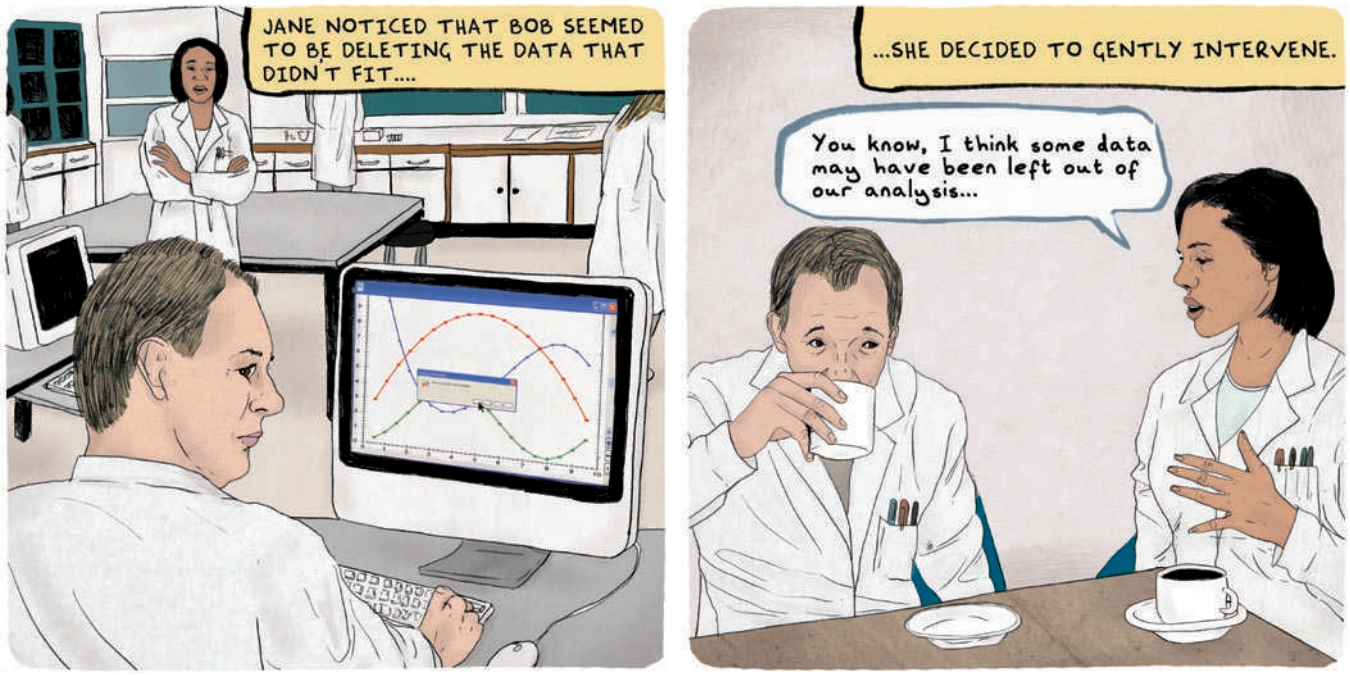



ILLUSTRATION BY JAY TAYLOR

# Peers nip misconduct in the bud

A new survey shows that informal intervention can often avert much irresponsible scientific behaviour, and is not as risky as people might fear, say **Gerald Koocher** and **Patricia Keith-Spiegel**.

What do researchers do when they suspect a colleague of cutting corners, not declaring a conflict of interest, neglecting proper oversight of research assistants or 'cooking' data? In one study[1], almost all said that they would personally intervene if they viewed an act as unethical, especially if it seemed minor and the offender had no history of infractions. But do researchers behave in reality as they say they would in a hypothetical situation? And is the outcome positive? Surprisingly, these important questions have not been investigated in a systematic way — so we set out to do so.

The types of scientific misconduct that receive most attention are severe cases of fabrication, falsification and plagiarism. But many other forms of wrongdoing can corrupt the scientific record, including honest mistakes[2,3] and a multitude of purposeful acts, from sloppy record-keeping to a failure to follow ethical rules (Fig. 1; 'Catalogue of wrongs'). Left uncorrected, these 'lesser' forms of irresponsible research may pose even greater threats to science[2,4].

We conducted a confidential online survey asking investigators funded by the US National Institutes of Health what they have done in the past when they suspected acts of scientific wrongdoing. Our research was funded by a grant from the Office of Research Integrity in Rockville, Maryland, and done in cooperation with the National Institute of Neurological Disorders and Stroke in Bethesda, Maryland, and a team comprising research psychologists Joan Sieber, Barbara Tabachnick and Darrell L. Butler.

Our survey revealed thousands of cases in which researchers got involved in some way, from making a formal report of misconduct to sitting down with suspects for a direct discussion, informally discussing concerns with their supervisors or simply referring off-hand to good lab practices in the hope of changing someone's behaviour. The outcome was often good: less than half of the interveners reported negative fallout (Fig. 1; 'Outcomes of interventions'), and more than half said that they would do the same thing again. The survey highlights the types of interventions that often lead to satisfying results, and the barriers that prevent some people from acting.

The culture and attitudes needed for responsible science already exist. Most institutions will say that they have zero tolerance for research misconduct; only a small percentage of our survey respondents were concerned that their institutions are not supportive in this regard. The majority of those surveyed agreed that researchers have an individual responsibility to get involved. The key to nipping as many infractions in the bud as possible is to reassure people of the potential effectiveness of informal intervention, and to educate them in how best to do it.

## Stepping in

We got 2,599 usable responses to our survey (Fig. 1; 'Getting involved'), 406 of whom experienced no incidents of wrongdoing. Almost two-thirds (63%) of the 2,193 respondents who shared one or more incidents with us took some form of action — and most of that action was informal (see go.nature.com/yOxfN8 for study details). This is a much higher rate of involvement than we expected, given previous work showing a reluctance to get involved for fear of retaliation[1]. Although this result leaves 807 respondents who did not take action, it is worth noting that most of these (581) felt either very removed from the matter or had reason to believe that others were already doing something about it. In 147 incidents, respondents said that they did not know what course of action to take.

From these numbers, it is difficult to estimate the overall rate at which intervention is happening because people who had cases to



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report might have been more likely to reply to the survey. Nevertheless, it is clear that personal action is a prominent way in which researchers deal with irresponsible acts they see occurring around them.

How did the respondents feel about their interventions? In our survey, about 39% of incidents ended in a way that left the intervener satisfied or extremely satisfied, 35% left them dissatisfied or extremely dissatisfied and just over one-quarter left them feeling neutral about the experience (Fig. 1; 'Feelings after intervening'). This broad conclusion masks some subtleties that came out in free-text answers to survey questions: a person may have rated an experience as satisfactory even if the accused abusively denied the problem, for example, because they were proud of their courage in doing the right thing. Importantly, for 61% of the incidents, interveners said that they would do the same again. Asked what they would do differently, the most frequent themes were to do more, faster and more forcefully — not to do less.

Of those who intervened, 28% reported that the scientific problem was corrected in one or more cases. Although that might seem low, it is interesting to note that the survey found little difference in this rate between informal interventions and formal reporting — if anything, the informal interventions had a slightly higher correction rate than formal reports, and probably caught problems earlier. Less encouraging is the large percentage of cases (27%) in which suspected offenders denied a problem; however, it is possible that wrongdoers quietly cleaned up their acts nonetheless.

Interestingly, informal intervention reportedly corrected problems at a significantly higher rate when interveners felt sure, or fairly sure, that the errors were unintentional. Free-text answers revealed many such cases in which interveners took a softer, less accusatory tone, which we suspect helped to create a good outcome.

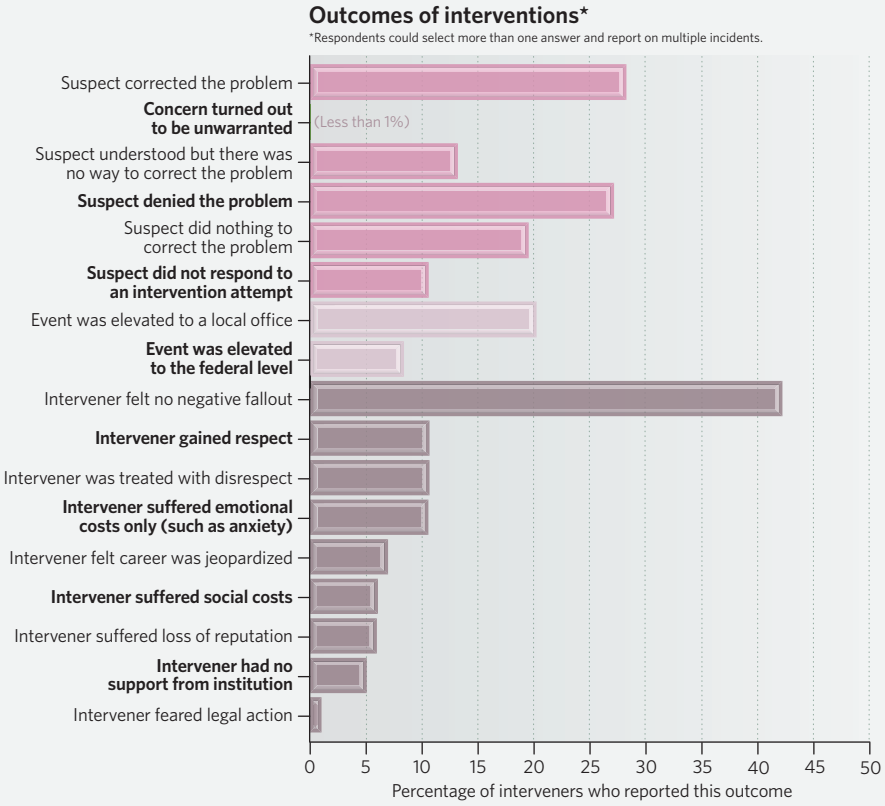
As for the interveners themselves, their chances of a good or bad outcome were about 50/50, ranging from increased respect to a loss of perceived career prospects. Although some consequences of intervention can be serious, a failure to act can have negative effects too. Respondents reported lingering misgivings in 40% of cases in which they had direct evidence of wrongdoing but chose not to act. Those feelings sometimes lasted for years.

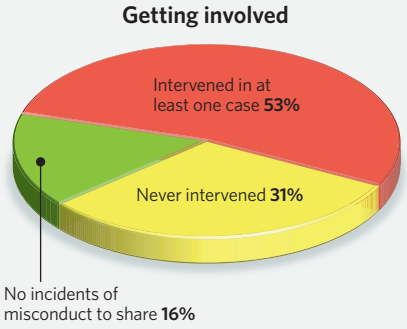
## Courage to act

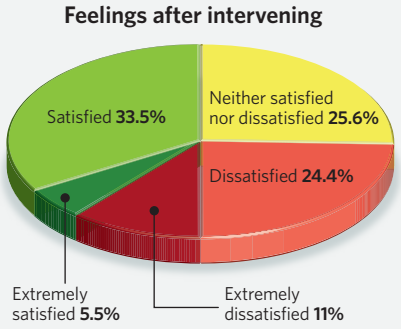
Perhaps unsurprisingly, people were more likely to take action if they were senior to the suspect — respondents intervened 92% of the time with their students, research assistants or postdocs. The overall odds of intervening

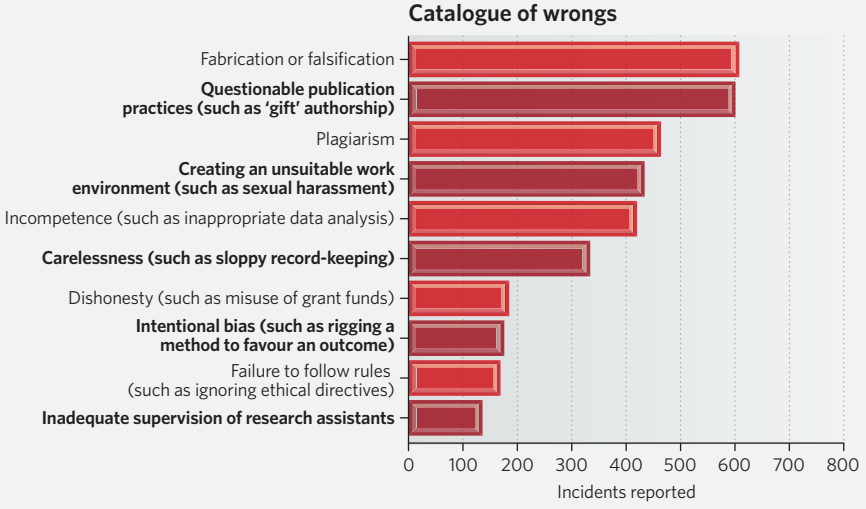
FIGURE 1 | ACTING ON THEIR SUSPICIONS

A total of 2,599 scientists responded to a confidential survey about dealing with wrongdoing in the lab; 2,193 shared one or more incidents, of whom 1,386 reported having intervened.






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## Teachable moments

*These illustrative stories taken from the survey have been edited for length and to protect respondents' identities.*

"He was so upset when I expressed my concerns. I let him rant for a few minutes. Then I said, 'Look, of course this is upsetting. I wasn't happy about having to come here. But I wanted to talk to you to see if we could find a solution rather than going to anyone else. Can we work this out more calmly together?' He changed after that."

**"I was the statistician for a large study. The principal investigator asked me to make comparisons that would have substantially inflated false-positive results. I was nervous at first because he was a brilliant statistician in his day, but I mentioned my concern. His response was, simply, 'Thanks, that's what I hired you for.'"**

"She was having serious second thoughts about deleting the more extreme data points for no appropriate reason other than making her data look much better. She had already submitted the article for publication, and it was accepted. We talked for almost an hour about responsible science. In the end she decided to write the editor to say that some errors had been discovered in the data and asked that the manuscript be withdrawn, perhaps to be resubmitted later."

**"He was intentionally cutting corners in a way that would bias the data, but I decided to play dumb. I told him that I was puzzled about his method and that I had learned to do it a different way. I then added a little flattery: 'You do such important work, I would hate to see anyone criticize it.' He had to admit that I was right."**

"My friend was going through a rough patch, and he confessed that he was plagiarizing some of his paper to get it done before a deadline. He said he knew it was wrong, but he doubted he would be caught. I was able to talk him out of it by saying that he'd have nothing left if he lost his self-respect."

**"I was quite sure that she had rerun some tests several times by selecting the data she wanted to include, and reported only the outcomes that she liked. I said, "I hate to be the one to tell you this, but I found a bunch of additional data in our computer files that I don't think you had a chance to see." The astonishment on her face was priceless, but she did add all of the data."**

were significantly lower when the suspect was senior to the respondent. This clearly shows how important it is to create a culture in which senior people welcome constructive monitoring of their work. Failing that, junior people might seek powerful allies or confidantes with whom to explore safe ways to resolve the matter.

Disappointingly, someone who worked closely with a suspected individual was less likely to take action than an intervener who had a more distant working relationship with the suspect. This is a shame given that close colleagues are more likely to notice or hear about poor practice. In 61 cases, the respondent reported not acting because the individual was a friend. Ethics education campaigns should remind researchers how their own tactful corrective actions might spare friends from disastrous outcomes should their poor science come to light in another way.

**"We have created a free online guide on how to respond to research wrongdoing."**

Most of our respondents, including those who did not act or did not have any cases to share, generally agreed that researchers have a personal responsibility to intervene when they learn of research wrongdoing. Those with the highest sense of personal responsibility were more likely to take action. It is vital that institutions create a culture in which interveners feel supported, and in which it is common practice for researchers to help each other and their assistants to stay on track. Previous work[5] has shown that purposeful dishonest acts often occur when individuals perceive little likelihood of detection. Fortunately, considerable efforts are under way to encourage responsible research, particularly by the Office of Research Integrity. Some scientists may worry that encouraging informal intervention promotes a 'science police' mentality that introduces intimidation and fear into the research environment. But our survey shows that attempts to correct misdeeds and errors usually remained private, and were rarely described as accusatory.

From our survey and other studies, we have created a free, user-friendly guide on how to respond to research wrongdoing (see www.ethicsresearch.com). Every situation is unique, but researchers can learn from the experiences of others (see 'Teachable moments'), and there are many common themes. To begin with, it is important that the rules of responsible conduct are understood by all members of the research team; we recommend that researchers set up regular lab discussions about good practices. If you suspect a problem, evaluate the evidence and the risks to science (and yourself), as this will assist in deciding how best to proceed. Keep notes and limit the number of people you discuss it with. Friends and loved ones often make poor sounding boards because they have only your safety at heart, rather than the broader interests of all involved.

Informal intervention is not always the best course of action. It is better to take a formal route for major cases of misconduct that would damage the reputation of one's workplace or significantly corrupt a body of knowledge, result in serious harm to participants or diminish the public trust in science. In addition, people with combative or excessively arrogant personalities, those known to have a track record of scientific misbehaviour, extreme incompetence, mental or substance-abuse problems, or those with much to lose, should be approached only after careful consideration of the available options.

If you decide to make an informal intervention, it is crucial that you adopt a non-adversarial tone. Think of it as an attempt at education and finding solutions, not as an attack, and leave open the possibility that your suspicions could be unfounded. Do not send an anonymous note, as this benefits no one. We hope that lessons like these, with the help of our guide, will be routinely taught in courses on how to conduct research responsibly.

Maintaining scientific integrity by helping to ensure an accurate research record is an obligation shared by all researchers. If colleagues who are in a position to take action fail to act, poor behaviour might remain uncorrected and could well spread or be repeated. Our survey highlights that researchers have a commitment to research integrity, and that many are acting on their beliefs by gently attempting to correct bad science. Such willingness needs to be encouraged and strengthened. ■

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**See also Opinion, page 436.**



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