# EVIDENTIAL PLURALISM

Evidential Pluralism (EP) is an emerging philosophical theory of causal enquiry. It tells us:

- How to establish causal relationships.
- How to evaluate causal claims.

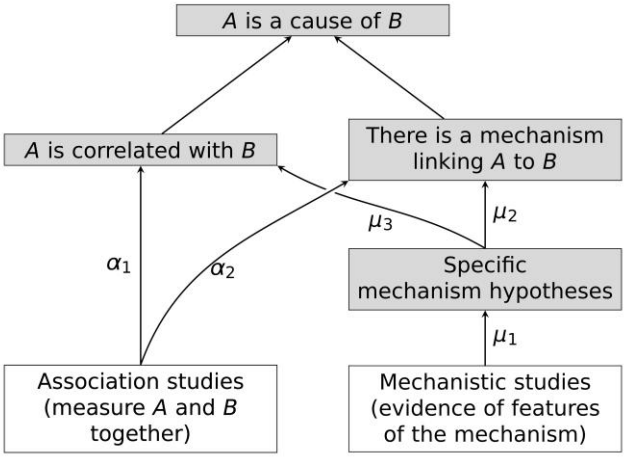
## What is Evidential Pluralism?

It is a platitude that *correlation is not causation*. This is because an observed correlation between two variables *A* and *B* of interest could be attributable to any of a wide variety of potential explanations:

*Causation*. *A* is a cause of *B*.
*Other causal explanations*. Reverse causation, confounding, performance bias, detection bias, ...
*Statistical explanations*. Chance, fishing, temporal trends.
*Non-causal connections*. Semantic, constitutive, mereological, logical, nomological or mathematical relationships between *A* and *B*.

The case in which *A* is a cause of *B* is characterised by the existence of some mechanism complex linking *A* to *B* that can explain the extent of the observed correlation.

So, to establish causation we need to establish both the existence of an appropriate correlation and the existence of an appropriate mechanism:

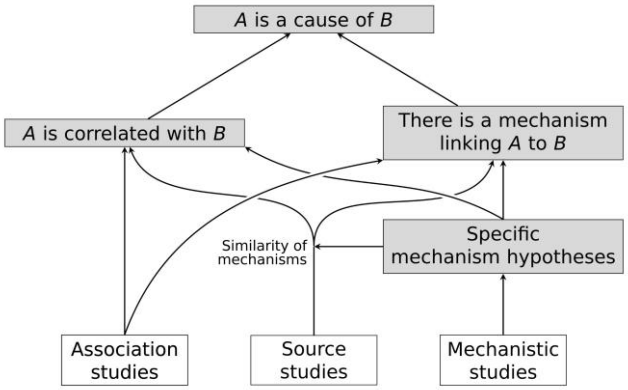



The usual way to test for a correlation is to perform a large comparative association study, that repeatedly looks for *B* in the presence and absence of *A*, while controlling for potential confounding variables (channel $\alpha_1$ in the diagram). Randomised controlled trials (RCTs) are particularly prized because they reduce the probability that the correlation is attributable to unforeseen confounding, indicating that it may be attributable to an underlying mechanism of action ($\alpha_2$). But there is a more direct way to confirm the presence of an appropriate mechanism: hypothesise key features of the mechanism (e.g., mediating variables, entities, activities and organisational structure), and perform studies that test for the presence of these features ($\mu_1$, $\mu_2$). In certain circumstances, these features can also support or undermine the claim that *A* and *B* are genuinely correlated ($\mu_3$).

EP motivates a kind of mixed methods research. While association studies typically use quantitative methods, mechanistic studies can use quantitative or qualitative methods. Because we need to scrutinise both association studies and mechanistic studies when evaluating causation, we need to scrutinise both quantitative and qualitative studies.

## Extrapolation

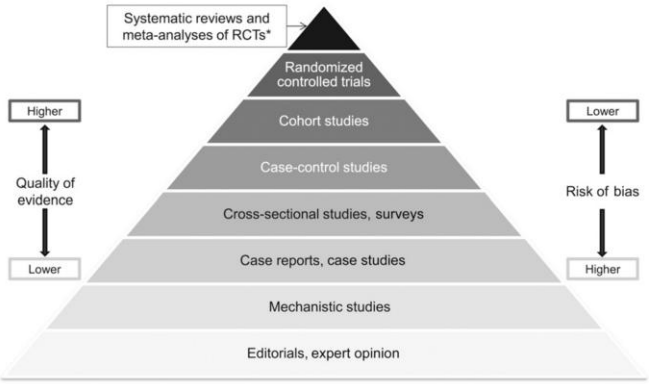
Mechanistic evidence can also help us to exploit studies that establish causation in a source population that is different to the target population of interest:




If key features of the mechanism by which *A* causes *B* in the source population are also present in the target population, and there are no additional counteracting mechanisms in the target population, the source population studies can help confirm causation in the target population.

## Evaluation

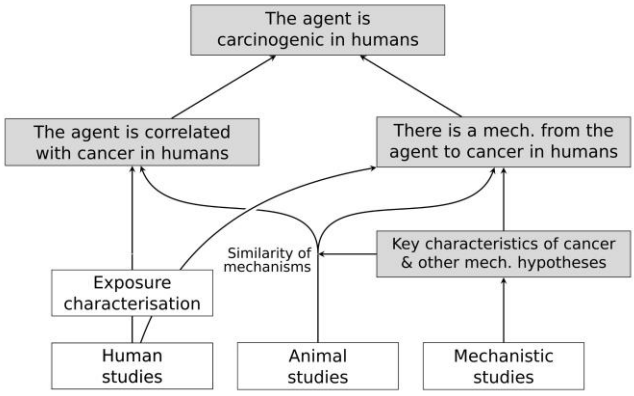
The orthodox approach to evaluation, which dominates evidence-based medicine (EBM) and evidence-based policy (EBP), focuses exclusively on association studies. Mechanistic studies are typically excluded on the grounds that they are 'low quality' or have 'high risk of bias':




This is a category error: mechanistic studies have a wide variety of research designs (e.g., RCT, quasi-experimental, observational, in vitro, in silico, mathematical modelling, ethnography); it makes no sense to say that mechanistic studies in general are low quality.

EP leads to new approaches to evaluation—EBM+ and EBP+—which scrutinise mechanistic studies in addition to the association studies that are the focus of orthodox evaluation.

An example of an organisation that follows the EP approach to evaluation is the International Agency for Research on Cancer, which assesses whether chemicals and other agents cause cancer:




## Systematic Review

New methods for systematic review are being developed that systematise the EP-motivated approach to evaluation.

This is the topic of an interdisciplinary project, funded by UKRI and involving the Universities of Manchester, Oxford and Exeter.

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## Evidence-based law

The emerging field of evidence-based law (EBL) aims to use the best available evidence to justify legal decision making and new legislation.

A research project at the University of Manchester, funded by the Leverhulme Trust, is developing an EP-motivated approach to evidence-based law, EBL+.

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## Further reading


Parkkinen et al. 2018. *Evaluating evidence of mechanisms in medicine: Principles and procedures*, Springer.

Wilde 2023. The EBM+ Movement, *The International Journal of Biostatistics* 19(2): 283-293.

Williamson 2019. Establishing causal claims in medicine, *International Studies in the Philosophy of Science* 32(1): 33-61.

Shan & Williamson 2023. Evidential Pluralism in the Social Sciences, Routledge.

Trofimov & Williamson 2025. Applying Evidential Pluralism to evidence-based law: EBL+, *Jurisprudence*.

Samet et al. 2020. The IARC Monographs: Updated procedures for modern and transparent evidence synthesis in cancer hazard identification, *Journal of the National Cancer Institute* 112(1):30-37.