

# Psychology remains marginally valid

In his 1990 paper, Paul Meehl argues that much psychology research is doomed to fail. He identifies ten reasons why accumulating evidence fails to provide decisive verdicts on psychological theories. To address these issues, he suggests many reforms – from mandating power analyses to abandoning entire lines of research.

Although Meehl's critique targeted particular subfields in 1990, his ideas explain why psychology struggles to produce predictive, generalizable insights to this day. The core problem is that behaviour emerges from an extremely dense causal web. This observation has profound implications: theories that hypothesize relations across a few nodes cannot predict complex real-world behaviour; experiments that use a few stimuli cannot validate comprehensive theories; and analyses that compare effects to null baselines are uninformative. Moreover, meta-analyses cannot recover the web of cognition by collating such research findings.

For example, consider a typical psychological theory: that honesty drives happiness. This theory omits many relevant factors (such as culture or lived experience) that interact to produce the complex dependency between honesty and happiness. Thus, the theory cannot accurately predict how honesty will causally influence happiness in individual, real-world cases.

Now, consider a typical experiment. Honesty is manipulated using a few scenarios and happiness is measured. However, the effect of honesty depends on many factors, including context: lying to hide a birthday surprise might make someone happy, whereas bluntly breaking up with a lover

might make someone sad. This example shows how if experiments do not comprehensively cover relevant contexts through their stimuli, their findings cannot generally validate theories.

Finally, a typical statistical analysis in this scenario might test the null hypothesis that there is no relationship between honesty and happiness. But if cognition is a dense causal web, most nodes are known to be causally connected and the null is an uninformative comparison.

Meta-analyses might aggregate results to address these limitations. Yet separate meta-analyses cannot be combined straightforwardly – honesty might drive happiness, and happiness might lower blood pressure, but this does not mean that honesty will lower blood pressure. Beyond recovering individual causal threads, reconstructing the web of cognition requires jointly examining all relevant nodes through comprehensive theories, experiments and tests.

The field has made strides to address these concerns since 1990: diverse samples, international collaborations and meta-analyses are increasingly common, and enable better tests through richer evidence. Yet progress has been slow, and psychologists should ask why.

A key factor is what I call the 'junior researcher's dilemma'. Developing comprehensive theories and testing them through studies with diverse stimuli, measures and populations takes time and effort. However, researchers who do 'fast science' (rapidly publishing flashy findings) out-compete researchers who do 'slow science'


(developing comprehensive theories and experiments) for citations and jobs. Although 'slow science' would be better for everyone, incentives push researchers towards minimally publishable papers.

**“Reconstructing the web of cognition requires jointly examining all relevant nodes through comprehensive theories, experiments and tests.”**

Stepping out of this dilemma requires changing incentives to align with better science. Meehl was pessimistic about such change, and wrote: “My recommendations ... have a negligible chance of being taken or even listened to seriously.” Yet here I am, listening seriously, three decades later – and, hopefully, so are other psychologists.

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The author declares no competing interests.

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