Tips for Writing Proposals

Lonnie Berger
(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 <u>entire</u> 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.
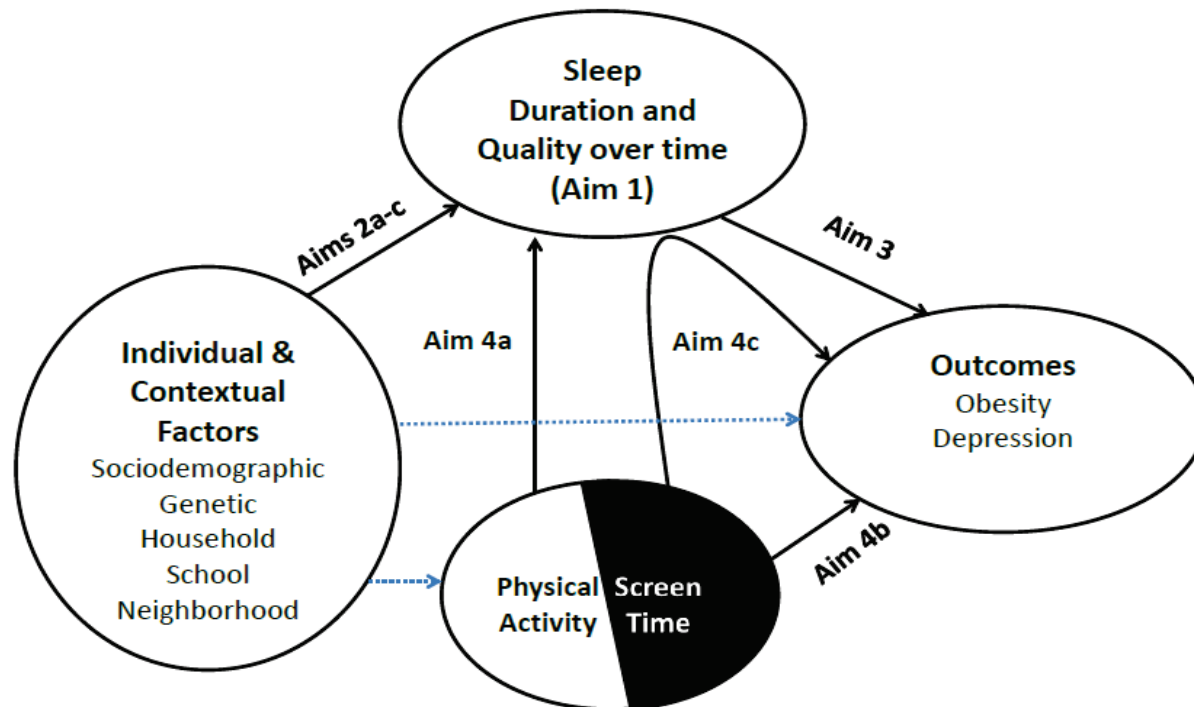
Tip 5: Literature Review

- 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.
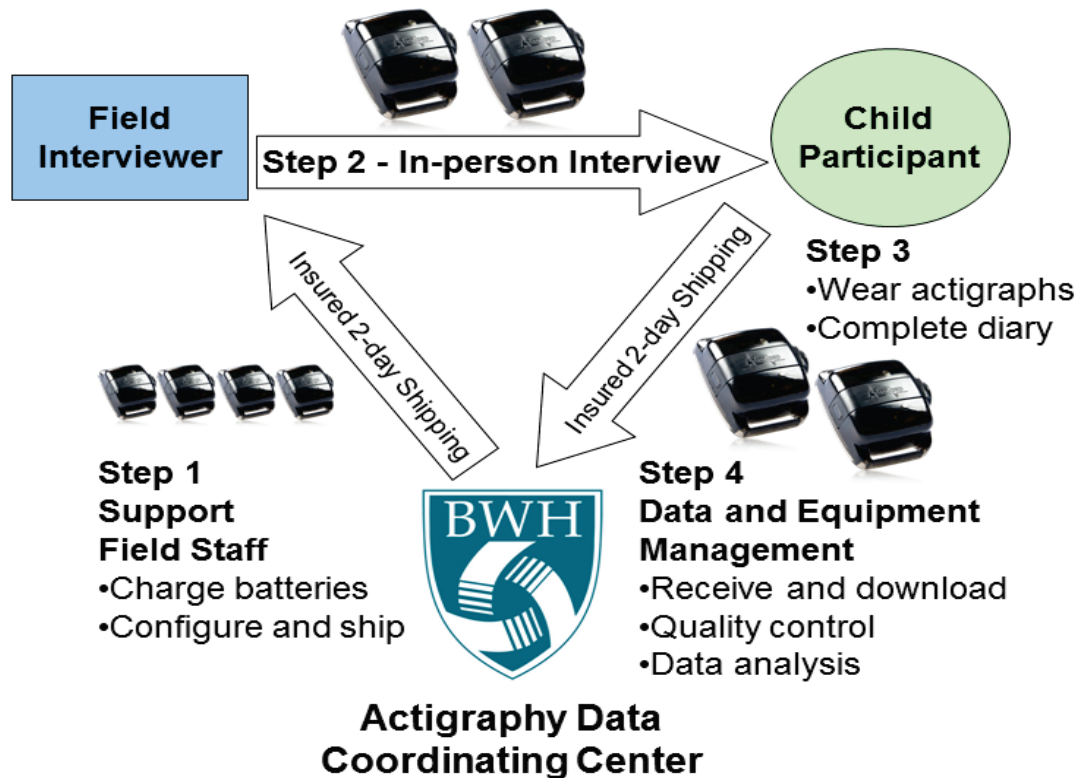
Tip 6: Theory is Important

- 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

Field Interviewer

Step 2 - In-person Interview

Child Participant

Insured 2-day Shipping

Insured 2-day Shipping

Step 3
- Wear actigraphs
- Complete diary

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

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

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 1. Sleep-Related Variables in FFS Waves

	Age 3 Survey n=3326	Age 5 Survey n=2999	Age 9 Survey n=3627	Age 15 Survey n~3600	Age 15 Actigraphy n~1000
Has Bedtime	Yes	Yes	Yes	Proposed	--
Uses Bedtime	Yes	Yes	Yes	Proposed	Proposed
Hour of Bedtime	Yes	Yes	Yes	Proposed	
# of Days Uses Bedtime	Yes	Yes	Yes	Proposed	Proposed
Has Bedtime Routine	Yes	Yes	Yes	Proposed	--
Bedtime Routines	Yes	--	--	Proposed	--
Technology in Bedroom			Yes	Proposed	
Sleep Duration (TST)	--	Yes	Yes	Proposed	Proposed
Sleep Quality	--	Yes	--	Proposed	
Fragmentation Index	--	--	--	--	Proposed
Midpoint Hour of Sleep	--	--	--	--	Proposed
Apnea Symptoms				Proposed	
Screen Time	--	--	--	Proposed	--
School Start Time	--	--	--	Proposed	--
Bed/Room Sharing	Yes	Yes	--	--	--

Tip #9: additional examples

Table 2. Select Child, Caregiver, Family, and Ecological Characteristics at Ages 0-15

Child	Caregiver	Family	Ecological
Age	Age	Family structure	Childcare/school factors
Gender	Race/ethnicity	HOME inventory	
General child health	Self-rated health	Household income	Neighborhood characteristics
Body mass index	Body mass index	Household turbulence	
Cognitive Development/PPVT-R	PPVT-R	Childcare experiences	Civic participation
Birth weight	Immigrant Status		
Depression Scales	Mental health/CIDI-SF		
Child Behavioral Checklist	Education level		

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

Gene	Variant	Trait	Allele
CLOCK	rs12649507	Sleep duration	A
CLOCK	T3111C 3'utr (rs1801260)	Evening preference	C
DEC2	P385R	Familial short sleep duration	R
PER2	S662G	Familial Advanced Phase Syndrome	G
PER2	C111G 5'utr	Extreme morning preference	G
PER3	V643G	Morning preference	G
PER3	18aa motif vntr	Evening preference	PER3-4
PER3	18aa motif vntr	Morning preference	PER3-5
PER3	18aa motif vntr	Sleep Latency	PER3-5

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

Timeline

Table 4. Project Timeline

Item	Period 1 4/13-3/14	Period 2 4/14-3/15	Period 3 4/15-3/16	Period 4 4/16-3/17	Period 5 4/17-8/18
Add Sleep Questions to FFS Survey; Collect Survey Data	←		→		
Analyze Age 9 Survey and Genetic Data	←		→		
Collect Age 15 Actigraphy	←		→		
Validation of Self-reported Data with Actigraphy				←→	
Aim 1: Sleep Trajectories over Time				←→	
Aim 2: Social & *Genetic* Determinants of Actigraphic Sleep				←→	
Aim 3: Sleep and Obesity/Depression Outcomes					←→
Aim 4: Physical Activity and Screen Time as Mediators				←	→
Meeting of All Investigators at SBU					←→
Manuscript Writing & Conference Presentations	←				→

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

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Tip 15: Check the Internal Consistency of Your Proposal

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

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