

AUSTRALIA

Scientists oppose monkey import ban

Rush of protests against proposed Australian bill.

BY BIANCA NOGRADY

A bill calling for a ban on the import of non-human primates for medical research in Australia almost slipped under scientists' radar — but researchers have now rushed to argue against the proposal.

A Senate committee is considering the bill and will report in early March, before a possible debate and vote by the full Senate. That it is now publicly opposed by several scientific institutions worldwide is largely down to the efforts of neuroscientist Nicholas Price, who says that he was shocked to hear about it in late January.

Researchers had missed the legislative proposal when it was introduced in September 2015 as an amendment to Australia's federal Environment Protection and Biodiversity Conservation Act. This was because the committee that deals with this legislation is not usually of interest to those in the medical-research community, says Price, who uses marmosets and macaques in experiments at Monash University's Biomedicine Discovery Institute in Melbourne. By the time he heard about the proposed ban, from another researcher, the window for public comment was days away from closing (although it was later extended). Price and his Monash colleagues James Bourne and Marcello Rosa began e-mailing researchers around the world, and institutions rushed to submit statements of opposition.

Senator Lee Rhiannon, a member of the Greens party who trained as a zoologist and introduced the proposal, told *Nature* that her party is not calling for a ban on non-human primates in research. The bill is a "modest" way to improve the welfare of research animals, she says. But Price and Bourne say that cutting off access to the genetic diversity required to maintain Australia's three main breeding colonies would eventually lead to inbreeding, health problems and the end of the country's research on non-human primates.

Australia's Parliament may be dissolved for a general election before the bill makes it to a vote — as happened to a similar bill that Rhiannon introduced in 2012. Price says that the events have convinced him of a need to be more public about the importance of his work. "We feel that the majority of the public would be very supportive," he says. ■

THOROUGHLY MODERN MILGRAM

A modern version of Stanley Milgram's experiments on obedience to authority avoids the ethical pitfalls of the classic 1960s studies.

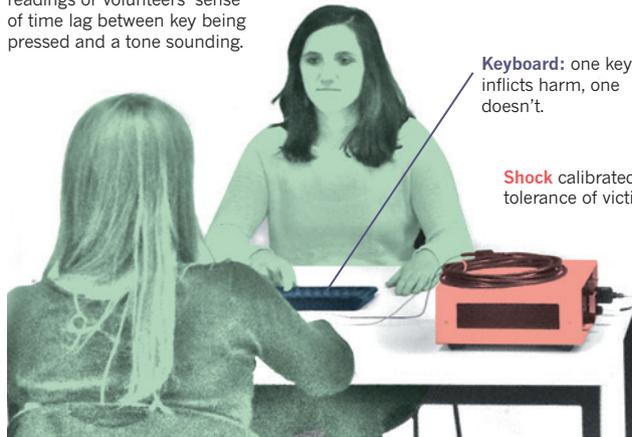
Volunteers knowingly inflict real pain: a cash fine and an electric shock, or just a fine. They take turns to be 'victim'.

Feelings probed using neural readings or volunteers' sense of time lag between key being pressed and a tone sounding.

Experimenter tells one volunteer which key to press — or turns away and offers a free choice of key press.

Keyboard: one key inflicts harm, one doesn't.

Shock calibrated to pain tolerance of victim.



ADAPTED FROM E. A. CASPAR ET AL. (2016)

PSYCHOLOGY

How the brain reacts to orders

Modern spin on iconic Milgram experiments suggests that people obeying commands feel less responsible for actions.

BY ALISON ABBOTT

More than 50 years after a controversial psychologist shocked the world with studies that revealed people's willingness to harm others on order, a team of cognitive scientists has carried out an updated version of these iconic 'Milgram experiments'.

The findings may offer some explanation for Stanley Milgram's uncomfortable revelations. When following commands, the team says, people genuinely feel less responsibility for their actions — whether they are told to do something evil or benign.

"If others can replicate this, then it is giving us a big message," says neuroethicist Walter Sinnott-Armstrong of Duke University in Durham, North Carolina, who was not involved in the work. "It may be the beginning of an insight into why people can harm others if coerced: they don't see it as their own action."

The study may feed into a long-running legal debate about the balance of personal responsibility between someone acting under instruction and their instructor, says Patrick Haggard, a cognitive neuroscientist at

University College London, who led the work, published on 18 February (E. A. Caspar *et al.* *Curr. Biol.* <http://doi.org/bcnj>; 2016).

Milgram's work in the 1960s was motivated by the trial of Adolf Eichmann, a Nazi who argued that he was 'just following orders' when he sent Jews to their deaths. The latest findings don't legitimize harmful actions, Haggard emphasizes, but do suggest that the excuse of 'obeying orders' betrays a truth about how a person feels when acting under command.

In his experiments, Milgram told participants that a man was being trained to learn word pairs in a neighbouring room. The participants had to press a button to deliver an electric shock of escalating strength to the learner when he made an error; when they did so, they heard his cries of pain. In reality, the learner was an actor, and no shock was ever delivered. Milgram's aim was to see how far people would go when they were ordered to step up the voltage.

Routinely, an alarming two-thirds of participants continued to step up shocks, even after the learner was apparently rendered unconscious. But Milgram did not assess his

participants' subjective feelings as they were coerced into doing something unpleasant. And his experiments have been criticized for the deception that they involved — not just because participants may have been traumatized, but also because some may have guessed that the pain wasn't real.

Modern teams have conducted partial and less ethically complicated replications of Milgram's work. But Haggard and his colleagues wanted to find out what participants were feeling. They designed a study in which volunteers knowingly inflicted real pain on each other, and were completely aware of the experiment's aims.

Because Milgram's experiments were so controversial, Haggard says that he took "quite a deep breath before deciding to do the study". But he says that the question of who bears personal responsibility is so important that he thought it was "worth trying to do some good experiments to get to the heart of the matter."

In his experiments, the volunteers (all were female, as were the experimenters, to avoid gender effects) were given £20 (US\$29). In pairs, they sat facing each other across a table, with a keyboard between them (see 'Thoroughly modern Milgram'). A participant designated the 'agent' could press one of two keys; one did nothing. But for some pairs, the other key would transfer 5p to the agent from the other participant, the 'victim'; for others, the key would also

deliver an electric shock to the victim's arm. (The shock was calibrated to the participant, so that it was painful but bearable.) In one experiment, an experimenter stood next to the agent and told her which key to press. In another, the experimenter looked away and gave the agent a free choice about which key to press.

Whichever key was chosen, a tone sounded after a few hundred milliseconds, and both volunteers were asked to judge how long this took. Psychologists have established that people perceive the interval between an action and its outcome as shorter when they act of their own free will, for example to move their arm, than when the action is passive — having their arm moved by someone else. As a result, the time that the participant thinks has elapsed between the key press and the tone acts as a measure of their sense of being responsible for their actions.

When they were ordered to press a key, the participants perceived the time to the tone as longer than when they had free choice — as if their action had been passive.

In a separate experiment, volunteers followed similar protocols while electrodes on their heads recorded their neural activity through EEG (electroencephalography). When ordered to press a key, their EEG recordings were quieter — suggesting, says Haggard, that their brains were not processing the outcome of their action. Some participants later reported

feeling reduced responsibility for their action.

Unexpectedly, giving the order to press the key was enough to cause the effects, even when the keystroke led to no physical or financial harm. "It seems like your sense of responsibility is reduced whenever someone orders you to do something — whatever it is they are telling you to do," says Haggard.

The study might inform legal debate, but it also has wider relevance to other domains of society, says Sinnott-Armstrong. For example, companies that want to create — or avoid — a feeling of personal responsibility among their employees could take its lessons on board. ■

CORRECTIONS

The News story 'Scientists probe Zika link to birth defects' (*Nature* **530**, 142–143; 2016) wrongly stated that at least seven countries have shown abnormal rates of microcephaly; this has happened only in Brazil. In addition, the article implied that 404 confirmed cases of microcephaly in Brazil could be linked to Zika virus — only 17 of those 404 have been linked so far. Finally, the correction note for the Editorial 'Blue future' (*Nature* **529**, 255–256; 2016) omitted to say that the carbon sequestration in question was by living organisms in the oceans.