

**TABLE 1.1 ■ Twenty-Five Fallacies That Derail Thinking**

“Problems in scientific thinking” (pp. 46–48)

1. Theory influences observations
2. The observer changes the observed
3. Equipment constructs results

“Problems in pseudoscientific thinking” (pp. 48–55)

4. Anecdotes do not make a science (stories recounted in support of a claim)
5. Scientific language does not make a science (watch out for jargon)
6. Bold statements do not make claims true
7. Heresy does not equal correctness (belief/opinion contrary to religious doctrine)
8. Burden of proof—convince others of validity of evidence (not of mere existence of evidence)
9. Rumors do not equal reality
10. Unexplained is not inexplicable
11. Failures are rationalized (\*\*pay attention to negative findings\*\*)
12. After-the-fact reasoning (correlations do not mean causation)
13. Coincidence (gambler’s fallacy)
14. Representativeness (base rate)

“Logical Problems in Thinking” (pp. 55–58)

15. Emotive words and false analogies (not proof; merely tools of rhetoric)
16. *Ad ignorantiam*—an appeal to ignorance; belief should come from positive evidence in support of a claim, not from lack of evidence for or against a claim
17. *Ad hominen* (to the man) and *tu quoque* (you also)—watch that you focus on the content, not on the character of the person making the argument or on the consistency of the behavior of the person relative to the argument the person is making
18. Hasty generalization—prejudice/improper induction; conclusions before facts warrant it
19. Overreliance on authorities (false positive: accept results just because supported by someone admired; false negative: reject results just because supported by someone you disrespect)
20. Either-or—fallacy of negation or the false dilemma (creation vs. evolution); dichotomizing the world, such that if you reject one position, you are forced to accept the other
21. Circular reasoning—begging the question; tautology
22. *Reductio ad absurdum* and the slippery slope—refutation of an argument by carrying the argument to its logical end and so reducing it to an absurd conclusion

“Psychological Problems in Thinking” (pp. 58–61)

23. Effort inadequacies and the need for certainty, control, and simplicity (have to practice thinking logically and clearly; thinking is skilled work)
24. Problem-solving inadequacies—we don’t seek evidence to disprove
25. Ideological immunity, or the Planck problem—we all resist paradigm change; opponents have to die out gradually; we build up immunity against new ideas; the higher the IQ, the greater the potential for ideological immunity