How to evaluate an evaluation study: Comparing and contrasting evaluative practices in VIS to those of other disciplines

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https://bit.ly/2q1QrnC

Why did we write this position paper?

- We are vis researchers with substantive backgrounds in other disciplines
- We found vis evaluation to be at odds with our other disciplines

Ana Crisan

Epidemiology, Statistics

(On the job market this year!)

Madison Elliott

Cognitive Psychology

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  - For quantitative, qualitative, and mixed methods studies
  - Compare and contrast vis use to other disciplines
- Provide commentary and background readings
- Propose a checklist criteria for reviewing evaluative user studies
  - Checklist items for study components
  - Four levels of rigor (unacceptable, baseline, good, and gold-standard)

A snapshot of our paper

Photo by Tirachard Kumtanom from Pexels

You don’t always need an evaluation

- Sometimes an interesting engineering project is a good contribution
  - Novel, innovative ideas are worth publishing

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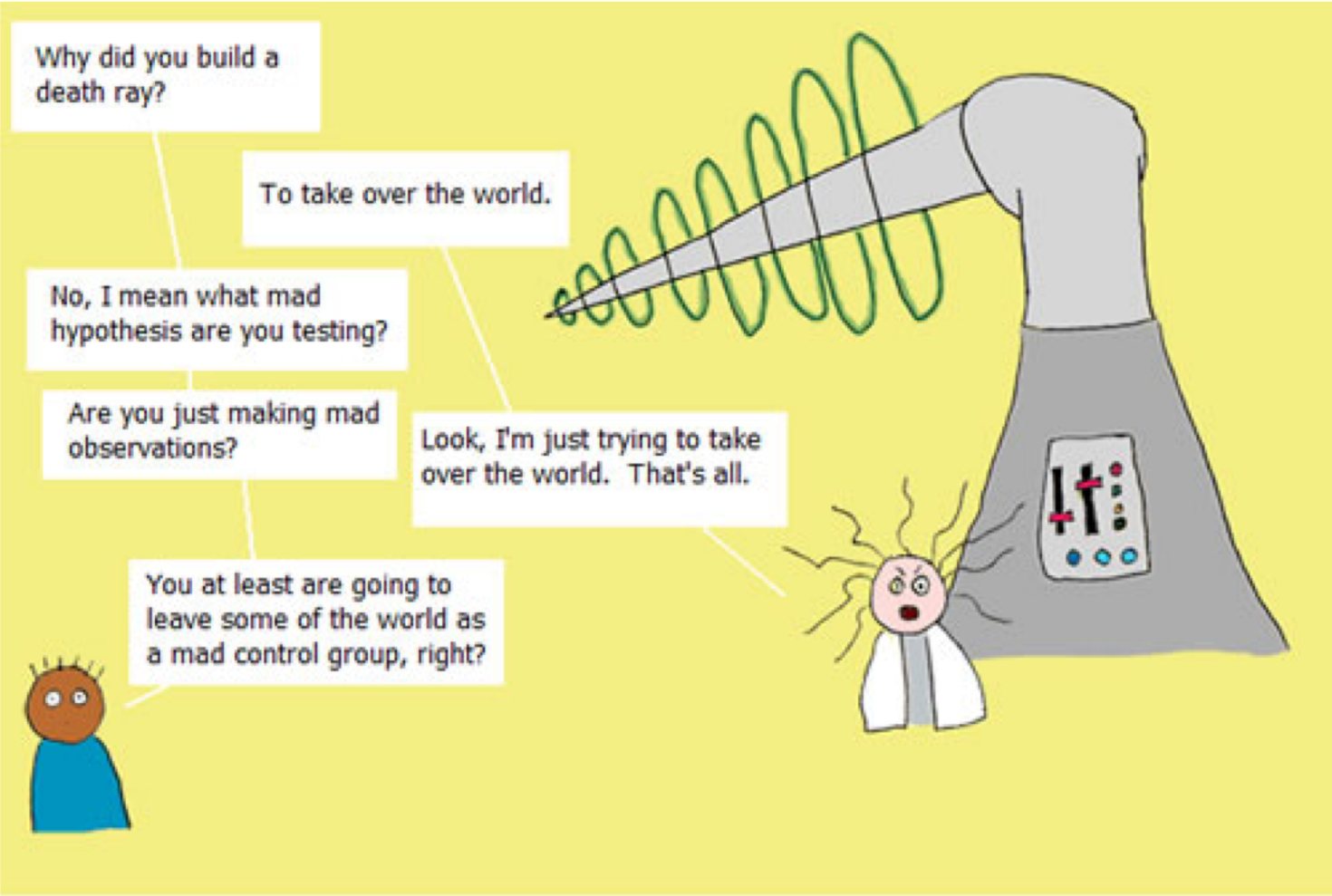

Sad truth: Most "mad scientists" are actually just mad engineers

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- **Claims about the impact on users must be evaluated**
  - **If you claim it, you should test it!**
  - Over speculation of impact should be avoided

You might want to rethink research methods

- Rethinking qualitative/quantitative and objective/subject studies
  - An example formulating research questions about this presentation:

	Objective	**Subjective**
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Qualitative	What institutions are the presenters from?	What did you learn from this presentation?

We should have a checklist for paper reviews

- We identify the following components that should be evaluated upon:
  - Research Motivation and research methodologies
  - Data Collection
  - Data Analysis
  - Validity of findings
  - Generalizability
- Provide general and specific criteria for quantitative, qualitative, and mixed methods designs

Checklist criteria presented in question format

- Examples from **data analysis** checklist components

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  - ❑ Is there a clearly articulated data analysis plan? Is it appropriate?
  - ❑ *Within reason and without violating ethics and the study participants' privacy*, do researchers make analysis artifacts available so that others can independently verify the results?
  - ❑ Is it clear whether the researchers are conducting a confirmatory or exploratory study analysis?
  - ❑ **Quantitative Methods |** Is it clear what the researcher is measuring?
  - ❑ **Quantitative Methods |** Is analysis code made available?
  - ❑ **Mixed Methods |** Is is clear when results were analyzed? In sequential study designs, separately and different points in times, in convergent study designs simultaneously.
  - ❑ **Qualitative Methods |** Are artifacts of the data coding processing made available?

- See our paper for full checklist – we've got a poster too!

Four reporting levels based upon checklist

Reject / Revise	Accept
• Insufficient Reporting • Bare Minimum Reporting	• Good Reporting • Gold Standard Reporting

- See our paper of definitions of each reporting level

Checklist goals

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- Increase replicability and quality of studies
- Encourage new discussion about identifying standards for all three methodological approaches: quant, qual, mixed.
- Engage VIS researchers in broader, pan-disciplinary methodological discourse

Discussion points:

- What do we want?
  - **Clear reporting in VIS evaluative user studies!**
- When do we want it?
  - **NOW!**
- We encourage activate dialogue on refining our checklist criteria
- We recommend checklists be used as standard reviewing practice

Check out our paper!

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