

Science vs. Pseudoscience in CSD: A Checklist for Skeptical Thinking

Gregory L. Lof, PhD
Boston, MA



**MGH INSTITUTE
OF HEALTH PROFESSIONS**
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There are many questionable alternative treatment approaches that are heavily marketed and promoted but have no evidence to support their use. Even experienced clinicians frequently resort to these fad or alternative treatments...in other words, they “get quacked” into using them. Quackery is a type of pseudoscience because it is a practice or remedy that has no compelling scientific basis; it includes questionable ideas, products and services. Clinicians may get quacked because they are not being appropriately skeptical or they do not have the tools to help distinguish between science and pseudoscience. Below is a checklist that can help clinicians evaluate claims made by promoters of products or services to help determine if they are based on scientific principles or on pseudoscience.

Healthy Debate About the Therapy

The debates and discussions are about efficacy findings/data
 Science

The debates usually are not about data, but instead about beliefs and opinions
 Pseudoscience

Quantifiable Data are Used

Data are quantitative, gathered following the scientific method
 Science

Data are qualitative, based on expert opinion
 Pseudoscience

Higher level studies tested the procedure
 Science

Data are testimonials and case studies
 Pseudoscience

Valid Data are Disseminated

Information is presented at conferences that use peer-review and scientific standards
 Science

Information is presented at CEU events and other non peer-reviewed conferences
 Pseudoscience

Information and data are presented in reputable journals
 Science

Information appears in self-published books or in the popular press
 Pseudoscience

Information is found on trustworthy, professional websites
 Science

Information is on proprietary, self-developed websites
 Pseudoscience

Valid and reliable data are presented in prominent spots on the webpage
 Science

Websites reporting findings have a testimonial section for hearsay but no research section
 Pseudoscience

Information is Peer-Reviewed

Anonymous (blinded), impartial refereeing of data/findings
 Science

No peer review or only quasi/pseudo peer review of the findings
 Pseudoscience

Independent Confirmation of Findings

Independent because the researchers are not connected to the therapy
 Science

No independent confirmation by impartial reviewers
 Pseudoscience

Scientific Method is Followed

Data obtained follow the scientific method to determine effectiveness
 Science

Use only clinician experience and judgments as the “best way” to determine effectiveness
 Pseudoscience

Data are gathered by professionals who are qualified to study clinical questions
 Science

Implicit disdain for researchers because of the belief that “only clinicians really understand clinical work”
 Pseudoscience

Results Have Theoretical Explanations

Theoretical models explain why therapy works
 Science

Poorly defined theoretical models for explanation of why a procedure is effective
 Pseudoscience

Every link in the chain of explanation is connected
 Science

Gaps and missing information break the chain of plausibility
 Pseudoscience

Use of Historical Data	
Appropriate reporting of prior data relevant to the therapy <input type="checkbox"/> Science	Claims of effectiveness because it has been done a long time in the field (e.g., "Van Riper said...") <input type="checkbox"/> Pseudoscience
Correct referencing of historical researchers and their findings <input type="checkbox"/> Science	Claims of effectiveness only because of extensive clinical experience of clinician <input type="checkbox"/> Pseudoscience
Unbiased and honest reporting of the pros and cons of a procedure <input type="checkbox"/> Science	Claims of effectiveness because of promoter's authority or charismatic nature <input type="checkbox"/> Pseudoscience
Appropriate use of data and theories from multiple perspectives <input type="checkbox"/> Science	Only use information from outside the field because "other fields know better" <input type="checkbox"/> Pseudoscience

Results are "Too Good to be True"	
Findings are specific for when and with whom a procedure may work <input type="checkbox"/> Science	Claims of effectiveness for a wide range of clients with unrelated problems <input type="checkbox"/> Pseudoscience
Objective terms about effectiveness for specific populations are stated <input type="checkbox"/> Science	Claims appeal to fears or wishful thinking about effectiveness or cure <input type="checkbox"/> Pseudoscience
Well-defined target population <input type="checkbox"/> Science	Treatment often focused on desperate clients (e.g., highly involved, severely impaired, difficult to teach, etc.) <input type="checkbox"/> Pseudoscience
Non-subjective terms describe effectiveness <input type="checkbox"/> Science	Use hyperbole such as: "results in minutes," "miracle cure," "problem solved" <input type="checkbox"/> Pseudoscience

Both Misses and Hits are Counted	
Candid about when a procedure is and is not effective <input type="checkbox"/> Science	Data ignored when a procedure does not work but referred to when it does work <input type="checkbox"/> Pseudoscience
Disproving evidence is not ignored <input type="checkbox"/> Science	Practice remains unchanged even with disproving evidence <input type="checkbox"/> Pseudoscience

Terms and Concepts are Standard and Conventional	
Use of terms that are agreed upon by the scholarly community <input type="checkbox"/> Science	New terms are created that are neither scientific nor conventional ("pseudoscientific jargon") <input type="checkbox"/> Pseudoscience

References
<ul style="list-style-type: none"> • Barrett, S. (2008). <i>Quackery: How should it be defined?</i> Available on line at: http://www.quackwatch.org/01QuackeryRelatedTopics/quackdef.html • Finn, P., Bothe, A., & Bramlett, R. (2005). Science and pseudoscience in communication disorders: Criteria and applications. <i>American Journal of Speech-Language Pathology, 14</i>, 172-186. • Lof, G.L. (2011). Science-based practice and the speech-language pathologist. <i>International Journal of Speech-Language Pathology, 13</i> (3), 189-193. • Lum, C. (2002). <i>Scientific thinking in speech and language therapy</i>. London: Lawrence-Erlbaum Associates. • Sagan, C. (1996). <i>The demon haunted world: Science as a candle in the dark</i>. New York: Random House. • Shermer, M. (2002). <i>Why people believe weird things: Pseudoscience, superstition, and other confusions of our time</i>. New York: W.H. Freeman.

Disclosure Statement
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