Tales from the lab:

A case study of metadata & data management in complex behavioral studies

IASSIST Conference 2017

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Agenda

Our Background - Social Science Research Support

Nature of Complex Experiments... and Experimenters

What We’ve Learned Along the Way

A Case Study for when it all works well

The Research Support Sevices team:

Thomas Lindsay, Coordinator

Pernu Menheer – Research support Programmer/Analyst

Alicia Hofelich Mohr - Data Manager/ Statistician

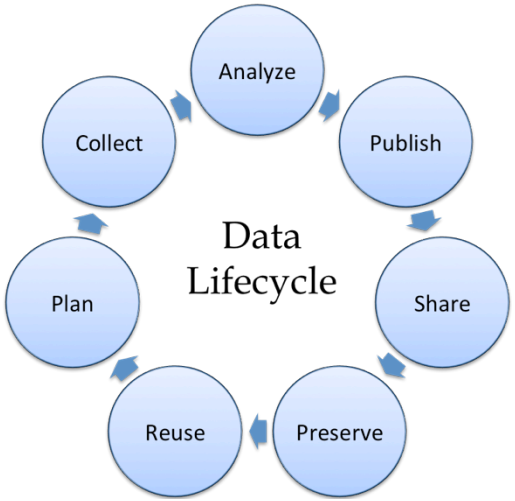
Michael Beckstrand - Mixed methods specialist

Andrew Sell - Research Support Project Manager

What we do as a team…

Research Support Services - College of Liberal Arts

Support faculty, students, and staff researchers in the College of Liberal Arts and across the University



My background

Assembly language programmer: Sears

Research Programmer: Minnesota Twin Family Study, University of Minnesota

Both larger scale organizations

Large scale projects

Full time staff employed by the project - The staff is the study.

- PI’s
- Executive team
- Data managers
- Project managers
- Programers

Years of planning data collection processes are developed and can potentially run for years.

Lab programmer

Worked more in isolation……

Research Support Services - College of Liberal Arts

Small / no infrastucture.

No staff employed by the project -

A professor,

RA

Our team, who collaborates with these researchers

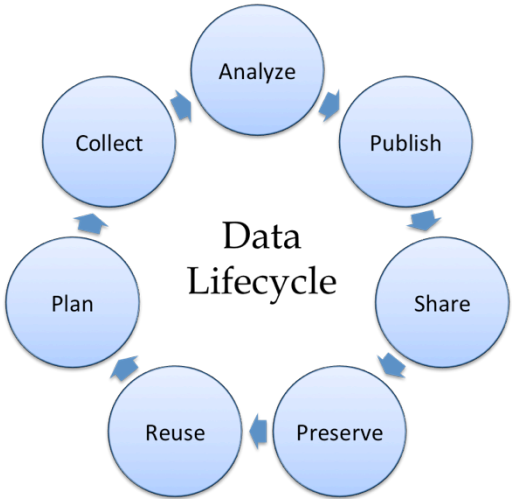
We support their large scale ambitions:

- Online and in lab Surveys
- Computer based individual tasks:
  - Stroop Task
  - IAT
  - Custom programming
- Computer based group tasks (game theory)

What we do as a team…

Research Support Services - College of Liberal Arts

We function as their exec team:



Nature of Complex Experimenters

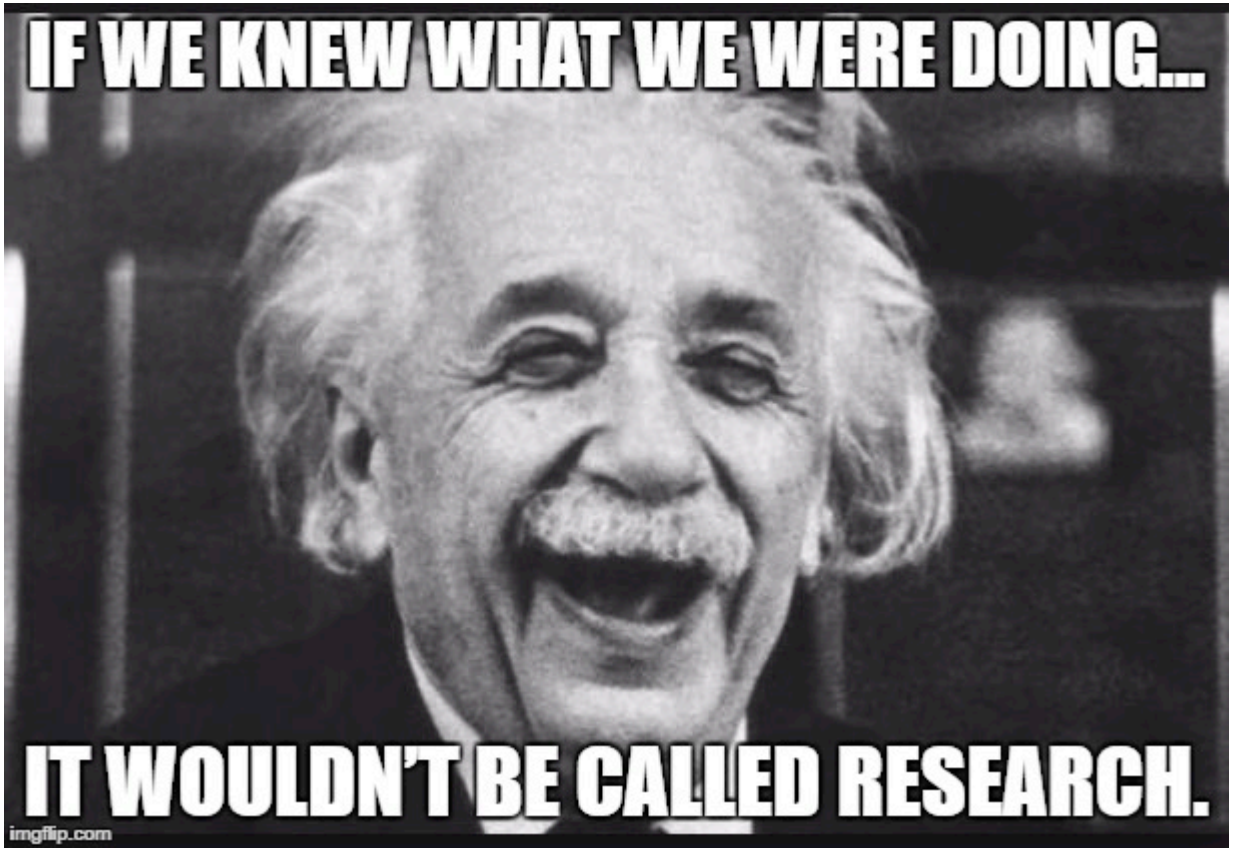
- They’re Alive!

They typically have control over creating Frankenstein. The Doctor has control of the process and learns through trial and error.

Custom programming - changing the specifications during data collection

Researchers are typically not Expert Project Managers and Research Data Managers

Pressure, pressure, pressure. Time Constraints!


IF WE KNEW WHAT WE WERE DOING...
IT WOULDN'T BE CALLED RESEARCH.
imgflip.com

Concrete Example - Part 1

Dr. Researcher

"I want the Students will come into the lab, fill out an anonymous survey about themselves. Then I want them randomly paired with another student in the lab over the computer and they do a gambling task interactively. Then I want the students to do a distractor task (alphabetize words), before finally filling out a questionnaire about their partner. "

Concrete Example - Part 2

Dr. Researcher

"Uh-oh, this is taking WAY too long for students to get through - instead, let's move the initial survey online and they have to do it at least a day before the in-person task.

Then they come into the lab, are randomly paired, and continue on the task "

Hold up, wait a minute!!!!!

Part of our job is to let make them aware of rules and regulations of the University.

(The things non tenured staff and faculty better be aware of)

- Ramifications of making this a two part study
  - Conecting time1 to time2
  - Is maintaining anonymity still possible, is it even necessary
  - Handling and linking secure data
  - IRB considerations.

Concrete Example - Part 3

Dr. Researcher

"Hmmm, the distractor task is not as engaging (or distracting!) as we would like. Let's instead give them the option of doing math problems or watching videos as a distraction. But I want to know which they do, if they switch, and how long they spend on each.

And can this be done for tomorrow?"

Me:

Tips for avoiding Future Self And/Or My Colleagues Hating Me:

Don’t kick that can down the road - it may pop your tire.

The “Hero” Mentality - risky but if it goes right you are the hero. With this mentality scope creep and non-transparent processes or decisions are more likely

Tasks may take longer when you incorporate quality control project management and data management best practices; however, you can reduce errors and future work.

Start with the End in Mind (Research Project Lifecycle)

What We've Learned Along the Way
-The school of hard knocks

- They do not always know what they will discover. They have an idea. It's not like they know what they want and they want you to implement it all beforehand. They are continuously thinking about ways to fine-tune their experiment, even while collecting data.
- When something hasn't been done before, they look to us to help them implement it. They also are not sure what they will discover. The goal posts will seem to keep moving further away.
- It pays to understand the bigger picture as well as the details, so you are not thrown off by the curveballs.

What We've Learned Along the Way

Modularizing segments of program

When working with most creative researchers, they like to mix and match many different aspects of their program. So when coding it is best to keep this in mind and use tools that make this simple.

Code like this

Not like this!

What We’ve Learned Along the Way

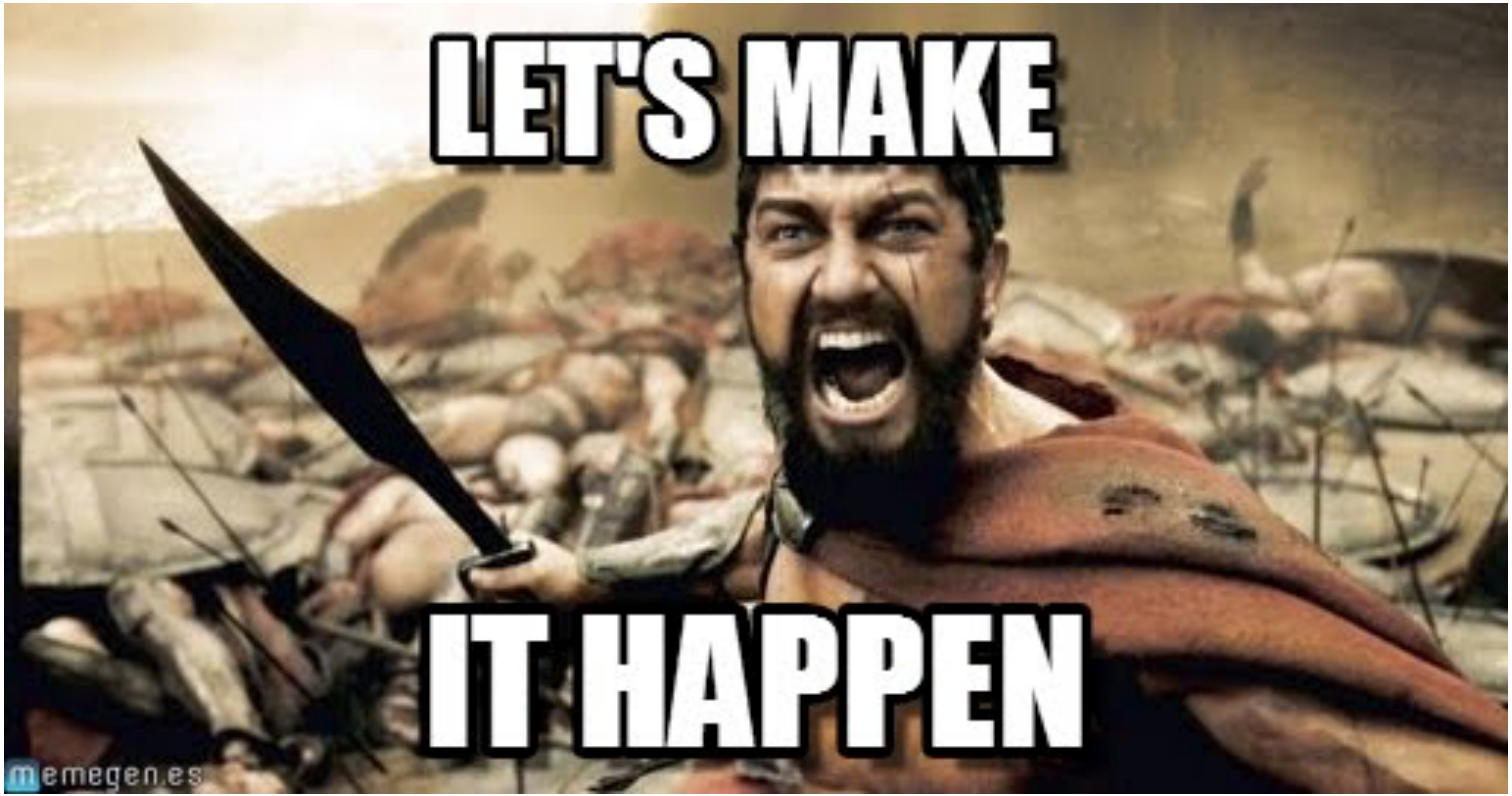
- Automate everything!!!!
- Be aware of the intrinsic fragileness of game theory projects!!

A Collaborative Approach

Inform researchers as to the potential consequences of their design changes.

Client service - Yes, we could do that but have you thought about this…

Can do attitude should be tempered with what will these changes mean to the data and metadata in the long term?



http://www.memegen.com/meme/oe5cnn

What has worked well?

- Researcher comes to us early in the research project lifecycle.
    - Ask for IRB documentation. Discuss implications of design based on their research requirements.
    - Walk through what they would need for analysis when talking about data collection - anticipate data format, linking, merging needs ahead of time
- Exhaustively document revisions - store correspondence and revision requests (as much as possible) in one location
- Organization and structure to corral chaos
- Heavily annotate what each block of code does

Case Study: A New Hope

Researcher asked for scripts, data, metadata, etc. so that the researcher could reproduce it without our help at a new institution.

With a team effort and good data management practices, we were able to transfer this knowledge!

Images obtained from: http://www.memegen.com/meme/oe5cnn

Mindful of Data & Project Management Good Practices
- Don’t be a hero

A clash of priorities.

Partnering with researchers who are used to DIY (Do it Yourself). Used to quick trial and error and seeing what sticks.

Not interested in sharing data with others.

They want changes but we need to have good documentation.

They have an idea for a new experiment. They have a vision but do not know how to implement it.

They come to us for our expertise.