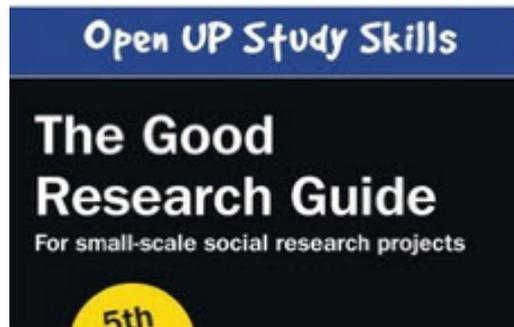


HEST 5001

**Research Designs in
Health**

**Lecture 1: Human agency in
research**

Books

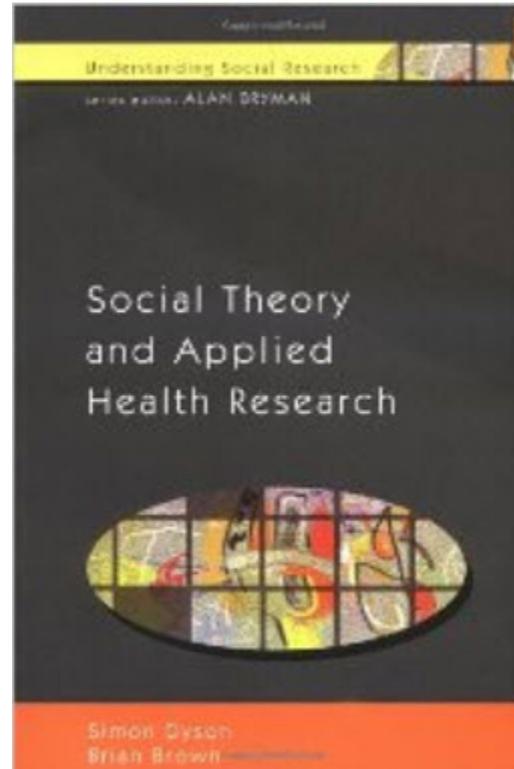


5th
edition

- Equips you with the skills you need for successful research
- New material on the use of social media in research
- New material on surveys and sampling
- Additional material on research ethics



Martyn Denscombe



Student seminars: Weeks 7 and 8

- Select one reading from ps 44-49 of the module guide.
- Present seminar in three parts:

Brief summary of article/chapter

The generic methodological lesson to be drawn out

Potential application to an area of research you are interested in

- Provide visual aids and/or handouts for the group if possible (helps share the work of reading)
- Some of the material is on my website <http://www.brown.uk.com> and follow the links to the teaching resources and then to HEST5001

Most research is wrong

Open access, freely available online

Essay

Why Most Published Research Findings Are False

John P. A. Ioannidis

Summary

There is increasing concern that most current published research findings are false. The probability that a research claim is true may depend on study power and bias, the number of other studies on the same question, and, importantly, the ratio of true to no relationships among the relationships probed in each scientific field. In this framework, a research finding is less likely to be true when the studies conducted in a field are smaller; when effect sizes are smaller; when there is a greater number and lesser preselection of tested relationships; where there is greater flexibility in designs, definitions, outcomes, and analytical modes; when there is greater financial and other interest and prejudice; and when more teams are involved in a scientific field in chase of statistical significance. Simulations show that for most study designs and settings, it is more likely for a research claim to be false than true. Moreover, for many current scientific fields, claimed research findings may often be simply accurate measures of the prevailing bias. In this essay, I discuss the implications of these problems for the conduct and interpretation of research.

factors that influence this problem and some corollaries thereof.

Modeling the Framework for False Positive Findings

Several methodologists have pointed out [9–11] that the high rate of nonreplication (lack of confirmation) of research discoveries is a consequence of the convenient, yet ill-founded strategy of claiming conclusive research findings solely on the basis of a single study assessed by formal statistical significance, typically for a p -value less than 0.05. Research is not most appropriately represented and summarized by p -values, but, unfortunately, there is a widespread notion that medical research articles

It can be proven that most claimed research findings are false.

should be interpreted based only on p -values. Research findings are defined here as any relationship reaching formal statistical significance, e.g., effective interventions, informative predictors, risk factors, or associations. “Negative” research is also very useful. “Negative” is actually a misnomer, and

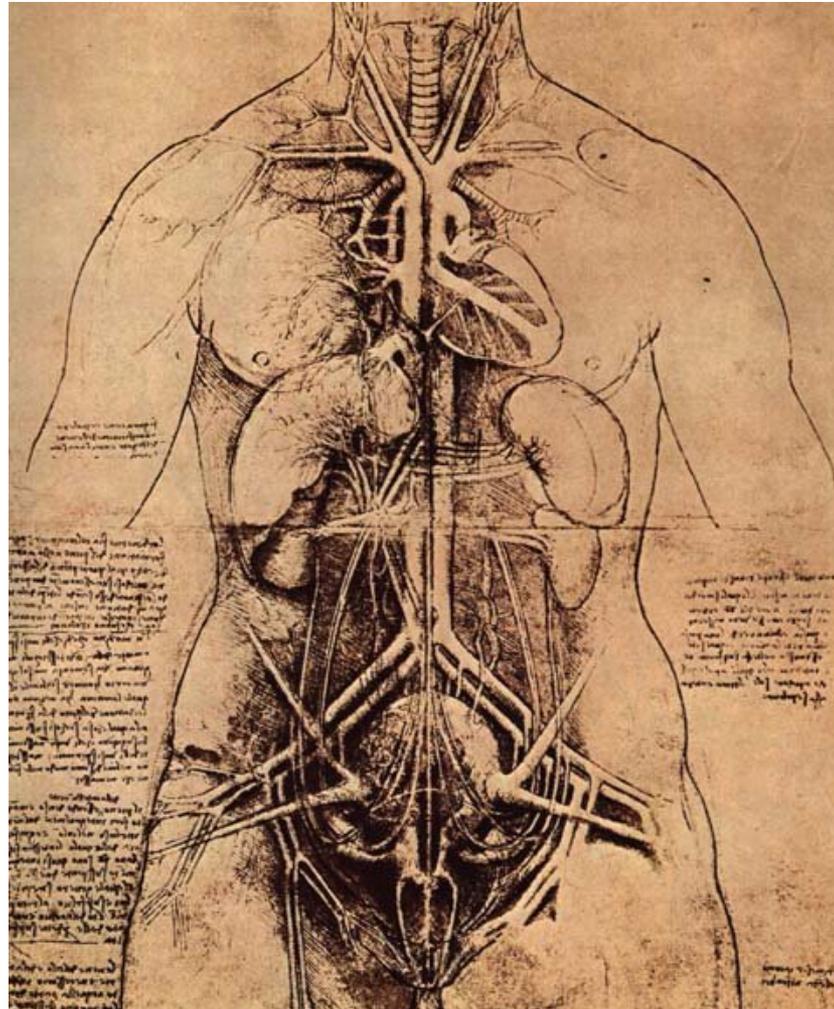
is characteristic of the field and can vary a lot depending on whether the field targets highly likely relationships or searches for only one or a few true relationships among thousands and millions of hypotheses that may be postulated. Let us also consider, for computational simplicity, circumscribed fields where either there is only one true relationship (among many that can be hypothesized) or the power is similar to find any of the several existing true relationships. The pre-study probability of a relationship being true is $R/(R + 1)$. The probability of a study finding a true relationship reflects the power $1 - \beta$ (one minus the Type II error rate). The probability of claiming a relationship when none truly exists reflects the Type I error rate, α . Assuming that c relationships are being probed in the field, the expected values of the 2×2 table are given in Table 1. After a research finding has been claimed based on achieving formal statistical significance, the post-study probability that it is true is the positive predictive value, PPV. The PPV is also the complementary probability of what Wacholder et al. have called the false positive report probability [10]. According to the 2×2 table, one gets $PPV = (1 - \beta)R / (R - \beta R + \alpha)$. A research finding is thus

Leonardo Da Vinci

1452-1519



The abdomen



They're doing something rude



Human Agency

- Human activities of the researcher (we design a questionnaire or an experiment)
- Human activities of the researched (resist, divert, aim to please, answer back, second guess)
- Social context of research (e.g. 1991 Census and ethnic question)

- Conventional research wishes away the gap between what we study and our interpretations of it (Parker, 1999)
- If transparency is at the heart of being scientific, then don't we need to stop hiding the human agency in production of research results?
 - (i) Write up these aspects in reporting research?
 - (ii) Take these effects into account by estimating their impact?

Research Process and Human Agency

- Setting research agendas
- Researcher interpretation
- Access to settings or subjects
- Emotions
- Informed Consent
- 'Respondents'
- How social differences ('race', gender and disability) are conceptualised
- How social differences ('race', gender and disability) affect interaction
- Use of research
- Acceptability of styles of research
- Writing research
- Reading research
- What counts as 'facts'?

Setting Research Agendas

- Continent?
- Health Topic?
- Age Group?
- Socio-economic group?

Setting Research Agendas 2

- James Cherry and UCLA vaccines (Dyson, 1995)
- HEA (1994), CHD and British Asians
- DHSS and domestic violence (Hanmer and Leonard, 1984)
- MRC and ESRC refused funding because 'social support in pregnancy' was neither medical nor social (Oakley, 1992)

Researcher Interpretation

- What does the primary care physician do in patient care that makes a difference?
- Patient narratives or databases? (Bass et al, 1991)

Access to Research Setting

- Blocked
- Partial (Oakley, 1992)
- Compromised (Lee, 1993)
- Timed out
- Changes setting
- R&D Governance – Trusts can avoid scrutiny!

Emotions in Research

- Older respondents redefine research interview to assert wish to remain independent living (Hey, 1999)
- Emotions of both researcher and researched influence research process (Young and Lee, 1996)

Informed Consent?

- Data collected on group who have declined in order to “characterise excluded group” (Oakley, 1990)
- Order in which informed consent and random allocation undertaken? (Oakley, 1990)
- Understanding of random allocation (Featherstone and Donovan, 2002)?

Respondents and Research

- Ethics of answering questions, giving of oneself (Oakley, 1981)
- Answering back: support group for survivors of medical research (Roberts, 1992)

Managing Research

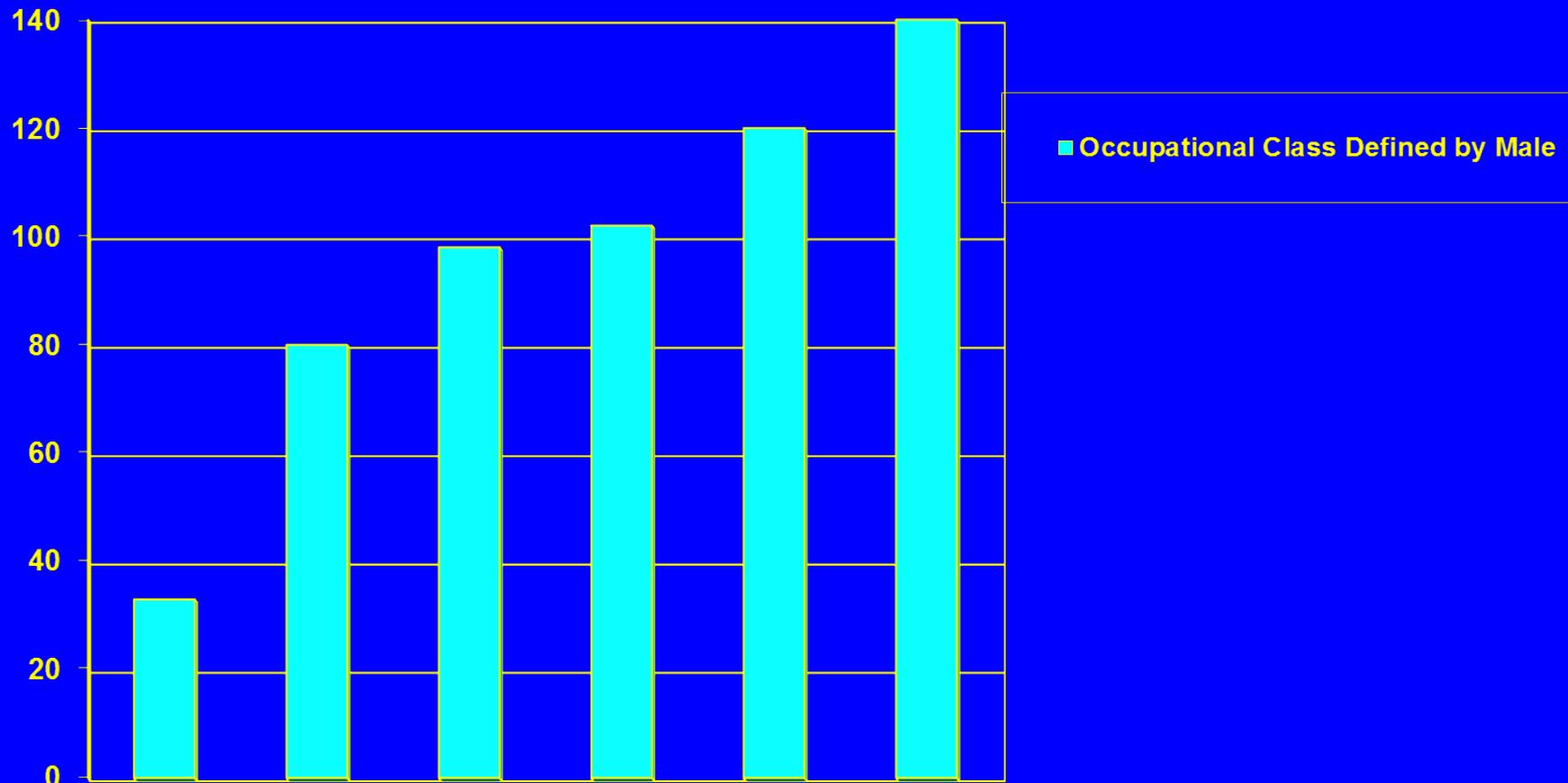
- Hired hand research (Roth, 1966)
- Participatory research (Dyson, 2000)

'Race' and research

- No distinct biological races
- CHD and “South Asian” heart health (Nazroo, 1999)
- “Racialization” Karl Pearson and his concern with ‘inferior races’
- ‘Race’ of interviewer effect (see Rhodes, 1994)

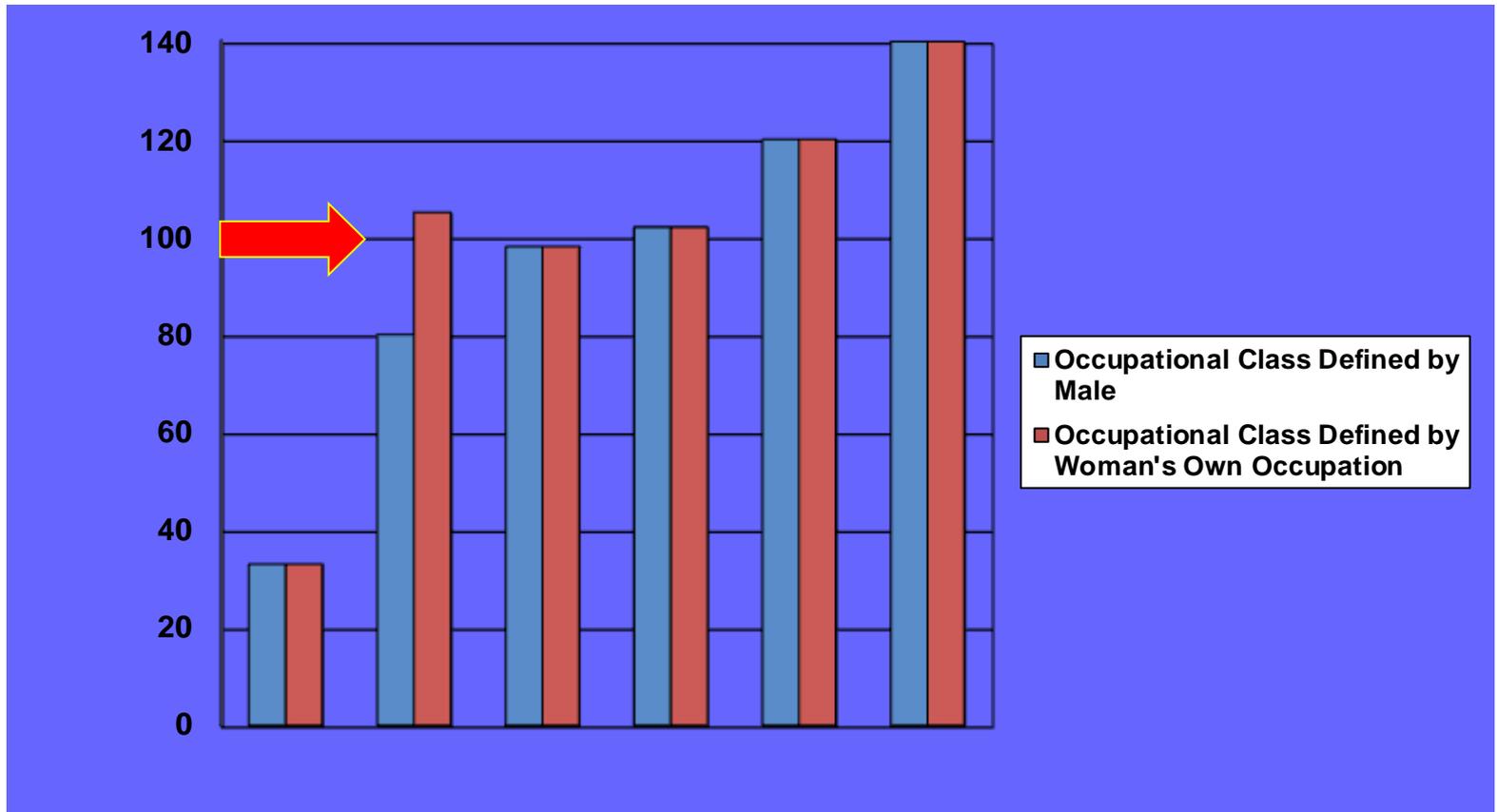
Gender and Research (Arber, 1990)

x axis = social class y axis = standardised limiting long term illness ratio



Gender and Research (Arber, 1990)

x axis = social class y axis = standardised limiting long term illness ratio



Disability and Research

- What's wrong with you?
- What's wrong with society (social arrangements, discriminatory practices, architectural and design barriers)? (see Oliver, 1992)

Use of Research

- Research to “cool out” policy problem?
- Not disclose at all because information could be used against marginalised groups studied (Finch, 1984)
- Role of professional and friendship networks (West et al, 1999)

Acceptability of Styles of Research

- Ethnography versus the power of 'large slabs of data' and RCTs (Pollitt et al, 1990)

Writing Research

- **Why the Scientific Paper is a Fraud** (Medawar, 1964)
- **“A questionnaire was administered..” use of passive language** (see Porter, 1993; and Tuskegee Study (Solomon, 2000))

Reading research

- **Publisher censors paper** (Arnaiz-Villena et al, 2001)
(See Shashok, 2003)
- **Seeing what you want to see** (McCormack and Greenhalgh, 2000)

What Counts as Facts?

- From the Latin “to make” as in manufacture
- Evidence-based health care: about power and control not evidence (Harrison, 1998)
- What if professional and lay discourses disagree? (Phillimore and Moffat, 1994)

Laboratory Science

- 'Science' depends upon human communication (see Conefery, 1997)
- 'Science' shaped by human interests and not by evidence alone (see Kerr et al, 1997)