing</p> <ul style="list-style-type: none"> <li>- Customizing the message to appeal to specific mind-sets or target audiences.</li> </ul> <p>Theme 2: Health and Nutrition</p> <ul style="list-style-type: none"> <li>- Emphasizing the availability of healthy, nutritious, and plant-based options for health-conscious individuals.</li> </ul> <p>Theme 3: Sustainability and Environmental Impact</p> <ul style="list-style-type: none"> <li>- Highlighting the restaurant's commitment to sustainability and lower environmental impact for environmentalists and sustainability advocates.</li> </ul> <p>Theme 4: Culinary Experience</p> <ul style="list-style-type: none"> <li>- Promoting unique flavors and combinations of vegetarian dishes for food enthusiasts and epicureans.</li> </ul> <p>Perspectives</p> <p>Theme 1: Targeted Marketing</p> <p>Plus:</p> <ul style="list-style-type: none"> <li>- Increased effectiveness of marketing campaigns by tailoring messages to specific audiences.</li> <li>- Higher likelihood of attracting the desired customer base.</li> <li>- Ability to segment the market and target niche markets more effectively.</li> </ul> <p>Minus:</p> <ul style="list-style-type: none"> <li>- Potential for overlooking potential customers outside of the targeted audiences.</li> <li>- Increased costs and effort associated with creating multiple marketing messages.</li> </ul>
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<p>- May face challenges in accurately identifying and understanding the target audiences' preferences and needs.</p> <p>Interesting:</p> <ul style="list-style-type: none"> <li>- Can use data analytics and technology to gather insights and personalize marketing messages.</li> <li>- Provides an opportunity for creative and innovative marketing strategies.</li> <li>- Enables the establishment of a strong brand image in specific market segments.</li> </ul> <p>Theme 2: Health and Nutrition</p> <p>Plus:</p> <ul style="list-style-type: none"> <li>- Appeals to the growing number of health-conscious consumers.</li> <li>- Aligns with the trend of plant-based diets and sustainability.</li> <li>- Allows the restaurant to establish itself as a go-to option for individuals seeking healthy and nutritious meals.</li> </ul> <p>Minus:</p> <ul style="list-style-type: none"> <li>- Limited appeal to customers who are not primarily focused on health and nutrition.</li> <li>- Potentially higher ingredient costs and limited menu options compared to traditional restaurants.</li> <li>- May require educating and convincing customers about the benefits of a plant-based diet.</li> </ul> <p>Interesting:</p> <ul style="list-style-type: none"> <li>- Can collaborate with nutritionists or wellness experts to create specialized menus.</li> <li>- Provides an opportunity to innovate and introduce unique plant-based dishes.</li> <li>- Builds a reputation as a restaurant that promotes well-being and healthy lifestyle choices.</li> </ul> <p>Theme 3: Sustainability and Environmental Impact</p> <p>Plus:</p> <ul style="list-style-type: none"> <li>- Appeals to environmentally conscious consumers who prioritize sustainability.</li> <li>- Caters to the increasing demand for businesses committed to reducing their environmental footprint.</li> <li>- Can implement eco-friendly practices, such as using compostable packaging or sourcing local ingredients.</li> </ul> <p>Minus:</p> <ul style="list-style-type: none"> <li>- Potential for higher costs associated with sustainable practices and sourcing eco-friendly materials.</li> <li>- Must maintain consistency in sustainability efforts to avoid being perceived as greenwashing.</li> <li>- May face criticism or scrutiny if not meeting customers' expectations in terms of sustainability.</li> </ul> <p>Interesting:</p> <ul style="list-style-type: none"> <li>- Can build partnerships with local organizations or initiatives focused on sustainability.</li> <li>- Opportunities to create a unique dining experience by incorporating eco-friendly elements into the restaurant's design.</li> <li>- Provides a platform to educate customers about the importance of sustainability and encourage positive behavioral changes.</li> </ul> <p>Theme 4: Culinary Experience</p> <p>Plus:</p> <ul style="list-style-type: none"> <li>- Appeals to food enthusiasts who enjoy exploring new flavors and culinary experiences.</li> <li>- Differentiates the restaurant from competitors by offering unique vegetarian dishes.</li> <li>- Can attract customers who are not necessarily vegetarian but interested in trying new and diverse food options.</li> </ul> <p>Minus:</p> <ul style="list-style-type: none"> <li>- Limited appeal to individuals who prefer more traditional or familiar flavors.</li> <li>- May require a higher level of culinary expertise to create innovative and standout dishes.</li> <li>- Potential for higher ingredient costs and difficulty in sourcing unique ingredients.</li> </ul> <p>Interesting:</p> <ul style="list-style-type: none"> <li>- Can collaborate with renowned chefs or host special events to showcase the culinary expertise.</li> <li>- Can incorporate storytelling and narratives around the inspiration behind each dish.</li> <li>- Provides an opportunity to experiment with different cooking techniques and international cuisines.</li> </ul>
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**Table 5:** AI summarization into themes, and perspectives on those themes.

<p>Interested Audiences</p> <ol style="list-style-type: none"> <li>1. Health-conscious individuals: This audience is likely to be interested in questions related to the health benefits of vegetarian food and nutritional information.</li> <li>2. Environmentalists and sustainability advocates: This audience is likely to be interested in questions regarding the environmental impact of food choices and the restaurant's commitment to sustainable practices.</li> <li>3. Food enthusiasts and epicureans: This audience is likely to be interested in questions that highlight the unique flavors, combinations, and culinary experiences offered by vegetarian dishes. They may appreciate exploring new tastes and ingredients.</li> </ol> <p>Alternative Viewpoints</p> <p>Mind-set 1: Health-conscious individuals</p> <p>Alternative viewpoint: Some health-conscious individuals may believe that a vegetarian restaurant does not necessarily guarantee healthier options and may prefer a restaurant that offers a wider range of balanced menu choices, including both vegetarian and non-vegetarian dishes.</p> <p>Mind-set 2: Environmentalists and sustainability advocates</p> <p>Alternative viewpoint: Some environmentalists and sustainability advocates may believe that a vegetarian restaurant alone is not enough to address the ecological impact of the food industry. They may argue that a more holistic approach, such as using locally sourced and organic ingredients, is necessary for true sustainability.</p> <p>Mind-set 3: Food enthusiasts and epicureans</p> <p>Alternative viewpoint: Some food enthusiasts and epicureans may have preconceived notions that vegetarian dishes are less flavorful compared to those with meat. They may require additional convincing, or evidence of the tantalizing flavors and unique combinations offered by the vegetarian dishes at the restaurant.</p> <p>Opposing Audiences</p> <ol style="list-style-type: none"> <li>1. Carnivores: This group of individuals may oppose the topic of vegetarian restaurants because they prefer meat-based dishes and may not find the options appealing or satisfying. They might argue that vegetarian food lacks protein or essential nutrients found in meat.</li> <li>2. Traditionalists: Some individuals who are rooted in traditional culinary practices or cultural norms may oppose the topic of vegetarian restaurants. They may believe that a meal without meat is incomplete or that vegetarianism goes against long-standing traditions or beliefs.</li> <li>3. Skeptics: Skeptics may oppose the topic of vegetarian restaurants due to skepticism or misconceptions about the health benefits, taste, or satiety of vegetarian food. They may doubt that vegetarian dishes can be as flavorful or filling as those with meat.</li> <li>4. Fast-food enthusiasts: This group of individuals may oppose the topic of vegetarian restaurants because they often prioritize convenience and speed over health or environmental concerns. They may prefer meat-based fast-food options and may not be interested in exploring vegetarian alternatives.</li> <li>5. Farmers and livestock industry supporters: Individuals with a vested interest in the livestock industry may oppose vegetarian restaurants, as the promotion of vegetarianism and plant-based diets can be seen as a threat to their livelihoods and the industry they support. They may argue that vegetarianism negatively impacts agriculture and rural communities.</li> </ol>
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**Table 6:** AI summarization of the interested audiences, the audience with alternative viewpoints, and the opposing audiences.



## What is missing

1. What are the specific healthy and nutritious options available on the menu?
2. What are the specific practices and initiatives the restaurant undertakes to ensure sustainability?
3. What are some specific unique flavors and combinations offered in the vegetarian dishes?
4. What are the potential dietary restrictions or preferences of the customers?
5. Are there any gluten-free, vegan, or other specialized options available?
6. Are there any specific nutritional benefits associated with the vegetarian dishes offered?
7. Are there any partnerships or collaborations with local farmers or suppliers to support the restaurant's mission?
8. What other amenities or services does the restaurant offer, such as outdoor seating or delivery options?
9. Are there any reviews or testimonials from previous customers that can attest to the quality or taste of the vegetarian dishes?
10. Are there any upcoming events or promotions related to vegetarian cuisine?

## Innovations

## Theme 1: Targeted Marketing

- Personalized meal plans based on individual dietary preferences and health goals.
- Loyalty programs that offer exclusive discounts and promotions based on customer preferences and purchasing history.

## Theme 2: Health and Nutrition

- Offering nutrition consultations and workshops to educate customers on incorporating plant-based options into their diets.
- Introducing a range of fresh juice and smoothie options, using locally sourced fruits and vegetables.

## Theme 3: Sustainability and Environmental Impact

- Implementing a zero-waste policy, using compostable or biodegradable packaging and utensils.
- Partnering with local farms and suppliers who follow sustainable farming practices.

## Theme 4: Culinary Experience

- Hosting vegetarian cooking classes and workshops to teach customers how to recreate restaurant dishes at home.
- Introducing a seasonal tasting menu that showcases the restaurant's most innovative and unique vegetarian creations.

**Table 7:** AI summarization showing new questions to ask [what is missing] and new opportunities for the restaurant [innovations].

## Discussion and Conclusions

The world of AI is expanding dramatically, especially with the introduction of the widely available Chat GPT3.5. The use of AI in research opens up many new opportunities in the world of foods [20,21], as well as in many areas where science, business and even education may touch each other [22]. Certainly the results presented here might well have been obtained with human beings, perhaps in a matter of weeks and months, as the researcher[s] studied the literature, developed hypotheses, selected the correct stimulus materials, and finally executed the study. Most likely, although not certainly, results such as those uncovered here might well have

emerged. From the perspective of author HRM in this paper, the corresponding author, with 55 years of professional experience, there appears to be nothing awry in this study, nothing that makes 'little or no sense,' viz., nothing that would make one stand back and doubt the results.

Given this type of performance, it is interesting to note that part of this effort with AI that have not been reported, in the interest of space, and at the risk of numbing the reader:

- Type of restaurant: Instead of vegetarian, try any of a dozen different cuisines
- Different ethnic backgrounds of the person opening the restaurant.
- Number of mind-sets: Instead of three mind-sets, try one, two, three, four and five, respectively, simply to get a sense of how AI is able to parse the existing information into smaller, more cohesive groups or mind-sets.
- Description of who the people are: Who are the target individuals addressed by the owner of the prospective restaurant. It is quite easy to specify different ethnic backgrounds, different health concerns, body states, and so forth.
- Different places where the restaurant will be located.

The important thing to note is that one requires only about a minute or two to modify the squib, and re-run the request. The reality, therefore, is that with this new world of AI, the user can learn to think critically, try out hypothesis, get AI conclusions in an ordered fashion, and as a result gain a rapid overview of a field in perhaps a day or two, that overview supported by an Excel file [the 'Idea Book'] which can become part of one's library at the individual level, or deposited in a central library on the internet for the education of world.

## Bibliography

1. Fowler A. "The role of AI-based technology in support of the knowledge management value activity cycle". *The Journal of Strategic Information Systems* 9 (2000): 107-128.
2. Abdullah M., et al. "ChatGPT: Fundamentals, applications and social impacts". In: Ninth International Conference on Social Networks Analysis, Management and Security (SNAMS) (2022): 1-8.
3. Wu T., et al. "A brief overview of ChatGPT: The history, status quo and potential future development. IEEE/CAA". *Journal of Automatica Sinica* 10 (2023): 1122-1136.
4. Ibna-Seraj PM and Oteir I. "Playing with AI to Investigate Human-Computer Interaction Technology and Improving Critical Thinking Skills to Pursue 21<sup>st</sup> Century Age". *Education Research International* (2022).
5. Stevens SS. "The psychophysics of sensory function". *American Scientist* 48 (1960): 226-253.
6. Moskowitz HR. "Intensity scales for pure tastes and for taste mixtures". *Perception and Psychophysics* 9 (1971): 51-56.
7. Moskowitz HR. "R&D-driven product evaluation in the early stage of development". *Developing New Food Products for a Changing Marketplace*; Brody, A.L, Lord, J.B, Eds, CRC Press, Taylor and Francis Group, Boca Raton FL, USA (2000): 277-328.
8. Moskowitz HR., et al. "Founding a new science: Mind Genomics". *Journal of Sensory Studies* 21 (2006): 266-307.
9. Porretta S., et al. "Mind Genomics (Conjoint Analysis): The new concept research in the analysis of consumer behaviour and choice". *Trends in Food Science and Technology* 84 (2019): 29-33.
10. Gofman A and Moskowitz H. "Isomorphic permuted experimental designs and their application in conjoint analysis". *Journal of Sensory Studies* 25 (2010): 127-145.
11. Spector JM and Ma S. "Inquiry and critical thinking skills for the next generation: from artificial intelligence back to human intelligence". *Smart Learning Environments* 6 (2019): 1-11.
12. Mendoza CL., et al. "Empowering young people to become researchers: What do people think about the different factors involved when shopping for food?" *Nutrition Research and Food Science Journal* 6 (2023): 1-9.
13. Kornstein B., et al. "Communication styles regarding child obesity: Investigation of a health and communication issue by a high school student researcher". *Mind Genomics Studies and Psychology Experiments* 3 (2023): 1-14.
14. Moskowitz H., et al. "Steps towards an integrated database of the citizen's mind using Mind Genomics". *Mind Genomics Studies and Psychology Experiments* 2 (2022): 1-11.
15. Mendoza C., et al. "Empowering young researchers through Mind Genomics: What will third grade mathematics look like in 10 years?" *Psychology Journal Research Open* 5 (2023): 1-15.
16. Likas A., et al. "The global k-means clustering algorithm". *Pattern Recognition* 36 (2003): 451-461.
17. Moskowitz H and Moskowitz D. "Systematics of Communication: Conjoint measurement, emotions, cognitive economics, and consumer mind-sets". In: *Product Innovation Toolbox: A Field Guide to Consumer Understanding and Research*. Eds. Lopetcharat, K., Paredes, D.; Beckley, J.H. Wiley Online Library (2022): 198-244.
18. Ibraheem NA., et al. "Understanding color models: A review". *ARPN Journal of Science and Technology* 2 (2012): 265-275.

19. Park I, *et al.* "Virtual audience providing AI-generated emotional reactions to enhance self-disclosure. Self-Introduction". *International Journal of Human-Computer Interaction* 39 (2023): 2702-2713.
20. Fuentes S. "Implementation of artificial intelligence in food science, food quality, and consumer preference assessment". *Foods* 11 (2020): 1192.
21. Kakani V, *et al.* "A critical review on computer vision and artificial intelligence in the food industry". *Journal of Agriculture and Food Research* 2 (2020): 100033.
22. Moskowitz H., *et al.* "Sourcing and vetting ideas for sustainability in the retail supply chain: The contribution of artificial intelligence coupled with Mind Genomics". *International Journal on Food System Dynamics* 14 (2023): 367-380.