

CHAPTER 7 ONLINE

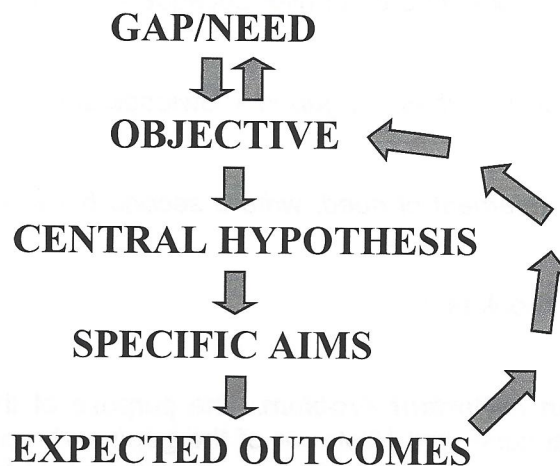
CREATE A BULLET OUTLINE FOR YOUR OVERVIEW AND OBJECTIVES SECTION

HOW TO CREATE YOUR BULLET OUTLINE

We include here some of what you have read in Chapter 7 of your *Workbook* as a means of reminding you of what the characteristics of each bullet should be. After writing each bullet, delete the preceding text. When you have finished, all you will have to do is expand the bullets into complete sentences and, *voila*, you will have the first draft of your Overview & Objectives section.

Understanding the purpose of each component will help to ensure development of the linear progression of logic that is so essential to the success of this section. Getting the progression of logic right at this “outline” stage is very important. Do you have all of the linkages? Are they complete? Do the bullets create a linear progression of logic that will lead the reviewers through this section, once they have been expanded into full sentences? In other words, have you created a section that has equivalency to what is depicted in the figure, below?

LINEAR PROGRESSION OF LOGIC FOR A STRONG OVERVIEW & OBJECTIVES SECTION



When you write the gap/need, it should set up the objective, because the overall objective of any application has to be to fill the gap/meet the need. If you are proposing hypothesis-driven research, the objective should set up the central hypothesis, because that is what has to be tested in order to attain the objective. The central hypothesis, in turn, should be written to have readily identifiable parts, each of which sets up an aim to test the related part. The expected outcomes of the aims should collectively attain the objective, which fills the gap/meets the need.

Bullets for the Introductory Paragraph:

Opening Sentence. The purpose of this sentence is to immediately capture the attention of the reviewers and highlight the program-relevant, fundamentally important area that your application will address. It should be arresting and, as such, immediately command the reviewer's attention. Use words that reflect the subject of the solicitation to which you are responding.

- *Write your bullet here. When it meets the criteria set out above, delete the preceding Workbook text.*

Current Knowledge. Your application will most likely be reviewed by a combination of external reviewers and by those on a panel. Not everyone at the review-panel table will be an expert on the subject that you are proposing. Accordingly, the purpose of this component is to inform reviewers with respect to what is already known in the area of your project, thereby facilitating their ability to grasp the importance of the research you will propose. In essence, you are setting up presentation of the gap in knowledge/unmet need that will drive your application. The progression of bullets should lead the reviewer from the oldest known facts that are relevant to what is currently the edge of the field. Be brief; details will be presented later, in the Background section. What you want is a maximum of 3-to-4 sentences.

- *Write your bullet here and delete preceding Workbook text.*

Gap in the Knowledge Base/Unmet Need. You can offer either a gap in knowledge or an urgent need as the driver of your application. The purpose of either approach – gap or need – is to define the subject of your proposal. The bullet must be simple, direct and must relate to the preceding, current-knowledge component as the next step needed to advance the field vertically. As you will see, it is a very important bullet because all of the logic downstream will evolve from it.

- *Write a bullet here that describes the gap in knowledge/unmet need that will drive your proposal.*
- *If you are offering a statement of need, write a second bullet that offers objective evidence that the need exists.*
- *Delete preceding Workbook text.*

Gap/Unmet Need as an Important Problem. The purpose of this component is to connect reviewers to the fact that continued existence of the gap/need represents an important, fundamental, and NSF-relevant problem. The bullet that you write should frame the gap/need as blocking vertical advancement of the field. That's why it's a problem.

- *Write your bullet here and then delete preceding Workbook text.*

Long-Term Goal. The purpose of this statement is to define for reviewers the continuum of research that you will be pursuing over multiple periods of grant support into the future. Filling the

gap/meeting the need delineated in the first paragraph must be seen by reviewers as the next logical step along the continuum that is projected by your long-term goal statement.

- *Write your bullet here and then delete preceding Workbook text.*

Overall Objective for this Application. The purpose of this component is to define what will be accomplished by the research proposed in this application. The objective must link back to the gap in the knowledge/need that you delineated earlier, because the objective for any application must be to fill the gap/meet the need that is offered there. As noted in the preceding paragraph, the objective must also link back to the long-term goal as the next logical step along the continuum of research that you are pursuing.

- *Write your bullet here and then delete preceding Workbook text.*

Central Hypothesis and How Formulated. The purpose of the central hypothesis is to focus the research that is proposed. It must logically flow from the overall objective, because the central hypothesis is what must be tested to attain the objective; that linkage must exist between them. To put it in a different context, your central hypothesis must be your "best bet", out of all alternatives, as to what explains the phenomenon you will be investigating.

A secondary purpose of the central hypothesis is to set up presentation of your specific aims. To do so, deliberately craft the bullet for the central hypothesis to have readily identifiable parts, each one of which will set up an aim, later, to test the related part.

The "how-formulated" bullet(s) has(have) the purpose of informing reviewers that you have preliminary data that supports the formulation of your central hypothesis. At the standard-grant level, you must have sufficient preliminary data to rule out alternative explanations, i.e., to provide support for your choice of a hypothesis. You don't need detail here. All you want is a statement that you have such data. If the work of others also contributed, acknowledge that fact with a separate bullet and reference the relevant publication(s).

- *Write your bullet for the central hypothesis here.*
- *Write one or more bullets here, starting with preliminary data that support the central hypothesis.*
- *Delete preceding Workbook text.*

Rationale. The purpose of this component is to convey why you want to do the research. In most cases, it will be because you are seeking new knowledge that will allow you to move the field vertically, something that can't be done now. The rationale must link back to the problem statement at the end of the first paragraph. There, you stated that the gap/need is a problem because it is what prevents vertical advancement of the field. Here, your bullet needs to convey that, once the project has been completed, you will be able to take the vertical step that you can't take now. That is why you want to do the research.

- *Write your bullet here and then delete preceding Workbook text.*

Well Prepared. The purpose of this component is to tell reviewers why you and your colleagues (if any) have a competitive advantage over equally qualified investigators elsewhere, i.e., what distinguishes you from them. In other words, the bullets that you write here should summarize why you and members of your team are the best candidates to do the work.

- *Write your bullet(s) here and then delete preceding Workbook text.*

Specific Aims. The purpose of the specific aims is either to test the parts of your central hypothesis or, if you are writing a purely need-driven application, to lay out the tasks that will be undertaken in order to meet the need. With respect to linkage, your aims must grow out of, and be completely concordant with, either the parts of your central hypothesis or, if yours is a need-driven proposal, parts of the overall objective.

If you have offered a central hypothesis earlier, a secondary purpose of the aims is to provide research focus. That is accomplished by including a working hypothesis under each aim.

- *Write a bullet here for your first aim.*
- *If you are proposing hypothesis-driven research, write a bullet here that summarizes the working hypothesis for the first aim. If you are proposing research that is purely need driven, write a bullet that summarizes the main approaches/methods that will be employed to complete the stated task.*
- *Continue by writing the two bullets described, above, for each of your aims.*
- *Delete preceding Workbook text.*

Creativity, Originality and/or Transformative Potential. The purpose of this component is to call attention to why/how the proposed research differs from what is being done elsewhere. Be sure that any claim of “transformative potential” that you make is not overreaching on your part.

- *Write your bullet(s) here and then delete preceding Workbook text..*

Expected Outcomes. The purpose of Expected Outcomes is to tell reviewers what each of your aims is expected to produce and how those products collectively attain the overall objective of the grant application.

- *Write a bullet here for the expected outcome of each aim.*
- *Write a bullet that tells reviewers that the expected outcomes collectively attain your overall objective for the project.*
- *Delete the preceding Workbook text.*

Generality Regarding Positive Impact. The purpose of this final bullet is to point out generally that the expected outcomes will positively impact your field. Collectively, by attaining the

overall objective of the application they will advance the field vertically. Write the bullet at a general level. Make sure that it creates a seamless segue into the next, *Expected Significance* section.

■ *Write your bullet here and then delete the preceding Workbook text.*

As a suggestion, once you have completed the outline, leave it alone for a day or so. Our experience is that, if you do so, invariably you will be able to improve it. When you have reached the point of diminishing returns, show it to Co-PIs who are on the application with you. Consider having students/postdocs who will be involved in the project take a shot at it. That kind of collective effort will pay big dividends because, if the outline has been optimized, expanding its bullets into sentences will create a compelling first draft of your Overview & Objectives section that will need little refinement.