


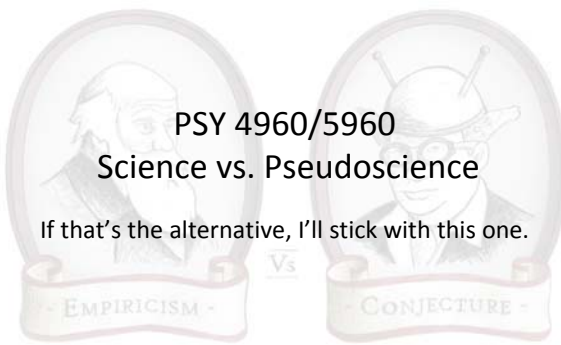
TO CURE THE COMMON COLD, YOU CAN EAT CHICKEN NOODLE SOUP FOR A WEEK... OR WAIT SEVEN DAYS.



dr. caleb lack's

PSY 4960/5960
Science vs. Pseudoscience

If that's the alternative, I'll stick with this one.



science versus pseudoscience


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Operational Definition

Alternative and complementary medicine

- "...approaches to health care outside the realm of conventional medicine as practiced in the United States."

Alternative is used in place of conventional medicine, complementary is used with it



<http://nccam.nih.gov>

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Operational Definition

Five main types

- Whole medical systems (e.g., homeopathic)
- Mind-body medicine (e.g., meditation)
- Biologically-based (e.g., herbs & supplements)
- Manipulative (e.g., chiropractic)
- Energy medicine (e.g., therapeutic touch)

Generally, little to no scientific evidence for their effectiveness in treatment

<http://nccam.nih.gov>


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Operational Definition

Quack

- "Anyone who promotes medical schemes or remedies known to be false, or which are unproven, for a profit."



US House of Representatives (1984)

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Homeopathy

Founded by German physician in early 1800s

Based on the "law of similars"

- Substances that produce certain symptoms in healthy persons cure the same symptoms in those who are sick

...and the "law of infinitesimals"

- The more diluted something is, the strong it is

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Homeopathy

Modern homeopaths claim it works because water retains a "memory" of the substance, even if it has been diluted out of existence

- No evidence that this is possible

Dilutions of homeopathic medicine regularly exceed the dilution limit

- Where not one molecule of the original solute is likely to be contained in the solution

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Homeopathy

REVISED 2nd EDITION OF THE ACCLAIMED BESTSELLER

RITALIN FREE KIDS

Safe and Effective Homeopathic Medicines for ADHD and Other Behavioral and Learning Problems

John Satchelberg, M.D., F.D., M.D., and Robert O'Brien, M.D.

Prescriptive Nutrients THE SCIENCE OF NATURAL HEALTH HYDRATE STRENGTHEN. SILENTLY FORMIDABLE

Not Nice To Arthritis 180 capsules

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Homeopathy

6X, 10X, 30X, more!

- Notations indicate how many times a 1:10 diluted solution has been succeeded
- 6X = 1 part per 10⁶
- 30X = 1 part per 10³⁰

So, for a 30X pill, you would have to take 1,000 tons to obtain one molecule of the "active" substance


[Check it out!](#)

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Smart Water

Would we really want our water to "remember" all the substances that it has come into contact with during it's existence?



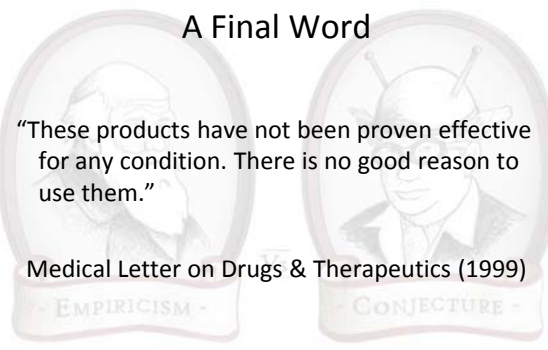
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A Final Word

"These products have not been proven effective for any condition. There is no good reason to use them."

Medical Letter on Drugs & Therapeutics (1999)



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Chiropractic Medicine

Started by grocer DD Palmer in 1895

Based on the premise that "subluxations" cause the majority of medical problems

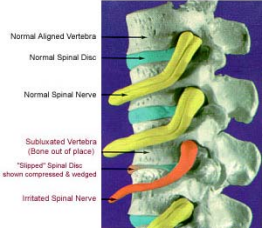
- A misalignment of the spine that interferes with the "Soul, Spark, or Spirit of Life" that controls the healing process
- Therefore, adjust the spine, "unblock" the subluxations, and get healthy

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Chiropractic Medicine

VERTEBRAL SUBLUXATION



Subluxations are usually now attributes to blocks in "nerves"

Substantial numbers of chiropractors do not support the germ theory of disease

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Chiropractic Medicine

There is some support that chiropractic can be effective at treating *some* types of back pain

...but no more so than exercise, relaxation, and other non-potentially harmful methods



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Chiropractic Medicine

Neck manipulations are particularly dangerous and can result in an increased risk of stroke

- Appear to be the leading cause of strokes in persons under 45 years of age




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Chiropractic Medicine

At least a dozen different "schools" of chiropractic, each with different ideas about how (and what) to adjust



Vs

EMPIRICISM

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Herbs & Supplements

In 1994, with the support of Senator Orrin Hatch (R-Utah), the Dietary Supplement Health and Education Act was passed

This allows anything labeled a "dietary supplement" to not have to pass FDA approval

FDA cannot regulate supplements until

- It is proven to be harmful
- It makes claims of treating/curing a disease

CONJECTURE

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Herbs & Supplements

Supplements can make three types of claims:

1. Health claims
 - "Diets high in calcium may help prevent osteoporosis"
2. Structure function claims
 - "Calcium builds strong bones"
3. Nutrient content claims
 - "Fat-free"

Statements that a product will treat, cure, or diagnose a disease are reserved for drugs

EMPIRICISM

CONJECTURE

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Herbs & Supplements

Little to no quality control among supplements

One study found that, of 10 brands of St John's Wort, three did not have even half of the amount the label claimed, while 70% didn't meet "good quality"

A study on 10 DHEA brands had three without any DHEA, three that had less 25% of the label's claim, and one that had 50% more

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Herbs & Supplements

83 of 260 Asian patent medicines contained undeclared pharmaceuticals or heavy metals

- 10% lead, 15% arsenic, 15% mercury

In 2002 alone, the Federal Trade Commission found that over half of all supplements had either exaggerate or made false claims in advertising

Ko (1998), Stebbins (2006)

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Herbs & Supplements

"View the word 'natural' with skepticism; after all, hemlock and arsenic are natural too."

Consumer Reports, 1999

- EMPIRICISM - - CONJECTURE -

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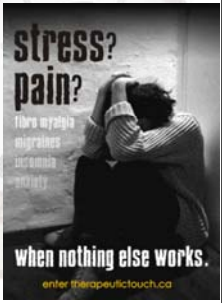
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Therapeutic Touch

Started in 1970s by a nurse and theosophist

Claims that the "human energy field" can be observed and manipulated by those trained to do so

This manipulation restores the "integrity" of the field and causes you to become healthy



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Therapeutic Touch

"The underlying principles upon which this technique is based include acceptance of the Einstein paradigm of a complex, energetic field-like universe (i.e., the existence of a Life energy flowing through and around all of us). Further, if life is characterized by an interchange of various qualities of energy, it can be assumed that any form of obstruction -- either within the organism or between the organism and the environment -- is contrary to Nature's tendencies and therefore unhealthy."

Witmer (1995)


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Therapeutic Touch

In 1998, 12-year-old Emily Rosa conducted a study to test practitioners of TT

Found that they only choose which of their hands had a hand above it 44% of the time



Rosa et al. (1998)

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Baloney Detection Alerts!

The product is advertised as a quick and effective cure-all for a wide range of ailments

The promoters use words like scientific breakthrough, miraculous cure, exclusive product, secret ingredient or ancient remedy

The text is written in "medicalese" - impressive-sounding terminology to disguise a lack of good science

FTC Office of Consumer Protection

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Baloney Detection Alerts!

The promoter claims the government, the medical profession or research scientists have conspired to suppress the product

The advertisement includes undocumented case histories claiming amazing results

The product is advertised as available from only one source

FTC Office of Consumer Protection

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Disease or Illness?

Disease is a pathological state caused by infection, toxins, trauma, etc.

Illness is the feelings that might accompany a disease

Just because some has an "illness" does not mean that they have a disease!

Beyerstein (1997)
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Why Is CAM so Popular?

1. No drugs or surgery
2. Conventional medicine often fails to discover cause of illness or relieve pain
3. CM often does not present treatment guaranteed to be successful
4. CAM often uses "natural" remedies, which people think are safer
5. CAM is often less expensive than CM

Beyerstein (1997)
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Why Is CAM so Popular?

6. Often sanctioned by state governments, so illusion of being "approved"
7. Many CM often treat illness first, patients second (or not at all)
8. People do not understand that CM is fallible but self-correcting
9. CAM appeals to magical thinking
10. They think it works!

Beyerstein (1997)
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Exercise #7

The Placebo Dilemma


If these are just placebo effects, and some people benefit from them, what is your opinion regarding people using CAM if there is no health risk?

Vs

- EMPIRICISM -

- CONJECTURE -

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To argue with a person who has renounced the use of reason is like administering medicine to the dead.

Thomas Paine

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Media Critique #4



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