Tips for Writing Proposals

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(with immense gratitude to Jan Greenberg)
A Few General Comments

- Do your homework:
  - Find the right potential funder and mechanism
  - What do proposals to this funding source typically look like?
  - Who are the likely reviewers?
  - If NIH: which study section is most likely to give it a good read?
  - If Foundation: get in touch with project officer
  - Get to the point: aims/Major Research Questions should be on the first page (or definitely by second page)
Tip #1: Write for a general audience

DO NOT write the application for the “Specialist”

Avoid jargon (our use it strategically)

You MUST write for the entire review/dissertation committee
Tip #2: Include Key Information in Main Proposal

Do not use appendices as a way to solve problems with page limits

- If it is essential to understanding and evaluating the scientific merits of your proposal, it belongs in the body of the text. Find a way to fit it in.
- Reviewers may only skim the appendices (or not look at them at all)
Tip #3: Presentation Counts

Avoid densely written proposals and jargon

Have someone “a bit” outside your area read your proposal

Organize and format your proposal to help reviewers: use of headings
  Study aims/questions
  Significance
  Study Design and so forth

Use charts/diagrams
Tip #4: Highlight Research Aims

- Don’t bury aims/research questions in a paragraph. Set them off (indent, number)
- If you have a large number of research questions, group them into a major research question and then sub-aims or research questions.
- If you are on p. 3 of your proposal and haven’t yet stated your study aims or questions, start cutting.
Tip 5: Literature Review

- Keep it brief (3-4 pages max). Sets the context for the study.
- Organize by key points that your study will address.
- Provide citations to major research articles in field but it is not necessary to describe every study.
- If there is a large literature in your field, develop criteria for selecting literature to review (e.g., studies done in past ten years, most methodologically rigorous studies).
- Major pitfall: The 14 page literature review.
Tip 6: Theory is Important

- Test general social and behavioral science theories with your research
- Explicitly discuss whether a theory is being directly tested—in part or in full, and how—or just more generally being used to motivate hypothesized relations. Integrate theory and literature.
- Motivate and predict based on theory, not just prior results.
Tip #6: Conceptual diagrams are often helpful

- Providing a picture/drawing of your conceptualization of the problem area is often very helpful
Other uses of diagrams

Step 1
Support Field Staff
• Charge batteries
• Configure and ship

Step 2 - In-person Interview

Step 3
• Wear actigraphs
• Complete diary

Step 4
Data and Equipment Management
• Receive and download
• Quality control
• Data analysis

BWH

Actigraphy Data
Coordinating Center
Tip #7: Hypotheses

• Don’t provide a laundry list of hypotheses. Organize them in relationship to your research questions.

• Limit number of hypotheses to those that are most central to your study. Having no hypotheses is not good. Having too many may also be a problem.

• Make sure hypotheses are consistent with theoretical model.

• You may want to show correspondence between hypotheses and theoretical model.
Tip #8: Give most attention and pages to methodology

- Describe the research design and provide a rationale for the design
- Discuss sample strategy, criteria you will use, response rates, fit for the research question
- Use measures that are considered state-of-the-art in your field.
  - Use standardized measures when possible
  - If developing own measures, talk about how you will check reliability and validity
  - If you triangulate measures, address how multiple measures will be analyzed (e.g., use of SEM)
- Present equations when relevant
- Present descriptives/preliminary results
Tip #9: Present measures in tables

Present measures in a table format indicating the variable to be measured, the method to be used, the measure that will be used, and any available information on the reliability and validity of the measure.

<table>
<thead>
<tr>
<th>Table 1. Sleep-Related Variables in FFS Waves</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td><strong>Age 3 Survey</strong></td>
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<tr>
<td><strong>Has Bedtime</strong></td>
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<td><strong>Uses Bedtime</strong></td>
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<tr>
<td><strong>Hour of Bedtime</strong></td>
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<td><strong># of Days Uses Bedtime</strong></td>
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<tr>
<td><strong>Has Bedtime Routine</strong></td>
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<tr>
<td><strong>Bedtime Routines</strong></td>
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<td><strong>Technology in Bedroom</strong></td>
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<td><strong>Sleep Duration (TST)</strong></td>
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<td><strong>Sleep Quality</strong></td>
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<td><strong>Fragmentation Index</strong></td>
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<tr>
<td><strong>Midpoint Hour of Sleep</strong></td>
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<td><strong>Apnea Symptoms</strong></td>
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<td><strong>Screen Time</strong></td>
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<td><strong>School Start Time</strong></td>
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<tr>
<td><strong>Bed/Room Sharing</strong></td>
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</tbody>
</table>
Tip #9: additional examples

Table 4. Select polymorphisms & familial mutations with sleep duration & circadian rhythms

<table>
<thead>
<tr>
<th>Gene</th>
<th>Variant</th>
<th>Trait</th>
<th>Allele</th>
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</thead>
<tbody>
<tr>
<td>CLOCK</td>
<td>rs12649507</td>
<td>Sleep duration</td>
<td>A</td>
</tr>
<tr>
<td>CLOCK</td>
<td>T3111C 3’utr (rs1801260)</td>
<td>Evening preference</td>
<td>C</td>
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<tr>
<td>DEC2</td>
<td>P385R</td>
<td>Familial short sleep duration</td>
<td>R</td>
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<tr>
<td>PER2</td>
<td>S662G</td>
<td>Familial Advanced Phase Syndrome</td>
<td>G</td>
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<tr>
<td>PER2</td>
<td>C111G 5’utr</td>
<td>Extreme morning preference</td>
<td>G</td>
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<tr>
<td>PER3</td>
<td>V643G</td>
<td>Morning preference</td>
<td>G</td>
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<tr>
<td>PER3</td>
<td>18aa motif vntr</td>
<td>Evening preference</td>
<td>PER3-4</td>
</tr>
<tr>
<td>PER3</td>
<td>18aa motif vntr</td>
<td>Morning preference</td>
<td>PER3-5</td>
</tr>
<tr>
<td>PER3</td>
<td>18aa motif vntr</td>
<td>Sleep Latency</td>
<td>PER3-5</td>
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</tbody>
</table>
Tip #10: Clear, logical, and feasible empirical strategy

- Proposed analysis needs to be directly linked to the research questions and hypotheses
- Proposed methods need to be clearly explained
- Propose an analysis that you understand. Ask yourself: Does your training and/or record indicate that you have the skills to carry out the proposed analysis?
- Be sure to address: statistical power, missing data/attrition, response bias, selection bias
Tip #11: Again, tables are helpful!

- Consider creating a table with research questions, hypotheses and proposed statistical procedures to answer those research questions.
Tip #12: Timeline of Tasks

- Can this project be accomplished in the grant period (e.g., two year period) or proposed dissertating period given everything else going on in your life? Be honest!
- If you have questions about the timeline, you can be sure the review committee will, too.
- If you think it is an ambitious project but doable in two years but others might have their doubts, be sure to describe how you can accomplish it within a two year timeline.
- Create a timeline in table format with the various research tasks along the rows and across the columns the months you will accomplish each tasks
### Table 4. Project Timeline

<table>
<thead>
<tr>
<th>Item</th>
<th>Period 1</th>
<th>Period 2</th>
<th>Period 3</th>
<th>Period 4</th>
<th>Period 5</th>
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<tbody>
<tr>
<td>Add Sleep Questions to FFS Survey; Collect Survey Data</td>
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<td>Analyze Age 9 Survey and Genetic Data</td>
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<td>Collect Age 15 Actigraphy</td>
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<td>Validation of Self-reported Data with Actigraphy</td>
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<tr>
<td>Aim 1: Sleep Trajectories over Time</td>
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<td>Aim 2: Social &amp; Genetic Determinants of Actigraphic Sleep</td>
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<td>Aim 3: Sleep and Obesity/Depression Outcomes</td>
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<td>Aim 4: Physical Activity and Screen Time as Mediators</td>
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<td>Meeting of All Investigators at SBU</td>
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<td>Manuscript Writing &amp; Conference Presentations</td>
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</table>
Tip 13: Discuss Study Limitations

- Not every single limitation but the major ones (top 3 or 4)
- Make sure a limitation is really a limitation.
  - If you have the data available to address the issue, it is not a limitation. Propose an analysis to rule the alternative explanation out.
Tip #14: Anticipate potential issues/criticism by reviewers and propose solutions

- Discuss potential problems that you might encounter along the way and how you will respond
- Potential shortfalls of empirical methods
- Overly optimistic sampling and sample retention
- Or a reviewer might be concerned about selection bias in your sample
Tip 15: Check the Internal Consistency of Your Proposal

Literature Review, Research Questions and Hypotheses, Measures, and Analysis