Writing in the Sciences

Module 3.1: Experiment with punctuation

Experiment with punctuation

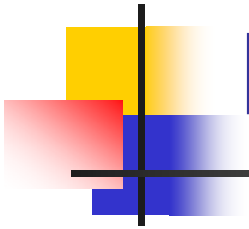
Our friends the dash, colon, semicolon, and parenthesis...

Use them to vary sentence structure!

Example

But what really grabbed me about the film is that it shows how humans—through our ingenuity, our commitment to fact and reason, and ultimately our faith in each other—can science the heck out of just about any problem.

https://www.wired.com/2016/10/president-obama-guest-edits-wired-essay/



Example

Original: Many types of cells and tissues develop a kind of directionality. Certain events happen toward one end of the cell or tissue or the other. It's a phenomenon called cell polarity.

Using a colon: Many cells and tissues develop a kind of directionality called cell polarity: certain events happen toward one end of the cell or tissue.

Experiment with punctuation

Increasing power to separate:

Comma

Colon

Dash

Parentheses

Semicolon

Period

Strunk and White, *The Elements of Style*

Experiment with punctuation

Increasing formality:

Dash

Parentheses

The Others (Comma,Colon,Semicolon,Period)

Semicolon

The semicolon connects two independent clauses.

(Note: a clause always contains a subject and predicate; an independent clause can stand alone as a complete sentence.)

Example: Kennedy could be a cold and vain man, and he led a life of privilege. But he knew something about the world; he also cared about it.

Example: It was the best of times; it was the worst of times.

Semicolon

Semicolons are also used to separate items in lists that contain internal punctuation.

Example: It happened because people organized and voted for better prospects; because leaders enacted smart, forward-looking policies; because people's perspectives opened up, and with them, societies did too.

Parentheses

Parenthesis (parenthetical expression):

Use parentheses to insert an afterthought or explanation (a word, phrase, or sentence) into a passage that is grammatically complete without it.

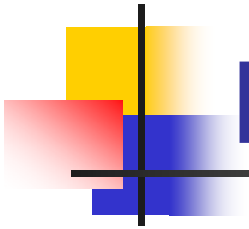
→ If you remove the material within the parentheses, the main point of the sentence should not change.

→ Parentheses give the reader permission to skip over the material.

Parentheses, example

They also have a specialized tail, kind of like a monkey's tail, that allows them to cling to a piece of grass (or a lucky diver's finger).

(Deborah Netburn, Seahorses are some of the strangest fish in the sea. Can their genome tell us why?, *LA Times*)



Parentheses, example

This is troubling because, while there are plausible biological stories to connect red meat with cancer and heart disease, it seems unlikely that eating too much red meat could directly cause accidents and injuries. (Unless, as one of my students quipped, red meat eaters are swerving to avoid cows!)

Colon

Use a colon after an independent clause to introduce a list, quote, explanation, conclusion, or amplification.

"The colon has more effect than the comma, less power to separate than the semicolon, and more formality than the dash."--*Strunk and White*

Colon (list or explanation)

The hydrogen bonds are made as follows: purine position 1 to pyrimidine position 1; purine position 6 to pyrimidine position 6.

From: "*A structure for Deoxyribose Nucleic Acid*"—Watson and Crick 1953

Colon (explanation or amplification)

That's one reason why I'm so optimistic about the future: the constant churn of scientific progress.

The woman suffers from lack of experience and a chronic Democratic disease: compound sentences.

Colon (quote, list of quotes)

The “Ask not” line follows right after an exhortation modeled on Franklin Roosevelt’s “rendezvous with destiny”: “In the long history of the world, only a few generations have been granted the role of defending freedom in its hour of maximum danger. I do not shrink from this responsibility—I welcome it.” The note throughout is one of alarm: “The trumpet summons us again”; “the burden of a long twilight struggle”; “that uncertain balance of terror.”

The rule of three's (lists, examples)

- NOTE: The "rule of three's" for lists and examples.

- Example: It happened because people organized and voted for better prospects; because leaders enacted smart, forwardlooking policies; because people's perspectives opened up, and with them, societies did too.

Colon (to amplify or extend)

Use a colon to join two independent clauses if the second amplifies or extends the first.

Companies use Marsh for the same reason that home sellers use real-estate agents: The agent's knowledge and experience is supposed to help the client get the right deal at the right price.

Colon misuse

EXAMPLE, what not to do!:

Two aspects of alcohol use are related to brain injuries: as a factor associated with risk of an injury such as a motor vehicle crash, and as a factor in TBI diagnosis, recovery, or survival after injury.

→

Two aspects of alcohol use are related to brain injuries: its association with risk of injury, such as motor vehicle crash, and its post-injury influences on TBI diagnosis, recovery, or survival after injury.

Colon misuse

EXAMPLE, what not to do!:

In one project we have a nutritionist, a psychologist, statisticians, a computer specialist, and dietitians: a whole range of specialties.

→

In one project we have a whole range of specialties: a nutritionist, a psychologist, statisticians, a computer specialist, and dietitians.

Dash

Use the dash to add emphasis or to insert an abrupt definition or description almost anywhere in the sentence. Just don't overuse it, or it loses its impact.

- "A dash is a mark of separation stronger than a comma, less formal than a colon, and more relaxed than parentheses."—*Strunk and White*
- "Use a dash only when a more common mark of punctuation seems inadequate."—*Strunk and White*

i.e. Reserve this tool for the really tough jobs!

Dash, example

But my fellow Americans, whatever mix of motives led us to create an Electoral College majority for Donald Trump to become President—and overlook his lack of preparation, his record of indecent personal behavior, his madcap midnight tweeting, his casual lying about issues like “millions” of voters casting illegal votes in this election, the purveying of fake news by his national security advisor, his willingness to appoint climate change deniers without even getting a single briefing from the world’s greatest climate scientists in the government he’ll soon lead, and his cavalier dismissal of the C.I.A.’s conclusions about Russian hacking of our election—have no doubt about one thing: We as a country have just done something incredibly reckless.

(Thomas Friedman, *New York Times*)

Dash

The drugs did more than prevent new fat accumulation. They also triggered overweight mice to shed significant amounts of fat—up to half their body weight. (*emphasis*)

Researchers who study shipworms say these mislabeled animals—they're clams, not worms—are actually a scientific treasure. (*emphasis and added information)*

What would happen if I used commas or parentheses rather than dashes in these two examples?

Dash

Commas instead…

The drugs did more than prevent new fat accumulation. They also triggered overweight mice to shed significant amounts of fat, up to half their body weight. (*loss of emphasis, more clunky*)

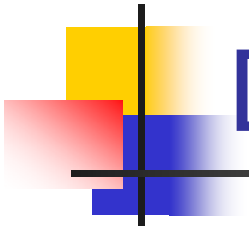
Researchers who study shipworms say these mislabeled animals, they're clams, not worms, are actually a scientific treasure. (*commas aren't strong enough to set off a clause*)

Dash

Parentheses instead…

The drugs did more than prevent new fat accumulation. They also triggered overweight mice to shed significant amounts of fat (up to half their body weight). (*buries the information*)

Researchers who study shipworms say these mislabeled animals (they're clams, not worms) are actually a scientific treasure. (*buries the information*)



Dash

One more example...

Baseball is the only game that's played every day, which is why its season often seems endless, right up to the inning and the out—the little toss over to first base—when, wow, it ends.

References/citations

Strunk and White's classic, *The Elements of Style*, http://www.bartleby.com/141/.

Examples from: Barrack Obama, Watson & Crick, Dickens, Michael Tomasky, Deborah Netburn, Fareed Zakaria, James Suroweiki, Nathan Seppa, Louis Menand, Joe Klein, Roger Angell

Writing in the Sciences

Module 3.2: Practice, colon and dash

Colon: Practice

Evidence-based medicine teaches clinicians the practical application of clinical epidemiology, as needed to address specific problems of specific patients. It guides clinicians on how to find the best evidence relevant to a specific problem, how to assess the quality of that evidence, and perhaps most difficult, how to decide if the evidence applies to a specific patient.

Colon: join and condense

Evidence-based medicine teaches clinicians the practical application of clinical epidemiology: how to find the best evidence relevant to a specific problem, how to assess the quality of that evidence, and how to decide if the evidence applies to a specific patient.

Colon: join and condense

Evidence-based medicine teaches clinicians how to find the best evidence relevant to a specific problem, how to assess the quality of that evidence, and how to decide if the evidence applies to a specific patient.

Dash: Practice

Finally, the lessons of clinical epidemiology are not meant to be limited to academic physician-epidemiologists, who sometimes have more interest in analyzing data than caring for patients. Clinical epidemiology holds the promise of providing clinicians with the tools necessary to improve the outcomes of their patients.

A long descriptive clause that could be set off by a dash.

No transition.

Dash: join and condense

Finally, clinical epidemiology is not limited to academic physician-epidemiologists—who are sometimes more interested in analyzing data than caring for patients—but provides clinicians with the tools to improve their patients' outcomes.

Writing in the Sciences

Module 3.3: Parallelism

Parallelism

Pairs of ideas joined by "and", "or", or "but" should be written in parallel form.

The velocity decreased by 50% but the pressure decreased by only 10%.

SVX but SVX

Parallelism

Pairs of ideas joined by "and", "or", or "but" should be written in parallel form.

We aimed to increase the resolution and to improve picture quality.

Infinitive phrase and infinitive phrase.

Parallelism

Lists of ideas should be written in parallel form.

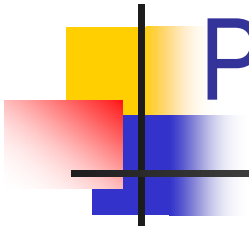
Unparallel:

Locusts denuded fields in Utah, rural Iowa was washed away by torrents, and in Arizona the cotton was shriveled by the placing heat.

Parallel:

Locusts denuded fields in Utah, torrents washed away rural Iowa, and blazing heat shriveled Arizona's cotton.

From: Strunk and White. *The Elements of Style*



Parallelism

Make a choice and stick to it!

Parallel example:

NASA's intrepid Mars rover, Curiosity, has been through a lot in the past year. It flew 354 million miles, blasted through the Mars atmosphere, deployed a supersonic parachute, unfurled a giant sky crane, and touched down gently on the surface of Mars.

Citation: Jenny Marder. “Mars Curiosity Rover Gets 'Brain Transplant,' Prepares for Mountain Trek”, pbs.org

Parallelism

Not Parallel:

If you want to be a good doctor, you must study hard, critically think about the medical literature, and you should be a good listener.

Parallel:

If you want to be a good doctor you must study hard, listen well, and think critically about the medical literature. (imperative, imperative, imperative)

Parallel:

If you want to be a good doctor, you must be a good student, a good listener, and a critical thinker about the medical literature. (noun, noun, noun)

Parallelism

Not Parallel:

This research follows four distinct phases: (1) establishing measurement instruments (2) pattern measurement (3) developing interventions and (4) the dissemination of successful interventions to other settings and institutions.

Parallel:

This research follows four distinct phases: (1) establishing measurement instruments (2) measuring patterns (3) developing interventions and (4) disseminating successful interventions to other settings and institutions.

Practice example

Bates describes the five principles for the success of decision support systems in clinical settings: speed, real-time delivery, integration into workflow, simplicity and to avoid data entry.

Practice example

Bates describes the five principles for the success of decision support systems in clinical settings: speed, real-time delivery, integration into workflow, simplicity, and the avoidance of data entry.

Writing in the Sciences

Module 3.4: Paragraphs

Paragraph-level tips

- 1 paragraph = 1 idea
- Give away the punch line early.
- Paragraph flow is helped by:
  - logical flow of ideas
  - parallel sentence structures
  - *if necessary*, transition words
- Your reader remembers the first sentence and the last sentence best. Make the last sentence memorable. Emphasis at the end!

Paragraph-level tips

logical flow of ideas:

- Sequential in time (avoid the *Memento* approach!)
- General→ specific (take-home message first!)
- Logical arguments (if a then b; a; therefore b)

Example

- We note that if one concentrates exclusively on Fermi surface–integrated quantities, such as thermal conductivity or penetration depth, distinguishing d-wave states from anisotropic, deeply nodal s states can be very difficult. As shown in Fig. 7, both d-wave and anisotropic s± states give reasonable fits to the pristine penetration depth data for x = 1.0. **Furthermore**, distinguishing on the basis of disorder is difficult because here we do not have a well-established link between the pair-breaking rate and irradiation dosage; **thus**, it is possible to find parameters for either “dirty d wave” or “dirty nodal s wave” cases that fit both the Dl and DTc data for the single x = 1 sample. **However**, on the basis of the fits to the heavily K-doped alloys near x = 0.9 in Fig. 7, we see that there is substantial additional curvature at low temperatures that is incompatible with the cos 2f d wave. It is conceivable that a strong antiphase cos 6f component in a d-wave state could fit the penetration depth data. **However**, there is no theory in support of such a state, and we therefore conclude that the superconducting condensate in this system hass-wave symmetry throughout the phase diagram and simply evolves in an anisotropic manner as roughly depicted in Fig. 1. In Fig. 7, we show a comparison between the state with accidental nodes and a d-wave state for x = 0.91 and x = 0.92. For x = 0.91 and x = 0.92, we see the incompatibility of a d-wave gap with experimental data. **However**, for x = 1.0, both d-wave and s± states with accidental nodes can fit the data. **Thus**, we cannot rule out a crossover between s-wave and d-wave symmetries between x = 0.92 and x = 1.0. **However**, ARPES measurements provide a strong argument against this scenario (11).

Example (from *Wired*)

This kind of progress hasn't happened on its own. It happened because people organized and voted for better prospects; because leaders enacted smart, forward-looking policies; because people's perspectives opened up, and with them, societies did too. But this progress also happened because we scienced the heck out of our challenges. Science is how we were able to combat acid rain and the AIDS epidemic. Technology is what allowed us to communicate across oceans and empathize with one another when a wall came down in Berlin or a TV personality came out. Without Norman Borlaug's wheat, we could not feed the world's hungry. Without Grace Hopper's code, we might still be analyzing data with pencil and paper.

Example (from *Wired*)

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Writing in the Sciences

Module 3.5: Paragraph Editing I

Example: paragraph for editing

Most scents remain constant in their quality over orders of magnitude of concentration (12). Nevertheless, at high concentrations, quality tends to be negatively correlated with intensity, as was the case, for example, for the cinnamon oil used in this study. Hence, reliability of absolute scorings was achieved by calibrating the amount of perfume ingredients with initial ratings for intensity against a reference substance of known concentration. The final concentrations were in principal chosen in a way such that individual ratings showed variance among participants within the sliding scale between 0 and 10 (meaning that people could decide whether they liked a scent or not). This procedure seemed successful for most scents; however, the concentrations for bergamot (highest average ratings) and vetiver (lowest average rating) could probably been reduced even more, as both scents did not show any discriminating power at the level of common alleles (people agreed largely on the quality of these two scents) (see Table 2). Interestingly, the pooled rare alleles showed discriminating power for…

Word count: 212

Example: paragraph for editing

Most scents remain constant in their quality over orders of magnitude of concentration (12). **Nevertheless**, at high concentrations, quality tends to be negatively correlated with intensity, as was the case, for example, for the cinnamon oil used in this study. **Hence**, reliability of absolute scorings was achieved by calibrating the amount of perfume ingredients with initial ratings for intensity against a reference substance of known concentration. The final concentrations were in principal chosen in a way such that individual ratings showed variance among participants within the sliding scale between 0 and 10 (meaning that people could decide whether they liked a scent or not). This procedure seemed successful for most scents; **however**, the concentrations for bergamot (highest average ratings) and vetiver (lowest average rating) could probably been reduced even more, as both scents did not show any discriminating power at the level of common alleles (people agreed largely on the quality of these two scents) (see Table 2). **Interestingly**, the pooled rare alleles showed discriminating power for…

Word count: 212

Example: paragraph for editing

Most scents remain constant in their quality over orders of magnitude of concentration (12). Nevertheless, at high concentrations, quality tends to be negatively correlated with intensity, as was the case, for example, for the cinnamon oil used in this study. Hence, reliability of absolute scorings was achieved by calibrating the amount of perfume ingredients with initial ratings for intensity against a reference substance of known concentration. The final concentrations were **in principal** chosen in a way such that individual ratings showed variance among participants within the sliding scale between 0 and 10 (meaning that people could decide whether they liked a scent or not). This procedure seemed successful for most scents; however, the concentrations for bergamot (highest average ratings) and vetiver (lowest average rating) could probably been reduced even more, as both scents did not show any discriminating power at the level of common alleles (people agreed largely on the quality of these two scents) (see Table 2). Interestingly, the pooled rare alleles showed discriminating power for…

Word count: 212

Example: paragraph for editing

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Word count: 212

What's the paragraph trying to convey? (outline)…

I. Were the perfume concentrations in the experiment appropriate?

Main idea of the paragraph

A. If the concentration is too high, the smell may be too overpowering and this may affect quality ratings.

i. This is not a problem here because we standardized intensity.

B. The concentrations are appropriate if they produce sufficient variability in quality ratings.

i. This appeared true for most scents, with two exceptions.

Example: paragraph

Perfume intensity and quality are negatively correlated at high concentrations: If the scent is too strong, people will rate it unfavorably. Hence, we chose the final concentration of each perfume ingredient so that it had similar intensity to a reference scent (1-butanol). The resulting concentrations appeared appropriate for most scents, as participants' preferences varied along the sliding scale between 0 and 10. However, participants largely agreed on bergamot (highest average ratings) and vetiver (lowest average rating), so lower or higher concentrations may have been needed for these scents.

Word count: 91

What's the paragraph trying to convey? (outline)…

I. Were the perfume concentrations in the experiment appropriate?

Main idea of the paragraph

A. If the concentration is too high, the smell may be too overpowering and this may affect quality ratings.

i. This is not a problem here because we standardized intensity.

B. The concentrations are appropriate if they produce sufficient variability in quality ratings.

i. This appeared true for most scents, with two exceptions.

Example paragraph

Although the methodological approaches are similar, the questions posed in classic epidemiology and clinical epidemiology are different. In classic epidemiology, epidemiologists pose a question about the etiology of a disease in a population of people. Causal associations are important to identify because, if the causal factor identified can be manipulated or modified, prevention of disease is possible. On the other hand, in clinical epidemiology, clinicians pose a question about the prognosis of a disease in a population of patients. Prognosis can be regarded as a set of outcomes and their associated probabilities following the occurrence of some defining event or diagnosis that can be a symptom, sign, test result or disease.

What's the paragraph trying to convey? (outline)…

I. Classic and clinical epidemiology differ

Main idea of the paragraph

A. Classic epidemiology is about disease etiology and preventing disease

Supporting ideas→ specifics of how they differ

i. Etiology is about this.

B. Clinical epidemiology is about improving prognosis

Sub-supporting ideas→ definitions

i. Prognosis is about this.

Sentence-level editing

Although the methodological approaches are similar, the questions posed in classic epidemiology and clinical epidemiology are different.

Sentence-level editing

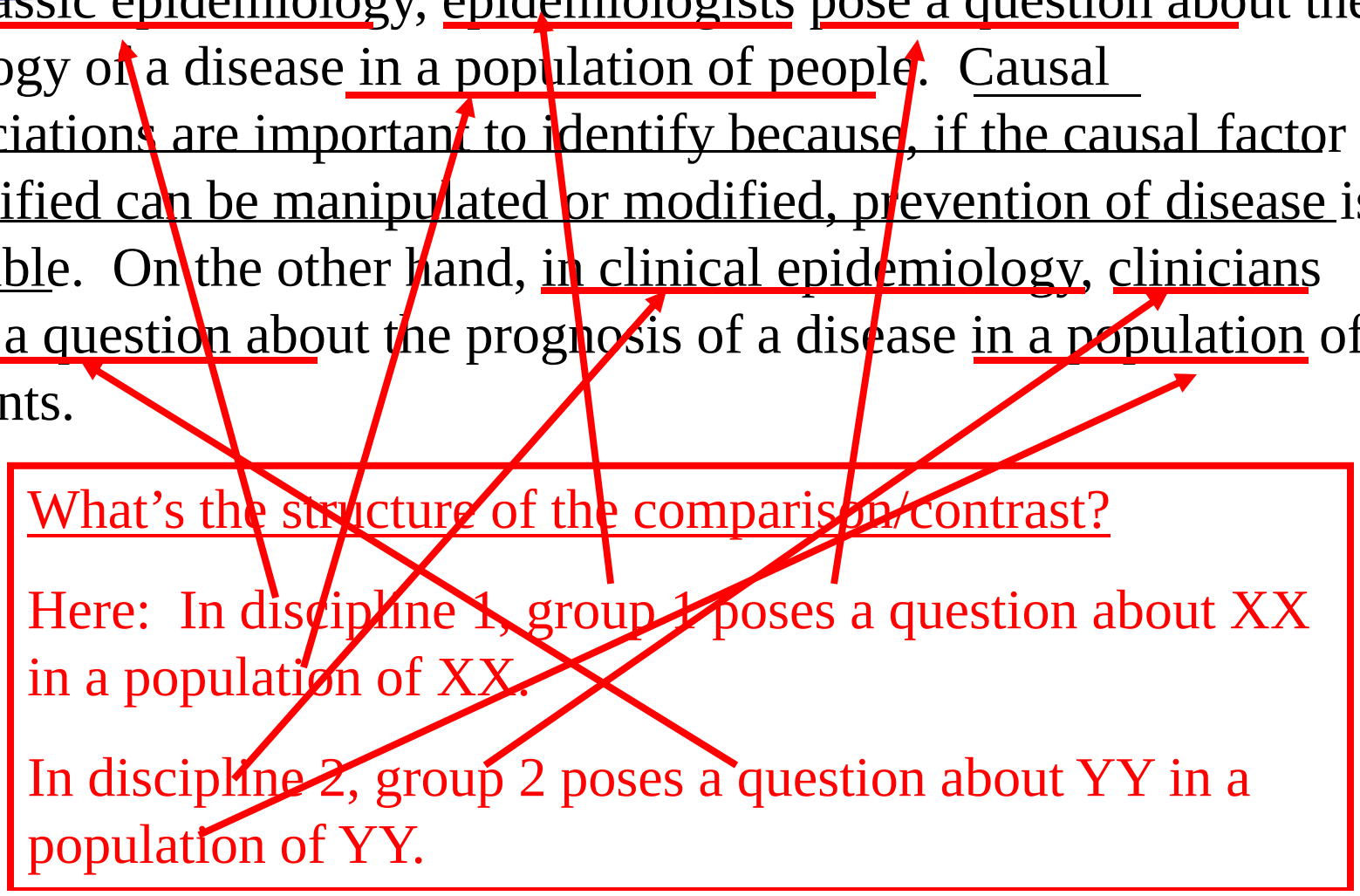
Despite methodologic similarities, classic epidemiology and clinical epidemiology differ in aim.

I. Classic and clinical epidemiology differ

Main idea of the paragraph

Parallel sentences

In classic epidemiology, epidemiologists pose a question about the etiology of a disease in a population of people. Causal associations are important to identify because, if the causal factor identified can be manipulated or modified, prevention of disease is possible. On the other hand, in clinical epidemiology, clinicians pose a question about the prognosis of a disease in a population of patients.



What's the structure of the comparison/contrast?

Here: In discipline 1, group 1 poses a question about XX in a population of XX.

In discipline 2, group 2 poses a question about YY in a population of YY.

Sentence-level editing

In classic epidemiology, epidemiologists pose a question about the etiology of a disease in a population of people. Causal associations are important to identify because, if the causal factor identified can be manipulated or modified, prevention of disease is possible. On the other hand, in clinical epidemiology, clinicians pose a question about the prognosis of a disease in a population of patients.

Sentence-level editing

Classic epidemiologists pose a question about the etiology of a disease in a population of people. Clinical epidemiologists pose a question about the prognosis of a disease in a population of patients.

A. Classic epidemiology is about disease etiology and preventing disease

Supporting ideas→ specifics of how they differ

B. Clinical epidemiology is about improving prognosis

Sentence-level editing

Sub-supporting ideas→ definitions

i. Prognosis is about this.

Prognosis can be regarded as a set of outcomes and their associated probabilities following the occurrence of some defining event or diagnosis that can be a symptom, sign, test result or disease.

→

Prognosis is the probability that an event or diagnosis will result in a particular outcome.

Altogether…

Despite methodologic similarities, classic epidemiology and clinical epidemiology differ in aim. Classic epidemiologists pose a question about the etiology of disease in a population of people; etiologic factors can be manipulated to prevent disease. Clinical epidemiologists pose a question about the prognosis of a disease in a population of patients; prognosis is the probability that an event or diagnosis will result in a particular outcome.

Compare to outline...

I. Classic and clinical epidemiology differ

Main idea of the paragraph

A. Classic epidemiology is about disease etiology and preventing disease

Supporting ideas→ specifics of how they differ

i. Etiology is about this.

B. Clinical epidemiology is about improving prognosis

Sub-supporting ideas→ definitions

i. Prognosis is about this.

Writing in the Sciences

Module 3.6: Paragraph Editing II

Example Paragraph

The concept of chocolate having potential therapeutic benefits for people with diabetes mellitus, especially type 2 diabetes mellitus, presents a number of intellectual challenges, from both clinical and sociological perspectives. It seems almost counterintuitive to suggest an energy-dense food that is high in sugar, and often seen as a treat or a “dietary sin”, could offer such promise. However, a large volume of mechanistic and animal model studies has been undertaken demonstrating the potential benefits of cocoa and chocolate for both glucose regulation and modification of complications associated with diabetes. Cesar Fraga in the *American Journal of Clinical Nutrition* first proposed the potential of chocolate for people with diabetes in 2005. It was suggested that we should consume more cocoa and chocolate to reduce the burdens of hypertension and diabetes.(1) Grassi and colleagues (2) further reinforced this potential for its antihypertensive and insulin-sensitizing effect with the mechanistic data. However, the hypothesis of chocolate having a beneficial effect remains counterintuitive to the average consumer and has yet to gain support among the wider medical and healthcare community.

Word count: 177

Sentence 1

- The concept of chocolate having potential therapeutic benefits for people with diabetes mellitus, especially type 2 diabetes mellitus, presents a number of intellectual challenges, from both clinical and sociological perspectives.

  - The upshot: It's surprising that chocolate might be healthy.

Sentence 2

- It seems almost counterintuitive to suggest an energy-dense food that is high in sugar, and often seen as a treat or a “dietary sin”, could offer such promise.

  - The upshot: It’s counterintuitive that chocolate might be healthy.

Sentence 3

- However, a large volume of mechanistic and animal model studies has been undertaken demonstrating the potential benefits of cocoa and chocolate for both glucose regulation and modification of complications associated with diabetes.

  - The upshot: Many studies suggest that chocolate is healthy.

Sentence 4

- Cesar Fraga in the *American Journal of Clinical Nutrition* first proposed the potential of chocolate for people with diabetes in 2005.
  - The upshot: The first of these studies was in 2005.

Sentence 5

- It was suggested that we should consume more cocoa and chocolate to reduce the burdens of hypertension and diabetes.(1)

  - The upshot: The study showed benefits for hypertension and diabetes.

Sentence 6

- Grassi and colleagues (2) further reinforced this potential for its antihypertensive and insulin-sensitizing effect with the mechanistic data.

  - The upshot: Another study showed benefits for hypertension and diabetes.

Sentence 7

- However, the hypothesis of chocolate having a beneficial effect remains counterintuitive to the average consumer and has yet to gain support among the wider medical and healthcare community.

  - The upshot: It's counterintuitive that chocolate might be healthy, so medical professionals are skeptical.

Altogether now:

- It’s surprising that chocolate might be healthy.
- It’s counterintuitive that chocolate might be healthy.
- Many studies suggest that chocolate is healthy.
- The first of these studies was in 2005.
- The study showed benefits for hypertension and diabetes.
- Another study showed benefits for hypertension and diabetes.
- It’s counterintuitive that chocolate might be healthy, so medical professionals are skeptical.

Altogether now:

- Many studies suggest that chocolate is healthy.
- The first of these studies was in 2005.
- The study showed benefits for hypertension and diabetes.
- Another study showed benefits for hypertension and diabetes.
- It’s counterintuitive that chocolate might be healthy, so medical professionals are skeptical.
- **It’s counterintuitive that chocolate might be healthy.**
- **It’s surprising that chocolate might be healthy.**

Use this to organize:

- Many studies suggest that chocolate is healthy.
- The first of these studies was in 2005.
- These studies show benefits for hypertension and diabetes.
- ~~Another study showed benefits for hypertension and diabetes~~.
- ~~It's counterintuitive that chocolate might be healthy,~~ so medical professionals are skeptical.
- ~~It's surprising that chocolate might be healthy~~. (moved)
- It's counterintuitive that chocolate might be healthy. (moved)

Edited version

Many mechanistic and animal studies suggest health benefits for cocoa and chocolate, particularly for patients with hypertension and type 2 diabetes mellitus. These studies suggest that cocoa and chocolate can lower blood pressure, improve glucose regulation, improve insulin sensitivity, and reduce complications from diabetes. But the idea of chocolate as medicine has yet to gain widespread support among consumers or among the wider medical and healthcare community. It seems counterintuitive that a high-sugar, energy-dense food—one often seen as a treat or “dietary sin”—could promote health.

Word count: 87

~~The concept of chocolate having potential therapeutic benefits for people with diabetes mellitus, especially type 2 diabetes mellitus, presents a number of intellectual challenges, from both clinical and sociological perspectives. It seems almost counterintuitive to suggest an energy-dense food that is high in sugar, and often seen as a treat or a "dietary sin", could offer such promise.~~ ~~However, a large volume of~~Many mechanistic and animal ~~model~~ studies ~~has been undertaken demonstrating the potential~~ suggest health benefits ~~of~~ for cocoa and chocolate, particularly for patients with hypertension and type II diabetes mellitus. These studies suggest that cocoa and chocolate can lower blood pressure, ~~for both~~improve glucose regulation, improve insulin sensitivity, and ~~modification of~~reduce complications associated with diabetes. ~~Cesar Fraga in the *American Journal of Clinical Nutrition* first proposed the potential of chocolate for people with diabetes in 2005. It was suggested that we should consume more cocoa and chocolate to reduce the burdens of hypertension and diabetes.(1) Grassi and colleagues (2) further reinforced this potential for its antihypertensive and insulin-sensitizing effect with the mechanistic data.~~ ~~However,~~But the ~~hypothesis of chocolate~~idea of chocolate as medicine ~~having a beneficial effect remains counterintuitive to the average consumer and~~ has yet to gain widespread support among consumers or the wider medical and healthcare community. It seems ~~almost~~ counterintuitive ~~to suggest~~that an high-sugar, energy-dense food—one ~~that is high in sugar, and~~ often seen as a treat or a "dietary sin"—~~,~~ could ~~offer such promise~~promote health.

Example: paragraph for editing

Headache is an extraordinarily common pain symptom that virtually everyone experiences at one time or another. As a pain symptom, headaches have many causes. The full range of these causes were categorized by the International Headache Society (IHS) in 1988. The IHS distinguishes two broad groups of headache disorders: primary headache disorders and secondary headache disorders. Secondary headache disorders are a consequence of an underlying condition, such as a brain tumor, a systemic infection or a head injury. In primary headache disorders, the headache disorder is the fundamental problem; it is not symptomatic of another cause. The two most common types of primary headache disorders are episodic tension-type headache (ETTH) and migraine. Although IHS is the most broadly used/recognized classification system used, a brief comment on others would be appropriate – especially if there are uses that have epidemiologic advantages.

Word count: 139

Sentence 1

- Headache is an extraordinarily common pain symptom that virtually everyone experiences at one time or another.
  - The upshot: Headaches are important.

Sentence 2

- As a pain symptom, headaches have many causes.
  - The upshot: Headaches have many causes.

Sentence 3

- The full range of these causes were categorized by the International Headache Society (IHS) in 1988.
  - The upshot: The IHS classifies headaches by cause.

Sentence 4

- The IHS distinguishes two broad groups of headache disorders: primary headache disorders and secondary headache disorders.
  - The upshot: The IHS classifies headaches into primary and secondary.

Sentence 5

- Secondary headache disorders are a consequence of an underlying condition, such as a brain tumor, a systemic infection or a head injury.
  - The upshot: Secondary headaches arise from another condition, such as brain tumors.

Sentence 6

- In primary headache disorders, the headache disorder is the fundamental problem; it is not symptomatic of another cause.
  - The upshot: Primary headache disorders are disorders themselves.

Sentence 7

- The two most common types of primary headache disorders are episodic tension-type headache (ETTH) and migraine.
  - The upshot: Here are examples of primary headache disorders.

Sentence 8

- Although IHS is the most broadly used/recognized classification system used, a brief comment on others would be appropriate – especially if there are uses that have epidemiologic advantages.
  - The upshot: We'll also briefly tell you about other classification systems.

Altogether now:

- Headaches are important.
- Headaches have many causes.
- The IHS classifies headaches by cause.
- The IHS classifies headaches into primary and secondary.
- Secondary headaches arise from another condition, such as brain tumors.
- Primary headaches are the disorder themselves.
- Here are examples of primary headache disorders.
- We'll also briefly tell you about other classification systems.

Use this to organize!

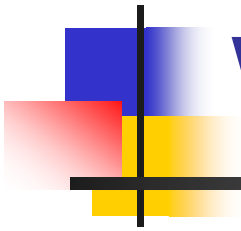
- Headaches are important.
- ~~Headaches have many causes.~~
- ~~The IHS classifies headaches by cause.~~
- The IHS classifies headaches as primary and secondary by cause. (main idea)
- Primary headaches are the disorder themselves. (definition, moved first)
- Here are examples of primary headache disorders. (examples)
- Secondary headaches arise from another condition. (definition)
- Examples include brain tumors. (examples)
- ~~We'll also briefly tell you about other classification systems~~.

Edited version

Headache is a pain symptom that almost everyone experiences. The International Headache Society (IHS) groups headaches into two types based on cause: primary headache disorders and secondary headache disorders. In primary headache disorders, the headache itself is the main complaint. The two most common types of primary headache disorder are episodic tension-type headache (ETTH) and migraine. Secondary headache disorders result from an underlying condition, such as a brain tumor, a systemic infection, or a head injury.

Word count: 76

Headache is a ~~an extraordinarily common~~ pain symptom that ~~virtually~~ almost everyone experiences ~~at one time or another~~. ~~As a pain symptom, headaches have many causes. The full range of these causes were categorized by t~~ The International Headache Society (IHS) ~~in 1988. The IHS distinguishes two broad~~ groups ~~of~~ headache~~s disorders~~ into two types based on cause: primary headache disorders and secondary headache disorders. ~~Secondary headache disorders are a consequence of an underlying condition, such as a brain tumor, a systemic infection or a head injury.~~ In primary headache disorders, the headache disorder is the ~~fundamental problem; it is not symptomatic of another cause~~ main complaint. The two most common types of primary headache disorders are episodic tension-type headache (ETTH) and migraine. Secondary headache disorders ~~are a consequence of~~ result from an underlying condition, such as a brain tumor, a systemic infection, or a head injury. ~~Although IHS is the most broadly used/recognized classification system used, a brief comment on others would be appropriate – especially if there are uses that have epidemiologic advantages.~~



Writing in the Sciences

Module 3.7: A few more tips: repetition, key words, and acronyms

A note on repetition...

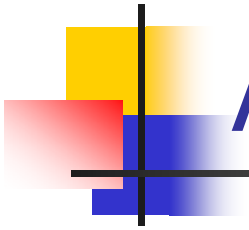
When you find yourself reaching for the thesaurus to avoid using a word twice within the same sentence or even paragraph, ask:

(1) Is the second instance of the word even necessary?

(2) If the word is needed, is a synonym really better than just repeating the word?

Challenges/difficulties
Illustrate/demonstrate
Teaches clinicians/guides clinicians

Repeat key words!
-e.g., names of comparison groups, variables, or instruments



A note on repetition...

It’s OK to repeat a word!

Needless synonyms!

To avoid repetition, writers have needlessly (and amusingly) come up with the following synonyms:

Banana→ “the elongated yellow fruit”

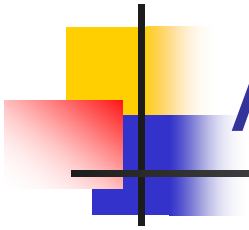
Beaver→ “the furry, paddle-tailed mammal”

Mustache→ “under-nose hair crops”

Milk from a cow→ “the vitamin-laden liquid” from a “bovine milk factory”

Skis→ “the beatified barrel staves”

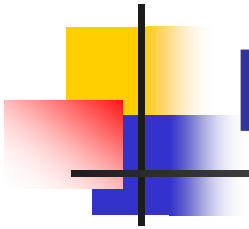
Examples compiled in: "The Press: Elongated Fruit - TIME." Time. 10 Aug. 1953. Web. 19 Feb. 2012.



A note on repetition...

For more, see:

Henry W. Fowler on “Elegant Variation”:
http://www.bartleby.com/116/302.html



Disastrous synonyms!

Whereas it's just amusing or inelegant in some types of writing, in scientific writing it's a disaster.

The reader may think you are referring to a different instrument, model, group, variable, etc.

Acronyms/Initialisms

It's OK to repeat words. Resist the temptation to abbreviate words simply because they recur frequently! (recall: miR instead of microRNA)

Use only standard acryonyms/initialisms (e.g., RNA). Don't make them up!

If you must use acronyms, define them separately in the abstract, each table/figure, and the text. For long papers, redefine occasionally (as readers don't typically read start to finish).

Unnecessary acronyms/initialisms

Spinal muscle fatigue is common in people with LLA, because decreased spinal muscle endurance and strength has been reported in persons with TFA and TTA with LBP.