

Characteristics of pseudoscience

1. Pseudoscientific dogma is accepted with uncritical belief. Scientific truths are tentative, never absolute, and always subject to challenge, verification, and validation.
2. Pseudoscience frequently deals with subjects which cannot be readily tested in an objective, scientific manner, e.g., the existence of 'life energy' which cannot be detected by our five senses or their technological extensions. If we cannot detect its presence, how can we test its effects? Scientists prefer to rely on testable, falsifiable hypotheses.
3. Even when the subject matter being investigated permits generation of predictions and testable hypotheses, this is rarely done. Objective tests of hypotheses are even rarer in pseudoscience.
4. Critics of pseudoscientific dogma, especially those armed with contradictory evidence, are frequently subjected to hostility. In science, verifiable, valid contradictory evidence is cause for a hypothesis to be rejected or revised to account for this new evidence.
5. Pseudoscience tends to ignore, suppress, or distort contradictory evidence. If you find only what you are looking for - and are blind to the alternatives - you are guilty of confirmation bias.
6. Pseudoscience is not progressive. No advancement of the field occurs. Scholarly texts are revised - new ideas and evidence are incorporated, errors and omissions are corrected - whereas pseudoscientific publications are rarely, if ever, revised.
7. Pseudoscience uses terminology which, on the surface, seems scientific; however, such terms are rarely clearly-defined.
8. The evidence for most pseudoscientific phenomena is anecdotal and cannot be systematically investigated. So-called 'experts' in pseudoscientific endeavors, e.g., UFO or alien encounters, lack any relevant expertise.
9. Pseudoscientific phenomena are usually fragile, i.e., they disappear when subjected to well-designed, objective experimentation. Individuals with the gift of ESP do not perform significantly better than expected by random guessing. Those with the gift of clairvoyance find that they do not perform any better than mildly-talented 'cold readers'.

10. Pseudoscientific phenomena are frequently created by looking for mysteries rather than by trying to generate testable hypotheses, examine their predictions, and objectively test hypotheses. Jean Dixon and Edgar Cayce made so many predictions through the years that one or two must have been borne out by sheer luck alone.

11. Pseudoscientists are frequently guilty of Explanation by Scenario, i.e., identifying the phenomenon and producing a *post hoc* explanation (based on the facts after they are known). Immanuel Velikovsky was a master of this art.

The preferred technique in science is to generate a testable hypothesis, make predictions based on the hypothesis, i.e., "If A is true then we should expect B to occur", then objectively test the hypothesis.