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Evidence-based practice: wishful thinking?

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Context: Evidence-Based Practice

- *What works* agenda
- Use of best available evidence to produce (bring about) desirable results
- EBP is *practical*
- Reproducibility of results
- EBP is causal

X = cause, intervention, input

Y= effect, result, outcome, output

Formula (1)

$$(1)\quad Y(i)c = \beta(i)X(i)$$

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Outcome Y is caused by X, and only X.

Effect size β discovered by research, e.g. 0.8

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- X-Y relation holds *simpliciter*
- The relation is *general* and holds widely
- X is *sufficient* for Y
- The relation is stable

- Quartet of assumptions makes X easily projectable
- We can *plan* for attainment of Y
- Desired results are reproducible

Formula (2a)

$$(2a)\ Y(i)c = a_1 + a_2 y_0(i) + a_3 b(i)x(i) + a_4 z(i)$$

(Cartwright and Hardie 2012)

No causal connections hold *simpliciter* but depend on underlying causal system

No causes work alone but always as part of a constellation of factors

- *y(i)* is the value of outcome Y for individual *i* in the study group,
- *'c='* indicates that the value on the left is equal to the value on the right as a result of the causal contributions of the factors joined by the plus sign,
- A_1 is a constant in the situation summarizing the net effect of all those factors that have an influence on the value of the outcome independently of differences between individuals *i*,
- $Y_0(i)$ is the value of Y for individual *i* at the start of the study,
- *B(i)* sums up the values for each individual *i* in the study of the necessary factors that work along with the intervention factor X to make a combination that is sufficient to influence the value of Y for individual *i,*
- *X(i)* is the value of the intervention variable for individual *i,* and
- *Z(i)* sums up the values for individual *i* of all the INUS conditions affecting the value of Y for individual *i* that do not include X.

(Cartwright and Hardie 2012)

Formula (2b)

$$(2b)\ Yc = a + bX + z + u$$

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$$(2b)\ Yc = a + bX + z + u$$

a = characteristics of individuals

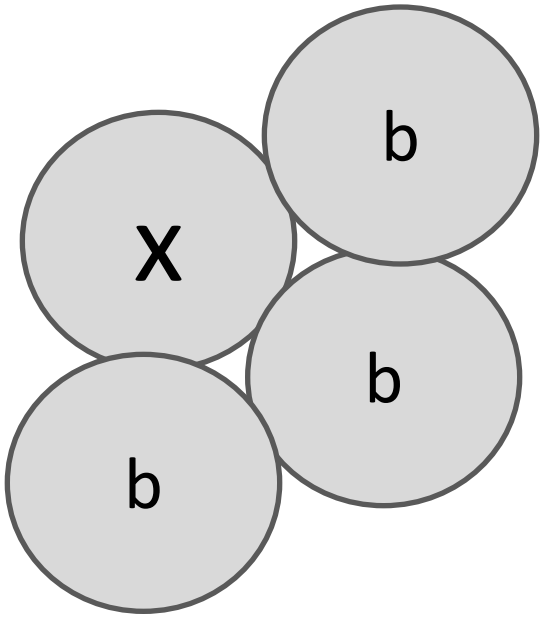
u = error term, unknown factors

Assumptions of 2a and 2b

1. Causality

INUS conditions: Insufficient but necessary part of a condition that is unnecessary but sufficient for the effect

(Mackie 1975)


b
X
b
b

2. Ontology

Effectiveness and diversity

Evidence supplied by RCTs. What does it tell us?

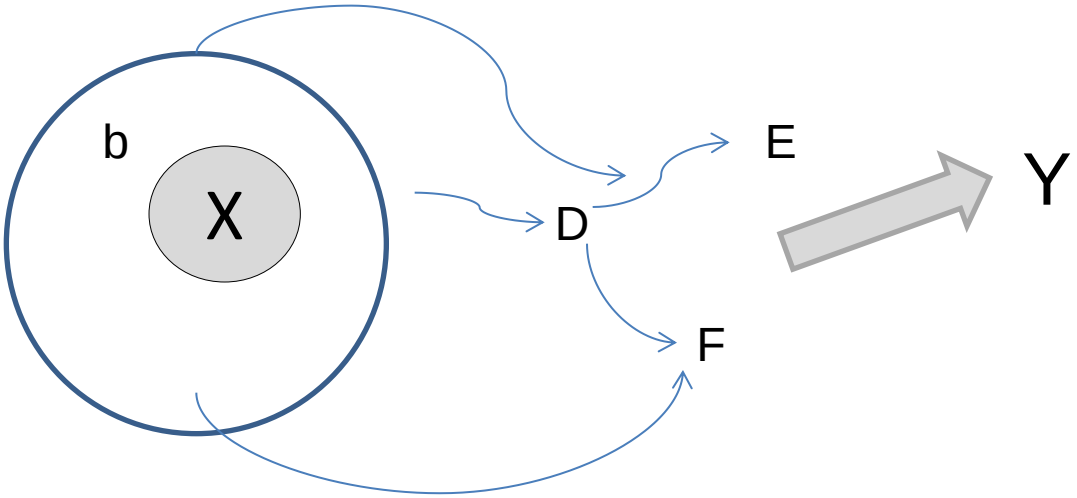
Projectability of causes in a diverse world: Generality a problem

(Cartwright and Munro 2010, Morrison 2001)

3. System matters

X-Y relation holds in causal system

Probability of Y given X-in-conjunction-with-system should be larger than probability of Y given not-X-in-conjunction-with-system


b
X
D
E
F
Y

The practitioner point of view

Finding causes ≠ using causes

What we want evidence *for:*

An effectiveness prediction: will X work *here*

How rather than *what*

How is X assumed to work *here?*

Trace *bs:* the enablers

Trace *zs*: the system

Stability

Much heterogeneous evidence needed!

Job for research

- Quality of evidence (researchers)
- Relevance of evidence for local purposes and needs (practitioners)
- Evaluation of effectiveness prediction (practitioners)
- Implementation of X (practitioners)

Conclusion

- EBP is a big enterprise

- Research provides half the story

- The other half is provided by heterogeneous local evidence

Practitioner makes an all-things-considered decision: yes, X will in all likelihood work here

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