CHIP-1

Concepts and history in psychology

Steve Draper, Glasgow University

CHIP-1 22 Feb 2011

1

My angle on, contribution to, CHIP

What do I know? That the philosophy of science course I did as an undergraduate has stayed with me more than any other module.

My own overall learning aim for this segment is to expand your wider critical thinking skills, by raising issues about the worth of psychology overall (not just the worth of individual studies). This is positive as well as negative senses of "critical".

If you want to expand your mind with issues you'll still be thinking about years from now, read round these lectures, do the homework, argue with each other at length.

2

-

This lecture addresses, in very different words, ch.8 of Brysbaert & Rastle.

Brysbaert & Rastle (2009) Historical And Conceptual Issues In Psychology (Harlow : Pearson/Prentice Hall) [Lib: Psychology B351 BRY]

Although almost everything I say I "got" from someone else, I'm not an expert, I have no proof (neither do others), and you have to decide what you yourself think. Put more in line with critical thinking, you have to assess what arguments seem most coherent based on what is available to you.

3

Part 1:

The Newtonian triad

4

Why talk about philosophy of physics?

Last year, some students objected to material on the philosophy of science applied to physics: why not just to psychology?

- Most philosophy of science has been about physics: that's what there is to read, mostly.
- Physics is about the oldest, most developed part of science (say 4 times as old as psychology)
- Psychology traditionally, and perhaps still, has "physics envy": it wishes to say it is based on definitive experiments, not intuition and personal experience.

On the other hand:

- Different sciences are different in their underlying methods because of their different subject matter. So it's right to challenge whether arguments developed about physics apply to psychology.

5

The meta-issue

Why should there exist, and why should we be able to discover, general scientific laws?

The essentially irrational or religious underpinning of Newton's programme, and hence of science. [Michael White]

Even if some kind of understanding is possible for an area, what kind of understanding is possible / best?

(For me, the by far the biggest intellectual contributions are those that establish the answer to this for each discipline or area.)

6

Isaac Newton's schema for science

1) A theory

2) Calculation / prediction: generate testable consequences from the theory. (A theory that can explain anything implies we shouldn't think any more, or learn any more.)

3) Observation, experiment

There are many questions about what does and doesn't count as cases of each of those.
But still more important: How do they relate to each other, how do you go from one to another?

7

Induction

Recipe 1: collect cases, invent a theory ("induction") that generalises and covers all of them (and excludes known cases that should be excluded). Observation —> Theory

Popper-1: a single counterexample defeats a theory.
So a theory can never be proven.
So recipe-1 can't be the whole story.
Implies: induction —> theory —> collect <u>new</u> cases as tests

N.B. in sciences such as zoology, astronomy, observing cases and discovering novelties is still the most important activity.

8

Falsifiability

Primacy of (grand) theory.
Theories that can explain anything, or are continuously adjusted to cover any new case, don't really add value
(they are just a self-abuse of our feeling of understanding).

Popper-2: it isn't a scientific theory unless it is falsifiable

This puts weight on the 2nd leg of the Newtonian triad: making "predictions" I.e. calculating new consequences of the theory.

Prediction: future or consequences? Predicting the past.

(Evolutionary psychology)

9

Part 2:

Experiments

10

Why experiment?

The triad only requires observation, data, empirical studies for its 3rd leg. Why do some people (especially in psychology) think experiments are strongly preferred for this role?

Aristotle's biology. Everything but the experiment (spontaneous generation of flies) [Armand Leroi (BBC4)]

Correlation vs. experiment.
Fixes the direction of causation.
But the real thing is: it isolates one factor and varies it independently [the independent variable], and shows the links of that factor independently of others.

Does this work even if it is not you manipulating, but pre-selecting subsets of people? [Homework 3]

11

Why experiment? (2)

But: no experiments in astrophysics, nor evolution, nor epidemiology.

Bertrand Russell: the most advanced science does NOT talk about causes but relationships.
Causation is for applied projects.

How important is experiment? [ethology]

Homework: in what areas does psychology NOT use experiment? Is this OK?

12

Part 3:

Kuhn, critical thinking, RMS

13

Kuhn

Thomas Kuhn "The structure of scientific revolutions"
Buzzword "Paradigms"

In fact in real life scientists can be very slow to abandon disproved theories. Why?

- Personal vanity, inability to change ideas, …
- Science as sociology, anthropology [Read Bruno Latour]
  Kuhn was vastly more important to social scientists than to physicists

But perhaps there is a different angle on this: CT, RMS ….

14

"Reason maintainence systems"

A little considered everyday mental activity, which is also a version of critical thinking aimed at decision making under uncertainty, is "RMS": maintaining provisional knowledge as a network of linked ideas. When contradiction is detected, this is adjusted by finding an assumption that can be abandoned to retain the maximum overall probability of the revised net.

We do it to understand everyday stories.
In CT we do it to give our best overall judgement on balance.
In science, it would lead to what Kuhn described: it takes more than one little data point usually to abandon a big network that explains a lot.

15

Part 4:

Research questions for homework

16

Research questions for homework

1. What are the cases (the kinds of cases) where experiment is not used in psychology.
   How do the objections apply to each or not?
2. Does experiment have the same power if you don't manipulate causality, but just select different types of people for the two groups (e.g. different personality types)?
3. What examples can you think of or find, where statistics act like a telescope: to see things that otherwise we could never know.

17

A place to stop

18