

THE DAILY DOSE

ISSUE 3

Who dunnit: Issue 3 examines the conclusions we can draw from different study designs

From the workbench to the breakfast table: How science ends up in the news

FROM THE WORKBENCH TO THE BREAKFAST TABLE

How science ends up in the news

Have you ever wondered how science news stories end up in the news?

Scientists share their findings with each other by publishing a scientific Journal Article. These journal articles are peer-reviewed, meaning the work has been reviewed by two or more experts prior to publication. This process tries to ensure that the work is rigorous and the journal article is clear and reaches reasonable conclusions. If not, the reviewers can reject it or ask for more work and changes to the article.

The Journal Article is written for the scientific community using scientific terms. In order to reach the general public, the University or the Journal can write a press release. This is a short summary written in lay terms in order to attract the interest of journalists.



Journalists read press releases and decide which studies are newsworthy. They might then read the journal article as well and interview the scientists before writing the news articles that we read at the breakfast table.

But the headline is often written by another person – a sub editor

who has only read the draft news article. This creates the potential for message creep so that headline claims may misrepresent the research findings.

Your job is to see through this back to the research methods.

Exercise 1: The editor's chair

Pretend that you are a science news editor. Three news stories are on your desk. Read each story, decide whether you can draw conclusions about cause and effect and write an appropriate headline:

1. Story 1

According to a new study, women who regularly eat potatoes are at an increased risk of developing Type 2 diabetes in pregnancy. Gestational diabetes, where diabetes is diagnosed for the first time during pregnancy, affects between 1 and 14% of women worldwide.

Scientists examined survey data on 15,632 women (average age, 32) who became pregnant in a 10-year span and found that those who had reported eating two to four portions a week were 27% more likely to be diagnosed with diabetes.

The findings indicate that swapping potatoes for other vegetables or whole grains might lower the risk.

a. Can we make conclusions about cause and effect?

b. Write an accurate headline for this news story

2. Story 2

Vitamin D supplements can reduce the risk of acute respiratory infections such as infections of the sinuses, throat, airways or lungs.

Scientists varied the dose of Vitamin D participants had and found that Vitamin D supplementation resulted in a 12% decrease in the number of patients who had at least one respiratory tract infection.

The team cautioned that more research is needed.

a. Can we make conclusions about cause and effect?

b. Write an accurate headline for this news story

3. Story 3

The more book, church, sporting and other social groups an individual belongs to after they stop work, the lower their risk of an early death, suggests a study published today.

Scientists tracked 424 English men and women as they went through their first six years of retirement and discovered a six-fold difference in mortality rates between those who belonged to social groups in retirement and those who didn't.

This study adds to the evidence that maintaining social links in old age might even be more important for health than keeping fit.

a. Can we make conclusions about cause and effect?

b. Write an accurate headline for this news story

WHO DUNNIT?

Between the 6th and 11th of August in 2011, riots swept across England. Chaos erupted in the streets of London and towns across England. The damage was estimated to cost £200 million.

Coincidentally, during the riots, a team from Cardiff University released a press release about their research. They had found that the concentration of a brain chemical called GABA was associated with impulsivity in a group of adult men.

The poor timing prompted a media circus with headlines such as “Brain chemical lack spurs rioting” and “Nose spray to stop drunks and brawls”. The original research did not mention either riots or nasal sprays. Needless to say, the team behind the GABA study were not happy.

The team began a discussion about the state of British health and science reporting. At first, they instinctively rushed to defend scientists. After all, it is a journalist’s job to make the articles they write exciting. Most of us assume this is why exaggerations occur.

Like most things, however, life is not that simple. There were



some potentially misleading words in their press release, and so the team set out to discover how most exaggerations occur.

They actually discovered many routine exaggerations – such as claiming causal connections for correlational research – are already in the press releases and quotes from the academics themselves. So everyone in the chain is partly responsible for misrepresentation of scientific findings in the news.

The team went on to test whether making press release headlines a bit more cautious and adding clear caveats in the

text would detract from the number of news stories written about that research. It did not. Moreover, the news itself became more cautious and sometimes included the caveats.

This led to recommendations that headlines for correlational research should include words like ‘might’ or ‘may’ to signal we cannot be certain about the causal link. According to the research, this little note of caution should not detract from news interest.

Exercise 2: Who dunnit?

Below you will see a made-up news article based upon the classic research conducted by Raine et al (1997). Read the article and answer the questions.

BRAIN DEFICITS DRIVE MEN TO MURDER



Brain scans have revealed murderers are driven to commit their lethal crimes by deficits in their brains.

The scientists compared the brains of murderers to the brains of law abiding citizens and found that the murderers had numerous abnormalities in their brains.

These deficits include the prefrontal cortex which is linked to impulsivity and emotion. They also include abnormalities in the corpus callosum which makes it hard for murderers to consider the long-term consequences of their actions and make decisions. This is because the two hemispheres of the brain struggle to communicate.

Lead researcher Dr Adrian Raine commented "A strength of this study is its large sample size".

The findings were published in the journal *Biological Psychiatry*.

1. Based on the article, what variables does it indicate the researchers used in this study?

2. What was the dependent variable?

3. What study design was used?

4. Can we make claims about cause and effect?

5. Are the claims made in the news article justified?

6. Can you see the parallels between this study and the GABA study by the Cardiff team? What are they?

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7. When an association is found between a biological factor (brain regions, neurotransmitters etc.) and behaviour of some sort, it is very common to assume the biological factor is causal. Can you think of a reason or an example to illustrate why the biological factor may not be causal? (Hint: is it possible to change your brain through your behaviour?)

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Exercise 3: Who dunnit part 2

Using your answers in Exercise 2 and your knowledge of the Raine et al (1997) study, answer each of the questions below to produce an accurate news article.

1. Re-write the headline to make its claims more accurate

BRAIN DEFICITS DRIVE MEN TO MURDER
Brain scans detect differences in the brains of murderers

2. Re-write the main conclusions so that they accurately reflect the findings

3. Methods: who took part in the study and what did Raine et al (1997) do?

4. Raine et al (1997) did comment that a strength of the study was its large sample size. What about the study's limitations? Identify one limitation below:

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