Chapter 1: Critical Thinking

a. claim
b. objective claim
c. subjective judgement
d. 'fact vs. opinion'
e. factual claim
f. moral subjectivism
g. argument
h. cognitive bias
    a. belief bias
    b. confirmation bias
    c. availability heuristic
    d. false consensus effect
    e. bandwagon effect
    f. negativity bias
    g. loss aversion
    h. in-group bias
    i. fundamental attribution error
    j. obedience to authority
    k. overconfidence effect
    l. better than average illusion
i. truth
j. knowledge

Chapter 2: Arguments

a. argument
b. major premise
c. minor premise
d. conclusion
e. evidence
f. deductive
g. inductive
h. cogent
i. sound
j. general
k. specific
l. valid
m. invalid
n. strong
o. weak
p. categorical logic
q. truth function logic
r. generalizing from a sample
s. statistical syllogism
t. argument from analogy

u. causal argument
v. inference to the best explanation

Chapter 3: Clarity and Vagueness

a. clarity
b. vagueness
c. ambiguity
d. generality
e. precision
f. imprecision
g. groups or individuals

Chapter 4: Truth and Credibility of Claims

a. first-hand observations
b. believability of claims
c. plausibility
d. doubts
e. multiple sources
f. advertising
g. authority
h. expectation
i. skepticism
j. background information
k. interested party
l. disinterested party
m. expertise
n. reliability
o. media bias
p. authoritative bias
q. fact-checking
r. logos
s. ethos
t. pathos

Chapter 5: Rhetorical Devices

a. euphemism
b. dysphemism
c. weaselers
d. downplayer
e. stereotypes
f. innuendo
g. loaded question
h. ridicule and sarcasm
i. rhetorical definitions and explanations
j. rhetorical analogies

k. proof surrogates
l. repetition
m. demonizing
n. fostering xenophobia
o. otherizing
p. fear or hate mongering
q. hyperbole
r. no rhetorical import

Chapter 6: Deductive Fallacies

a. ad hominem
b. straw man
c. false dilemma
d. misplacing the burden of proof
e. begging the question
f. appeal to emotion
g. irrelevant conclusion

(a. inconsistency ad hominem)
(b. personal attack or abusive ad hominem)
(c. circumstantial ad hominem)
(d. poisoning the well)
(e. guilt by association)
(f. genetic fallacy)

Chapter 7: Inductive Fallacies

a. hasty generalization/generalizing from exceptional cases
b. accident
c. weak analogy
d. mistaken appeal to authority
e. mistaken appeal to popularity
f. *post hoc, ergo propter hoc/cum hoc, ergo propter hoc*
g. overlooking the possibility of random variation or regression
h. slippery slope
i. untestable explanation

(a. argument by anecdote
(b. fallacy of small sample
(c. fallacy of biased sample
(d. overlooking the possibility of coincidence
(e. overlooking the possibility of common cause
(f.overlooking the possibility of reversed causation

Chapter 8: Fallacies of Language

a. affirming the consequent [SEP]
b. denying the antecedent
c. undistributed middle fallacy
d. confusing explanations with excuses
e. equivocation
f. composition
g. division
h. miscalculating probabilities

(a. incorrectly combining probabilities of independent events
(b. gambler's fallacy
(c. overlooking prior probabilities
(d. faulty inductive conversion

Chapter 9: Deductive Arguments: Informal Categorical Logic

S = Subject
P = Predicate

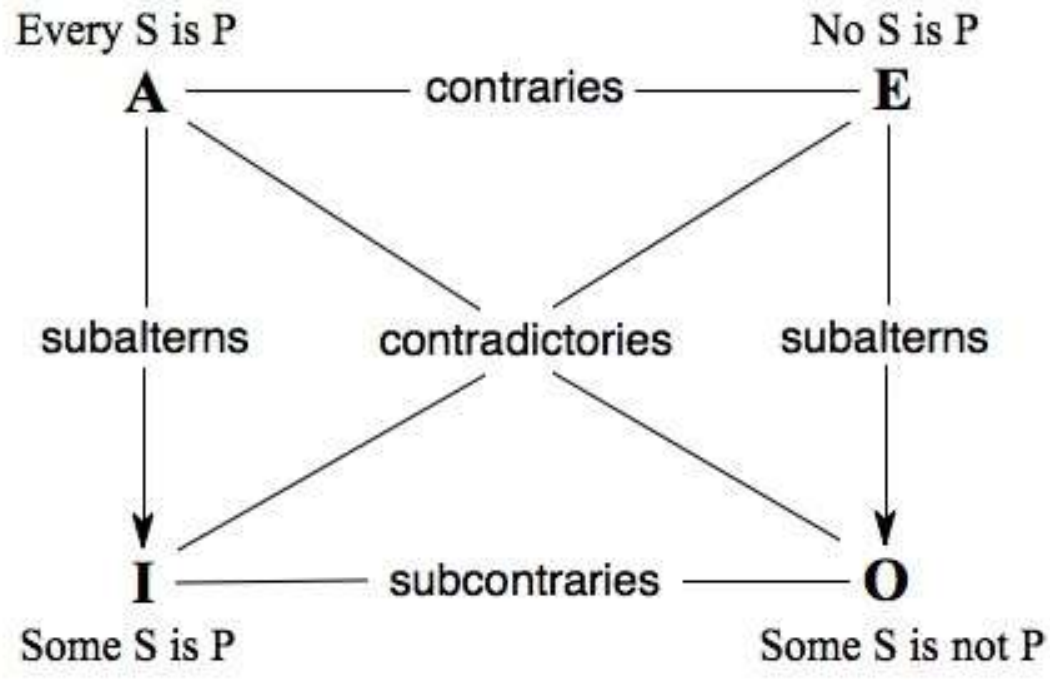
1) What is a "category"?
2) Categorical Claims: Standard form
    a. A and I claims are *affirmative*
    b. E and O claims are *negative*

        A) All S are P
        E) No S are P
        I) Some S are P
        O) Some S are not P
3) Venn Diagrams
    a. Circles represent classes ("categories")
    b. A shaded area indicates there is nothing in it
    c. An X in an area indicates that at least ONE thing is in that part of a class or classes
    d. An area that is blank does NOT mean that it is empty. It means we have no information about that part of the category or class.

4) Equivalent Claims
5) Translating claims with "Only" and "The only"
    a. "Only": The word "Only" used by itself, introduces the *predicate* term of an A claim
    b. "The only": The words "The only" introduces the *subject* term of an A claim.
6) Translating claims about Times and Places:
    a. Times: "always" or "never" or "whenever":
        A) Translation: "always" = "all times", "never" = "at no time",
        B) "whenever" usually introduces the subject term of an A-claim about **times**
    b. Places: "Wherever,"
        A) "Wherever" usually introduces the subject term of an A-claim about **places.**
7) Translating claims about specific individuals:
    a. Should be treated as A-claims or E-claims
8) Translating claims that use Mass Nouns:

a. About a *kind of stuff*: or *examples* of this kind of stuff.

9) The Square of Opposition



a. A and E claims are:
   A) Universal
   B) Contraries (not both true)
b. I and O claims are:
   A) Particular
   B) Sub-Contraries (not both false)

10) Inferences across the square
   a. If you know one standard form (letter), you can make *inferences about the other three*.
      A) Contraries (not both true)
      B) Sub-contraries (not both false)
      C) Contradictories (exact opposites of each other)
      D) Sub-alterns (Either of a pair of propositions; consisting of a ***universal*** proposition and a ***particular*** proposition having the same subject and predicate and being of the same quality (+ or -)

11) Three categorical Relations
   a. Conversion: Find the **converse** of a standard form claim by switching the positions of the subject terms and predicate terms.
      A) All E- and I- Claims are equivalent to their converses
   b. Obversion
      A) All members of a category and all members ***not*** in that catoery are *complimentary*. (All A and all ***not*** A are complimentary terms.)
      B) To find the ***obverse*** of a claim
         1. Change from + to – or from – to + (are/are not)
         2. (+) A claim ←→ E claim (-)
         3. (+) I claim ←→ O claim (-)

c. Contraposition
    A) Switch Subject and Predicate
    B) Replace both S and P with ***complimentary*** (non-S and non-P)
    C) All A and O claims (but not E and I claims) are ***equivalent to*** (contain the same information) their ***contrapositives.***

12) Syllogism: 2 premises (major, minor) plus a conclusion.
    a. Validity of a deductive argument:
        A) If it isn't possible for the premise(s) to be **true** and the conclusion to be **false**.
13) Categorical Syllogisms
    a. Major term: contains the **predicate** of the syllogism's **conclusion.**
    b. Minor term: contains the **subject** that occurs in the syllogism's **conclusion.**
    c. Middle Term**:** is in both premises, but ***not*** in the conclusion.
14) Venn Diagram method for testing validity:
    a. 3 circles of major premise, minor premise, and conclusion labled
    b. when one premise is an A or E premise, and the other is an I or O premise, →diagram the A or E premise ***first.***
    c. **Does the diagram yield a conclusion?** (is the I or O (X) *entirely* within an area? An X that is ***partly*** in one area and another ***fails*** to establish the conclusion.
15) Existential Assumption in Categorical Syllogisms
    a. When ***both*** premises in a syllogism are A and E claims and the conclusion is an I or O claim, → diagramming the premises cannot ***possibly*** yield a diagram of the conclusion (because A and E claims produce only coloring of areas, and I and O claims require an X to be read from the diagram). *If any circle has only one are aremaining uncolored, an X should be put in that area*.
16) Categorical Syllogisms with Unstated Premises.
    a. If no second premise; ask "Is there a reasonable assumption that I could make that would make this argument valid?
17) Rules method of testing for validity
    a. + and – categorical claims
        A) + = A and I claims
        B) - = E and O claims
    b. Distribution
        A) Either a claim says something about ***every*** *member* of the class the term names **or it does not.**
            1. A claim: All S are ← P
            2. E claim: No S are ← → P
            3. I claim: ***Some*** S are P (NO distribution)(not every member)
            4. O claim: Some S are not P.
18) Three rules of Syllogism (**valid IFF)**
    a. The number of (-) claims in the premises must be the same as the number of (-) claims in the conclusion.
    b. At least ***one premise*** must *distribute* the **middle term.**
    c. Any term that is distributed by the ***conclusion*** of the syllogism must be ***distributed*** by it's premises.

Chapter 11: Inductive Reasoning

1) Argument from Analogy

   a. Attribute of Interest
   b. Premise analogues
   c. Conclusion analogues
   d. Contrary analogues (attributes that don't match)
   e. Rhetorical analogues
2) Generalizing from a sample
   a. Sample attributes
   b. Sample size
   c. Atypical sample
3) Scientific generalizing from a sample
   a. Populations of interest
   b. Attributes of interest
   c. Skewed sample (atypical sample)
   d. Random sample
   e. Double-blind
4) Degeneralizing (reverse generalizing)
5) Causal Statements (vs arguments)
   a. *Cause* of the conclusion
   b. Give *evidence* for the conclusion
   c. Expert = 10,000 hours
   d. Method of difference
   e. Troubleshooting
6) Forming causal hypotheses
   a. Tentative claim offered for further investigation
   b. Form
   c. Confirm
   d. Test
7) Three often used principles
   a. Paired "unusual events' principle
      i. Hypothesizes causation but does not *establish* causation
   b. Common variable principle
      i. Variable common to multiple occurances
   c. Co-variation principle
      i. Variation in one phenomena
      ii. Variation in a second phenomena
      iii. Are these correlated?
8) Weighing Evidence
   a. Car not starting
      i. Gas
      ii. Crank
      iii. Spark
9) Confirming causal hypotheses
   a. Try to show hypothesized cause I the condition "but for which" the effect would not happen
10) Randomized controlled experiments
   a. Double-blind
   b. Single-blind
11) Prospective observational studies (Future)
   a. Confounding variables

12) Retrospective observational studies (Past)
13) Inference to the best explanation
    a. What best explains what is happening?
14) Reasoning from cause to effect
    a. Start with "effect"
    b. What could have caused it?
15) Calculating statistical probabilities
    a. Joint occurrence of *independent* events
    b. Alternative occurrences (providing the events are mutually exclusive)
16) Expectation Value
17) Calculating conditional probabilities
18) Causation and the Law
    a. Action → Harm
    b. Cause → Effect
    c. Which causal element is most relevant?
19) Causal Statements (vs Arguments)

Chapter 12: Moral, Legal, and Aesthetic Reasoning

1) Legal reasoning
2) Appeal to precedent (stare decisis)
3) Four Legal perspectives
   a) Legal moralism
   b) Harm principle
   c) Legal paternalism
   d) Offence principle
4) Good & Bad Faith
5) Reliability
6) Admissibility

Morality: definition
Value judgments
Moral value judgments
Moral vs Immoral
Moral vs Non-moral

Major perspectives in Moral Reasoning

1) Consequentialism (Ends)(Bentham & Mill)
    a. Utilitarianism
    b. Ethical Egotism
    c. Ethical Altruism
2) Non-Consequentialism (Means)
    a. Moral Duty: Deontology
        i. Grounded in human nature
        ii. Grounded in reason
        iii. Grounded in Christian God

   b. Imperatives (Kant)
      i. Hypothetical
      ii. Categorical
      iii. Kant's method
         1. Find the Maxim or Principle
         2. Do I want this Maxim to be Universal?
      iv. Theory of Moral Necessity: Not to treat people as tools
      v. Consider *happiness* allowing with duties and rights of others
   c. How to Know?
      i. Our conscience
      ii. Self-evident
3) Moral Relativism
   a. What is *believed* to be right and wrong may differ from group to group.
   b. What *is* right and wrong may differ from group to group.
4) Religious Relativism
   a. Different traditions have different practices
5) Religious Absolutism
   a. Rigid dogma
6) Virtue Ethics
   a. Not on *what to do*, but *how to* ***be.***
   b. Aristotle: We acquire virtues when we employ reason to *moderate our (emotional) impulses.*
   c. To become persons of *good moral character*.

Eight Principles of Aesthetic Reasoning: Objects are aesthetically valuable if they:

1) Teach us truths.
2) Convey values or traditions of origination.
3) Bring about social or political change.
4) Have the capacity to produce pleasure.
5) Produce emotions that we value.
6) Produce non-emotional experiences and/or autonomy; a suspension of belief.
7) Have a special property or form.
8) No reasoned arguments can conclude that objects are aesthetically valuable or valueless: *aesthetic tastes cannot be disputed.*

Why reason aesthetically?

1) To select a particular way of viewing, listening, reading, or otherwise perceiving the object, and
2) To recommend, guide or prescribe the object to be viewed, heard, or read to accurately and informatively be descriptive of the objects that they are to be applied.

Trolley Problem: How does each solve?

1) Mill: Utility: Ends
2) Kant: Duty: Means
3) Virtue: Good person

Great Learning

1) Self-similarity
2) Flexibility of awareness

Bolte-Taylor's Brain Quadrants

1) Left Thinking: Critical Thinker: Cognitive
    a. Re-presents
    b. Organizes
    c. Mechanical
    d. Neat
    e. Plans
    f. Rejects authority
    g. Critical morality: right/wrong
    h. Detail based
    i. Counts everything
    j. Protective
    k. Treats Body as vehicle
2) Left emotional: Strict Father: Authoritarian
    a. Suspicious
    b. Angry
    c. Deceives
    d. Shames and is shamed
    e. Loves conditionally
    f. Self-judging
    g. Anxious
    h. Whines
    i. Egocentric
    j. Blames
    k. Zero-sum
    l. Treats Body as Responsibility
3) Right emotional: Nurturant Parent: Egalitarian
    a. Forgiving
    b. Awe inspired
    c. Playful
    d. Empathic
    e. Creative
    f. Joyful
    g. Hopeful
    h. Direct experience

i. Treats Body as a Toy

4) Right Thinking: Expansive Awareness
   a. Aware
   b. Expansive
   c. Connected
   d. Accepting
   e. Embraces change
   f. Authentic
   g. Non-zero sum
   h. Clarity
   i. Intentional
   j. Vulnerable
   k. Treats Body as Temple of the Soul

TAYLOR, JILL BOLTE. 2022. *WHOLE BRAIN LIVING: the anatomy of choice and the four characters that drive our life*. [S.l.]: HAY HOUSE IN

McGilchrist's assessment of Brain Hemispheres

3) Left Brain
   1. Detail
   2. Self-validating
4) Right Brain
   1. Big-picture
   2. Aware

McGilchrist, Iain. 2021. *Master and His Emissary: the Divided Brain and the Making of the Western World*. Yale University Press.

Frame

1) Grievance
2) Accentuate the Positive

Norman's Six (Mental) Immune Disruptive Ideas:

1) Beliefs are private, and no one else's concern. (What I believe is none of your business!)(asw)

2) We have a right to believe what we like. (Right to believe ruse)(It's a free country!)(asw)

3) Values are subjective—relative, that is, to a fundamentally arbitrary set of preferences. (who appointed *you* the thought-police?)

4) We have no standing to criticize other people's value judgments.

5) Basic value commitments are not subject to rational assessment.

6) Questioning a person's core commitments is fundamentally intolerant, mean-spirited, offensive, or unkind. (Don't you tell me what to do!)(asw)

Norman, Andrew. 2021. *Mental Immunity: Infectious Ideas, Mind-Parasites, and the Search for a Better Way to Think*.

As found in:
Moore Brooke Noel and Richard Parker. 2021. *Critical Thinking* Thirteenth ed. New York NY: McGraw-Hill Education.

Cognitive Distortions

All-or-Nothing Thinking: “Always & Never”

All-or-nothing thinking is also known as black-and-white thinking or polarized thinking. This type of thinking involves viewing things in absolute terms: Situations are always black or white, everything or nothing, good or bad, success or failure.[1]

An example of all-or-nothing thinking is dwelling on mistakes and assuming you will never be able to do well, instead of acknowledging the error and trying to move past it.

One way to overtime this cognitive distortion is to recognize that success and progress are not all-or-nothing concepts. By addressing this type of thinking and replacing self-defeating thoughts, you can feel better about your progress and recognize your strengths.

Overgeneralization

Overgeneralization happens when you make a rule after a single event or a series of coincidences.[2] The words "always" or "never" frequently appear in the sentence. Because you have experience with one event playing out a certain way, you assume that all future events will have the same outcome.

For example, imagine that you made a suggestion about a work project that wasn't adopted in the final work. You might overgeneralize this and assume that no one at work ever listens to you or takes you seriously.

One way to combat overgeneralization is to focus on using realistic language. Instead of saying, "I always do that!," say something such as, "That happens sometimes, but I'll try to do better next time."

Mental Filters

A mental filter is the opposite of overgeneralization, but with the same negative outcome.[3] Instead of taking one small event and generalizing it inappropriately, the mental filter takes one small event and focuses on it exclusively, filtering out anything else.

For example, Nathan focuses on all of the negative or hurtful things that his partner has said or done in their relationship, but he filters all the kind and thoughtful things his

partner does. This thinking contributes to feelings of negativity about his partner and their relationship.

Journaling is one strategy that might help overcome mental filtering. Make an effort to intentionally shift your focus from the negative and look for more neutral or positive aspects of a situation.

Discounting the Positive

Discounting the positive is a cognitive distortion that involves ignoring or invalidating good things that have happened to you.[4] It is similar to mental filtering, but instead of simply ignoring the positives, you are actively rejecting them.

For example, Joel completes a project and receives an award for his outstanding work. Rather than feeling proud of his achievement, he attributes it to pure luck that has nothing to do with his talent and effort.

One way to overcome this cognitive distortion is to reframe how you attribute events. Instead of seeing positive outcomes as flukes, focus on noticing how your own strengths, skills, and efforts contributed to the outcome.

By having more faith in your abilities, you'll feel more empowered and less likely to experience learned helplessness, a phenomenon where people feel that they have no control over the outcome.

Jumping to Conclusions

There are two ways of jumping to conclusions:

- **Mind reading**: When you think someone is going to react in a particular way, or you believe someone is thinking things that they aren't
- **Fortune telling**: When you predict events will unfold in a particular way, often to avoid trying something difficult

For example, Jamie believes that he cannot stand life without heroin. Such beliefs hold him back from getting the treatment and help that he needs to successfully recover from substance use.

As found in:
Moore Brooke Noel and Richard Parker. 2021. *Critical Thinking* Thirteenth ed. New York NY: McGraw-Hill Education.

To overcome this cognitive distortion, take a moment to consider the facts before you make a decisions. Ask questions and challenge your initial assumptions.

Magnification

Magnification is exaggerating the importance of shortcomings and problems while minimizing the importance of desirable qualities. Similar to mental filtering and discounting the positive, this cognitive distortion involves magnifying your negative qualities while minimizing your positive ones.

For example, when something bad happens, you see this as "proof" of your own failures. But when good things happen, you minimize their importance. For example, a person addicted to pain medication might magnify the importance of eliminating all pain and exaggerate how unbearable their pain is.

To overcome magnification, focus on learning how to identify these thoughts and intentionally replacing them with more helpful, realistic ways of thinking.

Emotional Reasoning

Emotional reasoning is a way of judging yourself or your circumstances based on your emotions. This type of reasoning assumes that because you are experiencing a negative emotion, it must accurately reflect reality. If you feel experience feelings of guilt, for example, emotional reasoning would lead you to conclude that you are a bad person.

For instance, Jenna used emotional reasoning to conclude that she was a worthless person, which in turn led to binge eating.

While research has found that this distortion is common in people who have anxiety and depression, it is actually a very common way of thinking that many people engage in.[5] Cognitive behavior therapy can help people recognize the signs of emotional reasoning and realize that feelings are not facts.

"Should" & “Must” (Modal Operator of Necessity) Statements

As found in:
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"Should" statements involve always thinking about things that you think you "should" or "must" do. These types of statements can make you feel worried or anxious. They can also cause you to experience guilt or a sense of failure. Because you always think you "should" be doing something, you end up feeling as if you are constantly failing.

An example: Cheryl thinks she should be able to play a song on her violin without making any mistakes. When she does make mistakes, she feels angry and upset with herself. As a result, she starts to avoid practicing her violin.

When you recognize yourself engaging in this cognitive distortion, **focus on practicing self-compassion.** Replace these statements with more realistic ones, and work on accepting yourself for who you are rather than who you think you should be.

Labeling: Arbitrary Association with Identity: Boundary Violation

Labeling is a cognitive distortion that involves making a judgment about yourself or someone else as a person, rather than seeing the behavior as something the person did that doesn't define them as an individual.

For example, you might label yourself as a failure. You can also label other people as well. You might decide that someone is a jerk because of one interaction and continue to judge them in all future interactions through that lens with no room for redemption.

You can combat labeling by challenging the accuracy of your assumptions. Look for evidence that counters your negative thoughts. Remind yourself of the difference between opinions and facts.

Personalization and Blame

Personalization and blame is a cognitive distortion whereby you entirely blame yourself, or someone else, for a situation that, in reality, involved many factors that were out of your control.

For example, Anna blamed herself for her daughter's bad grade in school. Instead of trying to find out why her daughter is struggling and exploring ways to help, Anna assumes it is a sign that she is a bad mother.

When you find yourself engaging in this cognitive distortion, make a conscious effort to consider other factors that might have played a role in the situation. Instead of blaming

yourself for something that happened, consider external factors or other people's actions that might have also been contributing factors.

https://www.verywellmind.com/ten-cognitive-distortions-identified-in-cbt-22412

As found in:
Moore Brooke Noel and Richard Parker. 2021. *Critical Thinking* Thirteenth ed. New York NY: McGraw-Hill Education.