5 Minutes of Reflections

Matthew J. Hayat, PhD
Professor of Biostatistics
Department of Population Health Sciences
School of Public Health
Georgia State University
I’ve attended each USCOTS since 2009. Here is something I’ve observed.

USCOTS is a *meta* experience.

---

**meta**

*showing or suggesting an explicit awareness of itself or oneself as a member of its category*

---

The educators educate the educators & the teachers teach the teachers.

It’s awesome!
A lot of mention & discussion of *dichotomous thinking*

What does the internet have to say?
- google search of ‘dichotomous thinking’
- First hit:

"Dichotomous thinking," also known as "black or white thinking," is a symptom of many mental illnesses, including borderline personality disorder (BPD). If you have BPD and dichotomous thinking is a struggle for you, you may see only the extremes of things, never the middle.

*Verywell*
https://www.verywell.com/dichotomous-thinking-425292
Is NHST an illness?

It is definitely a problem
What is our mindset for ‘moving beyond p<.05’?

We cannot solve our problems with the same thinking we used when we created them

~ Albert Einstein
p-values & moving forward

• p-values are neither good nor bad; it’s how they are used that matters (Beth Chance)

• Even if we rid of statistical significance & p-values
  • 90+ years of p-value centric literature to deal with
  • That isn’t going away
p-values & moving forward

• Some ideas of what you can do now if you are not already doing:

1. Report effect size
2. Use interval estimate
3. Avoid using .05 or any other cutoff
4. Define contextual importance
A few things I learned these past few days…

1. Swim with the dolphins (Rossman 2008)

2. Go to Tasmania! (per Jane Watson)

3. WTF is robust to specification (thanks, Jeff Witmer)

4. Significance testing and Tinder have a lot in common (per Ron Wasserstein)
   - Little information to make any real decisions
   - Failing to reject is not the same as accepting
   - Give it a try and by chance alone you could get lucky
   - Significant results are a one-to-one function of your confidence level
What else did I learn?

Hm. Maybe I can rap too?
We’ve gone from

\textit{If the \(p\) is low, the null must go}

to

\textit{If the \(p\) is there… beware?!}
I have been pondering…

Challenges downstream beyond the classroom with ‘moving beyond $p<.05$’?

What about peer review?

Here is an example.
Do faculty in the health sciences – **dentistry, medicine, nursing, pharmacy, public health** – have an ability to **evaluate evidence**?

Can faculty read & understand the literature in their discipline?
Study: What Do Health Sciences Faculty Know About Statistics?

Team Members
Michael R. Jiroutek, DrPH
Campbell University
MyoungJin Kim, PhD
Illinois State University
Todd A. Schwartz, DrPH
University of NC at Chapel Hill
Study: What Do Health Sciences Faculty Know About Statistics?

Overall Study Results – Statistics Knowledge

Distribution of Number of Correct Out of 8 Questions by Discipline (n=708)
We had a publishing plan.

5 manuscripts to 5 discipline-specific journals.
We may have been a tad bit overly ambitious.
Things didn’t go according to plan.
Review of Dentistry Manuscript

Wrong Topic of Focus (Thank you, Jeff Witmer)

Journal of Dental Education

Decision: Reject

Reviewer 1: “With such a questionnaire in which the answers to the questions can be regarded as "correct" or "wrong", online survey is not acceptable to me. I prefer a face-to-face questionnaire.”
Review of Dentistry Manuscript

Wrong Topic of Focus

Journal of Education and Ethics in Dentistry

Manuscript Submitted: May 17, 2018
Journal Response: March 12, 2019 (299 days).
Decision: Reject

The entirety of the review consisted of one reviewer with one comment:

“Topic is interesting. However, your manuscript does not fulfill the standard of acceptable papers. First of all there are quite few references and the newest reference is from 2013. I am sure that this topic has been examined in past few years.”
The Pharmacy Manuscript was Accepted & Published!
A cross-sectional assessment of statistical knowledge among pharmacy faculty

Michael R. Jiroutek a,*, MyoungJin Kim b, Matthew J. Hayat c, Megan N. Taylor a, Todd A. Schwartz d

a Campbell University, Department of Clinical Research, College of Pharmacy & Health Sciences, Buies Creek, NC, United States
b Illinois State University, Mennonite College of Nursing, Normal, IL, United States
c Georgia State University School of Public Health, Atlanta, GA, United States
d University of North Carolina at Chapel Hill, Department of Biostatistics, Gillings School of Global Public Health, Chapel Hill, NC, United States
Just because...
KEEP CALM CAUSE Finally IT'S ALL OVER