

Developing a research question... and a research career

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Previous results



Research question(s)

Career goals



A good research question is:

- Interesting to you!!
- Answerable
- Do-able
 - Interesting to your mentor
 - Feasible given existing institutional resources

Educate yourself about your area of interest

- Start by reading
- Talk to people at your institution or others nearby
- Approach people at meetings
- Email people....**AFTER** you have done your homework
- Find a mentor and learn with him/her

Linearity and focus

Good science is linear.

- **The next study builds on the last one.**

Don't just think about one question, think about the **LINE** of research.

Successful research careers have a clear **FOCUS**.

If you are successful, you will be working in this area for a long time!!

Don't be discouraged if it's already been done.

- Replications are important.
- How can the replication improve on the original?
 - Science is linear. Can you replicate and extend?
 - Can you address confounds in the original study?
 - Example: study comparing patients and controls. That study is confounded by “presence of illness.” Can you add a psychiatric control group?

Learn statistics

- By taking courses, and by doing.
- Statistical power.
 - **Most studies in the literature are underpowered.**
- Association vs. causality.
- Talk to someone who knows statistics **BEFORE** you do the study, not just after.

A good research question is.....

- **Big enough that you (and others) care about it**
- **Small enough that you can answer it**

Common mistakes: The question is not answerable because...

- It is too big.
 - Too complicated
 - Trying to explain “causes”
- It is unclear.

The question is too big

What causes bipolar disorder?

How does family dysfunction worsen the course of bipolar disorder?

How...impact on patient's brain?
patient's psychology?
genes?

Is there an association between family dysfunction and increased illness severity in bipolar disorder?

Associational vs. causal question

Causal questions require experimental design

The question is unclear

- Often a problem with
 - post-hoc studies (analyzing data collected for another reason).
 - hypothesis-generating vs. hypothesis testing studies
 - no comparison or control group.
- The question drives the design and the analysis.
 - “What is the question?”
- Be your own worst enemy.
 - Can the study really answer the question?
 - What are the “holes” in the logic?

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Qualities of a Good Mentor

- Expertise in your area
- The right time in the mentor's career
 - Has adequate time for you
 - Has adequate resources for you
- Altruistic: Values your career
- Likes mentoring
- Good interpersonal fit

How to Measure a Mentor

- **Prior success**
- **Active role modeling**
- **Reputation for integrity**
- **Ability to**
 - **Help you design a feasible project**
 - **Articulate specific research rules and skills**

Negotiating with a mentor

- Make it a “win-win” situation
- What do you have that the mentor wants?
 - Access to patients
 - Another pair of hands
- Ask mentor to articulate his/her expectations clearly
- Make clear what you can and can't do
- Don't be shy about discussing authorship

What makes a project feasible?

- Mentor willing to support it
- Adequate recruitment
 - Access to adequate number of patients
 - Congruent with your clinical responsibilities
- Access to other resources (e.g. statistical help, labs)
- Consistent with department's focus

A research career requires:

- **Persistence**
 - **Expect to design many studies that you never do**
 - **Expect rejection: papers, grants**
- **Focus**
- **The ability to be self-critical**
- **The ability to be an effective team member**

The many benefits of a research career

- Intellectual stimulation
 - Fascinating questions
 - Always learning something new
- Opportunities to write
- Work as part of a team
- Opportunities to work with patients in a very satisfying way