

# On Research...

Blogging about research issues at Ohio State University



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## A graphic misrepresentation . . .

Posted on February 10th, 2012 by earlehollland

It was one of those emails that come out of the blue. Somebody who had seen that this blog cited the term “bad science” once before, was sending me an infographic, wanting to know what I thought.

What I didn't know was that I was just one of many bloggers to whom Tony Shin had sent his artwork. But I could have predicted what would happen in a lot of cases: Free artwork and a controversial topic . . . several bloggers quickly snapped the image up without, it seems, much review.

The thumbnail to the right shows the entire image. A larger, more readable version can be found [here](#). Regardless, at first blush, it's very appealing, colorful and suggestive of substantial content regarding the graphic's claim: That science is riddled with corruption and that the public should universally beware!

At the very beginning, Shin claims that “*shady science is rampant*,” arguing that “*one in three scientists admits to using questionable research practices*,” and that “*one in 50 scientists admit to falsifying or fabricating data outright*.” But fourth-grade mathematicians know that “*one in 50*” is only 2 percent, hardly qualifying such behavior as “*rampant*.”

Nor does he provide linked references to that — or any other — claim in his artwork.

Yes, at the tail end of the graphic, he lists “references,” but only two of those link to actual scholarly studies. The rest point to news stories from the mainstream media,



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- ✧ [Home](#)
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- ✧ [Research Communications Staff](#)

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- ✧ [A cascade of lemmings . . .](#)
- ✧ [Not what Ben meant . . .](#)
- ✧ [Of science, baseball, and cricket . . .](#)

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- ✧ [Uncategorized](#)

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- ✧ [February 2012](#)
- ✧ [January 2012](#)
- ✧ [October 2011](#)
- ✧ [September 2011](#)
- ✧ [August 2011](#)
- ✧ [July 2011](#)
- ✧ [May 2011](#)
- ✧ [April 2011](#)
- ✧ [March 2011](#)
- ✧ [December 2010](#)
- ✧ [October 2010](#)
- ✧ [September 2010](#)
- ✧ [August 2010](#)
- ✧ [July 2010](#)
- ✧ [June 2010](#)
- ✧ [May 2010](#)
- ✧ [April 2010](#)
- ✧ [March 2010](#)
- ✧ [February 2010](#)
- ✧ [January 2010](#)
- ✧ [December 2009](#)
- ✧ [November 2009](#)
- ✧ [October 2009](#)
- ✧ [September 2009](#)
- ✧ [August 2009](#)
- ✧ [July 2009](#)
- ✧ [June 2009](#)
- ✧ [May 2009](#)

opinion columns from magazines, a blog or two and even a commentary from a Minnesota "alternative newspaper."

Hardly the stuff of serious scholarship.

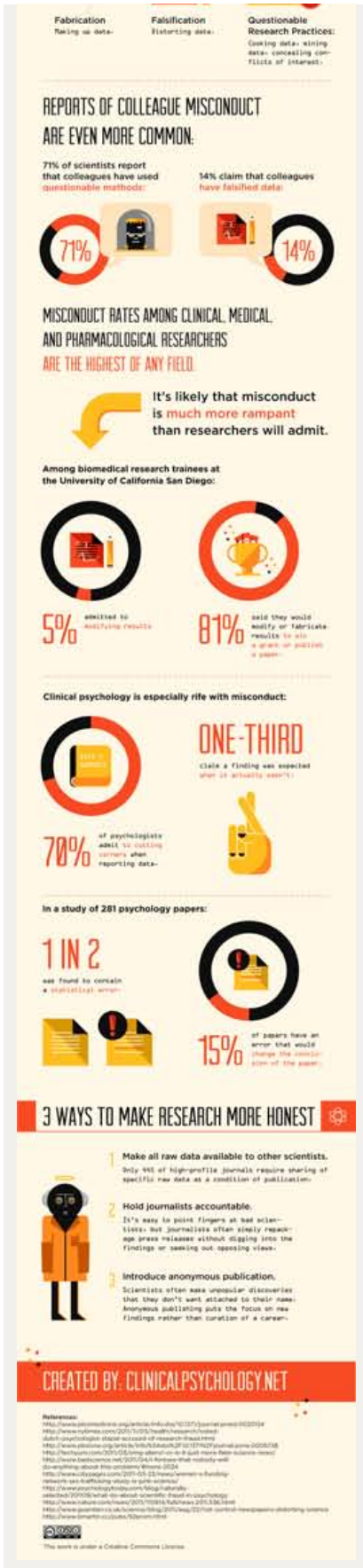
When he turns to the definition of scientific misconduct, he gets that wrong too, pointing to three categories: Fabrication, falsification and questionable research practices. The federal **Office of Research Integrity** oversees scientific misconduct among researchers supported by federal funds. ORI categorizes misconduct as fabrication, falsification or **plagiarism**, adding that "research misconduct does not include honest error or differences of opinion."

In essence, he starts with a premise that misbehavior among researchers is "rampant," then segues to an inaccurate definition of "scientific misconduct" and uses that to frame behaviors that aren't actually misconduct by definition, things like "questionable methods" and "statistical errors." Granted these last two claims are worrisome to science but they in no way represent "misconduct."

Shin's graphic then shifts to claims that one-third of clinical psychology (papers, I presume) claim a finding was "expected when it actually wasn't" — I'm at a loss to figure out how he would know that!

He says half of psychology papers "contain a statistical error" which would change the papers' conclusions in 15 percent of the cases, suggesting that this was misconduct as well, regardless of the ORI's rules saying errors are not misconduct.

Lastly, he suggests "3 ways to make research more honest," advising first



- \* April 2009
- \* March 2009
- \* February 2009
- \* January 2009
- \* December 2008
- \* November 2008
- \* October 2008
- \* September 2008
- \* August 2008
- \* July 2008
- \* June 2008
- \* May 2008

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that scientists should make all raw data available to other researchers, saying that less than half of scholarly journals require authors to share their data. He says nothing about exemptions for intellectual property or proprietary information, nor does he apparently know that most researchers willingly share their data with other scholars.

That's simply the way that science works.

His second suggestion is that the news media could do a better job of reporting on science. While most folks, including journalists, would agree that improvement would be welcome, that would hardly change the way researchers do their work.

But his last suggestion — that scientists should be allowed to publish their work anonymously — really defies all rational thought. Anonymity removes accountability and responsibility from researchers whose work is integral to improving society and the human condition. That, simply is a non-starter.

Some readers may think, "What's the big deal? It's just a graphic floating around the internet, obviously produced by someone who, at best, misunderstands science and research." But that reaction misses the current state of affairs where the public rarely invests ample time to understand complex subjects.

"Infographics," first popularized by the coming of the *USAToday newspaper*, are a quick and easy way of conveying information. Sadly, however, they're equally useful in simplifying data to the point of misrepresentation. Science as a subject is all too often seen by the public as too complicated to understand. It's a normal tendency for people to reach out for, and maintain, simpler notions that require less work.

That's what viewers risk with this graphic, and that's sad since the topic is too important to get wrong. What's more worrisome is that Shin's graphics on other topics appear frequently on the web. If he got this one so wrong, what about all the others? \_\_*Earle Holland*

[Note: A more detailed PDF of my responding email to Shin can be found [here](#).]

[A follow-up note: To his credit, Tony Shin responded with the following . . .]

*Earle,*

*I feel privileged you'd take time out to put together an in-depth analysis for me. Truly humbled you'd pick this apart for me. It's exactly what I needed. It's hard making infographics for the general masses to understand without going too detailed into one area – especially in the science realm when there are several factors to decide/include. Regardless, truly appreciate this.*



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