



LIFESCI 2N03: Human Nutrition for Life Science

Shelley Vanderhout, RD, PhD

Week 1

Land Acknowledgement

We recognize and acknowledge that McMaster University meets and learns on the traditional territories of the Mississauga and Haudenosaunee nations, and within the lands protected by the “Dish With One Spoon” wampum, an agreement amongst all allied Nations to peaceably share and care for the resources around the Great Lakes.

The “dish” represents the land that is to be shared peacefully and the “spoon” represents the individuals living on and using the resources of the land in a spirit of mutual co-operation.

Wampum belts (shown here) are often made to show agreements between people.





welcome

— BACK —

After a decade in university...

- Manage your time wisely
- Reach out to people you admire or whose work you are interested in
- Use the resources available to you
- Know your own work style
- Explore!



About LifeSci 2N03

- We'll cover:
 - How nutrition is studied (research) and assessed (individual health)
 - Basics of macro- and micronutrients
 - Nutrition recommendations (Canada's Food Guide)
 - Dietary patterns (vegetarianism, fad diets)
 - “Superfoods,” antioxidants, and the microbiome





How will this course run?

Mondays 9:30-10:20	Tuesdays 10:30-11:20	Thursdays 9:30-10:20
Virtual drop-in office hours (MS Teams)	Synchronous LIVE class (Echo 360) Will go 'LIVE' about 5min before class starts	Synchronous LIVE class (Echo 360) Will go 'LIVE' about 5min before class starts



How do the virtual office hours work?

LIFESCI 2N03 C01 FAL 2021 Human N... ...

General

Virtual Office Hours

SV

Shelley Vanderhout 10:45 a.m.
Drop in to ask questions about course content, assignments, readings, the exam, and more.

Virtual Office Hours
Occurs every Monday @9:30 a.m.

Reply

A screenshot of a digital communication interface. On the left, there's a sidebar with course information: 'LIFESCI 2N03 C01 FAL 2021 Human N...', three dots, and two tabs: 'General' and 'Virtual Office Hours'. To the right of the sidebar is a profile picture of a person named 'SV' with a green checkmark. Below the profile picture is a message from 'Shelley Vanderhout' at '10:45 a.m.' inviting people to drop in for questions. Underneath this message is a purple box containing a calendar icon and the text 'Virtual Office Hours' followed by 'Occurs every Monday @9:30 a.m.'. At the bottom of this purple box is a 'Reply' button.



How will the synchronous classes run?

- Go to Echo360 in the content section of our Avenue course → takes you to Echo360
 - Expand the section of the course that we are in (i.e., Carbohydrates)
 - Click green ‘LIVE’ button to join
 - LIVE stream will start about 5 mins before class



Tips for students

- If you don't see “LIVE” at time of synchronous class, refresh webpage
- Click “LIVE” to join the class
- Click “Show Live Stream” on bottom left
- Choice of 3 views (slides, my desktop with PPT and my camera). Double click preferred view to make it larger and close camera if you don't want it on, or delay
- Can follow along using slide advancer in Echo360 and make notes as you go in Echo360



What about the asynchronous work?

This is in the syllabus 😊

	Week 1 (Sept 7-10)	Week 2 (Sept 13-17)	Week 3 (Sept 20-24)	Week 4 (Sept 27-Oct 1)	Week 5 (Oct 4-8)
Topic	Intro to nutrition	What is a healthy diet?	Carbohydrates	Fat	Protein
Module Due	Sept 10 11:59 PM	Sept 17 11:59 PM	Sept 24 11:59 PM	Oct 1 11:59 PM	
	Week 6 (Oct 18-22)	Week 7 (Oct 25-29)	Week 8 (Nov 1-5)	Week 9 (Nov 8-12)	Week 10 (Nov 15-19)
Topic	Vegetarian & vegan diets	Hydration	Antioxidants	Weight loss & fad diets	Fad diets
Module Due	Oct 22 11:59 PM				Nov 19 11:59 PM
	Week 11 (Nov 22-26)	Week 12 (Nov 29-Dec 3)	Week 13 (Dec 6-10)		
Topic	Superfoods	Gut health	Wrap up		
Module Due	Nov 26 11:59 PM				



Where are the course resources kept and how should I take notes?

- Skeleton notes uploaded to Avenue on Mondays
 - Come to class on Tues and Thurs and complete your notes, or watch recordings
 - Just like in-person classes, completing notes in class encourages you to stay engaged or awake!
 - I recommend printing notes and hand writing in notes as we go through class
- Skeleton notes also uploaded to Echo360 (if you want to take notes using Echo360)

The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking



Pam A. Mueller¹ and Daniel M. Oppenheimer²

¹Princeton University and ²University of California, Los Angeles

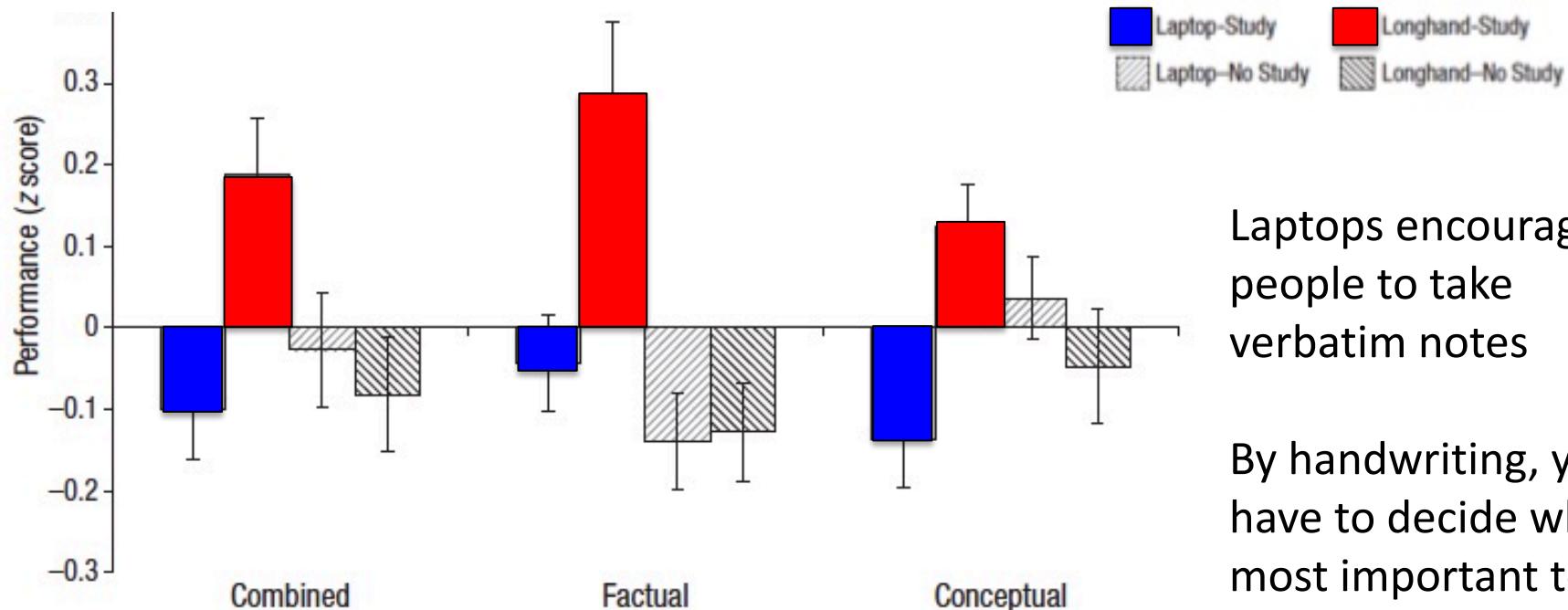
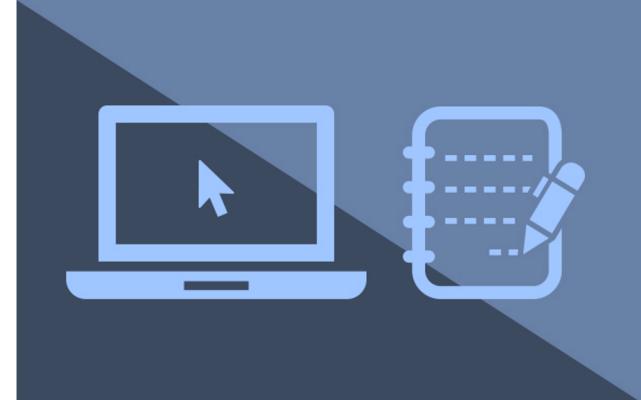


Fig. 5. Mean z-scored performance on factual-recall and conceptual-application questions as a function of note-taking condition and opportunity to study (Study 3). Combined results for both question types are given separately. Error bars indicate standard errors of the mean.

Laptops encourage people to take verbatim notes

By handwriting, you have to decide what's most important to write



How will I be assessed?

- | | |
|------------------------------|-----|
| 1) Assignment 1 | 25% |
| 2) Assignment 2 | 25% |
| 3) Online quizzes in Modules | 10% |
| 4) Participation | 5% |
| 5) Cumulative final exam | 35% |



What is Assignment #1 (25%)

Objective: Refine science communication skills

- Critique a mainstream news article about a food or beverage by comparing the news article to the scientific article that the news piece is based on
 - Create an infographic about the food or beverage
-
- Due Oct 8th, 2021
 - 3 day grace period if needed
 - Detailed guidelines on Avenue
 - More details on creating infographics next week

High blood pressure equals **HIGHER RISK OF STROKE.**



**NORMAL
BLOOD PRESSURE
IS BELOW
120/80**



**STROKE HAPPENS
WHEN A CLOT
OR RUPTURE
INTERRUPTS BLOOD
FLOW TO THE
BRAIN. WITHOUT
OXYGEN-RICH BLOOD,
BRAIN CELLS DIE.**

Most people who have a first **STROKE** have **HIGH BLOOD PRESSURE.¹**



 **80%**
of strokes can be
PREVENTED.²

Nearly
1 IN 6
American adults with
high blood pressure
DON'T KNOW.³

 At age 50, people without
LIFE EXPECTANCY
5 YEARS LONGER

than people with high blood pressure.³

 Have your
blood pressure
checked
and keep it
in check to
REDUCE
your **RISK OF STROKE.**

¹ Neal B et al; Lancet. 2000;356:1955-64 // ² D'Agostino, R.B. et al. Stroke. 1994;25:40-43 // ³ Mozzafarian D et al. Circulation. 2017;135:e135-139



What is Assignment #2 (25%)

Objective: Improve food literacy

- Log your diet for 5 days, enter everything you ate and drank into Diet and Wellness Plus software, generate analysis and compare your diet to recommendations
 - Find misleading food products and discuss what is misleading about them
-
- Due Nov 8th, 2021
 - 3 day grace period if needed
 - Detailed guidelines on Avenue
 - More information about this assignment in next few weeks



Diet Wellness +

- Online diet analysis software which provides nutrient breakdown of foods and beverages
- Necessary to complete Assignment #2
- Accessible via link found in syllabus
- Discount code: DIGITALB2S1479 (in syllabus)
- Resources for using Diet Wellness + available on Avenue



What if I need help with the assignments?

- Drop-in virtual office hours every week with me (Mondays at 9:30-10:20am) on Teams

The screenshot shows a Microsoft Teams message from Shelley Vanderhout (SV) at 10:45 a.m. The message invites the recipient to drop in to ask questions about course content, assignments, readings, the exam, and more. It also mentions Virtual Office Hours occurring every Monday @ 9:30 a.m. The message includes a reply button.

LIFESCI 2N03 C01 FAL 2021 Human N... ...

General

Virtual Office Hours

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Occurs every Monday @ 9:30 a.m.

Reply

- Danial, one of your TAs, can answer questions about Diet and Wellness + software (aminaeid@mcmaster.ca)



Teams

Welcome to LIFESCI 2N03 C01 FAL 2021 Human Nutrition for Life Sciences

Choose where you want to start



- You may use this space to ask your peers questions or post helpful websites, articles or resources you find
- It will not be actively monitored by me or TAs
- I may post announcements here, which I will also post on Avenue (and vice versa)



What is TopHat?

TOP HAT

- Platform to house our e-text
- 7 modules
- Each module has:
 - Learning objectives
 - Text to read
 - Questions throughout (marks for answering)
 - 1-2 videos to watch
- Completion in 30min-1 hour



What is TopHat?

- You will receive an email invite to access the textbook from TopHat
 - Join code: 997578
- The McMaster Bookstore also has information on this virtual textbook online



Our textbook

Welcome to your journey through the world of food and nutrition!

About the author

Thanks for choosing this e-book to guide you on your journey through the (sometimes confusing) world of nutrition! I'm Dr. Janet Pritchard, an Assistant Professor at McMaster University in the School of Interdisciplinary Science and Kinesiology. I have had a passion for nutrition and exercise science since my first year of university as an

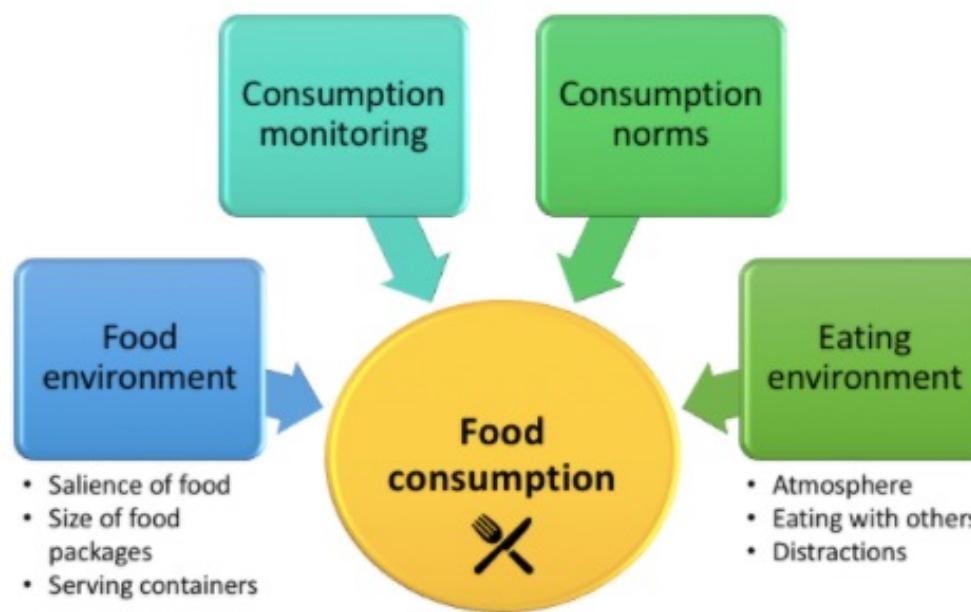




Our textbook

1.1 Why do we eat what we eat?

Did you know that undergraduate students make over 200 decisions about what to eat or drink each day (Wansink & Sobal, 2007)? If you think about it, that's a lot of opportunities to make good and bad choices. Obviously, our knowledge of nutrition influences what we choose to put in our bodies, but many other factors play a role. Overconsumption and underconsumption of food can lead to health issues down the road as there may be nutrient excess or deficiencies. Let's take a minute to look at some factors that influence our food choices.





Our textbook



Homework

Due September 10, 2021 [Details](#)



Assign to Individuals



Nutrition Applications for Optimal Health

[Copy URL](#)

Section 1: What is a healthy diet?

Contains 5 items • Worth 5 points [Adjust Points](#)



Knowledge check: Centenarian diet

[Show Correct Answer](#)

[Show Responses](#)

Match the dietary features to the Blue Zone.

Premise

Response

1	Greece
---	--------

→	A	bitter melon
---	---	--------------

2	Japan
---	-------

→	B	sheep's cheese
---	---	----------------

3	Italy
---	-------

→	C	avocados
---	---	----------

4	California
---	------------

→	D	eggs
---	---	------

5	Costa Rica
---	------------

→	E	potatoes
---	---	----------



Readings & Modules



- Designed to create a foundation for the material covered in class
- Allow for discussion and application of concepts during lectures instead of covering more basic principles
- Modules are embedded to check understanding as you read
 - Will be made available at least 2 weeks before due date



How do I gain access to it and how do I get marks?

- Can purchase through TopHat website or Bookstore
 - \$30 through TopHat or \$37.95 through bookstore plus \$16 subscription to TopHat to access book = \$46
- 10% of final grade from completing questions throughout the modules
 - Each module has ~10 questions
 - For each question: $\frac{1}{2}$ mark for attempting the question + $\frac{1}{2}$ mark for getting it correct (and you have 2 attempts to get it correct!)



Will I be tested on content from the modules?



- Yes, the content complements, adds to or overlaps with the content we cover in class
- Content in class *builds* on modules



How can I get the participation marks?

- Polls will occur in Echo360
 - I will open each question for about 2 mins to allow for internet delays
- Can answer polls as we are going through class together
- Polls can also be answered AFTER class if you watch recordings back if you miss LIVE class
 - Please wait until LIVE class is finished before trying to access recordings and polls



Why polls throughout class?

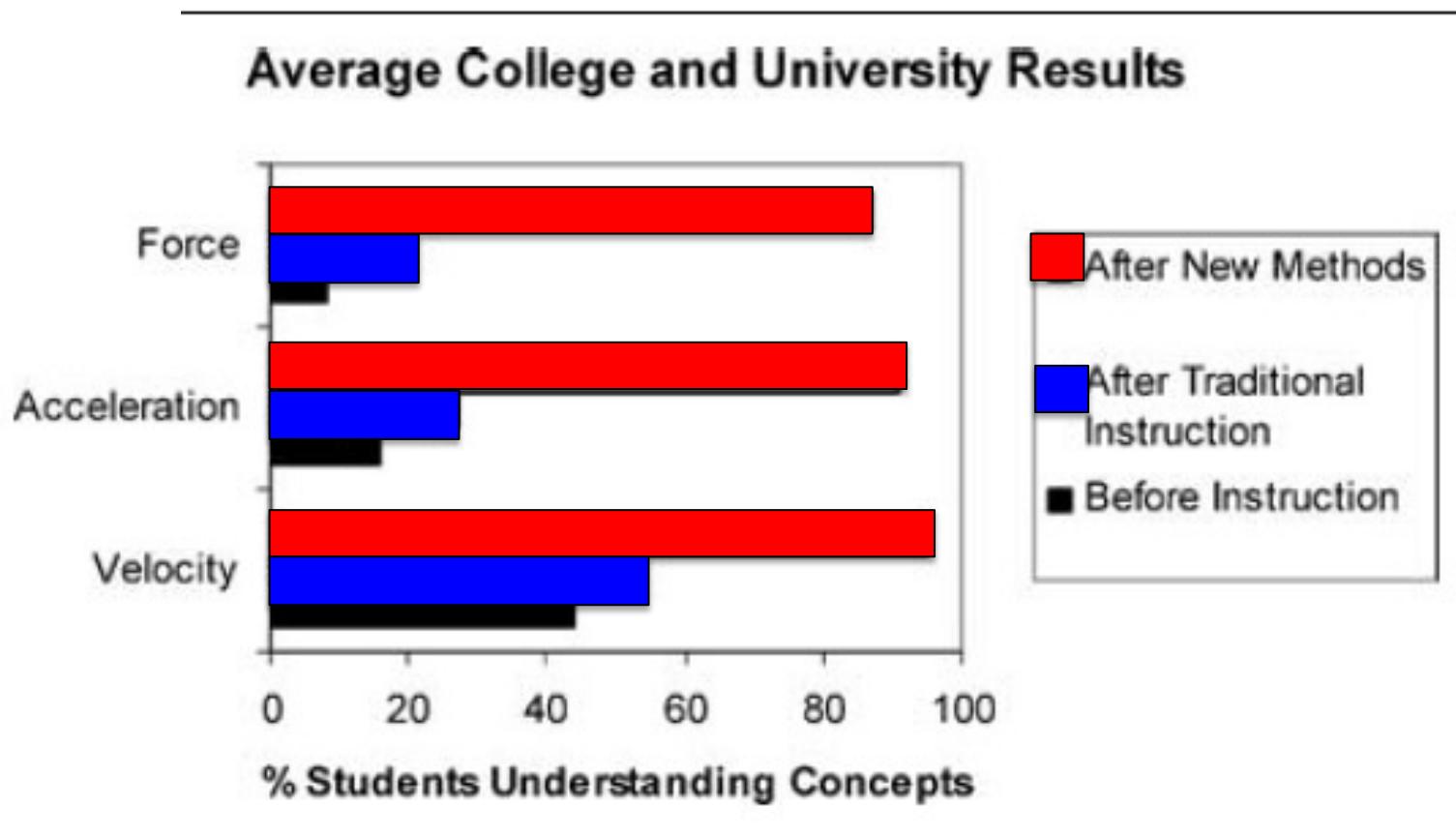


Figure 1. Active-engagement vs. traditional instruction for improving students' conceptual understanding of basic physics concepts (taken from Laws et al., 1999)



How will participation be calculated?

90-100% of questions answered = 5%

80-89% of questions answered = 4%

65-79% of questions answered = 3%

50-64% of questions answered = 2%

35-49% of questions answered = 1%

<35% of questions answered = 0%



Grace period folder

Friday, October 8, 2021

Assignment #1 - Due 11:59 PM

[Assignment #1](#)

Due October 8 at 11:59 PM

Monday, October 11, 2021

Assignment #1 Grace Period Folder - Due 11:59 PM

[Assignment #1 Grace Period Folder](#)

Due October 11 at 11:59 PM



MSAF (McMaster Student Absence Form)

mcmaster.ca/msaf

The University recognizes that students periodically require relief from academic work for medical or other personal situations. This Policy aims to manage these requests by taking into account the needs and obligations of students, instructors and administrators. It is the prerogative of the instructor of the course to determine the appropriate relief for missed term work in their course. Any concerns regarding the granting of relief should be directed to the respective [Faculty/Program Office](#).

Requests for relief should be made with a commitment to academic integrity in mind. Requests that deviate from this commitment will be handled under the [Academic Integrity Policy](#) and/or [Code of Student Rights and Responsibilities](#), where appropriate.



Final Exam

- Hosted on Avenue
- Multiple choice
- To be scheduled by registrar
- More details later!





Email etiquette



- **Email is for brief communication**
 - “1 sentence issues” (missed test, appointment outside of office hrs.)
- **No... screenshots of slides from class (i.e., slide 13 of week 9 and slide 6 of week 10...)**
 - “Can you explain how protein is metabolized? What happens on a low carb diet? I also don’t understand dehydration...”



What about netiquette?

Before you send a comment or post, ask yourself:

- Could anything in this message come off as rude, insensitive or disrespectful?
- Is this something I would keep to myself if I were communicating in person?
- Was I upset, frustrated or angry when I wrote this message?

If you answered “yes” to any of these questions, you should review and edit your message before you send it

Understanding changes when communicating online.

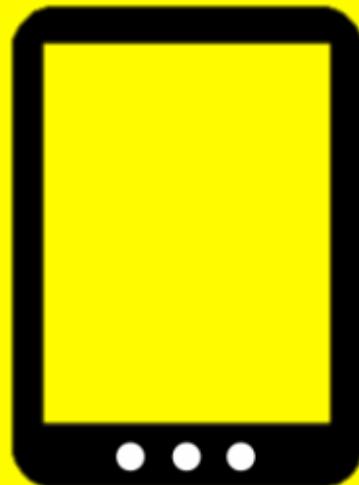
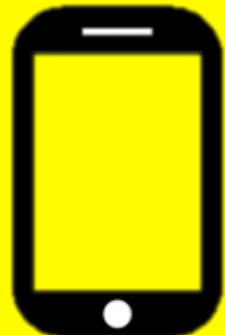
- Consider how others might interpret your words or actions.
- It's harder to convey tone online, so avoid using sarcasm or humour that could be misinterpreted.
- To avoid further confusion, ask for clarification if you need help understanding a message or comment.

You may encounter people with opposing opinions. In these situations:

When responding:

- Be respectful.
- Don't insult the other person or make personal remarks.
- If you feel angry or upset about an interaction, take a break to calm down and respond at a later time.
- Ask about the person's intent, and allow them to explain their perspective.

What do
you
think?

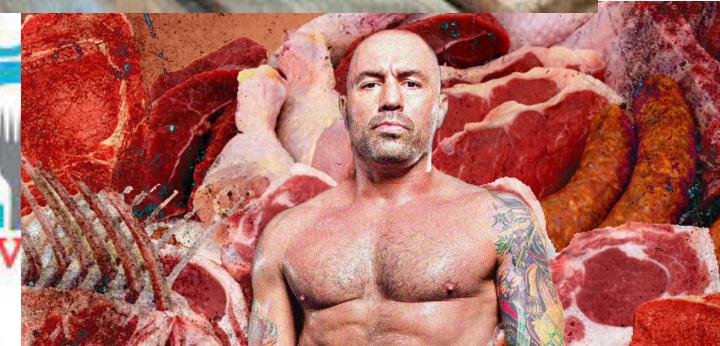




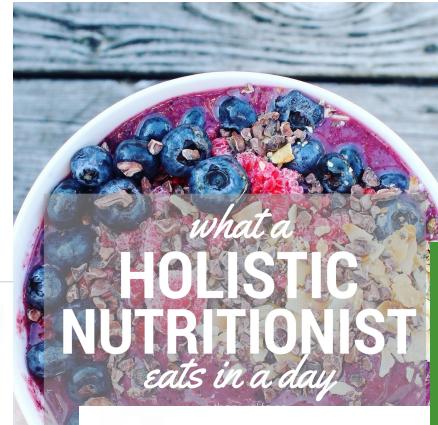
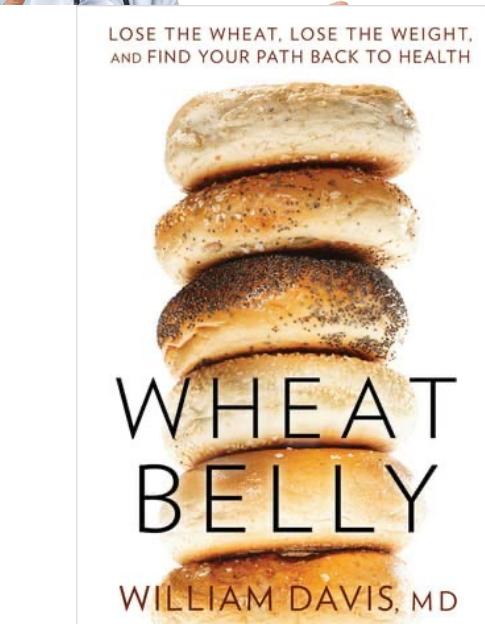
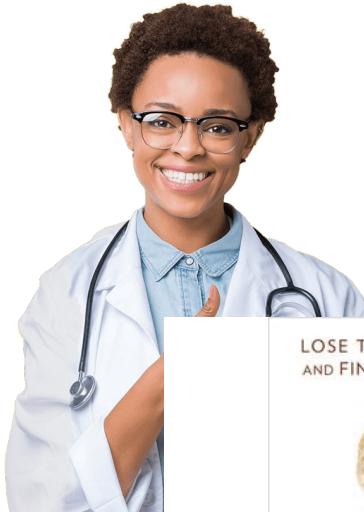
Introduction to the field of nutrition

Nutrition is all around us!





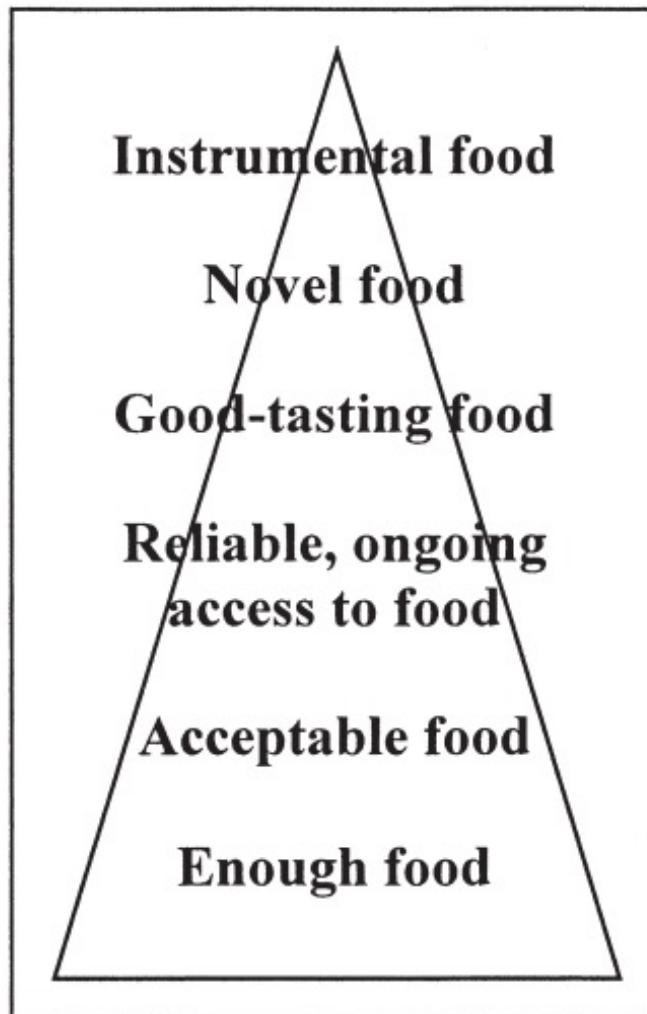
Nutrition Industry



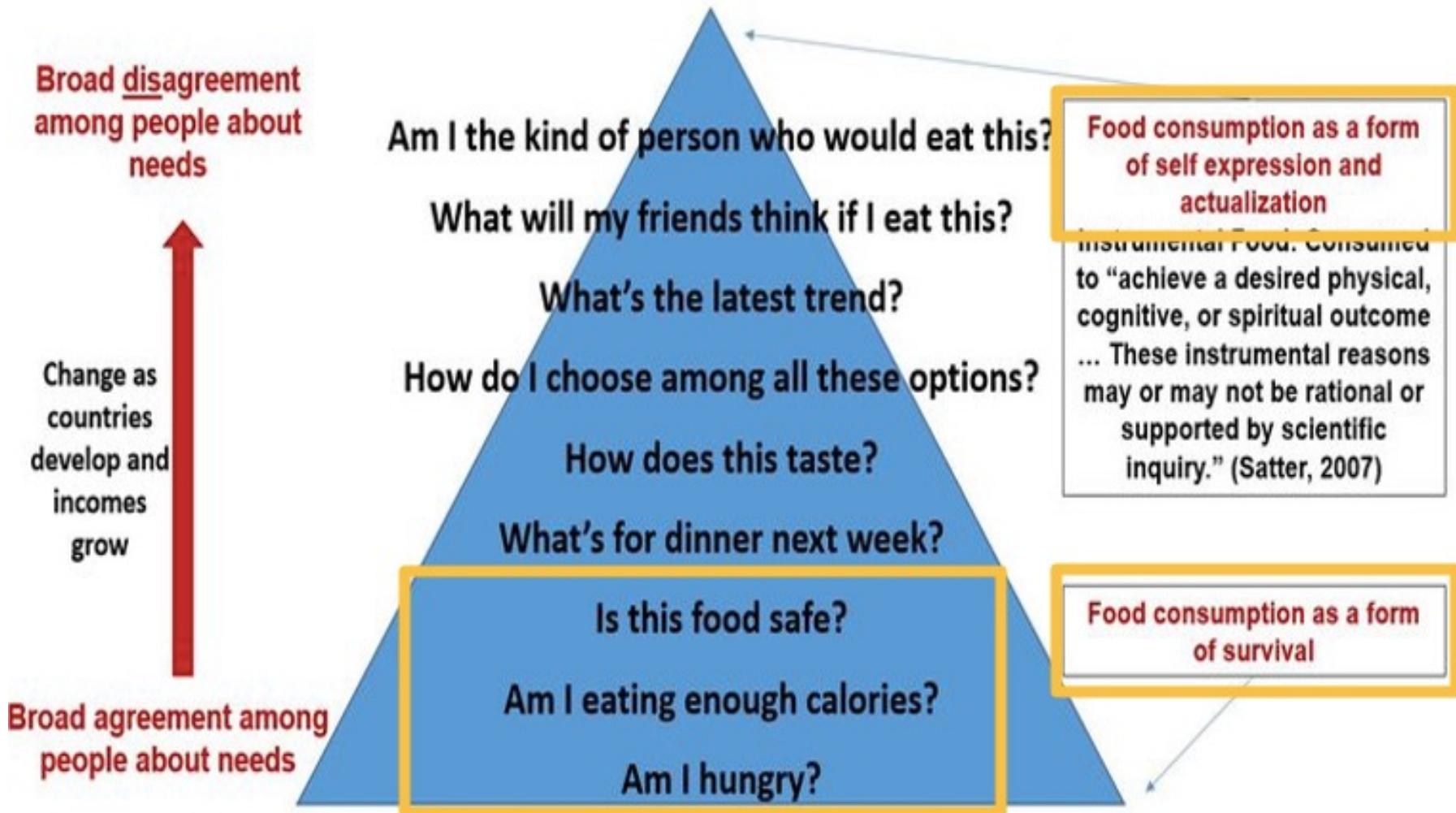
Learning objectives

1. Discuss the relevance of the food needs pyramid to food choices
2. Define health and food literacy and describe how food literacy influences dietary choices
3. List and differentiate the 6 classes of nutrients
4. Compare and contrast energy and nutrient density

Food Needs Hierarchy



Food Need Hierarchy



Source: Jayson Lusk, Purdue University

<http://jaysonlusk.com/blog/2018/8/15/disagreement-and-food-demand>

Food literacy



Health literacy

Cullen T et al. (2015) *Can J Diet Practice Res*, 76(3),140-145. Doi:10.3148/cjdpr-2015-010
Rootman I et al. *A Vision for a Health Literate Canada: Report of the Expert Panel on Health Literacy*. Canadian Public Health Association; 2008. <https://www.deslibris.ca/ID/251817>

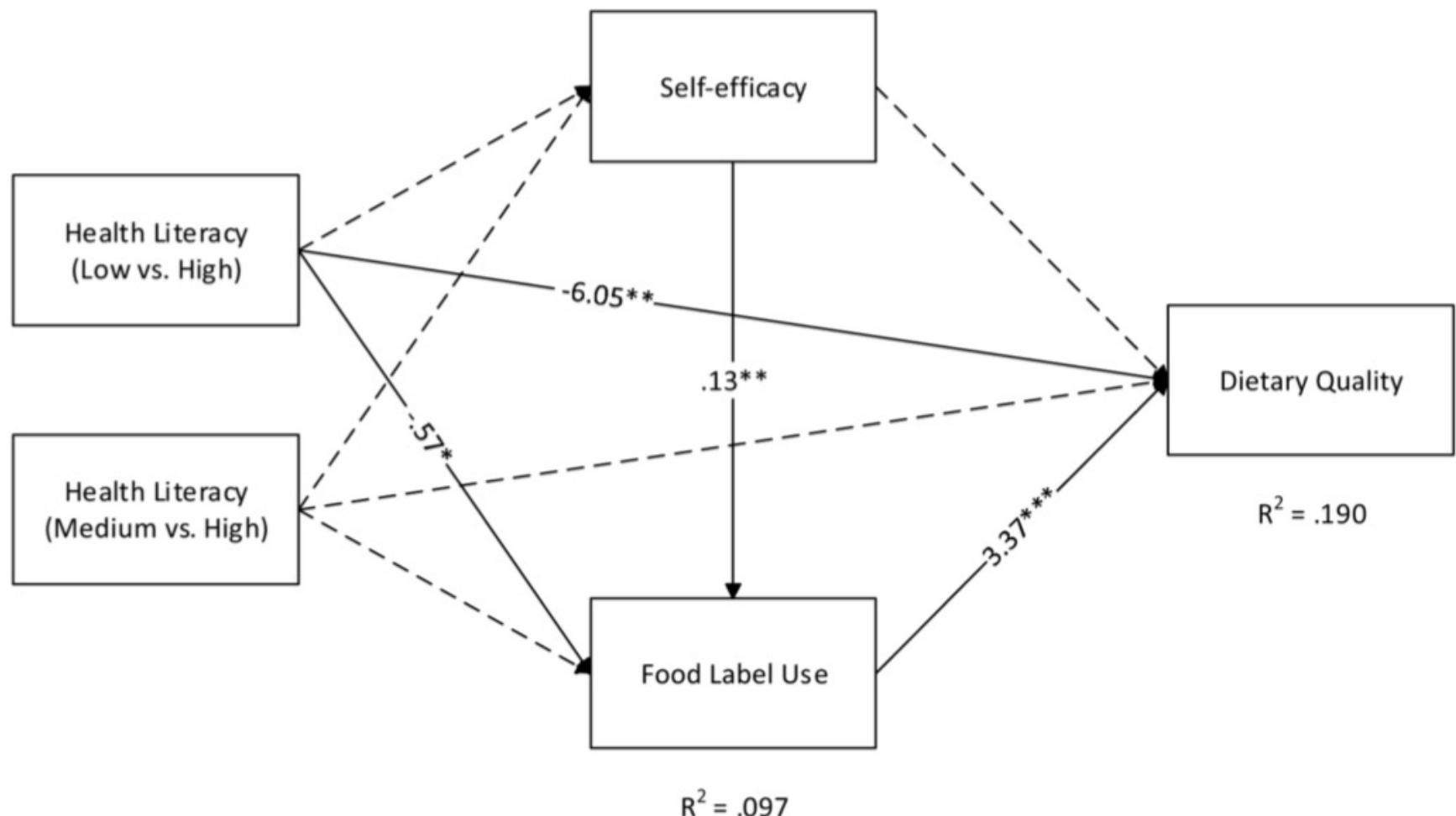
Food and health literacy



How do food literacy and health literacy influence your diet?

N=106 young adults
18-29 years of age

$$R^2 = .017$$



Recap

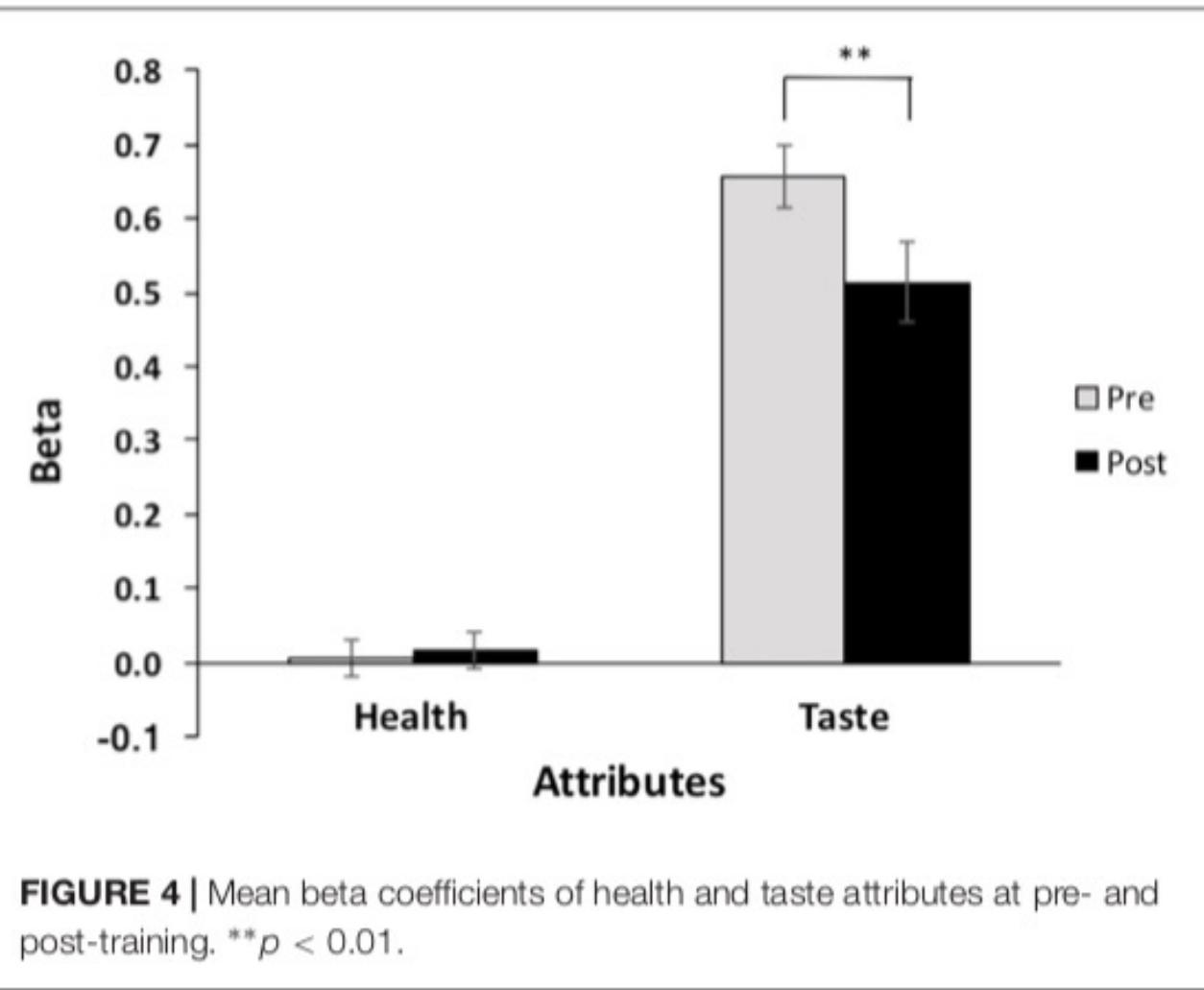
Food Advertising Literacy Training Reduces the Importance of Taste in Children's Food Decision-Making: A Pilot Study

Oh-Ryeong Ha¹, Haley Killian¹, Jared M. Bruce^{1,2}, Seung-Lark Lim¹ and Amanda S. Bruce^{3,4}*

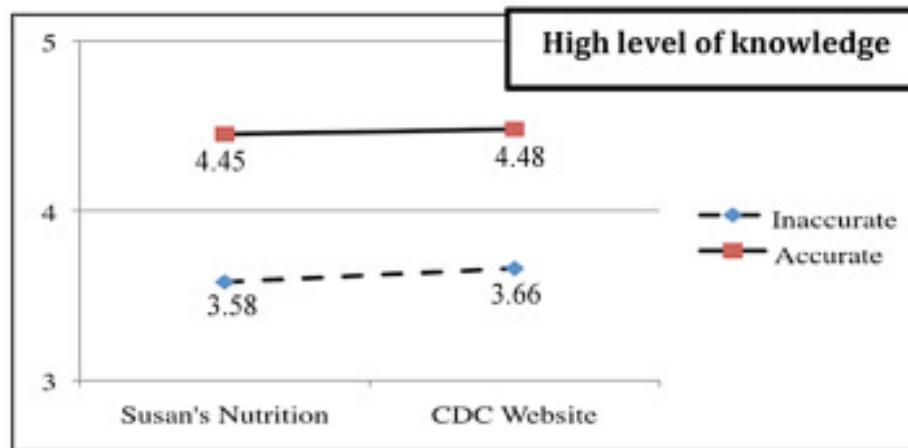
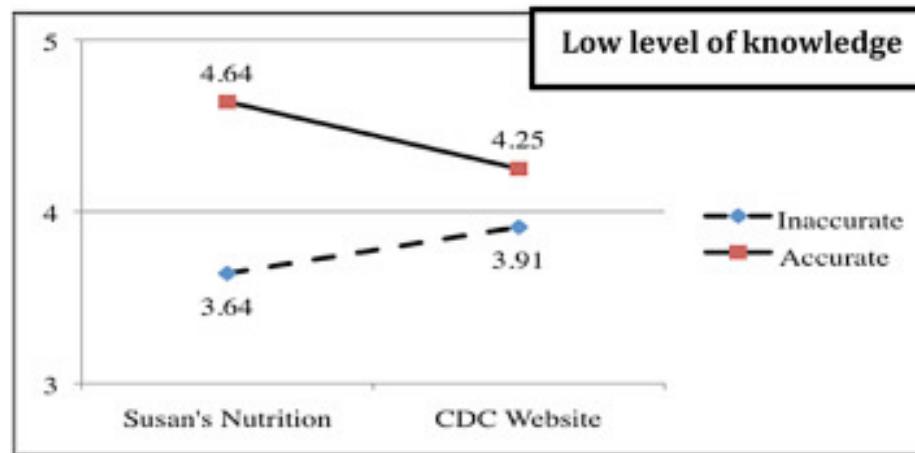
N=39 children, 8-13 years of age
Commercial → narratives

TABLE 1 | Factual and evaluative narratives for food advertising literacy training.

Factual narratives	Evaluative narratives
(1) Foods look and taste differently in reality.	(1) These foods don't make you have fun.
(2) The advertisers want you to go and eat these foods.	(2) Those foods are disgusting.
(3) These commercials are intended to sell.	(3) People in these commercials aren't cool.
(4) The advertisers are trying to trick you.	(4) These foods don't make you happy.
(5) These commercials aren't telling the truth.	(5) These foods are bad for you.
	(6) Those foods are not delicious.
	(7) Those foods are so unhealthy.



How does food literacy predict interpretation of nutrition information?



How much of what is online agrees with Canada's food guide?

Table IV. Number of articles congruent and incongruent with advice from the Canada food guide by website

	All	About	CHN	Doctissimo	iVillage	MSN	ServiceVie	WebMD	Yahoo
Pure congruent advice	858 (31.0)	71 (22.1)	131 (37.4)	94 (26.9)	115 (32.9)	117 (33.4)	124 (35.4)	106 (30.4)	100 (28.6)
Pure incongruent advice	284 (10.3)	53 (16.5)	9 (2.6)	35 (10.0)	43 (12.3)	47 (13.4)	23 (6.6)	39 (11.2)	35 (10.0)
Mixed advice	688 (25.8)	99 (30.8)	104 (29.7)	36 (10.3)	100 (28.6)	83 (23.7)	82 (23.4)	120 (34.4)	64 (18.3)
No advice	940 (33.9)	98 (30.5)	106 (30.3)	185 (52.9)	92 (26.3)	103 (29.4)	121 (34.6)	84 (24.1)	151 (43.1)
Ratio of pure congruent to incongruent advice	3.02	1.34	14.56	2.69	2.67	2.49	5.39	2.72	2.86
Total	2770	321	350	350	350	350	350	349	350

Chi-squared = 247.2156, df = 24, P-value = 0.000.

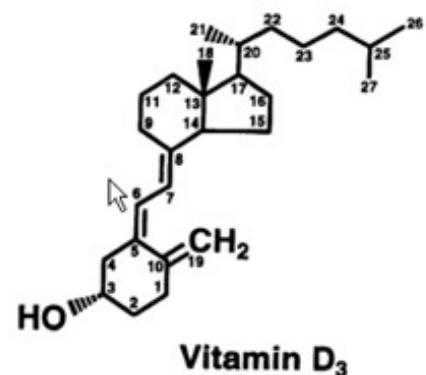
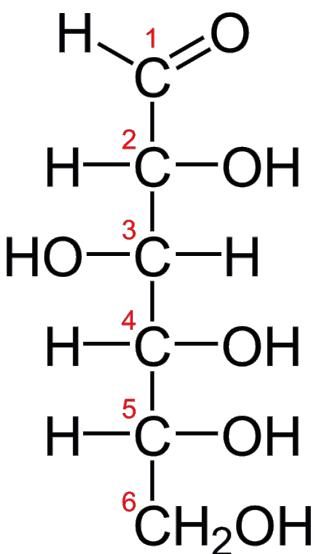
Why is the field of nutrition so complicated?

6 classes of nutrients

- Carbohydrates, fat, protein, vitamins
- Minerals
- Water



Glucose



Try it...

- Calculate the energy available from a bean burrito with cheese:
 - 55 grams carbohydrate
 - 15 grams protein
 - 2 grams fat
- Determine the % of kcalories from each of the energy nutrients.



Energy and nutrient density

Energy density: the energy content/unit weight of food

Nutrient density: the nutrient content/unit weight or kcal of food

Try it!

Calculate the energy density per serving of this Uncle Ben's Fast & Fancy Broccoli and Cheddar side dish.

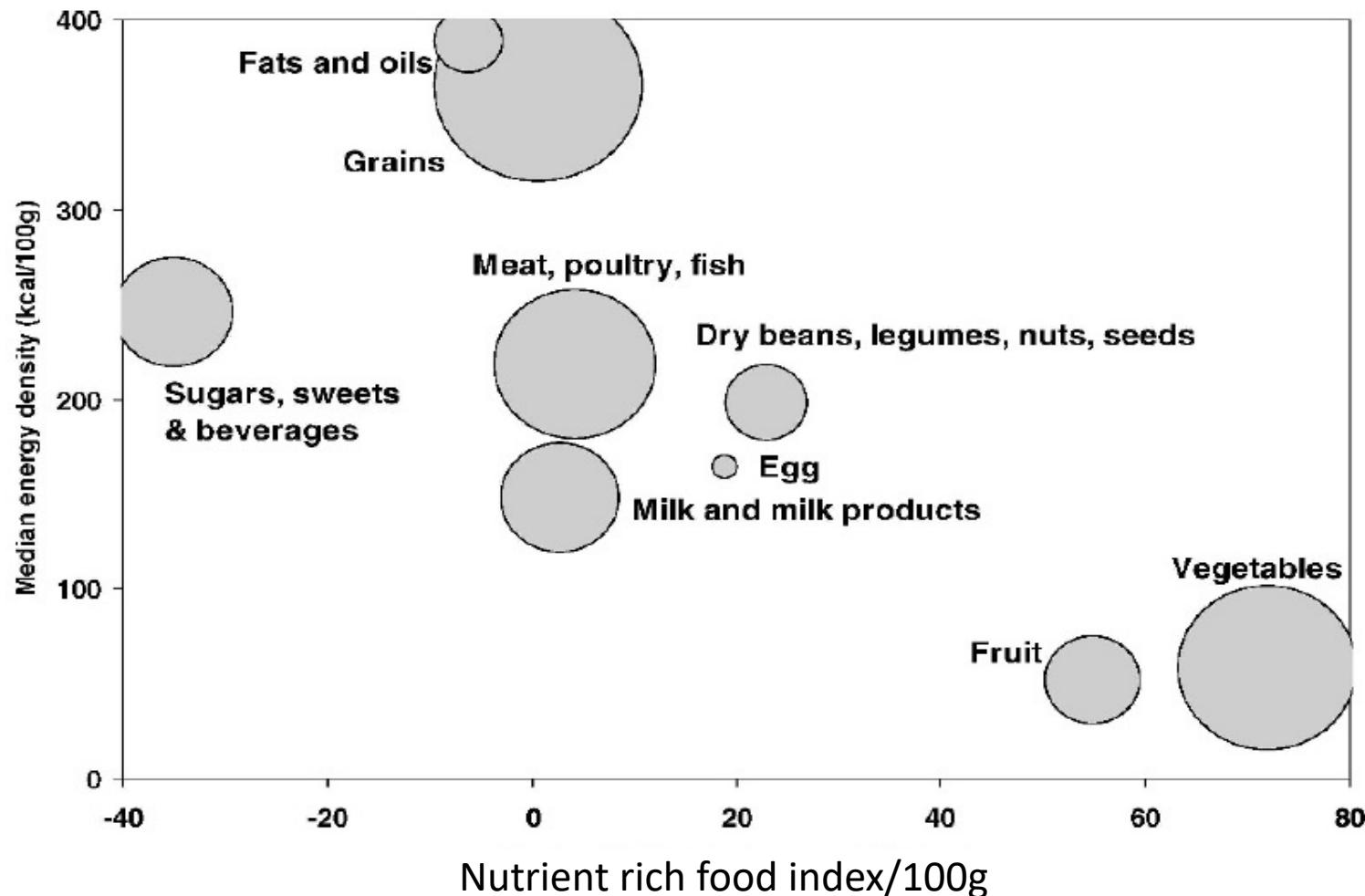


Nutrition Facts Valeur nutritive	
Per 1/4 package (42 g) pour 1/4 de l'emballage (42g)	
Amount Teneur	% Daily Value % valeur quotidienne
Calories / Calories 160	
Fat / Lipides 2 g	3 %
Saturated / saturés 1 g + Trans / trans 0.4 g	7 %
Cholesterol / Cholestérol 0 mg	
Sodium / Sodium 410 mg	17 %
Carbohydrate / Glucides 30 g	10 %
Fibre / Fibres 1 g	4 %
Sugars / Sucres 1 g	
Protein / Protéines 4 g	
Vitamin A / Vitamine A	0 %
Vitamin C / Vitamine C	2 %
Calcium / Calcium	6 %
Iron / Fer	2 %

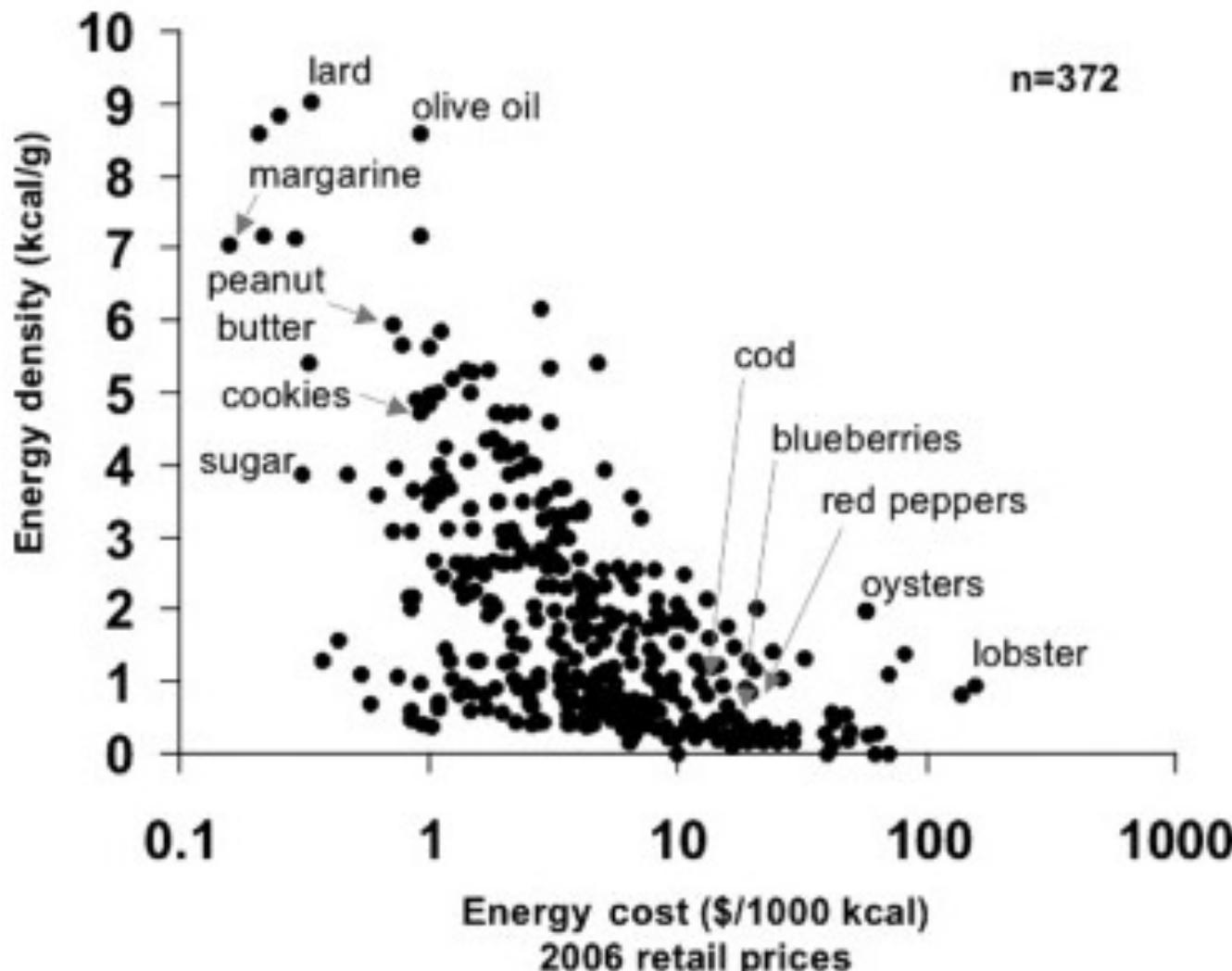
Energy density classifications

- **Very low** energy density foods = less than 0.6 cal/g
- **Low** energy density foods = 0.6 to 1.5 cal/g
- **Medium** energy density foods = 1.5 to 4 cal/g
- **High** energy density foods = more than 4 cal/g

How are energy density and nutrient density related?



Why don't we just eat low energy dense, high nutrient dense foods?



Why should we care?

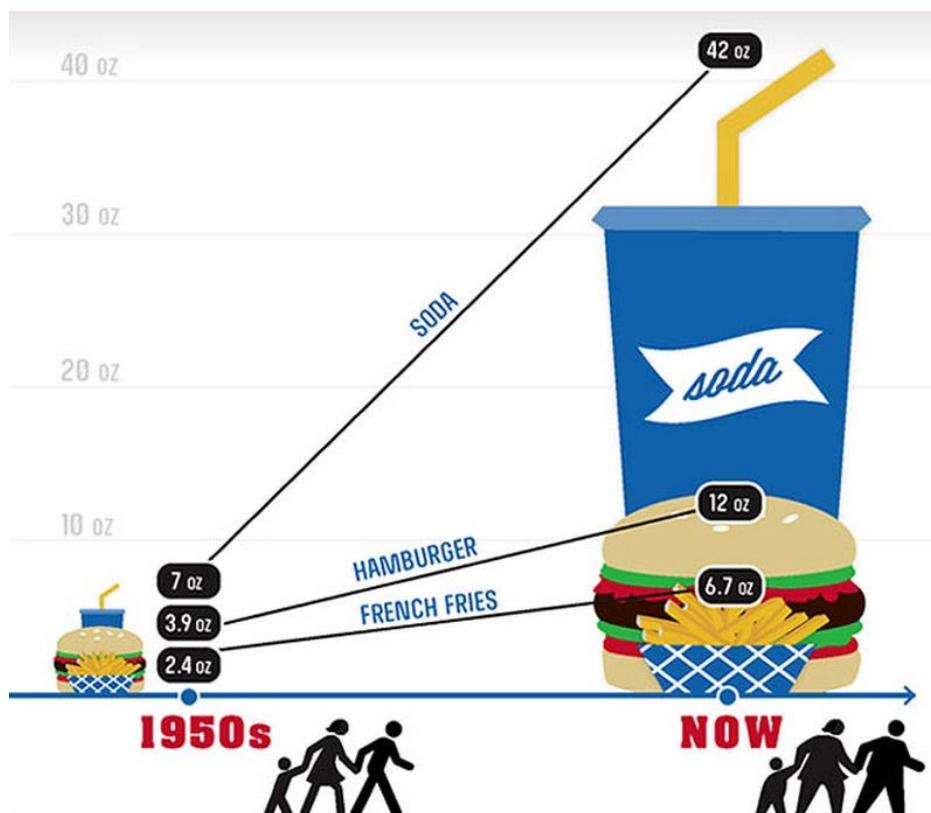
Serum concentrations of selected vitamins, carotenoids, and lipids by tertiles of percentage of energy from energy-dense, nutrient-poor (EDNP) foods: third National Health and Nutrition Examination Survey, 1988–1994

	Percentage of daily energy from EDNP foods			<i>P</i> for trend ^j
	First tertile (0–16.5%) ⁱ	Second tertile (16.6–31.3%)	Third tertile (>31.3%)	
	8.9% ^k	23.5%	41.9%	
Serum folate (nmol/L) (<i>n</i> = 14 256)	17.05 ± 0.5 ^l	15.28 ± 0.4	14.42 ± 0.5	0.0003
RBC folate (nmol/L) (<i>n</i> = 14 271)	478.0 ± 6.0	449.0 ± 8.0	429.0 ± 8.0	<0.0001
Serum vitamin B-12 (pmol/L) (<i>n</i> = 7256)	372.0 ± 6.0	348.0 ± 6.0	343.0 ± 8.0	0.01
Serum homocysteine (μmol/L) (<i>n</i> = 6382)	9.36 ± 0.2	9.80 ± 0.2	10.60 ± 0.3	0.02
Serum ascorbate (mmol/L) (<i>n</i> = 13 733)	43.41 ± 0.7	43.47 ± 1.0	40.67 ± 0.9	0.0012
Serum vitamin E (μmol/L) (<i>n</i> = 14 125)	27.66 ± 0.3	27.20 ± 0.3	26.47 ± 0.3	0.0001
Serum vitamin A (μmol/L) (<i>n</i> = 14 125)	2.13 ± 0.01	2.07 ± 0.02	2.01 ± 0.01	<0.0001
Serum β-carotene (μmol/L) (<i>n</i> = 14 125)	0.40 ± 0.01	0.39 ± 0.01	0.34 ± 0.01	<0.0001
Serum α-carotene (μmol/L) (<i>n</i> = 14 125)	0.10 ± 0.003	0.09 ± 0.002	0.08 ± 0.002	<0.0001

Portion Distortion

THE NEW (AB)NORMAL

Portion sizes have been growing. So have we. The average restaurant meal today is more than four times larger than in the 1950s. And adults are, on average, 26 pounds heavier. If we want to eat healthy, there are things we can do for ourselves and our community. Order the smaller meals on the menu, split a meal with a friend, or eat half and take the rest home. We can also ask the managers at our favorite restaurants to offer smaller meals.



Typical portion sizes have increased over the last 70 years, and with it an increase in the consumption of kcalories.

<http://www.nhlbi.nih.gov/health/educational/wecan/eat-right/portion-distortion.htm>

Centers for Disease Control



FOR MORE INFORMATION, VISIT MakingHealthEasier.org/NewAbNormal

Portion Distortion



Luisa Begani