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Review Article

Accelerating and Expanding Knowledge of the Everyday Through Mind Genomics: Teaching High School Students About Healthy Eating and Living

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Abstract

We present a streamlined system to understand the mind of people regarding topics of everyday life. The topic dealt with in this paper concerned the preferences of high school and slightly older students for topics in a course on healthful eating and living, with the goal of forestalling or preventing obesity and diabetes. The focus of the paper is on the rapid design, execution, and analysis of the study, with the goal of encouraging students ages 10 years and older to enter the world of science both as researchers and as respondents, respectively. By creating a fast, easy, inexpensive, and iterative system to 'do science' in a real way, the approach deepens our understanding of how people make decisions, and permits the improvement of public policy.

Keywords: Knowledge; Mind Genomics; Healthy Eating; Living

Introduction

One can scarcely open a newspaper, magazine, or surf the internet without coming up against a barrage of information about the looming crisis of obesity and the consequent illnesses, especially diabetes. Whether the information is presented in terms of health, economics, attractiveness, lifestyle, or other positive aspects of life, the message is always the same-eat less, be thinner by losing/ maintaining weight, avoid diabetes, and life will be much better. The mind-numbing health statistics proffered by the authors are neatly intertwined with motivating messages thought up by public relations or advertising agencies, as well as by the medical profession.

With the foregoing in mind, it is no wonder that schools are interested in teaching students how to eat healthfully and live better. Once up a time this was called Physical Education, Phys Ed, with the goal of presenting student with mind-number academic facts about exercise, health, lifestyle and the like. For many students the issue with Physical Education was that it was considered a non-academic 'gut course' to be taken to satisfy graduation requirements. It was only later, when the medical professional got involved as they realized the increasing girth of the population, the crisis of overweight, was upon the citizenry, and that this girth was the foreshadowing of diabetes and potentially bankrupting health problems. It was at that point that the topic of nutritional education became important and is becoming more important each year.

The key questions now is no longer data, no longer convincing people that there is a problem. That is obvious What is necessary now is a way to understand what students need to hear. We are not talking about mathematics and science, which have enjoyed their own struggles in teaching. Rather we are talking about something very common, very obvious, almost like teaching the goldfish about the water in which lives, something to which undoubtedly the goldfish would be unaware, were it capable of thinking. Students live in the world of eating and health. How do we teach them to think in productive ways about the topic, ways which may well increase their chances to a healthy maturity and beyond?

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Mind Genomics

Mind Genomics grew out of the increasing interest in the reasons why ordinary people behave in the situations of the everyday. For example, in the world of nutrition education we often read about issues involving the situation of increasing poor nutrition in a world of increasing calories. We know what is happening, simply by reading the writings of psychologists talking about problems of selfimage, and prescriptions for healthier eating offered by dietitians and nutritionists. But what about the mind of the ordinary person when it comes to food? Certainly, there are plenty of articles and an enormous amount of information spready by word-of-mouth. What disciplined science ought we muster to answer problems, such as *'what is the best way of teaching high school students?'* And, to go one step further,' *how can we evolve students into researchers, excited at the prospect of doing real science?'* [1-7].

The emerging science of Mind Genomics grew out of the interest of 'scientizing' everyday life of dealing with the ordinary in a manner which provides scientifically solid data to help understand people. Rather than putting people into unusual situations to understand how they react, pointing with delight to inconsistencies, always a pleasure to read, why not explore the regularities of everyday, much like a social scientist explore a society? Our world is awash in the everyday. Mind Genomics aims to organize the information contained in the everyday, the regularities, the different aspects, different mind-sets which exist, which make people different, differences often overlooked, but yet differences so important to the vitality of our daily realities.

The first foundational leg of Mind Genomics is psychology, and specifically psychophysics, the study of the relation between physical stimuli and subjective responses. Traditional psychophysics looked at the world of well-defined physical stimuli, and their relation to subjective perception. Harvard Professor of Psychophysics, S.S. Stevens, called this 'outer psychophysics', because the measurement was of the subjective magnitude of well-defined physical stimuli. Stevens also hinted at an 'inner psychophysics', the measurement of ideas. Mind Genomics fulfills that vision [8].

The second foundational leg of Mind Genomics is statistics, specifically experimental design to lay out the combinations of test stimuli, creating the vignettes to be evaluated by respondents, the analytical tools of ordinary least-squares to deconstruct the responses into part-worth contributions of elements, and finally clustering to create new, hitherto unexpected groups of like-minded respondents [9,10].

The third foundational leg of Mind Genomics is the world of public opinion polling and consumer research, disciplines which measure the ordinary world as is. Rather than creating artificial situations to observe behavior, and then pointing to single findings which add to the science of people, Mind Genomics works with common, simple stimuli, and tests reactions to them. Mind Genomics can be considered to be an experimentation-oriented version of public opinion research or consumer research. The objective is to understand patterns about our perception and behavior in the world of the every day [11].

Mind Genomics Process - Explicating health/nutrition education for the high school student

This study represents a simple example of Mind Genomics in action, the topic being a course for high school students in healthy behavior and healthy eating. Rather than focusing on how the study 'plugs holes in the literature' and provides the next piece of information in a world of hypotheses and theory, the reality is that with Mind Genomics the effort is simply to explore a topic, doing so with artificial intelligence, experimental design of ideas, and real people. It is the very simplicity of the approach, the directness, and profound 'ordinariness' that we wish to emphasize. It is in that simple directness, with deep thinking encouraged but NOT required, that Mind Genomics ends up providing profound results for even the youngest, inexperienced researcher, albeit one with some modicum of curiosity.

Step 1

Choose a name: The templated version of Mind Genomics, available on the web (www.BimiLeap.com, requires the researcher begin by selecting a name for the study. Naming the study is simple, but often forces the novice researcher to think about the topic. For young researchers, naming their first Mind Genomics project in BimiLeap is often the first time they have been forced to encapsulate their thinking in a simple phrase. In other words, this first step is the start of a self-education through Mind Genomics. Figure 1 shows a screen shot.

Step 2

Select four questions which 'tell a story'. It is at this point that many researchers feel overwhelmed. Our education systems are geared to having students answer questions, with the emphasis on good performance defined by knowing the answers. Not knowing an answer is a negative response. A more productive approach guides, even inspires students to think by asking the correct questions, questions which frame the topic in a coherent way. When the student asks a good question or series of questions one can be sure that the student has thought about the question. As an aside, in academies of Jewish studies (yeshivas), a student is often complimented on being able to stump the teacher by a powerful question. The highest form of compliment to a student learning a topic is to say that the student asked a 'bomb of a question.'

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Figure 1: Screen shot showing the requirement that the researcher 'name' the study.

Mind Genomics works in a Socratic fashion, with question followed by answer. During the evolution of Mind Genomics from the middle 1980's until about 2021, the development of studies was hindered by the felt or expressed inability of a researcher to think of ideas, to formulate questions. Many individuals during this time asked that there be an automatic set of questions for each topic, questions that could be selected to help the process along. It was impossible to do so until the recent emergence of Artificial Intelligence. The ability to write about the topic, submit that information to AI, and get back 10, 20, 30 or even more questions based upon AI's vast resource, changed the dynamic. The task of asking question evolved into a collaboration of the researcher with AI, so that the researcher could formulate the issue different ways, and for each formulation the AI would return with a somewhat different, more finely tuned set of questions [12,13].

Figure 2 shows the parts of the process. The top left panel shows the request to the researcher to provide the four questions. As noted above, this simple slide intimidates new and even experienced researchers.

The panel also features a button called 'Idea Coach'. When the researcher presses the Idea Coach button, a screen pops up (top right panel). A simple instruction reassures the researcher, and request that the researcher type some about the topic in the box provided. Using AI, the Idea Coach returns with up to 30 questions. (Note that the 30 questions is being reduced to 15, to diminish the possible information overload).

The questions can be modified and made more interesting by changing the text in the Idea Coach box. The lower left panel shows some of the questions emerging from the first iteration of Idea Coach. These were recorded for purposes of the showing the process, but the reality is that the Idea Coach was invoked twice more. At each invocation of Idea Coach, the researcher could select one or several questions, and even edit the questions. Repeating the effort with the same text in the box ended up changing some of the questions, as did changing the text.

07

The final set of four questions appears in the lower right panel. The actual process for each effort, from typing in the box to obtaining the 30 questions for that iteration was approximately 90 seconds.

Figure 2: Creating the four questions by invoking Idea Coach.

Step 3

For each of the four questions create four answers. This third step is far less daunting than the creation of four questions. The question require some thinking on the part of the researcher, who must come up with phrases, each phrase reasonably complete by itself, and each phrase painting a word picture. Once again the Mind Genomics process provides AI help in the form of the Idea Coach, which returns 15 answers to each question. The researcher can run the Idea Coach many times to learn about the topic, each run pertaining to a specific one of the four questions. The researcher is free to edit a question and re-run the Idea Coach, or put in some of the her or his own ideas, ideas that may evolve quickly, in minutes perhaps, due to the use and inspiration provided by Idea Coach. Over the last half year of use, a pattern has emerged. At first the researcher is intrigued, but later the researcher ends up learning about the topic through the Idea Coach, but creates her or his own answers.

Figure 3 shows the process. The first row, left panel, shows the first question, and then the open space for four answers. The first row, right panel, shows the nine of the 15 answers. When the researcher re-runs the Idea Coach, many of the answers change, albeit some remain unchanged. The second row left panel, shows the

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final four answers to the first question. The total time elapsed is about one minute for each iteration, from request to delivery of the 15 potential answers.

Table 1 presents the final selection of questions and answers. It is important to keep in mind that this type of productivity, minutes intead of days and weeks, ends up making the student or professional user far more proficient in the topic. Participating in setting up a Mind Genomics is a profound, painless learning experience, as much fun to the researcher, and as painless, as it will be actually run the study with real people. In other words, like the part of a pig after slaughter, every bit of the Mind Genomics process 'produces' and 'instructs.' Even in the study set-up, Mind Genomics ends up 'giving.'

	Question A: Teach High school first-year students: What lifestyle choices can lead to obesity?
A1	Excessive consumption of processed and high-calorie foods.
A2	Eating out at fast food restaurants.
A3	Having a sedentary lifestyle.
A4	Not getting enough sleep.
	Question B: Teach High school first-year students: What are the benefits of healthy eating?
B1	Increased energy levels
B2	Lower risk of chronic illnesses
B3	Enhanced physical performance
B4	Reduced stress levels
	Question C: Teach High school first-year students: What are some tips for eating healthy on a budget?
C1	Plan meals in advance - This will help you avoid impulse purchases and make the most of your grocery budget.
C2	Buy generic and store brands - Often these can be cheaper than name-brand items.
С3	Try frozen produce - Frozen fruits and vegetables are usu- ally cheaper and last longer than fresh.
C4	Don't shop when you're hungry - Shopping when you're hungry can lead to impulse purchases and overspending.
	Question D: Teach High school first-year students: How can you make healthier food choices when dining out?
D1	Skip high-calorie desserts and opt for a cup of fruit or yogurt instead.
D2	Order water instead of soda or sugary drinks.
D3	Ask for whole-wheat bread or a salad in lieu of French fries.
D4	Choose lean cuts of meat, like chicken or fish.

Table 1: The four questions and four answers to each question.

Step 4

Intruct the respondents to complete either/both a set of selfprofiling questions about the topic, as well as an open-ended question about the topic. These are optional, not required for the **Figure 3:** The process of obtaining four answers to question 1, including the results provided by the first iteration.

08

successful implementation of a Mind Genomics study. Younger researchers end up enjoying the creation and interpretation of these open ended questions. The richness and utter human aspect of the text is a complement to the somewhere austered, formalized structure encountered when setting up the questions and answers. Figure 3, lower right panel, shows the instruction screen for the open ended question. This question is usually asked after the repondent does the actual evaluation of the test stimuli, but the BimiLeap program has a provision for asking an open ended questin prior to the evaluation of the test stimuli, and another open ended question after the evaluation of the test stimuli.

Table 2 shows the self-profiling questions. The questions about gender and age are automatically programmed into the program. It is the other self-profiling questions that are created by the researcher.

Step 5

Respondent orientation and the rating scale. Mind Genomics presents respondents with combinations of text statements as discussed below. The orientation to the study (Figure 4, left panel) is generally as sparse as possible, in order to ensure that the elements themselves, viz., the answers, do the work. The respondent ends up seeing a set of answers, without any question, and is instructed to rate them. The more general the introductory statement the better will the results be, because the orientation did not influence the respondent in terms of hinting about the 'proper' answer.

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What is your gender
1 = Male
2 = Female
3 = Prefer not to answer
What is your age
What is the most important single thing for you that you would like to learn from a course about staying healthy?
1 = The proper diet I need
2 = How to avoid diabetes
3 = The proper exercise I need
4 = How to stay mentally and socially healthy
What do you personally think is the best source of information about living healthier?
1 = WebMD
2 = FDA
3 = Your doctor
4 = A nutritionist
What do you personally think is the worst source of information about living healthier?
1 = WebMD
2 = FDA
3 = Your doctor
4 = A nutritionist
Table 2: The self-profiling questions

The Mind Genomics rating scale, a so-called Likert Scale or category scale, comprises 5, 7 or 9 points, For this study, the scale was divided into four sections (see Figure 4, right panel). One part (left part of the sentence) talks about how students will respond. The other part (right part of the sentence) talks about how well the student will learn. The use of a scale of this type allows the researcher to obtain two types of information from the respondent, student acceptance and teaching effectiveness.

How successful would this course be for Freshmen and Sophomore high school students in a course on living better and eating better

- 1 = Students won't like it and students may or may not learn well
- 2 = Students won't like it but students will learn well
- 3 = I can't really answer
- 4 = Students will like it, but students may or may not learn well
- 5 = Students will like it and students will learn well

Figure 4: Respondent orientation (left panel), and the specifics of the 5-point rating scale (right panel).

09

Step 6

Create the test vignettes according to an underlying experimenl design. The actual respondent 'experience' in a Mind Genoms study consists of a person sitting in front of a computer screen, ading vignettes comprising 2-4 elements or answers, and rating e combination. To most respondents, the set of 24 vignettes that e being rated appear to be a 'blooming, buzzing confusion' in the ords of the revered Harvard psychologist, William James in his 392 textbook on psychology. Indeed, professionals who inspect ese 24 vignettes as well as respondents who evaluate them often el that they cannot possibly be 'correct', and thus they are merely lessing. Ordinary respondents stop at the feelings, do their job, king about 2-4 minutes to evaluate all 24 vignettes, and move on, ontinue with the experiment, finish and leave. Professionals, howver, stop to talk, often railing about the impossibility that from ese combinations a researcher could possibly determine how the erson might think [14].

The reality is that the 24 vignettes, combinations of elements, are created according to a well-defined, mathematically powerful experimental design. The design specifies the particular combinations, ensuring for the 24 vignettes that

- Each vignette comprises a minimum of two and a maximum of four elements
- Each vignette can have at most one element or answer from a question, sometimes no answer from the question, but never two answers from a question
- Each element appears in five vignettes, and is absent in 19 vignettes
- Four of the 24 elements are missing any of the four elements from a question.
- The 16 elements are statistically independent of each other.

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- Each respondent evaluates a unique set of 24 combinations. This means that the experimental design is 'permuted' so that the mathematical structure remains, but the actual combinations change from respondent to respondent. The permuted design allows the researcher to cover a great deal of the design space, as well as discover pairwise interactions by using socalled scenario analysis. (15)
- The foregoing steps mean that the researcher does not have to 'know' the best or most promising combination of elements to test, as is the case today. Rather, all the researcher has to know is the promising elements. The experiment will test many of the possible combinations, quickly revealing the underlying structure, even without any knowledge on the part of the researcher, other than a 'hunch.' Furthermore, the properties of the approach make it feasible to discover that one has not found a good answer, and almost immediate iterate with new elements. A good metaphor is the MRI, which takes many pictures from different angles, and then combines these pictures to create a single picture of higher dimension, revealing what any single picture might not have been able to do.

Figure 5 shows an example of a vignette. The elements are simply presented on at a time without a connective. The top of the picture shows the instructions. The instructions in figure 5 show punctuation marks such as , marks that will not appear in the actual evaluation.



Step 7

Send out the invitation to the respondents. The www.Bimi-Leap.com site has a section enabling the researcher to accelerate the field work by 'ordering' a desired number of respondents, and shaping the panel by specifying the criteria for participation (e.g., gender, age, income, education, market, etc.) For this study, the request was for 100 respondents, both genders, from the United States, who were in high school or who had graduated high school, and ages 14-22. The researcher was then able to pay for the study credit card. The study was launched i the middle of Monday afternoon and completed about 45 minutes later. By working with organizations specializing in on-line surveys, such as Luc.id, Inc., the researcher usually can complete the interview in hours, rather than in weeks or months.

Step 8

Acquire the raw data from each respondent and create the data base.

Each respondent evaluated a unique set of 24 vignettes, The first vignette was the 'training vignette' whose purpose was to familiarize the respondent with the setup. The rating and the response time were not recorded for this first vignette. The vignette was repeated as the last vignette, so that the data could be collected. Thus, the respondent was actually exposed to 25 vignettes, the first and the last being the same. Figure 6 shows a screen shot of the raw data prior to the data being entered into the database.

Each respondent generates 24 rows of data, one row for each of the 24 vignettes evaluated by the respondent. The first part of the raw data, the same for all 24 vignettes, comprises the study name, the system-assigned panelist number, the information from about gender, age (built into the system), and the information from the four self-profiling questions. The second part, differing by row, comprises order number of the vignette for the respondent (1-24), 16 columns which code the presence of an element (code = 1), or absence of an element (code = 0) for the particular vignette, and finally a column for the 5-point rating along with the the column for the response time, respectively. The response time is defined as the number of seconds between the appearance of the full vignette and the response to the vignette.

The database incorporated four new variables, each binary transformations of the original 5-point rating.

R54 (Student likes the Course): This corresponds to those responses indicating that the high school student likes the course as described by the vignette. Ratings 5 and 4 show this liking. To

Figure 6: Raw data from the first three vignettes rated by Respondent #1.

create R54 one converts ratings of 5 or 4 to 100, and converts ratings of 1, 2, or 3 to 0. A vanishingly small random number ($<10^{-5}$) is added to the transformed number so that when R54 is used as a dependent variable in modeling it will always exhibit some variability, preventing the regression model from crashing.

R12 (Student dislikes the Course): This corresponds to those responses indicating that the high school student will not like the course as described by the vignette. Ratings 1 and 2 are transformed to 100, ratings 3,4,5 are transformed to 0. Again, the small random number is added to the transformed ratings.

R52 (Student ends up learning): This corresponds to those respondents indicating that the high school student will learn the topic, as described by the vignette. Ratings 5 and 2 are transformed to 100, ratings 1,3 and 4 are transformed to 0. Again, the small random number is added to the transformed ratings.

R41 (Student ends up not learning): This corresponds to those ratings indicating that the high school student will not learn the topic as described by the vignette. Ratings 4 and 1 are transformed to 100, ratings 2,3, and 5 are transformed to 0. The small random number is again added to the transformed rating.

Step 9

Create equations relating the presence/absence of elements to the binary transformed rating. In the interest of simplicity, we focus only on one dependent variable, R54 (Student likes the course). The experimental design underlying the 24 vignettes of each respondent make it straightforward to create the equations, using the well accepted procedure of ordinary least squares (OLS) regression. The particular variation of OLS regression used here is known as Dummy Variable Regression. In OLS regressions the independent variables are presumed to vary along some type of continuum. With dummy variable regression the variable takes on either the value '1' when present in a vignette, or the value '0' when absent from a vignette. [16]. We express the equation as: $R54 = k_0 + k_1(A1) + k_2(A2)$. $k_{16}(D4)$ The equation can be created using the data from each respondent, the data from the total panel, or the data from any subgroup of respondents, such as those who self-define themselves by age or gender, or by the choice of response in the self-profiling questionnaire completed at the start of the study.

The additive constant, k_0 , is the estimated percent of responses R54 in the absence of elements. It is the 'intercept' of the equation, the expected value of the dependent variable when all of the independent variables are 0. In our case the additive constant is a purely theoretical, estimated value. Each of the 24 vignettes evaluated by a respondent by design comprised a minimum of two element and a maximum of four elements. Thus, the additive constant is simply a numerical parameter. Mind Genomics uses the additive constant as a baseline, as the likely response to a topic. As we will see, there are dramatic differences among additive constants for comparable groups.

Mind Genomics studies return with a great deal of data. When estimating the coefficients of the OLS regression each group generates 17 numbers, an additive constant and 16 coefficient. The patterns become difficult to discern with this 'wall of numbers.' To allow the important findings to emerge it has become the standard practice to show only positive coefficient (2 or higher), and to highlight the 'strong 'performing elements. The word 'strong' is written in parentheses because 'strong' is operationally defined. Typically, coefficients of 4 or higher approach statistical significance with these base sizes, so for the study here we define 'strong' as a coefficient of +8 or higher.

Armed with this information, we now look at the 12 groups shown in Table 3. We could spend a great deal of time of time reiterating what is obvious in the table. Instead, we will scan the table for general findings

The typical 'pattern' emerging from these Mind Genomics studies is that high additive constants are accompanied by low coefficients, whereas low additive constants may be accompanied by either high coefficients for some elements, or low coefficients across the set of 16 elements. When the additive constant is high, the reason is that most of the vignettes are rated high (viz., 5 and 4). It takes a very powerful element to move beyond the already-high pattern of ratings. In contrast, when the additive constant is low we are in a situation when many if not most of the vignettes are rated low. In such a situation an element which is very strong will pull up the rating of the vignette in which it is a member, producing a high coefficient. When almost all of the vignettes are rated low, the situation is simpler. No elements end up pulling up the rating. As a consequence, both the additive constant is low, and the elements are low, even negative.

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- The additive constants vary The lowest value (unlikely to enjoy the class) comes from the nine youngest respondents. The 88 older respondents are substantially ore positive (31 vs 53)
- There are a great number of empty cells, showing that that these topics are not interesting. What is interesting to the respondent are the simple 'factoids' leading to obesity (question #1). We get a sense here that the

course might be focused on specifics that are concrete and lead to problems, not on prescriptive behavior to prevent problem. This inference is just that, an 'inference' from the data, but something which ends up emerging from the pattern of responses, a 'something' that might not be readily discovered in any other way.

			Ge	Gender		ge	Personal Goal					st Info	Source
	Dependent variable = R54 Only groups of base size of 9 or more are shown	Total	Male	Female	13 - 17	18 - 24	The proper diet I need	How to avoid diabetes	The proper exer- cise I need	How to stay mentally and socially healthy	BFDA	Your doctor	BA nutri- tionist
	Base Size	100	47	53	9	88	34	14	18	34	16	54	27
	Additive Constant	50	54	47	31	53	56	39	57	44	58	44	60
	Question A: Teach High school first-year students: What lifestyle choices can lead to obesity?												
A1	Excessive consumption of processed and high-calorie foods.	4	6		9	2		20	8	3	6		
A2	Eating out at fast food restaurants.	6	6	6	11	4		25	6	9	9	4	2
A3	Having a sedentary lifestyle.		3		7			15	7		12		5
A4	Not getting enough sleep.	4	6	2	9	3		15	8		10		7
	Question B: Teach High school first- year students: What are the benefits of healthy eating?												
B1	Increased energy levels	2			10		2	2		2		2	4
B2	Lower risk of chronic illnesses				13			6					
B3	Enhanced physical performance				20			7					
B4	Reduced stress levels				18								
	Question C: Teach High school first- year students: What are some tips for eating healthy on a budget?												
C1	Plan meals in advance - This will help you avoid impulse purchases and make the most of your grocery budget.			3	10		2			2	5		
C2	Buy generic and store brands - Often these can be cheaper than name- brand items.										4		
C3	Try frozen produce - Frozen fruits and vegetables are usually cheaper and last longer than fresh.				4								
C4	Don't shop when you're hungry - Shopping when you're hungry can lead to impulse purchases and over- spending.												
	Question D: Teach High school first year students: How can you make healthier food choices when dining out?												
D1	Skip high-calorie desserts and opt for a cup of fruit or yogurt instead.												
D2	Order water instead of soda or sugary drinks.				11			3					
D3	Ask for whole-wheat bread or a salad in lieu of French fries.							2					
D4	Choose lean cuts of meat, like chicken or fish.		6				4					3	2

Table 3: Parameters of the linear equation relating the presence/absence of the 16 elements to the binary transformed rating R54.

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Step 10

Uncover mind-sets, viz., different ways people respond to the elements. Table 3 showed us that we could deconstruct the ratings assigned to the vignettes into the part-worth contribution of the 16 elements, as well as to a baseline value, viz., the additive constant. The preponderance of empty cells in Table 3 might be disturbing, indicating that, somehow, we failed to find the appropriate elements. Such disappointments occur all the time, ending up with the user going back to the research again and again, trying new ideas, and becoming discouraged because no matter how many times the thinking is repeated and the research re-done, there seems to be improvement.

Part of the frustration may be due to the fact that people differ. What one person likes another person dislikes. Traditionally, researchers have made this person-to-person variation into a big research effort to find these different people and capitalize on the differences. The most typical way to divide people is by who they are. Sometimes these are called 'personas', idealized images of people who are presumed to have the same preferences. To the marketer the 'persona' seems to be a wonderful idea, because of the old adage (true or not), 'birds of a feather flock together.' The notion of this type of segmentation goes back many decades in consumer research. When we rely on personas created on the basis of general areas, the notion of personas may be counter-productive. The personas created for the general category, e.g., the world of education may mislead or be ineffective. The possible, and unhappy result ends up being perhaps leading to years of effort to fine-tune this characterization of people and then adjust the characterization to deal with the topic at the more local level where reality reigns, and where, in colloquial terms, 'the rubber hits the road.' [17,18].

Moskowitz has suggested that people differ from each other, but that the most meaningful differences are at the granular level for particular topics. A demonstrably more productive way is to create a system to work efficiently and inexpensively at the level of the granular, at the level of the immediate issue. This approach is opportunistic, finding meaningful differences only for the relevant issue, but doing so quickly, inexpensively, with profound learning, pure and applied, emerging virtually in real time [19-21].

The approach used is clustering, the results are called mind-sets. The researcher follows a short series of steps with well accepted methods (regression and clustering).

• Create a model for each respondent, rather than for the group. Regression at the individual level can be done easily because the underlying experimental design ensured that each respondent evaluated 24 vignettes set up for an experimental design. Furthermore, the prophylactic method of adding a vanishingly small random number to the newly created variable R54 ensures that the dependent variable always has some variation, and thus the regression program will not 'crash.'

- Create a database. Each row corresponds to one of the 100 respondents. The columns correspond to the 16 elements. The cells contain the coefficients for the individual respondent, whether the coefficient be positive, zero, or negative. The additive constant is not included in this database.
- Cluster the rows (respondents) using k-means clustering, to create groups of 'similar' respondents, based strictly the pattern of coefficients. As the measure of 'distance' between any pair of respondents, use the quantity (1-Pearson Correlation). The Pearson Correlation (R) shows the strength of the linear relation between two variables. Thus, the quantity (1-Pearson Correlation) or (1-R) is a measure of the distance between two variables. (1-R) varies between a low of 0 (two variables perfectly correlated) to a high of +2 (two variables perfectly inversely correlated, viz. behave in opposite ways).
- The k-means clustering program divides the respondents into exhaustive, mutually exclusive groups. It is the job of the researcher to select the number of groups (clusters, mind-sets). Fewer clusters are better (parsimony), and logical/coherent/ meaningful clusters (interpretability) is better [10].

Table 4 shows the parameters of the models for the two mindsets (top) and for the three mind-sets (bottom). For this study the three-mind-set solution seems to be more coherent and more inclusive than the two-mind-set solution. One of the issues in clustering is the need to restrain oneself from pulling out too many clusters or mind-sets. Each additional mind-set will make the interpretation of the mind-set easier for the researcher, but at the price of creating too many mind-sets to use in practical situations. Table 4 is also gratifying to the researcher because of the larger number of non-zero cells, meaning more positive coefficients, as well as the far greater number of strong performers.

Step 11

How well did we do? One of the foci of research is to excel in opening up new areas of knowledge and prove one's own worth and contribution. The Mind Genomics system combines learning with informal 'evaluation' of that learning, almost in the form of a contest. That is, the researcher begins with a topic, finds questions and answers through thinking and/or with the participation of artificial intelligence (Idea Coach), and then does an experiment to find out how people feel about the ideas. Over time students have discussed the use of Mind Genomics and the templated process as a tool for competitive thinking, viz., as a way of matching brains and insights against others. The ability to quantify performance in the Mind Genomics process becomes important in education, both to measure progress, and in competitions, e.g., those focusing on competitive proposals.

					14
	Dependent variable = R54	Total	MS 1 of 2	MS 2 of 2	
	Base Size	100	50	50	
	Additive Constant	50	43	59	
	Strong for Mind-Set 1 – Interested in benefits				
B4	Reduced stress levels		13		
B1	Increased energy levels	2	11		
B2	Lower risk of chronic illnesses		9		
C1	Plan meals in advance - This will help you avoid impulse purchases and make the most of your grocery budget.		9		
A2	Eating out at fast food restaurants.	6	8	5	
B3	Enhanced physical performance		8		
	Strong for Mind-Set 2 – Interested in food decisions				
D4	Choose lean cuts of meat, like chicken or fish.			9	
D2	Order water instead of soda or sugary drinks.			8	
	Not strong for either mind-set				
A1	Excessive consumption of processed and high-calorie foods.	4	3	4	
A3	Having a sedentary lifestyle.			3	
A4	Not getting enough sleep.	4	3	5	
C2	Buy generic and store brands - Often these can be cheaper than name-brand items.				
C3	Try frozen produce - Frozen fruits and vegetables are usually cheaper and last longer than fresh.		2		
C4	Don't shop when you're hungry - Shopping when you're hungry can lead to impulse purchases and overspending.		3		
D1	Skip high-calorie desserts and opt for a cup of fruit or yogurt instead.			5	
D3	Ask for whole-wheat bread or a salad in lieu of French fries.			3	
	Dependent variable = R54	Total	MS 1 of 3	MS 2 of 3	MS 3 of 3
	Base Size	100	36	34	30
	Additive Constant	50	48	56	42
	Strong for Mind-Set 1 – Interested in benefits				
B1	Increased energy levels	2	12		9
B2	Lower risk of chronic illnesses		12		
B4	Reduced stress levels		11		1
A2	Eating out at fast food restaurants.	6	10	16	
C1	Plan meals in advance - This will help you avoid impulse purchases and make the most of your grocery budget.		9		4
A4	Not getting enough sleep.	4	8	11	
	Strong for Mind-Set 2 – Interested in causes				
A2	Eating out at fast food restaurants.	6	10	16	
A3	Having a sedentary lifestyle.		3	13	
A1	Excessive consumption of processed and high-calorie foods.	4	5	12	
A4	Not getting enough sleep.	4	8	11	
	Strong for Mind-Set 3 – Interest in foods				
D2	Order water instead of soda or sugary drinks.			3	14
D4	Choose lean cuts of meat, like chicken or fish.			5	12
D1	Skip high-calorie desserts and opt for a cup of fruit or yogurt instead.				11
B1	Increased energy levels	2	12		9
	Not strong for any mind-set				
B3	Enhanced physical performance		7		1
C2	Buy generic and store brands - Often these can be cheaper than name-brand items.				
С3	Try frozen produce - Frozen fruits and vegetables are usually cheaper and last longer than fresh.				4
C4	Don't shop when you're hungry - Shopping when you're hungry can lead to impulse purchases and overspending.		5		1
D3	Ask for whole-wheat bread or a salad in lieu of French fries.			2	7

Table 4: Coefficients emerging after clustering the respondents into two mind-sets (top) and three mind-sets (bottom), basedupon k-means clustering. Only positive coefficients are shown. Strong performing elements are shown by shaded cells.

Citation: Howard Moskowitz, *et al.* "Accelerating and Expanding Knowledge of the Everyday Through Mind Genomics: Teaching High School Students About Healthy Eating and Living". *Acta Scientific Nutritional Health* 7.5 (2023): 05-22.

15

To measure one's performance, the developers of Mind Genomics created the IDT, Index of Divergent Thought, shown in table 5. The IDT has been developed to measure the power of the elements to drive interest, and thus indirectly to measure the power of divergent thinking. The index looks at the weighted sum of positive coefficients (> 0), from total panel, two mind-sets, and three mind-sets. The weights come from the base size. The total panel has a weight of 100. The two-mind-set solution has a weight of 100 (divided between the two mind-sets in proportion to their base size), and the three-mind-set solution has a weight of 100 (divided among the three mind-sets in proportion to their base size). The objective is to maximum the weight sum of the positive coefficients. The IDT (index of divergent thought) for this first experiment is 47.21, fair to good. Keep in mind that this is the first effort of the senior researcher, a second-year high school student. The 47 is a respectable score. In the growth of a student or a topic area of science, time will reveal the trajectory as the student gets more practice in thinking.

	Total	MS 1 of 2	MS 2 of 2	MS 1 of 3	MS 2 of 3	MS 3 of 3
Base (number of respondents in this group)	100	50	50	36	34	30
Excessive consumption of processed and high-calorie foods.	4	3	4	5	12	
Eating out at fast food restaurants.	6	8	5	10	16	
Having a sedentary lifestyle.			3	3	13	
Not getting enough sleep.	4	3	5	8	11	
Increased energy levels	2	11		12		9
Lower risk of chronic illnesses		9		12		
Enhanced physical performance		8		7		1
Reduced stress levels		13		11		1
Plan meals in advance - This will help you avoid impulse purchases and make the most of your grocery budget.		9		9		4
Buy generic and store brands - Often these can be cheaper than name-brand items.						
Try frozen produce - Frozen fruits and vegetables are usually cheaper and last longer than fresh.		2				4
Don't shop when you're hungry - Shopping when you're hungry can lead to impulse purchases and overspending.		3		5		1
Skip high-calorie desserts and opt for a cup of fruit or yogurt instead.			5			11
Order water instead of soda or sugary drinks.			8		3	14
Ask for whole-wheat bread or a salad in lieu of French fries.			3		2	7
Choose lean cuts of meat, like chicken or fish.			9		5	12
Sum Total of All Positive Coefficients	16	69	42	82	62	64
Average of All Positive Coefficients (sum coefficients/base)	0.2	1.4	0.8	2.3	1.8	2.1
Number of respondents in the column (in the subgroup)	100	50	50	36	34	30
Weight = Proportion of the respondents in the subgroup	0.33	0.17	0.17	0.12	0.11	0.1
Weighted Total (Weight x Sum Total of All Positive Coefficients)	5.28	11.73	7.14	9.84	6.82	6.4
Final Score = sum of weighted total	47.21					

Table 5: The IDT (Index of Divergent Thought) to measure the power of the elements to drive interest.

Step 12

Using artificial intelligence to summarize the findings (TACT). Mind Genomics emerges with a great deal of data. A continuing issue in the advancement of science is to create a system to help interpret the results. With the potential of being able to run a study like the one presented here in about two hours and scale the study to 100 countries within a day, there is a developing need for a TACT, Technical Aid to Creative Thought. The term TACT was used by the late Harvard Professor Anthony Gervin Oettinger, in the 1960's, in the early days of digital computing. The use of a TACT approach for the Mind Genomics studies might well unblock the potential log jam of information that Mind Genomics threatens to create when these easy-and-inexpensive tools are used widely, Table 6 shows this 'TACT' analysis in action, summarizing the three mind-set solutions with one summarization and five queries for each mind-set [22].

16
MS 1 of 3 - Top
The following is a description of attributes from the total sample of a research study. Interested in: Excessive consumption of processed and high-calorie foods.; Eating out at fast food restaurants.; Not getting enough sleep.; Increased energy levels; Lower risk of chronic illnesses; Enhanced physical performance; Reduced stress levels; Plan meals in advance - This will help you avoid impulse purchases and make the most of your grocery budget.; Don't shop when you're hungry - Shopping when you're hungry can lead to impulse purchases and overspending.;
Create a label for this MS:
Health-Conscious Consumers
Describe this MS:
This MS is comprised of individuals who are looking to make positive lifestyle changes in order to improve their overall health and wellbeing. They are likely to be conscious of their diets and looking to reduce their consumption of processed and high-calorie foods, eating out at fast food restaurants, and lack of sleep. They also seek to increase their energy levels, reduce their risk of chronic illnesses, enhance their physical performance, reduce their stress levels, and plan their meals in advance. These individuals are likely to be aware of the benefits of avoiding impulse purchases, and so may also be looking to save money by not shopping when they are hungry.
Describe the attractiveness of this MS as a target audience:
This MS of the population is an extremely attractive target audience due to its shared characteristics. Excessive consumption of pro-

cessed and high-calorie foods can lead to health risks such as weight gain, diabetes, and heart disease. Eating out at fast food restaurants can also be detrimental to overall health. Not getting enough sleep can reduce energy levels, increase stress, and negatively affect physical performance. By reducing excessive consumption of processed and high-calorie foods, eating out at fast food restaurants, and getting enough sleep, this MS can achieve enhanced physical performance, lower risk of chronic illnesses, and reduced stress levels. Additionally, by planning meals in advance and avoiding shopping when hungry, this MS can make the most of their grocery budget and avoid impulse purchases. All of these factors make this MS an excellent target audience for health and wellness initiatives.

Explain why this MS might not be attractive as a target audience:

This MS might not be attractive as a target audience because the behaviors listed are either detrimental to health or are not necessarily indicative of an individual who is actively trying to improve their health or well-being. Excessive consumption of processed and high-calorie foods, eating out at fast food restaurants, and not getting enough sleep are all behaviors that can lead to long-term health issues. Additionally, the tips listed to plan meals in advance and not shop when hungry are not necessarily appealing to individuals who are not looking to make dietary changes. Therefore, this MS may not be an attractive target audience as they are likely not interested in making health-related changes or are actively engaging in behaviors that are detrimental to health.

Which messages will interest this MS?

Reduce your risk of chronic illnesses by cutting back on processed and high-calorie foods. Enhance your physical performance and energy levels by getting enough sleep. Lower your stress levels by planning meals in advance. Avoid impulse purchases and overspending by not shopping when you're hungry. Make the most of your grocery budget by planning meals in advance.

MS 2 of 3 - Top

The following is a description of attributes from the total sample of a research study. Interested in: Excessive consumption of processed and high-calorie foods.; Eating out at fast food restaurants.; Having a sedentary lifestyle.; Not getting enough sleep.; Choose lean cuts of meat, like chicken or fish.;

Create a label for this MS:

Unhealthy Lifestyle Habits.

Describe this MS:

This MS consists of individuals who are likely engaging in unhealthy behaviors, such as excessive consumption of processed and highcalorie foods, frequenting fast food restaurants, having a sedentary lifestyle, and not getting enough sleep. They are not likely to be following a healthy diet, as evidenced by their dietary habits. This MS should be targeted with interventions that encourage healthier lifestyle choices, such as choosing lean cuts of meat, like chicken or fish, engaging in regular physical activity, and getting adequate amounts of sleep.

Describe the attractiveness of this MS as a target audience:

This MS of the population is an attractive target audience for health and wellness initiatives due to their high consumption of processed and high-calorie foods, frequent visits to fast food restaurants, sedentary lifestyle, and lack of adequate sleep. They are likely to benefit from health education initiatives that emphasize the importance of eating lean cuts of meat such as chicken or fish, as well as strategies to encourage physical activity and create healthier lifestyles. Additionally, this MS may be more likely to take advantage of health and wellness initiatives that target their excessive consumption and lifestyle practices.

Explain why this MS might not be attractive as a target audience:

This MS might not be attractive as a target audience because it consists of individuals who have unhealthy habits that are detrimental to their health. They are consuming excessive amounts of processed and high-calorie foods, eating out at fast food restaurants, leading a sedentary lifestyle, and not getting enough sleep. These are all behaviors associated with poor health and would likely not be receptive to messages about making healthier choices, such as choosing lean cuts of meat like chicken or fish.

Citation: Howard Moskowitz., et al. "Accelerating and Expanding Knowledge of the Everyday Through Mind Genomics: Teaching High School Students About Healthy Eating and Living". Acta Scientific Nutritional Health 7.5 (2023): 05-22.

17
Which messages will interest this MS?
 "Make healthier choices in your diet by choosing lean cuts of meat such as chicken or fish." "Reduce your consumption of processed and high-calorie foods for better health." "Eat out at healthier restaurants that offer more nutritious options." 4. "Get more physical activity and make time for exercise." 5. "Create a sleep schedule and get enough rest to stay healthy and alert."
MC 2 of 2 Ton
MS 3 01 3 - TOP
The following is a description of attributes from the total sample of a research study. Interested in: Increased energy levels; Plan meals in advance - This will help you avoid impulse purchases and make the most of your grocery bud- get.; Try frozen produce - Frozen fruits and vegetables are usually cheaper and last longer than fresh.; Skip high-calorie desserts and opt for a cup of fruit or yogurt instead.; Order water instead of soda or sugary drinks.; Ask for whole-wheat bread or a salad in lieu of French fries.; Choose lean cuts of meat, like chicken or fish.;
Create a label for this MS:
Healthy Eating on a Budget
Describe this MS:
This MS consists of individuals who are looking to increase their energy levels through diet modification. They are looking to plan meals in advance to save money and avoid impulse purchases. They are looking to replace high-calorie desserts with healthier al- ternatives and to opt for water instead of sugary drinks. They are also looking to opt for leaner cuts of meats such as chicken or fish. Additionally, they are also looking to replace French fries with healthier options such as whole-wheat bread or a salad.
Describe the attractiveness of this MS as a target audience:
This MS of the research sample is very attractive as a target audience, as it is composed of individuals who are interested in increasing their energy levels and making healthier food choices. This audience is likely to be motivated to invest in strategies that will help them save money, such as planning meals in advance, using frozen produce, and skipping high-calorie desserts. They are also likely to be open to healthier options when eating out, such as ordering water instead of soda or sugary drinks, asking for whole-wheat bread or a salad instead of French fries, and choosing lean cuts of meat, such as chicken or fish. Overall, this MS is likely to be a receptive audience for health- and budget-focused messaging.
Explain why this MS might not be attractive as a target audience:
This MS may not be an attractive target audience because they may already be following these tips and have already achieved the desired result of increased energy levels. Additionally, they may not be interested in or have access to the specific resources (such as frozen produce or whole-wheat bread) being suggested. Furthermore, they may have dietary restrictions that would prevent them from following the suggested tips, such as being vegetarian or having allergies.
Which messages will interest this MS?
Increase your energy levels with healthier meal planning. Take advantage of budget-friendly frozen produce. Enjoy healthier desserts like fruit or yogurt. Pass on sugary drinks and opt for water instead. Ask for whole-wheat bread or a salad instead of French fries. Select lean cuts of meat like chicken or fish.

 Table 6: Technical Aids to Creative Thought (TACT), comprising a summarization of each of the three mind-sets using six steps (six queries).

Step 13

Open ended questions. A hallmark of consumer research is the ability to ask the respondent about her or his points of view regarding a topic. The 100 respondents in this study each ended up immersed in the messages about the high school course on living and nutrition. At the end of the evaluation the respondents were encouraged to write three sentences about 'What is the absolute most difficult to teach high school students about eating better and living better.' Most people ended writing a phrase or two. Table 6 shows the AI summarization of the results for Total Panel and the three mind-sets, using AI. The actual summarizations might change somewhat with different AI systems. Table 7 shows the actual answers provided by respondents who wrote 'coherent' answers.

Discussion and Conclusion

The focus of this paper is on a sequence of design and analysis steps to evaluate any problem where one is interested in how people make judgments about the topics of everyday life. Rather than spending the time 'filling holes in the literature', working within the hallowed frame of the hypothetico-deductive world-view, the

18

TOTAL SAMPLE: High school students struggle to adopt healthier lifestyles due to various factors, including lack of time, energy, and knowledge about healthy eating and exercise. Fast food is a common option due to its convenience, taste, and affordability, and students may have difficulty understanding the long-term effects of an unhealthy diet. Cultural differences, negative attitudes surrounding healthy lifestyles, and difficulties with standardizing nutrition in school also make it challenging to teach students about proper nutrition. Additionally, social health is difficult to teach because experiences vary, and discipline is required to maintain a healthy lifestyle. Ultimately, it is important to teach students that their decisions now will impact their health later in life and that healthy food can be tasty.

MIND-SET 1 (Interested in benefits of healthier life and eating): Teaching high school students about nutrition is a difficult task since there are many conflicting sources of information, and finding what works for each individual is a challenge. It is also hard to motivate them to change their eating habits and avoid fast food. Students often prioritize convenience over health and may not fully understand the negative effects of their food choices. Encouraging them to listen to trusted sources, such as parents or experts, is important. However, some students may not be receptive to the message due to their immaturity and lack of focus. Ultimately, teaching them about what foods to eat and what to avoid is a crucial part of promoting a healthy lifestyle.

MIND-SET 2 (Interested in cause of obesity and diabetes): Teaching high school students about the importance of healthy eating and physical exercise can be challenging as many students prefer junk food and lack motivation to change their habits. It is crucial to emphasize the benefits of a proper diet and staying away from unhealthy foods, such as salty items. However, students must also be cautious of marketing schemes that label products as healthy, even if they are not. Teachers must push students to make changes in their lifestyle and consume more water while also cutting out cheap and easy unhealthy options. While it may be difficult to get students to listen and believe in these concepts, it is essential to teach them proper nutrition to prevent eating disorders and diseases.

MIND-SET 3 (Interested in food choice): The importance of proper health, sleep and attention is emphasized, but getting students to stop eating junk food is difficult as they have been doing it for years and are resistant to change. Eating healthier can have long-term benefits and it's important to think of food choices instead of opting for fast food. Changing eating habits and cutting sugar from their diet are also important aspects to focus on.

Table 7: The open-ended question, showing the AI summarization of the results by Total Panel and by key groups.

	Gr	oup m	embe	rship			Post Open-Ended Question
Pan	Gender	Age	Q1	Q2	Q3	Mind Set	What is the absolute most difficult to teach high school students about eating better and living better.
100	1	19	4	3	3	2	A lot of students are going to resort what tastes best and works for them. Sure, they can be informed and that might alter their decisions but ultimately they will have to learn on their own. The transition to living a better healthier life is difficult but most be done.
24	2	23	1	3	3	3	Asking them to change their eating habits.
13	1	21	1	4	2	2	Eat healthy the importance of physical exercises And well care of the body
81	2	19	4	3	2	1	Fast food is not good. Will make you feel bad. Will not help you
77	2	21	2	2	3	2	Getting the student to actually believe the things that I'm telling them and making them actually do it
26	2	22	3	4	2	3	Good food makes you feel good too. Momentary satisfaction is not always good. Some- times thinking of food choices is better than fast food.
76	2	19	1	2	3	2	High school students are just hard to teach about health in general. They know they need sleep, but they can't really get it. It's hard to tell them to eat right when most don't have the options.
28	2	19	4	3	1	3	Honestly, I don't think it's difficult if done right. Most people say all this stuff you hear, and it sounds hard right? It's not. Literally all you have to do to live a healthier lifestyle is choose better alternatives whether that's swapping out peanut butter for a low fat and high protein option or swapping out 5 extra minutes of down time for some yoga or meditation.
61	2	19	4	4	1	3	Honestly, I really don't know
42	1	18	4	3	1	3	honestly not sure. maybe just convincing them that it's worth it? the main reason high school students don't live better is because they usually don't have time or energy. homework takes a lot of time and energy and doesn't leave much time or energy for working out or meal planning
97	2	19	4	3	4	3	How it can affect your health in the long run and when you're in your 30-40s
4	2	19	2	2	3	1	How to add in healthy meals into their day. Helping them exercise. And giving them advice.

							19
73	1	25	4	3	1	3	How to cut sugar from their diet. Eating more protein high foods. And reducing the consumption of fast food
55	2	18	4	3	2	1	How to have a healthy diet that works for your lifestyle. Especially athletes, they need more food and different kind of food then someone who doesn't do sports. Know what to eat and how much to eat is difficult to teach.
54	2	19	4	3	3	2	i don't know maybe exercising and being consistent with it
5	2	20	1	3	1	3	I think the most difficult thing to teach high school students about eating better is that there are multiple different factors that go into eating better and living better. And that they don't have to give up anything.
93	1	19	1	2	2	2	I'm going on my walk right after the gym I have no clue how long
95	2	17	4	1	4	3	In my experience, the attitude surrounded eating well and exercising well was taught with a negative undertone and made me feel bad about myself
25	2	20	1	3	1	1	It is difficult to combine student fast food is bad. It is difficult to want to live better cause better is expensive. They would not like eating better and would not under- stand
63	2	19	2	2	1	1	it is difficult to teach about nutrition of everything. it is also hard to align diet advice to different cultural diets. it's hard to standardize nutrition in school
98	1	24	1	1	1	1	It is harder for them to focus
78	2	22	3	4	4	2	It's hard to get that motivation to get started. A lot of kids don't wanna try. But we have to push them.
6	1	19	3	4	1	2	it's hard to try and convince someone once there already set on their way. They might not want too. They might not need too.
60	1	20	3	4	1	1	It's that they can't eat junk food. Junk food tastes very good and is common for kids that age. So, eating junk food is hard to stop.
33	2	20	4	4	3	2	lunches being better & healthier
84	2	23	1	3	3	2	Making them change their lifestyle. Cutting out things they like and are cheap/easy. Making things less accessible
92	2	21	4	3	3	3	Proper health. Proper sleep. Proper attention
91	1	24	3	3	2	3	So, eating better and more healthy is so important because if you don't you will have long run effects from not eating well in your past when you were young as I should say.
65	1	20	1	3	3	1	So, they won't mess up their body at very young age
46	2	16	1	3	3	3	Sports
56	2	22	1	3	2	2	Staying away from unhealthy foods. Students have a hard time eating what's right for them and because of stress rely more on fast food and snacks. This can lead to eating disorders and diseases.
17	1	19	4	3	2	1	Students will struggle to stop eating fast food. It is addicting. And healthy food is kinda boring to eat.
36	2	18	4	3	1	2	Teaching students about social health is difficult. I believe this is because it varies from person to person. It is hard to teach one thing to a large group of people when the experience can vary so significantly.
74	2	24	3	3	1	1	Teaching them how to avoid eating a lot of fast food just because it is fast. Students like getting fast food because it is effortless and good. They become ignorant to how bad it is for them but instead they just look at the fact that it is easy and good.
82	1	19	4	4	1	2	Teaching them how to eat healthy. We live in a time where it's very easy to eat only fast food. This can be useful to high school students.
39	1	19	1	3	1	3	Teaching them that it requires discipline to eat healthy and be physically healthy. It is not easy and cannot be achieved overnight. Being healthy is truly something done over time.
30	2	23	1	4	1	1	Tell them to listen to their parents or someone else because they know better
43	2	19	2	3	3	2	Telling them what they should and shouldn't eat
49	2	17	3	4	1	1	That being healthy is more important than eating tasty, greasy foods. Also, that often healthy foods can be tasty. This is hard for most high school students to accept because of their attitude towards health.

							20
79	2	18	3	3	4	3	That decisions that they make now ultimately affect a person later in life. Many teens lack permanence. In the sense that they will more than likely be alive for the next ten years and that decisions from now will help or harm them
80	1	23	2	4	1	2	That just cause a bag says its healthy it has healthy "words" doesn't mean it's good for you. Also, not to trust most healthy marketing schemes. This could be very difficult since high schoolers are very naive and tend to think they're always right
59	2	19	4	3	1	2	That the results will not be immediate. It is a process. Therefore, it will take time.
72	2	19	1	3	4	1	That they are not interested on it
69	1	18	4	3	2	3	The hardest thing is that it's hard to incorporate learnings with the lifestyle a high schooler lives. Most have very busy schedules so they might get fast food. Many have so much work that they can't get adequate sleep.
53	1	18	1	2	1	1	The hardest thing to teach are the benefits of a healthy lifestyle. A reason is hard is because they don't see life as a privilege when they're that young. We should instead teach them at home than at schools.
89	2	23	2	3	1	1	The hardest thing to teach high school students is nutrition. There are many sources telling you what to do and it's almost impossible to find one that works for you. You have to find out what works for you.
23	1	20	1	3	1	3	The long-term effects of poor diets. the health risks. healthier alternatives that taste good
12	1	23	1	4	2	2	The most difficult is teaching them a proper diet. Many teens eat unhealthily and have control of what they eat. They need to have a diet plan and consume more water.
41	1	18	1	3	1	3	The most difficult thing is actually getting them to listen. Once you get their atten- tion the next hardest thing is getting them to even try to do it. Now you probably only have like 2 students willing to try at that point and then you just work on those 2.
19	2	18	1	3	3	1	The most difficult thing is to grasp their attention. You can't persuade them if they don't want to listen. I've tried taught them before as a class assignment.
15	2	21	1	2	3	3	The most difficult thing is to make them stop eating junk food. They have been eat- ing like this for years, and it's difficult to stop. We try, but it's challenging.
66	1	21	4	3	1	3	The most difficult thing is what to eat better. They don't really like eating better. And Also, they like to really eat whatever they want.
22	1	20	1	4	4	2	The most difficult thing to teach high school students about eating better and living better is how to properly diet. This is due to them not having jobs, and therefore not being able to buy their own food. Their groceries or dependent on their parents.
87	2	21	1	4	1	2	the most difficult thing to teach high school students about better eating is hav- ing them substitute foods with healthier options and figuring out which foods are healthier options
31	2	45	4	2	1	2	The most difficult thing would be teaching them l. High school students tend to like junk food a lot. In advance the high school students don't like it.
29	1	19	3	2	3	1	The only way I could see the picture. It looks so good and every bit as beautiful and unique
90	2	20	4	3	1	2	The stplastic and fake food they wanna give us then not even make it enough to fill you up
38	1	24	2	3	4	1	They don't listen. They don't understand half the things. They aren't mature yet.
7	2	19	4	4	3	2	They don't follow things easily and like to do things their way. It is hard to want to do things that they are told to do. Even if it makes them better.
14	1	17	3	4	1	3	They feel the need to be sedentary. They want to play video games. People don't understand the benefits of healthy body.
75	2	18	4	4	1	1	they may not have th money to eat healthy, they don't care about their health until they are diagnosed with something, many are lazy.
67	2	20	2	3	1	2	They may not listen
10	1	20	2	3	3	1	To not eat fast food so much
86	2	20	4	3	1	1	To stay consistent and how important it is
8	2	19	4	4	1		To teach to kids that healthy can come in different sizes. You don't have to look the same to be healthy. Everyone is different.
64	1	22	1	1	2	2	Watch what you put in your body. Don't eat a lot of salty items. Eat Vegetables, fruit

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51	1	21	4	4	3	1	Well to be honest i think that it's better to living instead of eating to be honest
45	1	24	1	2	1	1	What food to eat and what diet and not to eat

Table 8: Membership of respondents in the self-defined groups, and by mindsets (left side of table),and their edited open-ended response (right side of table).

paper moves in a different direction, one that might be called 'industrial scale creation of knowledge.' The goal is not to spend one's resources adding to that which is known, doing so in the careful, well-thought-out manner, with meticulous attention to the correctness of one's hypothesis, data collection, analysis and conclusion. Rather, the goal, really the vision, is bolder. It is to create a system whereby anyone in the world can investigate a topic deeply and widely, albeit a topic of the 'everyday', with the 'deeply and widely' made possible by low cost, fast speed, easy deployment, and unlimited 'interactivity'.

It is worth enumerating some applications

- Educating students: One can imagine students pursuing topics which interest them. The combination of topic (from the student), questions and answers (jointly from students and from artificial intelligence) could be done quickly, perhaps in a few minutes for each effort, culminating in a 'book' of questions and answers, even without the person doing and experiments with respondents. After each query to Idea Coach, the student would use artificial intelligence to summarize each set of questions, or each set of answers from one query to the Idea Coach, creating in that way the student's very own 'book of knowledge' about a topic. The student need not even do the follow-up research with human respondents, but simply go back and forth, in a Socratic manner, fascinated by the process of posing/selecting questions and in turn receiving a plethora of answers for each question posed, viz., each time Idea Coach is queried That back and forth becomes the Socratic way of teaching, with the process being called 'Socrates as a Service' (sm).
- Educating STEM with real experiments: The selection of the topic, the creation of the test questions/answers, and the evaluation by human beings with the panel 'shaped' by the student, gives the student a taste of 'real science', not just the rehash of experiments where the goal is to 'get the right answer.' There is, of course, room and necessity for the latter, but one might ignite the mind of a student if and when the student can contribute to science, not just repeat it as part of education and training.
- Solving Social Problems: One can imagine the approach being used in an open contest to create and test interest in solutions to social issues. The organization sponsoring the effort would advertise a competition and perhaps the offer to pay for the research, state the problem, and let the contestants 'have

at it'. The IDT, index of divergent thought, might be used as an objective measure of the quality of the effort. Think of the contribution to society emerging from a contest involving say 1,000 researchers, each attacking the problem separately, perhaps with a team of others, but doing do in perhaps a week.

21

Providing Answers to Business Problems about Products, . People, Positioning: A cursory examination of the business practices of today suggest that the practices and of course the research is slow, meticulous, driven by the need of consensus, and the ever-present problem of disguised self-interest. People generally get to keep their job when they position the decision process as needing to be risk-reduction. One often hears the statement 'we must crawl before we walk, walk before we run.' What would happen if there is little or no risk for a wrong answer? The approach presented here provides a safe system for rapid answers to questions, at low prices, with the 'out' that such quick research is only meant to be 'directional.' Although that excuse is not true, the sheer 'shock value' of world-wide results and recommendations in 24 hours suffices to place the approach in the category of 'interesting, let's try it, but don't bet the store on the outcome.' Even with those caveats, the system should be able to prove itself, as it has done in this effort on the relevant topics to be included in a first year (or second year) high school course on better living and better nutrition.

Creating Database of the Mind About Social Issues, Over Time, World-Wide. We live in a world where internationalization is the norm. We are accustomed to cross-national studies of topics. The approach presented makes it possible to create a series of several studies on a granular topic (e.g., school learning patterns), doing the study world-wide, across 100+ countries, across ages, and across socio- demographics, with the study set up, executed and completed, as well as set up for deep analysis with 48-72 hours, or perhaps even as long as a week or two. The potential for such work is vast, eventuating in an easy-to-create cross-sectional and longitudinal database of the Mind of Society.

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