

## BB1025 Project: The Truth Behind the Headlines

The goals of this project are:

- to encourage students to think critically about health information presented in the popular media
- to apply your knowledge of the basic function of human organ systems to understanding a human disease state
- to gain experience locating and reading appropriate primary scientific literature
- to gain experience in analyzing primary scientific information and drawing conclusions from potentially contradictory data
- to improve skill in accurately interpreting scientific information for a non-scientific audience

Each group will research a health “fact” they may have heard in the media, and will create a short (2-4 minute) video about their findings. A list of potential topics is attached, or students may propose their own topics. You will use both popular media sources (newspapers, magazines, the Dr. Oz Show, etc) and primary scientific literature (journal articles) to clarify the facts and obtain the best scientific evidence to support or refute your chosen health “fact”. Your video will present the results of your research in a way that is easy for non-scientists to understand while presenting the factual evidence you uncover.

### **Group Assignment (GA) project deliverables**

There are several assignments along the way that each group will complete.

**GA1: An exploration of your proposed topic in the popular media.** Search the internet and read several articles relative to your proposed topic. This assignment will contain 4 distinct parts:

- 1) A summary of the proposed topic as you have read about it in popular media sources. 2-3 paragraphs will be sufficient. You should include various sources where you may have heard about the topic and details about the claim being made. (“according to the Dr. Oz website, carrots are good for your eyes because.... The Woman’s Day website also adds that carrots contain vitamins such as beta carotene.....”).
- 2) A scientifically valid hypothesis statement. This will be the hypothesis that you will test using the published scientific literature. “Eating a serving of carrots daily decreases your risk of developing degenerative eye disease, such as macular degeneration or glaucoma”. Your hypothesis should be specific, scientifically stated, and directly testable by the scientific method. Nonspecific terms like “eating carrots improves your health” or “carrots boost your immunity” are not testable and are not acceptable hypotheses.
- 3) Fill out the posted activity to describe the ideal experiment that would prove or disprove (as appropriate) your hypothesis (posted in the Project Information folder of the course website)
- 4) Citations for the popular media articles you have read.

All citations will be completed in the Council of Science Editors (CSE) Name-Year format. Examples can be found at the following website:

[https://writing.wisc.edu/Handbook/DocCSE\\_NameYear.html#internet](https://writing.wisc.edu/Handbook/DocCSE_NameYear.html#internet)

Your citations for GA1 will most likely be websites. When citing websites using CSE, use the following general information:

Author(s) name (if given). Date (if given use full date, months are given with three letter abbreviations). Title of the webpage [Internet]. Publisher; [cited date]. Available from: web address

**\*\*Note:** When there is no author available for a work, the date of publication comes after the title in the name-year system.

Example:

Smith KA. 2013 Aug 13. A WWII propaganda campaign popularized the myth that carrots help you see in the dark. [Internet]. Smithsonian Magazine; [cited 2015 Apr 6]. Available from:

<http://www.smithsonianmag.com/arts-culture/a-wwii-propaganda-campaign-popularized-the-myth-that-carrots-help-you-see-in-the-dark-28812484/#KIUBGxUs47eJhUlf.99>.

**GA2: Annotated Bibliography.** You will provide a list of 3-5 scientific sources (*THERE MUST BE AT LEAST ONE SOURCE PER GROUP MEMBER, so if your group has 4 people you will need 4 sources*) that you will use for the project. You will likely need to look into many more than 3-5 journal articles in order to select the best/most relevant ones for your project. You should provide a brief, 1 paragraph (3-4 sentence) summary of each article, which includes the important conclusion(s) of the article AND why this article is relevant to your project. (Example: In this article by Jones *et al* in the American Journal of Nutrition, the researchers analyze the diets of mice fed with or without carrots, and perform histological analyses of the retinas of the study animals. They conclude that... This information is useful to our project because....).

In biology, the primary database for identifying scientific journal articles is PubMed.

(<http://www.ncbi.nlm.nih.gov/pubmed/>).

Rebecca Ziino, a research librarian at the Gordon Library, will come to our class to talk about identifying good sources using PubMed. She will also be available for consultation about your source lists if you would like assistance. You can contact Rebecca for assistance at any time throughout the project at [rziino@wpi.edu](mailto:rziino@wpi.edu)

Each of your brief article summaries should be followed by the appropriate citation. Again we will follow the CSE format for print journals: Author(s). Year (note: do not include other date info). Article title. Journal title (note: use appropriate abbreviations). Volume(issue):page numbers.

Example:

Manzi F, Flood V, Webb K, Mitchell P. 2002. The intake of carotenoids in an older Australian population: The Blue Mountains Eye Study. *Public Health Nutr.* 5(2):347-52.

Please note! In biology, we never use the “Journal Article Found Online” format. Even though you will likely be accessing and reading these articles online, we cite them as though they were in physical print, because the print version is identical (the online versions are simply .pdf files of the print versions). Please use the correct format.

**GA3: Transcript with Citations.** You will provide a written script of the film you are planning to create. The script should have appropriate citations of your popular media and scientific source material in the format described above. The text must be fully and accurately cited, to give proper credit to those sources where you obtained information. In-text citations should be identified with the author’s name and year (see the CSE Name-Year format mentioned above). The reference list should appear at the end of the document in alphabetical order by the last name of the first author in the list, **not in the footnotes** (you can refer to any of your scientific articles as a model). Rebecca will also be available to assist with citations if you would like assistance.

Below is an example of a line in a video transcript that should be cited:

One baseline study of intake of beta-carotene, a vitamin A derivative that is metabolized into pigments used in the rod and cone cells of the retina, identified a population of adults with elevated beta-carotene levels which may be good subjects to study the relationship of beta-carotene to eye disease (Manzi et al. 2002). Furthermore... [text goes on]

Below is the way the reference list at the end of the document would look:

References:

Manzi F, Flood V, Webb K, Mitchell P. 2002. The intake of carotenoids in an older Australian population: The Blue Mountains Eye Study. *Public Health Nutr.* 5(2):347-52.

**GA4: The Video Presentation.** You will make an approximately 2-4 minute video of the written transcript. One member of your group should create a YouTube account (if one of you does not already have one) and upload your video. You may create a “dummy” YouTube account if you wish, using a generic e-mail address for your group (example: [WPI.BB1025.Group7@yahoo.com](mailto:WPI.BB1025.Group7@yahoo.com)). You may also select the option to keep your video out of the searchable YouTube database so that it does not appear in search results.

I realize that some of you may be a bit “camera shy”. It is not necessary for everyone on the team to appear on camera. Members may participate by filming and editing, even if they are reluctant to

perform on camera. Other alternatives to acting on camera include using animations, white board/chalk board drawings, puppets, talking animals, voice-overs of other video footage, whatever! Get creative!

Jim Monaco is an Instructional Media Specialist at the ATC. He will come to our class to discuss the options for videography and film editing, and can provide assistance throughout the project as necessary. Cameras, tripods, and film editing software are all available through the ATC, or you may use your own camcorder or even your phone if it takes decent video. I do not expect professional quality videography, but you must make an attempt at a decent quality product. I cannot properly evaluate a video that is out of focus, or is too dark to see your faces, or I can't hear you over the wind noise!

You may contact Jim for assistance at any point at [jmonaco@wpi.edu](mailto:jmonaco@wpi.edu)

You will finally upload a Word document to the dropbox on the course website that contains: your group number, your names, your YouTube link, and whether or not you permit me to show the video in class as part of our video contest.

On the final day of class, I will show several of my favorite videos, and the class will vote for their favorite. The winning team will receive a prize!

### **Assessment**

Rubrics for each group assignment will be distributed before the assignment is due. Please pay careful attention to the rubrics! They tell you EXACTLY what you should do to receive full credit, and also will explain EXACTLY why you may have lost points on an assignment. Check your assignment against the rubric before turning it in for best results!

Twice over the course of the project, you will use the CATME system to evaluate yourself and your group members. This will be your opportunity to give feedback about your opinion of the performance of your team members. If there are certain team members that are clearly not pulling their weight, or who are doing more than their share of the work, the individual's final project grade may be adjusted to reflect this at my discretion.

Your videos will be evaluated by your professor as well as 6-8 of your classmates.

As part of your grade, you will use a posted rubric to evaluate two other groups' videos. You will be assigned other groups to evaluate once the videos are posted. Information will be collected using the Qualtrics survey system. You will receive a survey link after the videos are posted.

The project will consist of 100 cumulative points, which are worth 25% of your final grade. The allotted points and due dates of the various items can be found in the table below:

## Project Schedule:

<b>Item</b>	<b>Due Date</b>	<b>Points</b>
GA1: Topic Summary, Hypothesis, Questions	Mon 3/28, uploaded to myWPI by 11:59pm	15 points
GA2: Annotated bibliography	Mon 4/4 Uploaded to myWPI by 11:59pm	20 points
Team assessment 1 (CATME)	Friday 4/8 Surveys close at 11:59pm	Must be completed. 5% deduction in final project grade if not completed
GA3: Transcript	Fri 4/15 Uploaded to myWPI by 11:59pm	30 points
GA4: Final Video	Fri 4/29 Uploaded to youtube and document to drop box by 11:59pm	35 points (Instructor's evaluations = 25 points, peer evals = 10 points)
Team assessment 2 (CATME)	Tue 5/3 Surveys close at 11:59pm	Must be completed. 5% deduction in final project grade if not completed
Peer Evaluation of 2 other videos (Qualtrics survey)	Tue 5/3 Surveys close at 11:59pm	Must be completed. 5% deduction in final project grade if not completed.
Video Contest	In Class on Tue 5/3	Win a fabulous prize!

### List of potential topics

These are some suggestions, but you are welcome to research and propose your own topic as well. There are many, many websites out there with quasi-scientific health headlines that you can use to come up with your own ideas.

Causes Cancer:

- power lines, pesticides, fluoridated water, processed meat/nitrates, artificial sweeteners, any others

Entertainment:

- TV makes you dumber, ruins your eyesight
- Video games lead to aggressive behavior

Heart disease:

- Foods that are good for your heart (but, see banned list)
- Good dental hygiene reduces heart disease

Health benefits of consuming (though you must focus on a SPECIFIC health benefit, like blood pressure, weight loss, metabolism, cancer, dementia, etc)

- organic food, gluten-free diet, daily multivitamin, fish oil, various herbal teas or other pills/supplements, antioxidant-rich foods

Weight loss properties of (but see banned list):

- acai berry, teas, particular daily exercise regimens (8 minute workouts, etc)

Babies and Children:

- breastfeeding is healthier/better than formula/bottle
- classical music makes babies smarter
- television programs designed for infants or toddlers improve early learning
- Alcohol, caffeine is bad for a developing fetus

Immunity (but see banned list):

- cures for the common cold: zinc, lysine, Echinacea
- foods or supplements that confer resistances to infection or disease
- role of the microbiome or microbial supplements/probiotics in preventing infection or disease

Other misc:

- Ginger, peppermint, slippery elm as a cure for stomach cramps/nausea
- Ginko biloba improves memory
- Effectiveness of “neural training” games (eg. Lumosity) or use in combatting dementia or neurodegenerative disease
- Relationships between mental health and exercise, other non-strenuous activity, yoga, tai-chi, or effects on physical wellness (cholesterol, blood pressure, cancer, etc)

Banned topics (these have been patently disproven and/or have been done too many times in this class): Chocolate or red wine and heart disease, vitamin C and colds, vaccines and autism, green tea or caffeine and weight loss, oatmeal and cholesterol, and the example of carrots and eyesight used herein

Rubric for Group Assignment 1 (Topic and Hypothesis)

Group # \_\_\_\_\_

	Unacceptable	Needs Improvement	Acceptable	Very Good	Excellent
<p><b>Article Summaries</b>  <b>4 points</b>                      At least two popular articles from reasonable sources are identified, and an accurate summary of the contents of the articles are provided</p>	<p><b>0</b>                      Not completed, or clearly lacks effort.</p>	<p><b>1</b>                      Articles are inappropriate, or summaries are brief and uninformative</p>	<p><b>2</b>                      Appropriate articles identified. Summaries are inadequate or inaccurate, and show little insight.</p>	<p><b>3</b>                      Appropriate articles identified. Summaries are accurate, succinct, and informative.</p>	<p><b>4</b>                      Characteristics of "Very Good" category plus some additional element: additional sources identified, conflicting sources identified and a discussion of the conflict is provided, or other efforts beyond the basic description of this category</p>
<p><b>Worksheet (includes hypothesis)</b>  <b>10 points</b>                      The assignment should narrow the project focus to a specific and scientifically valid hypothesis which the team will investigate. Experimental design worksheet should be fully completed.</p>					<p><b>10</b>                      one point awarded per question</p>
<p><b>Citations</b>  <b>1 points</b>                      Please refer to the project description document for a detailed description of how to cite popular sources</p>	<p><b>0</b>                      Citations are present but do not conform to required format</p>				<p><b>1</b>                      Citations are correct</p>

## Rubric for Group Assignment 2 – Annotated Bibliography – 20 points

There should be a MINIMUM of three primary research articles, or ONE for EACH member of your group. Each one is worth 6 points (18 points total) If your group needs to submit more than three I'll count the best three for grading purposes but don't overdo it with a million articles. (If your group has only three people you can still submit 4-5 articles!) The remaining 2 points will be assigned for the correctness of the citation style.

Remember that the three articles that will be graded should be PRIMARY ORIGINAL RESEARCH. Review articles are useful and can be listed, but will not earn any points as one of the three mandatory articles that will be graded for this assignment.

Each article will be assigned points based on the rubric below:

### Article Annotations (best three articles, 18 points total):

- |          |  |
|----------|--|
| 0 points | Not completed and/or completely lacking in effort, and/or does not follow the prescribed format  |
| 2 points | Needs improvement – ( <i>includes any articles that are not primary literature regardless of how well the summary is written</i> ) summaries lack in sufficient detail or are inaccurate assessments of the literature, and/or are not directly relevant to the hypothesis of the project, and/or relevance to the hypothesis is not articulated |
| 4 points | Good – decent summary provided but may be confusing, poorly worded, or difficult to understand in a minor way, and/or explanation of the relevance to the project hypothesis is unclear or questionable  |
| 6 points | Excellent – completely conforms to the prescribed format and content, accurately summarizes the article content and provides a clear explanation of the relevance of the content to the project hypothesis   |

### Citation (2 points):

- |          |   |
|----------|---|
| 0 points | Not completed, or prescribed citation format was completely ignored |
| 1 point  | Minor errors but attempted to adhere to prescribed format           |
| 2 points | All citations conform to prescribed format                          |



Rubric for Group Assignment 3 – Video Script

Assignment total = 30 points

	Not Completed	Unacceptable	Needs Improvement	Acceptable	Very Good	Excellent
<p><b>Content:</b>  <b>Introduction to the topic</b>  <b>5 points</b>                      The topic is clearly presented to the audience, and is easily understood</p>	0	<p>1                      The topic of the project is not immediately evident.</p>	<p>2                      It takes the reader some significant effort or time to understand the main topic.</p>	<p>3                      The topic is mostly clear but could be better stated or better organized.</p>	<p>4                      The topic is clear.</p>	<p>5                      The topic is extremely clear and easily understood.</p>
<p><b>Content:</b>  <b>presentation of supporting evidence</b>  <b>12 points</b>                      Key information from the primary literature is described in terms that a non-scientific audience can understand; the cited evidence is directly relevant to the topic. The evidence is properly interpreted and comes from reputable sources.</p>	0	<p>1 2 3                      Supporting scientific evidence is scant, not explained, completely irrelevant to the topic, or not from a reputable source</p>	<p>4 5 6                      Supporting evidence is not explained in non-scientific terms; the validity of the evidence is questionable; report is full of jargon that is not explained or evidence that is not relevant to the stated topic</p>	<p>7 8 9                      Scientific evidence is presented, and is explained in non-scientific terms; the quantity of evidence or the quality of the explanation could be improved. One or two facts are not relevant to the topic.</p>	<p>10 11                      Valid scientific evidence is presented in non-scientific terms that are easy to follow and convincing to the reader. The data seem relevant to the topic at hand.</p>	<p>12                      Valid scientific evidence is presented in terms that are easy to follow and convincing to the reader. The team has shown extraordinary insight in identifying high-quality, relevant data, or in interpreting the specific shortcomings of the data that are available.</p>
<p><b>Content: Conclusion</b>  <b>5 points</b>                      An interpretation of the preponderance evidence is presented in terms that are understandable by a non-scientific audience; The conclusion is consistent with and supported by the evidence that is presented.</p>	0	<p>1                      It is completely unclear how the students interpreted the factual data they have presented; the stated conclusion seems contradictory to the evidence presented.</p>	<p>2                      The conclusion is very confusing; it is difficult to understand how the students arrived at the conclusion; elements of the presented data do not seem to support the conclusion.</p>	<p>3                      A conclusion is stated, and mostly agrees with the given evidence but could be improved in language or clarity (too vague or too technical)</p>	<p>4                      A clear conclusion is given that seems consistent with the evidence provided.</p>	<p>5                      The conclusion is very clear; the chosen evidence is entirely consistent with the conclusion. The reader is convinced of the validity of this conclusion</p>
<p><b>Style:</b>  <b>4 points</b>                      Includes appropriate use of language, grammar, spelling and punctuation</p>		<p>0                      Multiple errors, clear lack of proofreading detracts from the transcript; style is sloppy or inappropriately colloquial</p>	<p>1                      Numerous errors; language is disorganized or difficult to follow</p>	<p>2                      A few errors; word choice is awkward in a few places; language is difficult to follow in isolated spots</p>	<p>3                      Very few errors; Generally well organized and easy to follow</p>	<p>4                      No errors; language flows well and is very logical and easy to follow</p>
<p><b>Citations:</b>  <b>4 points</b>                      Source information is appropriately cited. Citations comply with the prescribed format.</p>		<p>0                      Numerous facts are given without proper citation; Citation does not follow any appropriate format; References are not listed at the end of the document</p>	<p>1                      Multiple errors in citation were made; Citations are inconsistent in format.</p>	<p>2                      Several items that should have been cited were overlooked; A few errors were made in citation format</p>	<p>3                      Most facts are appropriately cited; Citation style adheres to a prescribed format.</p>	<p>4                      All facts are appropriately cited. Citation completely adheres to a prescribed format.</p>

**Rubric for Group Assignment 4: Video Presentation Assignment total: 35 points: Prof. Farny's rating = 25 points (using rubric below); 10 points from average of peer surveys**

	<b>Not Completed</b>	<b>Unacceptable</b>	<b>Needs Improvement</b>	<b>Acceptable</b>	<b>Very Good</b>	<b>Excellent</b>
<p><b>Content:</b>  <b>Introduction to the topic</b>  <b>5 points</b>                      The topic is clearly presented to the audience, and is easily understood.</p>	<p><b>0</b>                      There is no explicit definition of the topic</p>	<p><b>1</b>                      The topic of the project is not immediately evident.</p>	<p><b>2</b>                      It takes the viewer some significant effort to understand the main topic.</p>	<p><b>3</b>                      The topic is mostly clear but could be better stated or better organized.</p>	<p><b>4</b>                      The topic is clear.</p>	<p><b>5</b>                      The topic is extremely clear and easily understood.</p>
<p><b>Content:</b>  <b>presentation of supporting evidence</b>  <b>5 points</b>                      Key information from the primary literature is described in terms that a non-scientific audience can understand; the cited evidence is directly relevant to the topic. The evidence is properly interpreted and comes from reputable sources.</p>	<p><b>0</b>                      There is no supporting evidence presented</p>	<p><b>1</b>                      Supporting scientific evidence is scant, not explained, completely irrelevant to the topic, or not from a reputable source</p>	<p><b>2</b>                      Supporting evidence is not explained in non-scientific terms; the validity of the evidence is questionable; the team uses jargon that is not explained or evidence that is not relevant to the stated topic</p>	<p><b>3</b>                      Scientific evidence is presented, and is explained in non-scientific terms; the quantity of evidence or the quality of the explanation could be improved. One or two facts are not relevant to the topic.</p>	<p><b>4</b>                      Valid scientific evidence is presented in non-scientific terms that are easy to follow and convincing to the viewer. The data seem relevant to the topic at hand.</p>	<p><b>5</b>                      Valid scientific evidence is presented in terms that are easy to follow and convincing to the viewer. The team has shown extraordinary insight in identifying high-quality, relevant data, or in interpreting the specific shortcomings of the data that are available.</p>
<p><b>Content: Conclusion</b>  <b>5 points</b>                      An interpretation of the preponderance of evidence is presented in terms that are understandable by a non-scientific audience; The conclusion is consistent with and supported by the evidence that is presented.</p>	<p><b>0</b>                      No conclusion is stated</p>	<p><b>1</b>                      It is completely unclear how the students interpreted the factual data they have presented; the stated conclusion seems contradictory to the evidence presented.</p>	<p><b>2</b>                      The conclusion is very confusing; it is difficult to understand how the students arrived at the conclusion; elements of the presented data do not seem to support the conclusion.</p>	<p><b>3</b>                      A conclusion is stated, and mostly agrees with the given evidence but could be improved in language or clarity (too vague or too technical)</p>	<p><b>4</b>                      A clear conclusion is given that seems consistent with the evidence provided.</p>	<p><b>5</b>                      The conclusion is very clear; the chosen evidence is entirely consistent with the conclusion. The viewer is convinced of the validity of this conclusion</p>
<p><b>Production:</b>  <b>5 points</b>                      Includes editing, sound and light, special effects.</p>	<p><b>0</b>                      Unable to see and/or hear the video well enough to evaluate it.</p>	<p><b>1</b>                      Defects in sound and/or lighting quality make it difficult to watch and understand, and significantly detract from the final product.</p>	<p><b>2</b>                      Some defects in editing, sound quality or lighting quality detract somewhat from the viewer's experience.</p>	<p><b>3</b>                      Editing, sound and lighting do not interfere with the viewer's experience, but neither do they enhance it.</p>	<p><b>4</b>                      Students made an effort to enhance the quality of the finished product with sound, lighting, effects and/or editing.</p>	<p><b>5</b>                      Outstanding effort was clearly made to produce a polished product. Very easy to see and hear. The team went above and beyond in production, editing, and/or effects.</p>
<p><b>Creativity:</b>  <b>5 points</b>                      The team attempted to present the information from a new or different point of view. The finished product is entertaining and interesting to watch.</p>	<p><b>0</b>                      Clear lack of effort put into production of the final video.</p>	<p><b>1</b>                      Presentation lacks in creativity.</p>	<p><b>2</b>                      The presentation is dry, or is too complicated or abstract for the viewer to follow.</p>	<p><b>3</b>                      The team attempted to present the story from a new or different point of view.</p>	<p><b>4</b>                      Topic is prevented from an interesting or different point of view.</p>	<p><b>5</b>                      The presentation was both interesting and enjoyable to watch. The team truly went "outside-the-box" to create a fresh and innovative way to present their project.</p>

The Qualtrics survey you will fill out will roughly follow the guidelines below. The average of the responses of your classmates will be combined to arrive at the final 10 points of the grade. (approximately 6-8 of your classmates will review your video.)

Your Name:

Group number of the video you are reviewing:

Your opinion of this video (you will click the appropriate buttons on the online survey form for each question):

Question	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
The topic is clear and easy to understand					
The evidence presented to support the argument is convincing					
The evidence is explained in a way that is easy for a non-scientific audience to understand					
The conclusion is clear and easy to understand					
I learned something from this video					
I feel that my classmates made an honest effort to do their best in creating this video					
I enjoyed watching this video					

Additional Comments: