



**CRITICAL  
THINKING**



**YOU'LL NEED TO  
CRITICALLY  
EVALUATE RESULTS  
AND SOURCES  
THROUGHOUT YOUR  
LIFE**

**“CRITICAL THINKING IS ABOUT TAKING A STEP BACK AND THINKING LOGICALLY AND CAREFULLY ABOUT THE INFORMATION YOU HAVE, RATHER THAN BELIEVING EVERYTHING YOU READ, SEE AND HEAR.” (AVEYARD 2011, P.8)**

**“KNOWLEDGEABLE DOER – SOMEONE WHO SELECTS, COMBINES, JUDGES AND USES INFORMATION IN ORDER TO PROCEED IN A PROFESSIONAL MANNER.” (WADE AND TRAVIS, P.7)**



**ALL OF THE FOLLOWING  
NEWSPAPER HEADLINES  
ARE BASED ON  
SCIENTIFIC STUDIES!**

**You CAN think yourself thin! Dieters lose up to 10 TIMES more weight by simply 'imagining themselves as being slimmer'**

**Why you should have a hot bath: It could be as effective as exercising to tackle type 2 diabetes**

LIFESTYLE 23/07/2015 10:33 BST | Updated 08/01/2017 05:12 GMT

**A Glass Of Red Wine Is The Equivalent To An Hour At The Gym, Says New Study**

LIFESTYLE 23/07/2015 10:33 BST | Updated 08/01/2017 05:12 GMT

**A Glass Of Red Wine Is The Equivalent To An Hour At The Gym, Says New Study**

# **Is your bubble bath safe?**

By PAT THOMAS

Last updated at 16:01 05 September 2006

**Bath foam that triggers headaches. Shampoo full of cancer-causing chemicals. And shower gel that attacks your skin. As experts warn of the chemicals in our toiletries, we reveal the health hazards in your bathroom cabinet.**

**How using Facebook could raise your risk of cancer**

**How a romantic candle-lit dinner can give you cancer**

*Logical*: Scientific inferences must be based on logical principles of reasoning.

*Confirmable*: Inferences derived must match with observed evidence.

*Repeatable*: Other scientists should be able to independently replicate or repeat a scientific study and obtain similar, if not identical, results.

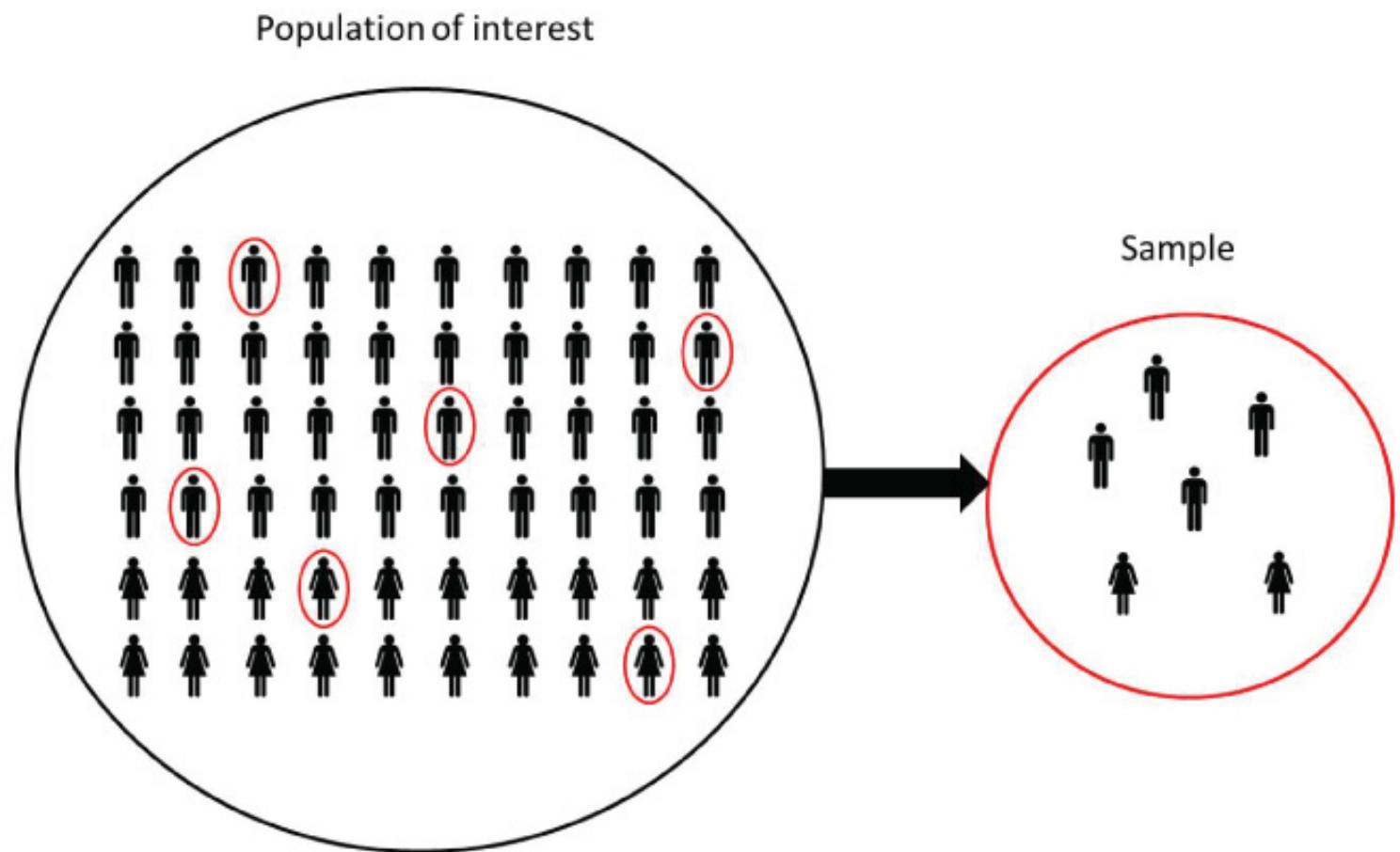
*Scrutinizable*: The procedures used and the inferences derived must withstand critical scrutiny (peer review) by other scientists.

(Bhattacherjee 2012, p.8)

## TERMINOLOGY: SCIENCE

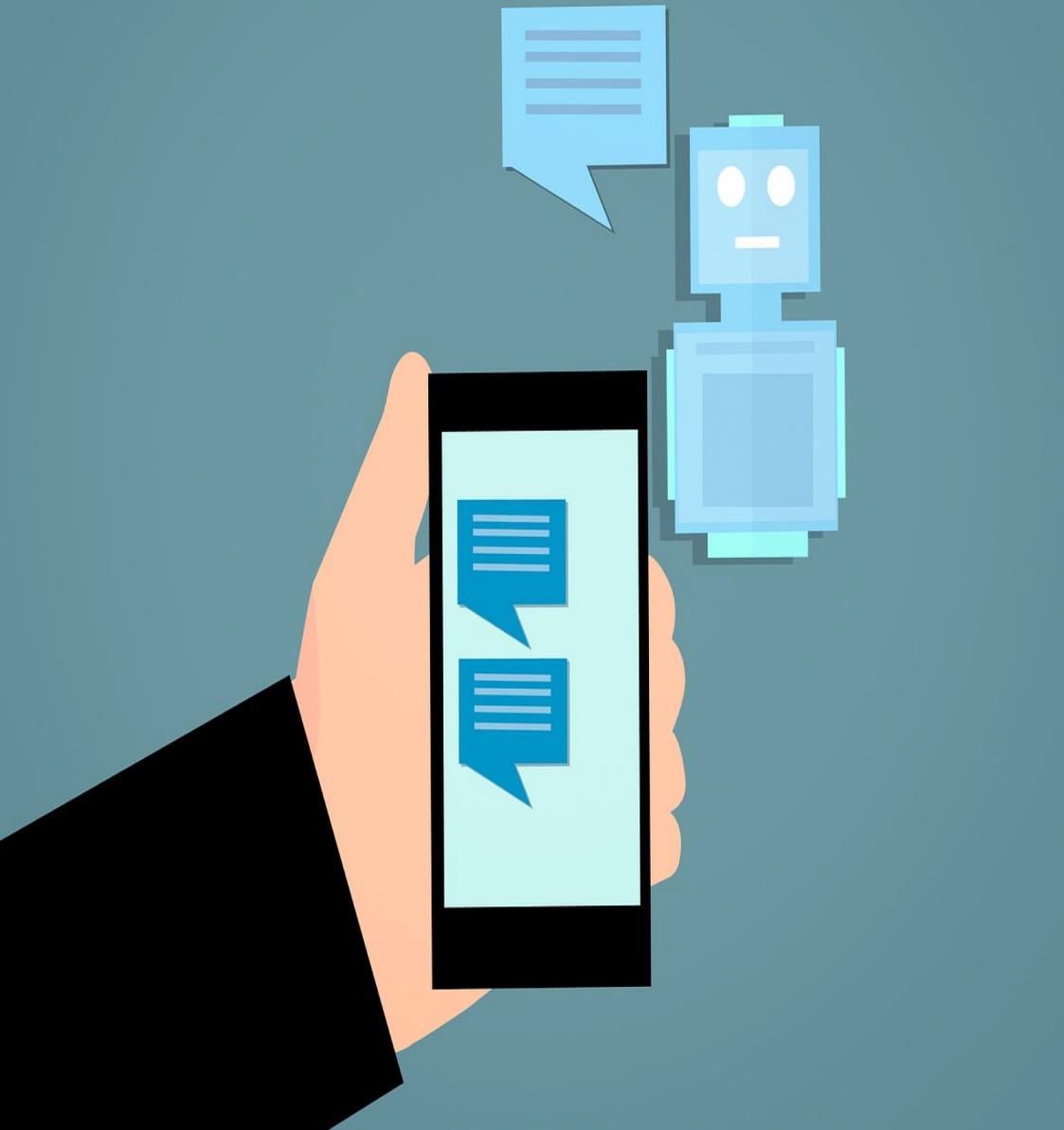


**TERMINOLOGY: PEER REVIEWED JOURNAL PUBLICATION**



**TERMINOLOGY: POPULATIONS AND SAMPLE**

## Can A Chat Bot Increase Learning



**H<sub>0</sub>: MEAN GRADE = C<sub>1</sub>**

**H<sub>1</sub>: MEAN GRADE > C<sub>1</sub>**

**SIGNIFICANCE P > 0.05**

**TERMINOLOGY: HYPOTHESIS**

EARLY REPORT | VOLUME 351, ISSUE 9103, P637-641, FEBRUARY 28, 1998

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## RETRACTED: Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children



Dr AJ Wakefield, FRCS • SH Murch, MB • A Anthony, MB • J Linnell, PhD • DM Casson, MRCP • M Malik, MRCP  
et al. [Show all authors](#)

Published: February 28, 1998 • DOI: [https://doi.org/10.1016/S0140-6736\(97\)11096-0](https://doi.org/10.1016/S0140-6736(97)11096-0)





## Methods

12 children (mean age 6 years [range 3–10], 11 boys) were referred to a paediatric gastroenterology unit with a history of normal development followed by loss of acquired skills, including language, together with diarrhoea and abdominal pain. Children underwent gastroenterological, neurological, and developmental assessment and review of developmental records. Ileocolonoscopy and biopsy sampling, magnetic-resonance imaging (MRI), electroencephalography (EEG), and lumbar puncture were done under sedation. Barium follow-through radiography was done where possible. Biochemical, haematological, and immunological profiles were examined.

# Feeling the Future: Experimental Evidence for Anomalous Retroactive Influences on Cognition and Affect

Daryl J. Bem  
Cornell University

The term *psi* denotes anomalous processes of information or energy transfer that are currently unexplained in terms of known physical or biological mechanisms. Two variants of *psi* are *precognition* (conscious cognitive awareness) and *premonition* (affective apprehension) of a future event that could not otherwise be anticipated through any known inferential process. Precognition and premonition are themselves special cases of a more general phenomenon: the anomalous retroactive influence of some future event on an individual's current responses, whether those responses are conscious or nonconscious, cognitive or affective. This article reports 9 experiments, involving more than 1,000 participants, that test for retroactive influence by "time-reversing" well-established psychological effects so that the individual's responses are obtained before the putatively causal stimulus events occur. Data are presented for 4 time-reversed effects: precognitive approach to erotic stimuli and precognitive avoidance of negative stimuli; retroactive priming; retroactive habituation; and retroactive facilitation of recall. The mean effect size ( $d$ ) in *psi* performance across all 9 experiments was 0.22, and all but one of the experiments yielded statistically significant results. The individual-difference variable of stimulus seeking, a component of extraversion, was significantly correlated with *psi* performance in 5 of the experiments, with participants who scored above the midpoint on a scale of stimulus seeking achieving a mean effect size of 0.43. Skepticism about *psi*, issues of replication, and theories of *psi* are also discussed.

*Keywords:* *psi*, parapsychology, ESP, precognition, retrocausation

**THE REPRODUCIBILITY PROJECT 97  
STUDIES ONLY 35 OF THE STUDIES  
REPLICATED (36.1%)**

<https://youtu.be/0RnqINpHdmw?t=259>

# THE TRAP OF READILY AVAILABLE INFORMATION

- NEWSPAPER ARTICLES
- PRODUCT BLOGS
- PROMOTIONAL ARTICLES
- WIKIPEDIA

Six questions to trigger critical thinking	
<b>Where</b> did you find the information? Did you just 'come across' it? Or did you access it through a systematic search?	<b>What</b> is it and <b>what</b> are the key messages or results/findings? Is it a research study, professional opinion, discussion, website or other?
<b>How</b> has the author/speaker come to their conclusions? Is their line of reasoning logical and understandable? If it is research or a review of research, how was it carried out, was it done well and do the conclusions reflect the findings?	<b>Who</b> has written/said this? Is the author/speaker an organization or an individual? Are they an expert in the topic? Could they have any bias? How do you know?
<b>When</b> was this written/said? Older key information may still be valid, but you need to check if there has been more recent work.	<b>Why</b> has this been written/said? Who is the information aimed at – professionals or patient/client groups? What is the aim of the information?

A FRAMEWORK TO THINK CRITICALLY (CAVEYARD 2011)