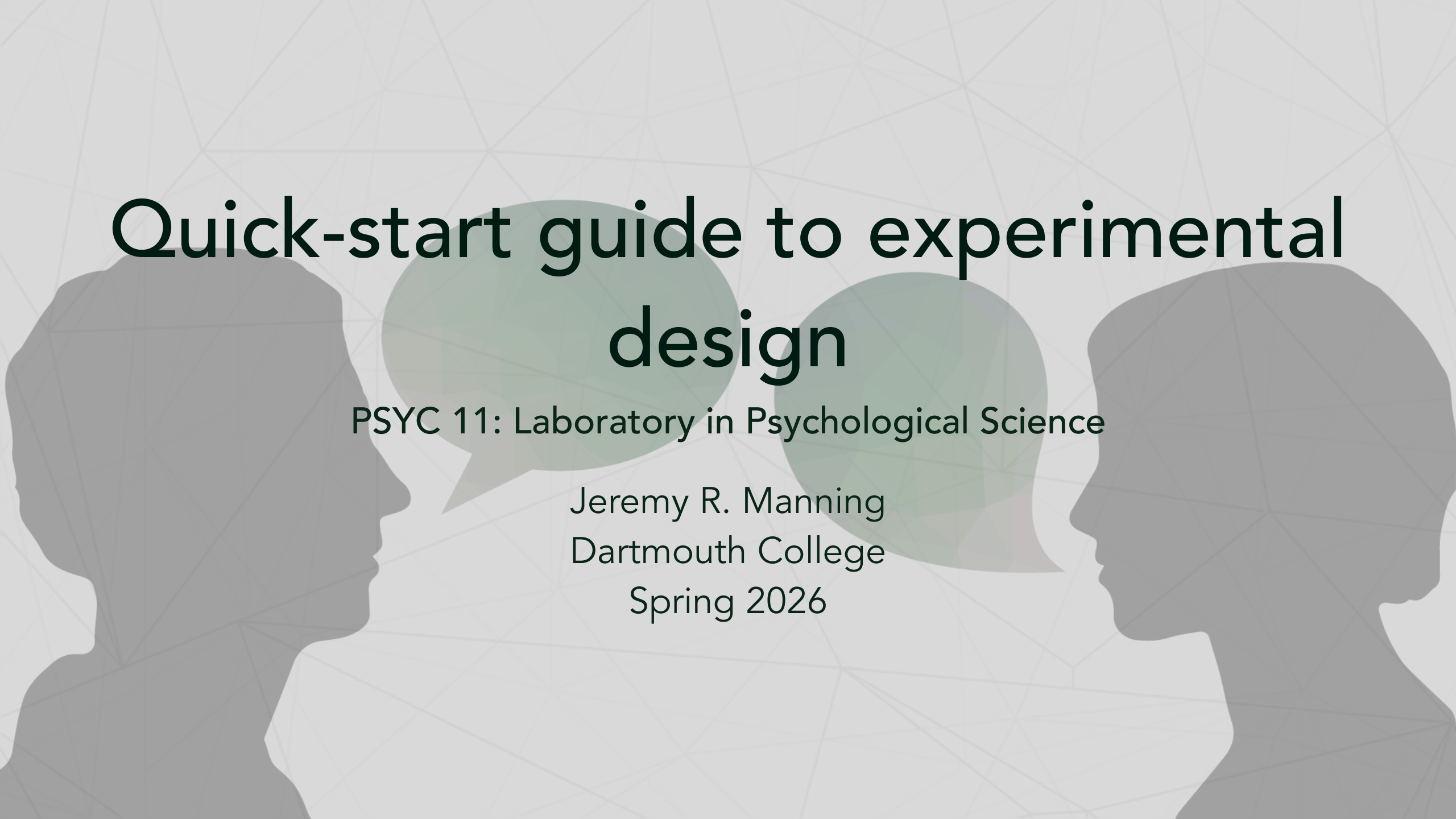

Quick-start guide to experimental design

PSYC 11: Laboratory in Psychological Science

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What is the purpose of running an experiment?

Goals of experimentation

- Understand or explore how something works
- Distinguish between several potential alternatives
- Get more information (data!)

Two big design philosophies

Classic vs. Naturalistic

- **Classic (maximize control):** simplify the phenomenon, carefully manipulate specific factors across conditions, measure behavioral differences
- **Naturalistic (maximize realism):** create a rich, realistic scenario, measure as much as possible, mine the data for patterns
- Most studies fall somewhere on this spectrum -- where does yours?

The key ingredients

Core design elements

- **Independent variable (IV):** what you **manipulate** or compare across groups
- **Dependent variable (DV):** what you **measure**
- **Controls:** what you keep the **same** so you can isolate the effect of your IV
- **Participants:** who are you studying, and how many?

Discussion: what's your IV/DV?

Activity (10 minutes)

- In your project groups, identify:
  - What is your **IV**? (What are you manipulating or comparing?)
  - What is your **DV**? (What are you measuring?)
  - What needs to be **controlled**?
- If you are doing an observational study, what are your key **variables of interest**?
- Be ready to share with the class

Common pitfalls

Watch out for these

- **Confounds:** something other than your IV that differs between conditions
- **Demand characteristics:** participants guess what you expect and change their behavior
- **Too many variables at once:** keep it simple -- one clear comparison is better than five murky ones
- **Forgetting a baseline:** what does "normal" look like without your manipulation?

Implementation tools

Tools for building experiments

- **Low-tech:** notebooks, audiovisual recordings, Google Forms
- **Mid-tech:** slideshows, Qualtrics surveys
- **High-tech:** PsychoPy, jsPsych, Google Colaboratory
- Use what you already know -- simplicity is your friend

Practical advice

Keep these in mind

- Simplicity: the art of maximizing the amount of work **not** done
- Pilot test early -- run your study on a friend before collecting real data
- Work together and ask for help
- You have **3--4 weeks** -- scope accordingly!