

How to be a good critical thinker?

كيف تكون مفكرًا نقديًا كفاً؟

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Abstract:

I introduced in provide some issues concerning how to be good critical thinker and the main questions which stem from any content area and provide some hindrances which due to basic human limitations and we divided these hindrances to four kinds of kind due to use language kind due to faulty logic and perception kind due to psychological pitfalls kind due to sociological pitfalls in the end we provide some misconceptions of critical thinking.

Besides some obstacles to critical thinking as egocentrism, ethnocentrism, unwarranted assumptions, distrust in reason, wishful thinking relativism, misunderstanding of truth, closed mindedness, selective thinking, emotions.

Keywords: Hindrances, Logic, Perception, Language, Sociology, Psychology, Egocentrism, Emotions, Rigidity, Biases, Lack of humility, Superstition.

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(How to be a good critical thinker?)

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ملخص:

في هذا المقال طرحنا بعض القضايا الأساسية الخاصة بكيفية كون المرء مفكراً نقدياً، والتساؤلات التي يجب طرحها والصعوبات التي تحول دون التفكير النقدي، ومنها: المحددات الإنسانية، والأخطاء المنطقية، والإدراكية، والعقبات السيكولوجية، والاجتماعية.

وفي عرضنا لبعض التصورات الخاطئة التي تحيط بالتفكير الناقد أضفنا ما يمكن اعتباره الأسباب الشخصية التي تحول بين المرء وممارسة التفكير النقدي ومنها: التمركز حول الذات، والمركزية العرقية، والعنصرية، والافتراضات غير المدعمة، والتفكير الانتقائي، والانغلاق الذهني، والانفعالات.

الكلمات المفتاحية: الإدراك، اللغة، المنطق، علم النفس، علم الاجتماع، التمركز حول الذات، العواطف، الخوف من التغيير، الأحكام المسبقة، خداع الذات، المركزية العنصرية، الخرافة.

(1)

28 Critical Thinking Questions Stem For Any Content Area

1. What evidence can you present for/against...?
2. How does ... contrast with ...?
3. How could you outline or concept map...? Explain your response with examples.
4. Why is ... significant? Explain your reasoning.
5. What are the advantages and disadvantages of ...?
6. What is the point or 'big idea' of ...?
7. How could you judge the accuracy of ...?
8. What are the differences between ... and ...?
9. How is ... related to ...?
10. What ideas could you add to ... and how would these ideas change it?
11. Describe ... from the perspective of
12. What do you think about ...? Explain your reasoning.
13. When might ... be most useful and why?
14. How could you create or design a new...? Explain your thinking.
15. What solutions could you suggest the problem of ...? Which might be most effective and why?
16. What might happen if you combined ... and ...?
17. Do you agree that ...? Why or why not?
18. What information would you need to make a decision about ...?
19. How could you prioritize ...?
20. How is ... an example of ...?
21. What are the most important parts or features of ...?
22. Which details of ... are most important and why?
23. What patterns do you notice in ...?
24. How could you classify ... into a more/less general category?
25. What makes ... important?
26. What criteria could you use to assess ...?

27. How could ... and ... function together? How do they work separately and together and different ways?
 28. Where is ... most/least ...? Explain your reasoning.

(2)

A Practical Guide to Critical Thinking
Hindrances Due To Basic Human Limitations

Hindrance	Definition	Example	Critical Thinking Tip
Confirmation Bias & Selective Thinking	The process whereby one tends to notice and look for what confirms one's beliefs, and to ignore, not look for, or undervalue the relevance of what contradicts one's beliefs.	If one believes that more murders occur during a full moon, then one will tend to take notice of murders that occur during a full moon and tend <i>not</i> to take notice of murders that occur at other times.	Obtain and objectively evaluate all relevant information and sides of an issue before passing judgment.
False Memories & Confabulation	Being aware that our memories are often "manufactured" to fill in the gaps in our recollection, or that some memories of facts, over time, can be unconsciously replaced with fantasy.	Police officers should <i>not</i> show a photo of a possible assailant to a witness prior to a police lineup, or the actual memory of the witness may be unconsciously replaced.	Put more reliance on proven facts than memory recollection or testimonies from others. Know your own memory limitations.
Ignorance	The lack of essential background knowledge or information on a subject prior to making a judgment.	One may be convinced a "yogi" has the power to levitate objects, but does not see the thin wire attached to them.	Perform appropriate research on multiple sides of issues to obtain all pertinent evidence, before reaching conclusions.
Perception Limitations	Being unaware of our own perception limitations that can lead to misconceptions about reality.	Looking up at the stars at night and perceiving they are as close as the moon and planets.	Recognize that "seeing is not always believing" because of our sensory limitations. Know when & how to verify your observations with other sources.

Personal Biases & Prejudices	We each have personal biases and prejudices, resulting from our own unique life experiences and worldview, which make it difficult to remain objective and think critically.	Some people are biased against claims made by scientists because their worldview appears too cold and impersonal.	Resist your own biases by focusing on the facts, their sources, and the reasoning in support of arguments.
Physical & Emotional Hindrances	Stress, fatigue, drugs, and related hindrances can severely affect our ability to think clearly and critically.	Air traffic controllers often have difficulty making good judgments after long hours on duty	Restrain from making critical decisions when extremely exhausted or stressed.
Testimonial Evidence	Relying on the testimonies and vivid anecdotes of others to substantiate one's own beliefs, even though testimonies are inherently subjective, inaccurate, unreliable, biased, and occasionally fraudulent.	Dramatic stories of Bigfoot sightings do not prove the existence of Bigfoot.	Resist making judgments based on testimonies alone. Extraordinary claims generally require extraordinary evidence.

The *Use of Language* is highly relevant to critical thinking. The choice of words themselves can conceal the truth, mislead, confuse, or deceive us. From ads which guarantee easy weight loss to politicians assuring prosperity for everyone, a critical thinker must learn to recognize when words are not intended to communicate ideas or feelings, but rather to control thought and behavior.

Hindrances Due To Use of Language

Hindrance	Definition	Example	Critical Thinking Tip
Ambiguity	A word or expression that can be understood in more than one way.	From the statement “Lying expert testified as trial”, is the expert a liar or is the person an expert on telling when someone is lying?	If the intended meaning of an ambiguous word or expression cannot be determined, avoid making judgments
Assuring Expressions	Using expressions that disarm you from questioning the validity of an argument.	Expressions such as “As everyone knows...”, and “Common sense tells us that...”	Disregard assuring expressions and instead focus on facts & reasoning that support arguments.
Doublespeak Euphemisms	The use of inoffensive words or expressions to mislead, disarm, or deceive us about unpleasant realities.	Referring to a policy of mass murder as “ethnic cleansing” or the inadvertent killing of innocent people as “collateral damage.”	Look beyond the emotive (emotional) content and recognize the cognitive (factual) content of euphemistic words and expressions.
Doublespeak Jargon	The use of technical language to make the simple seem complex, the trivial seem profound, or the insignificant seem important, all done intentionally to impress others.	Referring to a family as “a bounded plurality of roleplaying individuals” or a homeless person as a “nongoal oriented member of society.”	Recognize the cognitive (factual) content of jargon words and expressions.
Emotive Content	Intentionally using words to arouse feelings about a subject to bias others positively or negatively, in order to gain influence or power.	Naming detergents “Joy” and “Cheer” (positive), not “Dreary” and “Tedious” (negative). The military using the phrase “neutralizing the opposition” (less negative) rather than “killing” (negative).	Learn to recognize and distinguish the emotive (emotional) content of language. Try to focus on reasoning and the cognitive (factual) content of language when evaluating arguments.
False Implications	Language that is clear and accurate but misleading because it suggests something false.	The dairy industry cleverly expresses fat content as a percentage of weight, not of calories. Thus 2% “low” fat milk really has 31% fat when fat	Understand not only the facts, but also their relevance and context.

		is measured as a percentage of calories.	
Gobbledygook	The use of confusing non-technical language to mislead or deceive.	A company using lengthy and intimidating language to simply express that if your check bounces, your receipt is voided.	Recognize the cognitive (factual) content of gobbledygook words and expressions.
Hedging & Weasel Words	Language that appears to commit one to a particular view, but because of its wording, allows one to retreat from that view.	President Clinton's claim that he did not have "a sexual relationship" with Monica Lewinski, in which he later explained that "engaging in sexual acts" was not "a sexual relationship."	Be on the lookout for hedging language that suppresses facts supporting an argument.
Judgmental Words	Stating opinions as though they were facts, so the audience does not have to "bother" judging for themselves.	The President took <i>justifiable</i> pride in signing the peace treaty.	Distinguish what is <i>fact</i> from what is <i>opinion</i> in any statement or argument.
Meaningless Comparisons	Language that implies that something is superior but retreats from that view.	An ad that claims a battery lasts "up to" 30% longer, but does not say it will last 30% longer, and if it did, longer than what?	Avoid making judgments if it is not exactly clear what is being compared.
Vagueness	Language which is less precise than the context requires.	If someone needs to be paid back tomorrow, and the borrower says "I'll pay you back <i>soon</i> ", the borrower's response was too vague.	Be aware of the consequences of imprecise claims based on vagueness.

Misconceptions due to *Faulty Logic or Perception* (Table 3) or *Psychological and Sociological Pitfalls* (Table 4) can also lead one to erroneous conclusions. A critical thinker must understand how numbers can be used to mislead; perceptions can be misinterpreted due to psychological and sociological influences; and reasoning can be twisted to gain influence and power.

Hindrances Due To Faulty Logic Or Perception

Hindrance	Definition	Example	Critical Thinking Tip
Ad Hoc Hypothesis	A hypothesis, which cannot be independently tested, is used to explain away facts that refute a theory or claim.	Psi researchers often blame the “hostile thoughts” of onlookers for adversely affecting instruments measuring the alleged existence of psychic powers	Put low reliance, or reserve judgment on, claims that cannot be independently tested.
Apophenia & Superstition	Erroneous perception of the connections between unrelated events.	Irrationally believing that how one wears their hat while watching a football game can influence the score.	Recognize the difference between <i>cause & effect</i> versus <i>unrelated coincidence</i> .
Argument from Ignorance	A logical fallacy claiming something is true because it has not been proven false.	Believing that there must be life on Mars because no one has proved that there is not life on Mars.	Do not believe a proposition simply because it cannot be proven false.
Begging the Question	A fallacious form of arguing in which one assumes to be true something that one is trying to prove.	A man claiming that paranormal phenomena exists because he has had experiences that can only be described as paranormal.	Recognize when an argument assumes to be true something it is attempting to prove. When this occurs, seek alternative explanations.
Clustering Illusion & Texas Sharpshooter Fallacy	The erroneous impression that random events that occur in clusters are not random.	In ESP experiments, a “water witcher” using dowsing may find water at a slightly higher-than-chance rate over a brief period of time, and mistakenly assume this proves dowsing really works.	Understand the basic principles of probability & statistics. Recognize when numbers are being used correctly & objectively versus incorrectly & with bias.
False Analogies	Making illogical analogies to support the validity of a particular claim.	Arguing that two children sharing the same bedroom is wrong because double-celling of criminals in a penitentiary can lead to bad behavior.	Learn to recognize the faulty assumptions behind false analogies.
Forer Effect	The tendency to accept vague personality descriptions that can	Astrology readings, intended for people of a specific sign, can be applicable to most	Critically evaluate if personality characterizations are truly

	be applicable to most people as uniquely applicable to oneself.	individuals. This effect usually works in conjunction with ‘Self-Deception’ and ‘Wishful Thinking.’	unique to you, or could apply to most people.
Gambler’s Fallacy	The fallacy that something with fixed probabilities will increase or decrease depending upon recent occurrences.	The misconception that picking lottery numbers that have not yet been picked will increase your chances of winning.	Learn to recognize and distinguish events that have <i>fixed</i> versus <i>variable</i> probabilities.
Irrelevant Comparisons	Making a comparison that is irrelevant or inappropriate.	Making a claim that Printer A makes better copies than Printer B, while ignoring the important fact that only Printer B can also fax, copy, and scan.	Be sure to compare “apples with apples.”
Law of Truly Large Numbers	A failure to understand that with a large enough sample, many seemingly unlikely coincidences are in fact <i>likely</i> coincidences, i.e., likely to happen.	The alleged uniqueness of the number 11 to the September 11 can mathematically shown to be not unusual at all, and merely a game to play with people’s minds.	Understand the basic principles of probability & statistics. Recognize when numbers are being used correctly & objectively versus incorrectly & with bias to support an argument.
Non Sequitur	Reasons given to support a claim that are irrelevant.	To say “I am afraid of water, so I will take up flying.”	Learn to recognize when arguments are supported by irrelevant reasons.
Pareidolia	A type of misperception involving a vague stimulus being perceived as something clear, distinct, and highly significant.	Most UFO, Bigfoot, and Elvis sightings.	Recognize that a vague perception of a strange event can have many possible explanations. Seek alternative explanations that are <i>more likely</i> rather than more emotionally appealing.

Post Hoc Fallacy	The mistaken notion that because one thing happened after another, the first event caused the second event.	Believing that beating drums during a solar eclipse will cause the sun to return to the sky.	Try to identify the known or possible causal mechanisms of observed effects, starting with those that are more likely.
Pragmatic Fallacy	Arguing something is true because "it works," even though the causality between this something and the outcome are not demonstrated.	After using a magnetic belt for awhile, a woman notices her back pain is less, even though there may be a dozen other reasons for the reduced back pain.	Try to identify known or possible causal mechanisms for observed effects, starting with those that are <i>more likely</i> , not more emotionally appealing.
Regressive Fallacy	Failing to take into account the natural and inevitable fluctuations of things when assessing cause and affect.	Assuming a man's neck pain consistently fluctuates over time, he will most likely try new remedies when the pain is at its worst point, then perhaps incorrectly assume that the pain got better because of the new remedy.	Try to identify and understand recurring behavioral patterns before making judgments about recently observed events.
Slippery Slope Fallacy	An argument that <i>assumes</i> an adverse chain of events will occur, but offers no proof	"Because regulators have controlled smoking in public places, their ultimate goal is to control everything else in our lives."	Evaluate the logic supporting an alleged adverse chain of events.

Hindrances Due To Psychological and Sociological Pitfalls

Hindrance	Definition	Example	Critical Thinking Tip
Ad hominem Fallacy	Criticizing the <i>person</i> making an argument, not the argument itself.	"You should not believe a word my opponent says because he is just bitter because I am ahead in the polls."	Focus on reasons & facts that support an argument, <i>not</i> the person making the argument. Independently verify supporting facts if the source is in question.
Ad populum,	An appeal to the	Thousands of years	A valid claim

Bandwagon Fallacy	<i>popularity</i> of the claim as a reason for accepting the claim	ago the average person believed that the world was flat simply because most other people believed so.	should be based on sound arguments, not popularity.
Communal Reinforcement	The process by which a claim, independent of its validity, becomes a strong belief through repeated assertion by members of a community.	The communally reinforced yet mistaken belief that one can get rid of cancer simply by visualization and humor alone.	Do not follow the crowd simply because it gives you a feeling of acceptance and emotional security. Think for yourself.
Emotional Appeals	Making <i>irrelevant</i> emotional appeals to accept a claim, since emotion often influences people more effectively than logical reasoning.	Advertisements that appeal to one's vanity, pity, guilt, fear, or desire for pleasure, while providing no logical reasons to support their product being better than a competitor.	If an argument requires a logical reason to support its claim, do not accept emotional appeals as sufficient evidence to support it.
Evading the Issue, Red Herring	If one has been accused of wrongdoing, diverting attention to an issue <i>irrelevant</i> to the one at hand.	The President making jokes about his own character in order to disarm his critics & evade having to defend his foreign policy.	Learn to recognize evasion, which implies a direct attempt to avoid facing an issue.
Fallacy of False Dilemma, Either/or Fallacy	Intentionally restricting the number of alternatives, thereby omitting relevant alternatives from consideration.	"You are either with us, or with the terrorists!"	Seek opposing arguments on the subject which may reveal the existence of other viable alternatives.
Irrelevant Appeal to Authority	An attempt to get a controversial claim accepted on the basis of it being supported by an admirably or respectable person	"Since the Pope thinks capital punishment is morally justified, it must be morally justified."	Recognize that any appeal to authority is irrelevant to providing logical grounds and facts to support an argument.
Lawsuit Censorship	Repressing free speech and critical thinking	Journalist Andrew Skolnick was sued for his investigative	If a counter-argument is not readily available,

	by instilling fear through the threat of lawsuits.	reporting of Maharishi Mahesh Yogi and his Transcendental Meditation Movement.	don't assume it does not exist - it could be suppressed by special interests.
Moses Syndrome, Suggestibility, Conformity, & Deferring Judgment	Promises of happiness, security, power, wealth, health, beauty, etc., made again and again in a confident manner, by charismatic people with prestige, tend to be believed uncritically and without argument or proof.	Hitler convinced an entire country to follow his dream of making Germany great, which included the subjugation and massacring of Jes. Also, Jim Jones of the <i>Peoples Temple</i> doomsday cult convinced 914 of its members to commit suicide.	Resist the human tendency to believe a charismatic leader simply because he/she appeals to your basic human needs. Seek alternate views & reliable sources for facts and objective reasoning to support arguments.
Poisoning the Well	Creating a prejudicial atmosphere against the opposition, making it difficult for the opponent to be received fairly.	"Anyone who supports removing troops from Iraq is a traitor!"	When evaluating an argument, focus on the argument, not prejudicial remarks.
Political Censorship	Repressing free speech, distorting facts, or "cherry picking" facts to support a biased political viewpoint or dogmatic belief.	When politicians intentionally provide inadequate or distorted facts on a particular issue, then conclusions reached by the public may be biased or faulty.	Learn all sides of an issue. People can present deceptively logical arguments that are built upon the selective choosing of facts.
Positive Outcome Bias	The tendency for researchers and journalists to publish research with positive outcomes between two or more variables, while not publishing research that shows no effects at all.	The media will publish results showing a nutritional supplement can reduce anxiety, but will not publish other results showing the same supplement has no affect on reducing anxiety.	Put more reliance on claims which use methods that seek to eliminate positive outcome bias. Seek information from sources that do not have a biased interest in the results.

Shoehorning	The process of forcefitting some current event, after the fact, into one's personal, political, or religious agenda.	Jerry Falwell and Pat Robertson claimed that American civil liberties groups, feminists, homosexuals and abortionists bear partial responsibility for September 11 because their immoral behavior has turned God's anger toward America.	Understand the motives or agenda of people or organizations prior to making judgments on their arguments.
Sunk-Cost Fallacy	The psychological phenomenon of continuing to hold on to a hopeless investment for fear that what has been invested so far will be lost.	Lyndon Johnson continued to commit many thousands of U.S. soldiers to Vietnam even after he was convinced the U.S. could never defeat the Viet Cong.	Do not allow your feelings of fear & disgrace of taking a loss cause you to take even a bigger loss.
Wishful Thinking & Self Deception	The process of misinterpreting facts, reports, events, perceptions, etc, because we want them to be true.	94% of university professors think they are better at their jobs than their colleagues.	Understand that our individual view of what we think is true can be strongly biased by our needs, fears, ego, world view, etc.

(3)

Common misconceptions of critical thinking

It is intuitively appealing to describe critical thinking in terms of how an individual is to go about it. The procedure approach, by reducing critical thinking to steps, seeks to provide operational or task descriptions of the building blocks of such thinking. Consider the following example- the 'Decide Model' by E. Daniel Eckberg. This conception holds or assumes that critical thinking comprises a set of steps characterized as follows:

D. Define the dilemma

- What's the problem?
- Why does it concern me?
- What's the basic issue?

E. Examine electives

- What are all sorts of possible ways of solving the problem?
- What choices do we have?
- What are our alternative courses of action?
- What hypothesis can we make?

C. Consider consequences

- What happens if we try each choice?
- If we do this, then what?*
- How will things change if I choose this one?
- What data can I collect and consider in considering these consequences?

I. Investigate importance

- What principles are important to me here?
- What things do I most value?
- How will these values influence my choice?
- What am I assuming to be true?
- What are my preferences and biases?

D. Decide direction

- In the light of the data, what's my choice?
- Which choice should now be chosen?
- Which hypothesis seems to be the best?
- Based on the evidence, what course of action should I take?

common misconceptions of critical thinking 277

E. Evaluate ends

How can I test my hypothesis?

Was my course of action correct?

What are the consequences of my choice?

Has a tentative hypothesis been proven or disproved?

What are my conclusions?

As one can see, the model attempts to characterize critical thinking as a set of procedures to be carried out. None of the steps directly raises the underlying normative questions. Even in asking, 'Was my course of action correct?', the schema refers to what has been completed a reflection back. Thus, the fundamentally normative and ongoing nature of critical thinking is ignored or masked. Critical thinking is not simply a retrospective undertaking.

It might be suggested that amore appropriate description of the 'decide direction' step is 'make an informed, fair-minded decision'. We agree, but this no longer describes a procedure to be performed, rather it identifies norms to be fulfilled. As such, it is not characteristic of the procedure view. Although some educators may use the term 'step' to refer to achievement of standards, the focus is overwhelmingly on strategies and heuristics. We do not wish to quibble over conceptual territory; rather we draw attention to the dominant (possibly, paradigmatic) use of the term 'step' so as to expose the inadequacies of this view of critical thinking as following general procedures.

1. Trusting Your Gut

Trust your gut is a piece of advice often thrown around in the context of being in doubt. The concept of using intuitive judgment is actually the last thing you want to be doing if critical thinking is your goal. In the past, *intuitive judgment* has been described as "the absence of analysis"; and automatic cognitive processing—which generally lacks effort, intention, awareness, or voluntary control—is usually experienced as perceptions or feelings.

Given that intuitive judgment operates automatically and cannot be voluntarily "turned off," associated errors and unsupported biases are difficult to prevent, largely because reflective judgment has not been consulted. Even when errors appear obvious in hindsight, they can only be prevented through the careful, self-regulated monitoring and

control afforded by reflective judgment. Such errors and flawed reasoning include cognitive biases and logical fallacies.

Going with your gut—experienced as perceptions or feelings—generally leads the thinker to favor perspectives consistent with their own personal biases and experiences or those of their group.

(4)

Barriers To Critical Thinking

Here are the Seven Essential Questions that must be reflected upon and honestly answered to begin the process of developing critical thinking skills:

1. What is the truth? Can you differentiate the difference between truth and opinion? (hint: truth is discovered - it is what is - opinion is created by people - it is opinion that is relative not truth)
2. Who do you trust? Why?
3. From where do you obtain the information that forms your worldview? Why?
4. Can you discern the truth from the lie - the real from the false? How do you discern? - Try logic, reason, rational evaluation, reliable intuition, common sense, anecdotal evidence, *nonjudgmental observation* and *selfless reflection*.
5. Can you recognize "what really is" from what you believe "ought to be?" - It has been said that strife and discord in life arise from the struggle between "what is" and "what ought to be." What do you do when you discover this conflict?
6. Can you formulate conclusions and judgments based upon the ability to access, evaluate and determine the relevancy and reliability of facts and evidence?
7. Which barriers are the most prevalent in your critical thinking process, and which ones do you experience most prevalent in others?

Barriers of critical thinking

Your responsibility as a critical thinker is to be aware of the barriers, acknowledge the challenges they present, and overcome them to the best of your ability.

"If critical thinking is so important, why is it that *uncritical* thinking is so common? Why is it that so many people - including many highly educated and intelligent people - find critical thinking so difficult?"

Discovering the answers to these questions is crucial to the understanding of what is required to be a true critical thinker, and the reasons you will encounter from those who resist embodying critical thinking skills are often quite complex, and can be both subtle and blatant. The following list of barriers to critical thinking will help guide you to recognizing the challenges that await you.

- egocentrism (self-centered thinking)
- sociocentrism or ethnocentrism (group/society/cultural-centered thinking)
- an over-reliance on feelings
- self-deception
- the erroneous belief of personal infallible intuition
- unconscious reaction
- reacting in self-defense - fear of personal attack - believing one's ideas and beliefs are an extension of one's self and must be defended at all costs
- fear of change or an unwillingness to change
- a pathological inability to evaluate, recognize, or accept an idea or point of view that differs from one's own
- a less than honorable agenda
- lack of relevant background information or ignorance
- inappropriate bias
- prejudice
- unwarranted assumptions
- overpowering or addictive emotions
- fear of being wrong or face-saving
- selective perception and selective memory

- peer pressure
- conformism (mindless conformity)
- indoctrination initiated by uncritical thinkers with malicious and selfish intent
- provincialism (restricted and unsophisticated thinking)
- narrow-mindedness or close-mindedness
- lack of discernment
- distrust in reason
- relativism (relativistic thinking)
- absolutism (there are no exceptions)
- stereotyping
- scapegoating (blaming others)
- denial
- wishful thinking
- short-term thinking
- political correctness
- superstition
- being influenced by drugs
- excessive anger, hate, or bitterness
- disturbing one's comfort
- lack of personal honesty
- apathy
- poor reading and comprehension skills
- poor or dysfunctional communication skills
- excessive addiction
- a mental disorder
- cognitive dissonance (psychological conflict resulting from incompatible beliefs and attitudes held simultaneously)
- lack of humility
- the effects of radiation and man-made atmospheric chemicals
- debilitating fear and uncertainty
- reliance on main stream television, newspapers and other media for information

- the effects of television and electronic media on memory, cognition and brain function

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Given that intuitive judgment operates automatically and cannot be voluntarily "turned off," associated errors and unsupported biases are difficult to prevent, largely because reflective judgment has not been consulted. Even when errors appear obvious in hindsight, they can only be prevented through the careful, self-regulated monitoring and control afforded by reflective judgment. Such errors and flawed reasoning include cognitive biases and logical fallacies.

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2. Lack of Knowledge

CT skills are key components of what CT is, and in order to conduct it, one must know how to use these skills. Not knowing the skills of CT—analysis, evaluation, and inference (i.e., what they are or how to use them)—is, of course, a major barrier to its application. However, consideration of a lack of knowledge does not end with the knowledge of CT skills.

Let's say you know what analysis, evaluation, and inference are, as well as how to apply them. The question then becomes: Are you knowledgeable in the topic area you have been asked to apply the CT? If not, intellectual honesty and reflective judgment should be engaged to allow you to consider the nature, limits, and certainty of what knowledge you do have, so that you can evaluate what is required of you to gain the knowledge necessary to make a critically thought-out judgment.

However, the barrier here may not necessarily be a lack of topic knowledge, but perhaps rather believing that you have the requisite

knowledge to make a critically thought-out judgment when this is not the case or lacking the willingness to gain additional, relevant topic knowledge.

3. Lack of Willingness

In addition to skills, disposition towards thinking is also key to CT. Disposition towards thinking refers to the extent to which an individual is willing or inclined to perform a given thinking skill, and is essential for understanding how we think and how we can make our thinking better, in both academic settings and everyday circumstances.

Dispositions can't be taught, per se, but they do play a large role in determining whether or not CT will be performed. Simply, it doesn't matter how skilled one is at analysis, evaluation, and inference—if they're not willing to think critically, CT is not likely to occur.

4. Misunderstanding of Truth

Truth-seeking is one such disposition towards thinking, which refers to a desire for knowledge; to seek and offer both reasons and objections in an effort to inform and to be well-informed; a willingness to challenge popular beliefs and social norms by asking questions (of oneself and others); to be honest and objective about pursuing the truth, even if the findings do not support one's self-interest or pre-conceived beliefs or opinions; and to change one's mind about an idea as a result of the desire for truth.

Though this is something for which many of us strive or even just assume we do, the truth is that we all succumb to unwarranted assumptions from time to time: that is, beliefs presumed to be true without adequate justification. For example, we might make a judgment based on an unsubstantiated stereotype or a commonsense/belief statement that has no empirical evidence to justify it. When using CT, it's important to distinguish facts from beliefs and, also, to dig a little deeper by evaluating "facts" with respect to how much empirical support they have to validate them as.

Furthermore, sometimes the truth doesn't suit people, and so, they might choose to ignore it or try and manipulate knowledge or understanding to accommodate their bias. For example, some people may engage in *wishful thinking*, in which they believe something is true because they wish it to be; some might engage in *relativistic thinking*, in which, for them, the truth is subjective or just a matter of opinion.

5. Closed-mindedness

In one of my previous posts, I lay out "5 Tips for Critical Thinking"—one of which is to *play Devil's Advocate*, which refers to the "consideration of alternatives." There's always more than one way to do or think about something—why not engage such consideration?

The willingness to play Devil's Advocate implies a sensibility consistent with open-mindedness (i.e., an inclination to be cognitively flexible and avoid rigidity in thinking; to tolerate divergent or conflicting views and treat all viewpoints alike, prior to subsequent analysis and evaluation; to detach from one's own beliefs and consider, seriously, points of view other than one's own without bias or self-interest; to be open to feedback by accepting positive feedback, and to not reject criticism or constructive feedback without thoughtful consideration; to amend existing knowledge in light of new ideas and experiences; and to explore such new, alternative, or "unusual" ideas).

At the opposite end of the spectrum, *closed-mindedness* is a significant barrier to CT. By this stage, you have probably identified the inherent nature of bias in our thinking. The first step of CT is always going to be to evaluate this bias. However, one's bias may be so strong that it leads them to become closed-minded and renders them unwilling to consider any other perspectives. Another way in which someone might be closed-minded is through having properly researched and critically thought about a topic and then deciding that this perspective will never change, as if their knowledge will never need to adapt. However, critical thinkers know that knowledge can change and adapt. An example I've used in the past is quite relevant here growing up, I was taught that there were nine planets in our solar system; however, based on further research, our knowledge of planets has been amended to now only consider *eight* of those as planets.

Being open-minded is a valuable disposition, but so is skepticism (i.e., the inclination to challenge ideas; to withhold judgment before engaging all the evidence or when the evidence and reasons are insufficient; to take a position and be able to change position when the evidence and reasons are sufficient; and to look at findings from various perspectives). However, one can be *both* open-minded and skeptical. It is closed-mindedness that is the barrier to CT, so please note that closed-mindedness and skepticism are distinct dispositions.

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