

CHAPTER 13

EFFECTIVE SCIENTIFIC PRESENTATIONS

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EFFECTIVE SCIENTIFIC PRESENTATIONS

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An earlier chapter on scientific writing emphasized the importance of scientific communication. Making findings public enables research to contribute to the cumulative body of knowledge called "science." In addition to writing articles, scientists communicate their results verbally in a variety of formal and informal settings.

The first formal speaking occasions for undergraduate students will include seminar presentations in class, defense of an undergraduate thesis, and perhaps talks at an undergraduate or regular scientific conference. During or following graduate school, academic and clinical psychologists add lectures, longer colloquia, and interactions with clients or the public to the list of spoken communications about psychological research and its implications. Speaking is also involved when collaborating on research projects, explaining work to subjects and to friends, being interviewed for graduate school or jobs, and numerous other informal situations.

Basic speaking skills are important not only for academic occasions, but also for business, education, law, medicine, and most other professional careers. Interpersonal relationships with family and friends also benefit, and good speaking can even enhance our own understanding of some topic. That is, trying to verbalize ideas in a clear way, even to ourselves, can reveal weaknesses in our understanding and identify areas requiring further development.

The success of these diverse speaking opportunities will depend in part on effective public speaking skills. This chapter provides some guidelines and suggestions for effective speaking, concentrating on those aspects involved in formal presentations. Although effective speaking requires many of the same skills as good writing, the interactive and immediate nature of speaking introduces some special considerations. See the chapter on writing for additional relevant material, as well as references at the end of this chapter.

In reading the following guidelines, keep in mind that there is no single correct way to speak effectively and, perhaps more than written communication, effective speaking techniques should match the "style" of the presenter. So carefully evaluate each suggestion to determine whether you think it will work for you.

This chapter has six sections: preparing a talk, delivery, audiovisual aids, managing emotions, poster presentations (a second common form of conference presentation), and a

general section on how to strengthen your speaking skills.

PREPARING A TALK

Preparing carefully for a talk is particularly important, both in terms of the overall organization and the specific details. You usually have little time in which to communicate your information (typically 10-15 minutes, including questions) and listeners cannot go back and "reread" material that is unclear. So you must consider carefully what is said and how it is said. Two important questions to ask yourself repeatedly when planning a talk are: "Do I need to include this information for my talk to make sense?" and "How can I explain this information in as clear a fashion as possible?"

A research presentation can be thought of as a miniature paper. You will describe the basic background of the area, state what question you want to answer, outline the design of your research, present the results, and state the conclusions. The required content is therefore similar to that described in the chapter on writing papers and can be generated and organized using similar methods (e.g., rough outlines, semantic networks). Once the information is gathered, you are ready to write your talk. More truthfully, much overlooked information will have to be generated once you are actually in the act of preparing the talk, but for this chapter we will assume that all information is available.

The preparation of talks is similar to writing papers, but pay special attention to what information you include and how you present your information. The primary objectives are to speak as concisely and clearly as possible. Conciseness and clarity are even more important for a talk than for a paper because (1) you have little time to present the ideas, (b) listeners cannot go back to review past material, and (c) listeners cannot pause while they digest or study unclear material.

Conciseness

Conciseness means that you must be particularly selective about the information that you include in a talk. Omit any details that are not essential for understanding the presentation. A description of methods, for example, is much briefer for a talk than for a paper and many details included in a paper will be omitted from a talk. Try to identify the critical features of the method necessary for understanding your study. Conciseness also means that tangential comments, no

matter how interesting, should generally be omitted, along with any other material that might be distracting.

Plan to cover only a modest amount of material in your talk. Novice speakers often try to include too much in the time available. Too much material only serves to increase your nervousness (more to forget), decrease time for audience participation (you are rushing along as it is), and lessen what listeners take away from the talk (much will not be understood).

Clarity

While eliminating information from your talk, however, be careful not to omit material necessary for your talk to be clearly understood by naive listeners. Not all complex or detailed aspects of the method or results, for example, can be ignored. Identify the material that the listener must have to understand your study, the findings, and their implications. When reading a paper, readers have the time to piece together what the researcher probably did, but listeners must be provided with all critical information in as direct and clear a manner as possible. To avoid omissions, ask yourself whether you have already provided all information necessary to understand each statement that you write.

When you must present complex information in a talk, pay special attention to the clarity of your verbal description or accompanying audiovisual aids. Define any unfamiliar terms or procedures using language that is as concrete, simple, and familiar as possible.

Look for graphical ways to represent information that requires long verbal descriptions. A complex method, for example, might be described by successive overheads superimposed on one another, with each overhead providing additional components of the method. Or complex results (e.g., of a factor analysis) could be arranged carefully so as to reveal important details a bit at a time (e.g., order the factors so they can be revealed one factor at a time) with distracting material omitted (e.g., eliminate nonessential factor loadings).

Organization

Another aspect of clear speaking (or writing) is effective organization. Prepare a point-form and quite detailed outline of your talk. Include the ideas that need to be presented and their order. Experiment with different organizations within the major sections of the talk (i.e., introduction, method, results, discussion). An outline will strengthen the coherence and structure

of your talk, making it easier for listeners to follow. The outline also provides cues that will help you to retrieve the ideas later when you give the talk. The chapter on writing describes several ways to outline.

Include obvious organizational cues within your talk. Remember that there are no paragraphs to indicate breaks in thought for the audience, and even sentences can run together when spoken. Organization can be indicated by a visual outline on an overhead, by clearly worded headings, by transition words, and by delivery (e.g., pausing). These various rhetorical clues to organization are of most help when the ideas themselves follow a coherent structure.

The primary determinant of organization is always the content. Have a clear purpose in mind when organizing your talk. What is the general scientific question being addressed and how does the present study help to answer that question? Keeping a specific theme in mind will help you to filter out unnecessary material and select the most appropriate organization for what remains. A short talk can only address one question well, so focus on that main theme and avoid getting sidetracked.

Consistency

Because it is a talk, clarity benefits if the various components of the talk are well-integrated and consistent across time. For example, if you present the design using a table that represents certain variables as rows and columns, present the results using the same format (i.e., do not switch rows and columns unnecessarily).

You should also arrange multiple figures so that they follow a common pattern (e.g., place the same variable on the horizontal axis, use the same symbols for conditions across different figures). Inconsistency and random variations from one figure or table to another are extremely confusing given the brisk pace of a talk.

Writing a Talk

Once you have collected your ideas in a coherent form and prepared an outline, you may choose to write the talk out in full. This is generally a good idea the first few times that you speak. A fully written talk allows you to assess carefully each major element of the talk (e.g., any confusing passages, the length, whether the style is conversational). Writing out the talk, however, does not mean that you are going to read it (see the delivery section).

When writing a talk, always keep in mind that it is meant to be heard and not read. Your language should be somewhat more casual and conversational for a talk than for a paper; for example, you might use contractions that you would probably avoid in writing (e.g., Today, I'll talk about the effects of bicucilline on inhibitory processing.). Use the first person more often than you would in writing (Cook, 1989). Sentences designed for speaking should generally be short and simple, again to minimize demands on the limits that speaking places on the cognitive resources of listeners.

Even if you do not write out your entire talk, prepare written opening and closing paragraphs. The initial few minutes of the talk are very important if both you and the audience are to get briskly into the session with minimal confusion and (at least for your part) minimal worry. An effective closing is also important because that is the last thing that your audience will take away from your talk. So prepare it carefully as well.

Select an informative title for your talk. Conference-goers must often choose between competing sessions and your title may be the only basis for people choosing whether or not your talk is worthwhile.

The duration of your talk should be about 75-80% of the allotted time (Anholt, 1994). For example, you would talk for about 12 minutes of a 15 minute session. Be ruthless with yourself to ensure that you leave time for questions and that you are not rushing to finish as time runs out. Practice will help you to determine whether the length of the talk is appropriate.

Practice

Complete the actual writing of your talk well in advance of when it must be given. You want to allow yourself considerable time for practicing and, if necessary, revising.

Rehearse your talk completely several times by yourself. Read it aloud just as though you were actually making a presentation and include any audiovisual materials. These preliminary rehearsals can take place anywhere, but it is important that the rate of presentation be approximately that of the final talk. Eliminate or shorten material if the talk is too long.

If possible, later rehearsals should take place in a setting similar in size to that of the actual presentation. Go through the talk several times again, now trying to present the talk in as effective a fashion as possible (see the delivery section for specific suggestions). Have a friend

who is able to make constructive comments listen from a distant area of the room. Invite critical comments and be receptive when they are offered.

In addition to polishing your talk and presentation style, rehearsal serves important mnemonic functions. You should find with each repetition that you need to refer to notes less and that the talk becomes more automatic. Mental rehearsal helps this process and can be performed at any time (e.g., riding a bus, taking a shower). Try to vividly imagine yourself giving the talk when engaging in mental rehearsal.

Psychological research indicates that distributed practice strengthens memory more than does massed practice (see also Carnegie, 1956). Therefore, space out practice sessions rather than grouping them all together one right after the other. Plan a final practice for the day of your talk. Perhaps allow an extra 20 minutes in the early morning to go through your talk one last time.

As noted earlier, the opening and closing sections of a talk are particularly important, so practice those sections until they become automatic. During all practice sessions, evaluate and revise not only the content and organization of your talk, but also the manner in which it is delivered. The following section describes some aspects of delivery that you may want to consider.

DELIVERY

As is the case for writing papers, there are many suggestions for how to actually give a scientific talk. Examine the ideas listed here and identify several that you think are particularly important. Work on those first and then gradually introduce additional features into your presentations. These and other ideas are expanded on in numerous books on public speaking, some of which are cited in the references for this chapter.

Do not be in a hurry to start your talk (Carnegie, 1956). Wait until you have the full attention of your audience and for any distractions to subside. Your opening should capture the attention of your audience and give them reason for attending to your talk. The opening cannot achieve these ends if people are not listening or they cannot hear because of other noises in the room.

Reading the Talk

When beginning to give talks, you might write out a talk completely (making sure that you do not have too much material). Generally you do not want to read a talk during the actual presentation, but if you do plan to read a talk, follow the suggestions in Box 13.1. The major objective of these suggestions, and others that you might consider, is to make your presentation as natural and conversational as possible, despite reading.

Extensive practice of the speech can be particularly useful in helping you to read more naturally. With each rehearsal, you need to read fewer of the words and can maintain eye contact with the audience longer. As you become more experienced with giving talks, you will probably move away from reading to a more natural presentation using few notes, and perhaps even no notes eventually.

Space the text so that it can be read clearly.
 Mark important transitions with color or some other cue.
 End one page and start the next with entire sentences to avoid awkward pauses.
 Keep the text on the top 2/3ds of the page so that your head does not bow down excessively.
 Use heavy bond paper that makes it easy to grasp a single sheet at a time.
 Slide pages off to one side rather than turning them over.
 Number the pages in case they get out of order.
 Practice the talk many times so that it becomes automatic.

Box 13.1. Format of Written Text for Talks.

Speaking Without Reading

No matter how well done, there is a limit to how natural a talk can be when it is read. Eventually you want to deliver talks with minimal or even no notes. Your notes should be clearly written so that they can be read in an unobtrusive manner; for example, notes written in large letters down the length of index cards can be held comfortably in your hand. Some people outline their talk on an overhead transparency in place of notes (see the section on Audiovisual Methods).

The notes should list the topics and major ideas of your talk (remember your outline?) and perhaps several good opening and closing sentences. The opening will get you started smoothly and alleviate worry. Be sure that the notes can be read easily, so that you can keep track of your place. Good notes will mean that you do not need to memorize your talk and that you can deliver the talk in a more natural manner than is usually possible when reading.

Effective Speech

One important aspect of delivery is your voice. The information in a talk is communicated through sound, so attend carefully to the quality of your speech. Box 13.2 lists some suggestions for effective verbal delivery of a talk.

Breathe easily, keeping enough air in lungs to talk clearly.
 Speak loudly enough. Make your voice carry and "project" to back of room.
 Use a microphone if available.
 Enunciate clearly, especially final consonants.
 Speak in a natural, conversational way.
 Address audience personally.
 Speak at a brisk pace.
 Stress important words.
 Pause for emphasis and variety.
 Avoid "um," "you know," and other filler words.
 Vary loudness, pitch, and pace.

Box 13.2. Verbal Aspects of Delivery.

Effective enunciation requires that words be spoken

clearly and crisply. Syllables are pronounced fully. Consonants at the ends of words can be problematic, especially such troublesome ending sounds as -gth, -th, -g, -gs, -ing, -k, -ks, -t, -st, -sts, -d, -en. Say "a trained deer" a few times and notice the many different interpretations of this sequence of sounds (e.g., a trained ear; a train, dear; ...). The problem with this phrase and other words in English is caused in part by the occurrence of the plosive "d" at the end of one word and the beginning of the next.

In general you will find that you must speak more slowly, loudly, and distinctly than at first might seem necessary. Open your mouth as you speak and make full use of your tongue and lips. Try to keep your lips moist (e.g., sip water, candy) and make the sounds come crisply off the tongue, teeth, and lips. Speak from the front of your mouth.

Correct pronunciation of unfamiliar or difficult words is important. Determine and practice the proper pronunciation (i.e., sound of letters and placement of accent). If the word remains problematic, consider an alternative, such as a pronounceable acronym (e.g., GABA is easier to say than gamma-aminobutyric acid and probably just as meaningful to most people). Learn to interpret the phonetic alphabet used in dictionaries to encode the pronunciation of words so that way you can verify any words about which you are uncertain. Alternatively, use a simpler and more familiar term, which avoids pronunciation difficulties and enhances communication. Carnegie (1926/1956) has an appendix that lists words that are often mispronounced and

bookstores contain more recent dictionaries of such words.

Increasingly, students of psychology and other disciplines have learned English as a second language. If you are a foreign student with an accent or a native English speaker with a regional accent, practice with fluent speakers of standard English who can help to identify problematic areas, if any, in your speech. Also pay special attention to audiovisual aids because these can be used to minimize problems associated with pronunciation difficulties (Anholt, 1994). A carefully-prepared outline, for example, allows the audience to map your pronunciation onto the more immediately understood written words.

Nonverbal Behavior

In addition to the verbal qualities of Box 13.2, nonverbal behaviors contribute to the impression of the talk. The primary objectives are to appear natural and to develop rapport with the audience. Stand straight without seeming stiff or wooden, and convey an impression of being at ease. Let your eyes rove over the audience and especially try to attend to people at the back. Making regular eye contact with audience members is one of the main reasons to avoid reading a speech verbatim.

Appropriate gestures and movement about the available space also strengthen a presentation. For example, use a pointer at the screen rather than remaining tied to the overhead, especially in a longer talk. Try to make your gestures as natural as possible, while avoiding such distracting mannerisms as playing with a pointer or chalk, rocking or other repetitive actions, and jerky movements. Some writers recommend not putting your hands in your pockets (Anholt, 1994).

Your movements should be purposeful rather than random or repetitive (Cook, 1989). Practicing in front of a mirror or with a videocamera will allow you to attend to nonverbal behaviors and to "work" at making your gestures natural. As with other suggestions, tailor your nonverbal behavior to the particular situation; for example, you might have to exaggerate your movements in a large room.

Appearance, including dress, is another aspect of nonverbal behavior. The major consideration is to avoid distractions. Chains or bracelets that make noise, for example, can distract both the speaker and the audience. Clothing that is bizarre, psychedelic, or sloppy is also

likely to attract the audience's attention away from the content to your attire. At the same time, wear clothing in which you feel comfortable, so that you are not yourself distracted by shoes that pinch, by a shirt or blouse that makes you feel self-conscious, or by any other avoidable feature of your clothing that can detract from the presentation.

Dynamic nonverbal behaviors are important for conveying enthusiasm. When used effectively, the tone of your voice and your actions communicate to your listener the excitement and interest that you have for the topic. Such enthusiasm is contagious and will help to maintain the interest of the audience.

Answering Questions

Most conferences allow a few minutes at the end for questions. Occasionally (especially in longer talks), someone might also interrupt you with a question during your presentation. With respect to interruptions, it is not a good idea to give a general invitation for people to ask questions during your talk. You might, however, pause and explicitly ask at certain points (again in longer talks) whether everyone understands. This keeps you in control. If someone does interrupt with a question, determine whether it is an important point to address at the present time. If so, then answer the question and move on. If the question would lead to an undesirable digression from the planned organization, then ask politely to take up the question later and move on. Remember to come back to the question!

Be sure that you understand questions before answering them, but don't pause overly long. If you cannot immediately make sense of the question or you are uncertain, then paraphrase the question (e.g., "Are you asking ...?" "Do you mean ...?"). You might also ask the person whether you have understood and answered the question correctly.

Your answers to questions should be as direct and clear as possible given their impromptu nature. Admit your ignorance if completely lost and perhaps ask to meet with the person after the talk. Part of your preparation for the talk might be to anticipate some of the questions you are likely to receive. Guessing questions in advance also helps you to clarify your talk because you have a chance to modify the talk to avoid any widespread misunderstandings.

At all times be polite and respectful, no matter how misguided the question appears to be. Develop a repertoire of phrases to use for awkward questions (e.g., "That is an interesting

question." "I have never quite thought about the issue in that way before." "Perhaps I wasn't clear when I described my method."). The question-and-answer portion of a talk can be very interesting for both speaker and audience, as it provides an opportunity to get other people's perspectives on your work.

AUDIO-VISUAL AIDS

Most talks are accompanied by audio-visual aids, generally overhead transparencies, slides, or increasingly computer displays (e.g., Powerpoint). Some people prefer slides because slide projectors have remote controls that leave the speaker free to move around. Irrespective of the actual technology that is used, visual aids often involve figures and tables, the same non-text materials that appear in papers.

General Guidelines

Talks entail many of the same suggestions given in another chapter for preparing tables and figures for papers. But there are a few additional points to consider. With respect to content, overhead materials should generally stand on their own (e.g., have meaningful titles on figures). Some listeners may miss your introduction of the figure because they were talking to their neighbour, thinking of your last point, taking notes, or for any number of reasons. When these mental wanderers finally look at the figures, they must be intelligible.

As was the case for the verbal material, audiovisual aids for talks should generally be simpler and less cluttered than the corresponding material for papers. Your listeners are at a distance and have limited time to study the material that you will be showing. Avoid putting too much information on one figure or table, and also avoid multiple panel visuals, unless you have carefully laid the groundwork so that the entire figure is easily understood. It may be worthwhile to develop complex visual aids a bit at a time, either by uncovering the overhead in sections or using overlaid transparencies. Simplicity and ease of comprehension is also furthered by using a uniform style that primes subjects to understand later visual aids (Anholt, 1994).

If you plan to use the same transparency at different points in your talk, make multiple copies or *carefully* set it aside each time that you use it. You would be surprised how easily one can lose track of a single copy during a talk. When that happens, both the speaker and the audience are distracted by a speaker rummaging through a disheveled pile of transparencies

looking for the one to be reshowed.

The size of the materials is also more critical than for a paper. Ensure that letters and symbols are sufficiently large to be seen from a considerable distance. Experiment beforehand in a room that you estimate will be comparable to that in which you will speak. Most talks are given in rooms that seat 50 to 100 people. Conferences held at universities will generally use classrooms comparable to those with which you are already familiar (e.g., seating may be tiered). Conferences at hotels or convention centers are more likely to be held in ballroom or meeting room settings (i.e., level floors with rows of chairs), which can pose difficulties for effective use of audiovisual materials.

Outlines

One visual aid that is more common in talks than papers is the outline. Speakers may list the major points of their talk on an overhead and reveal the points one at a time as they are discussed. This technique, if not overdone, can be an effective way to communicate the structure of your talk, helps the listener to remember the information, and also provides cues for the speaker about the points to be discussed.

Make the points of your outline brief by eliminating unnecessary material and retaining only essential words. Do not write out long passages, unless you want them read verbatim. Find an effective and consistent way to represent the organization (e.g., indenting, numbering or lettering, style or size of font). Prepare outlines according to the guidelines for other types of visual aids (e.g., large font).

Preparing and Using Overheads

Overheads can be created in several ways. If the figure or table is on computer, there are special transparency sheets that can be fed directly into a laser printer. Only certain types of transparency materials are appropriate for use on laser printers or photocopiers. An alternative approach is to print the material on regular paper and then convert that to transparencies on a photocopier or on a machine designed especially for producing overheads. The media personnel in your department or university can explain how best to prepare overheads at your institution. If you are using Powerpoint, consider whether you want overheads for back-up.

Familiarize yourself with any audiovisual equipment before your talk. Arrive at the room

early so that you can determine how to turn the overhead on and how to adjust its focus; you'd be amazed at how many different places there are to put a switch! This also gives you an opportunity to check again that your materials will project large enough to be seen throughout the room. Moving the projector further from the screen, if possible, makes the image larger. If the image remains too small no matter what you try, suggest that people sitting too far away move closer. There are usually lots of empty seats near the front.

Position yourself so that you can easily place overheads on the projector and remove them when you are finished. You will need surfaces large enough to keep your materials organized. Position is also important for Powerpoint, although you may have little choice as to where to stand. If the equipment puts you in an awkward position (e.g., partly hidden behind a computer screen), then make a point of moving away whenever possible (e.g., when not using the slides, or when a complex slide requires a few moments of explanation).

Some people recommend turning the projector off when it is not in use because the light and noise distract the audience (e.g., Cook, 1989). As with other suggestions, use your judgment on this issue. A short break between overheads does not require turning off the machine. The fan will continue for a time anyway and you can always use a sheet of paper to block the light.

Use a pointer to direct the listener to relevant parts of the visual material. Coordinate pointing with your comments (e.g., "The horizontal axis shows the three conditions." "The open circles indicate the control group.") With an overhead, you can point on the projector itself with a pencil or use a regular pointer at the screen. Pointing at the screen can make your talk more dynamic (i.e., you have to move!), but is not always possible and sometimes leads to inappropriate behavior (e.g., talking to the screen instead of to the audience or playing with the pointer).

Whatever format you choose, ensure that all materials are displayed for long enough to be understood. Nothing quite turns off an audience so quickly as giving them just a few seconds to grasp a matrix of 50-100 correlations while you make vague references to some specific values or some general pattern in the data! The requirement to provide enough time to understand the visual aids should tell you to avoid overall complex graphics and text (e.g., a matrix of 50-100 correlations).

If you use other media (e.g., slide projectors, videos, audiotapes, computer displays), then ensure that your materials are well-prepared, that you are familiar with the equipment, and that the equipment is available and functioning at your presentation site. The orientation and sequencing of slides can be problematic.

It is worthwhile for beginning speakers to learn early on how to use tables, figures, and outlines. Effective use of media can enhance a talk and make it a more enjoyable experience for both the speaker and the audience.

MANAGING EMOTIONS

One special feature of talks is their capacity to produce negative emotions in most of us. Few individuals have no qualms about making an oral presentation to a group of people, even to familiar peers and in small classes. Worry, fear, or anxiety about public speaking is quite widespread, in part because we do not get much instruction and practice at speaking to groups and in part because speaking is public. If for no other reason, we are likely to worry because of the importance that we place on what other people think about us.

Worry

Anxiety can be conceptualized as having two components, a cognitive component associated with worry and a physical component associated with visceral and other tangible bodily indicators. People differ in which of these elements dominate their reactions to stressful events and different strategies are more or less effective with easing worry and physical symptoms.

Box 13.3 shows some techniques that can be used for coping with the cognitive and physical symptoms associated with nervousness (i.e., the "excitement" of giving a talk). Try those techniques that best match the signs that you are experiencing. A general principle is to expose

<p>If possible, familiarize yourself with the room. Mentally rehearse using vivid images of the setting. Practice alone and then with a few people. Repeatedly practice opening and closing lines. Practice speaking from point-form notes. Avoid catastrophizing; most audiences are supportive. Use neutral labels (e.g., excited vs. terrified). Use mental counting (one-two), mantras (ohmm...), or other thought-stopping methods to relieve worry while imaging. Practice diaphragm breathing, deep muscle, or other relaxation techniques to control visceral reactions.</p>
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Box 13.3. Managing Emotions.

yourself gradually to the threatening situation (really or imaginably) while maintaining a relaxed manner. Seek out opportunities to speak in increasingly demanding situations after successes with simpler talks.

Such techniques as those in Box 13.3 probably work for the majority of people, but those with severe nervousness might consider seeing a trained psychologist who can help them to understand and control the negative symptoms. Unless you feel that deeper problems might underlie your concerns about public speaking, seek out someone who focusses specifically on the problematic thoughts and feelings associated with speaking (e.g., cognitive therapists).

Motivation

A secondary emotional problem when speaking may be motivation or enthusiasm. By the time you give a talk about your research, you have spent much time planning and carrying out the study, and writing up the results. You may find that your interest has waned by the time you actually get to talk about the research and you may have doubts about the value of your work. Any such lack of interest can detract from your talk and should be overcome in some manner.

There are several ways to "psych yourself up." One method is to vividly imagine how you felt when you initially undertook the research. Why did you want to study this topic? What was it that interested you? Try to renew that lost enthusiasm by putting yourself back in an earlier frame of mind.

Second you should remember that science proceeds in gradual steps and that your work is just one small but perhaps important contribution. Darwin was fascinated by the general idea of accretion and believed strongly that phenomenal effects resulted from small causes (e.g., atolls from coral, new species from variation and graduated selection, the earth's soil and all its bounty from the action of worms). Scientific knowledge and breakthroughs are, I believe, yet another example of this principle and each of us (the "worms") have to remember that we are contributing to a larger enterprise with important and widespread benefits.

A final way to cope with lack of interest is more pragmatic. Vividly imagine yourself doing a good job at giving an enthusiastic talk. An excellent talk will make you feel good and will help to further your academic career. Or you might want to promise yourself a beer or glass of wine when it is finished.

POSTER PRESENTATIONS

A second format used at conferences is the Poster presentation. Presenters are given a 4' by 8' or so bulletin board on which to mount text, tables, and figures describing their study. Many presenters are scheduled at the same time, usually in a large hall, and audience members circulate among the displays, reading those that interest them and talking to the presenters, who are expected to be at their posters during certain hours. Read carefully the information from the conference organizers for such details.

Posters combine aspects of both writing and speaking. Some of the recommendations for posters are similar to those for talks. Do not try to include too much material. People should be able to get the gist of your study in a few minutes of reading. Remember also that the written material must stand on its own because you will not be present at all times that viewers come by, and not all viewers will stop to ask questions.

The title, author(s), and institutional affiliations should be in large text, ideally centered on the board. The title should be informative and capture the interest of those who you want to read your poster. The title must attract people to read your poster more closely and to ask about your research.

The content will include an abstract or summary that outlines the major features of your research. Additional material will usually be much-abbreviated versions of the various sections of a research paper, including introduction, method, results, conclusions or discussion, and references.

Perhaps more than in the case of talks, matters of style and format are very important. The competition for the attention of viewers means that your material must attract people's attention and be easy to process. Otherwise, people will move on to the next display.

The spatial arrangement of the poster is one important stylistic consideration. Have an orderly organization to your material, and be sure that the organization is apparent to the reader. Order material by columns rather than rows, so that people are not passing back and forth in front of one another as they read the poster. Keep text close to any associated tables or figures. Be sure that the abstract can be easily identified by viewers. In addition to the logical sequence, consider how to incorporate symmetry and other aesthetic considerations.

A second important stylistic consideration concerns the fonts used. Fonts must be large enough to be readable from some distance, although remember that people will not be standing across the room! One effective strategy is to print material in a moderate size font on 8.5" by 11" sheets and then enlarge it onto 11" by 17" sheets on a photocopier. Style of font also determines readability. Fancy fonts that are so complex as to slow down reading should be avoided. Also consider carefully the variety of fonts that you use. Numerous different fonts might be effective if used carefully, but they might also simply appear too "busy" or detract from your message.

A third stylistic factor concerns the setting or background material. Especially with modern wordprocessors, presenters have ready access to various publishing options. For example, consider whether putting borders around your material (i.e., setting your material in boxes) or around important information (e.g., the title) might help communication. Shading can also be used for emphasis.

Some people like to mount their sheets on colored paper, but avoid bright colours. A muted background is more appropriate for scientific presentations (Anholt, 1994). Remember that it is what you have to say that is of primary importance. Strive for a clean, simple look that does not distract from your content.

Creation of an effective poster can be demanding and there are often unanticipated details to be worked out. So don't leave the preparation of the poster materials until the last minute, at least not until after you have acquired sufficient experience to be sure that everything will work as expected. Even a simple task such as enlarging the materials can present unexpected problems (e.g., getting sufficiently large characters printed, fitting together different pieces, enlarging via photocopier).

It is worthwhile to get feedback from people about your poster before the conference (another good reason to prepare in advance). Show your materials and display to several people to ensure that it is clear and pleasing. Check that your material fits in the display area. Try to read it from the typical distance of a viewer, and also try to get an overall impression of the display. Experiment, but always consider critically whether any novel technique enhances communication or detracts from it.

In addition to the poster material, have available either outlines of your poster or a sheet

on which interested parties can provide addresses to which you will mail additional information. On your outline, include your mailing and e-mail addresses, and the conference at which the poster is being presented.

Transporting the poster material and associated paraphernalia (e.g., thumbtacks) can be awkward. Some people protect their sheets in large pieces of cardboard or in art cases. Others roll them in protective tubes for transportation. Find something convenient, as you will probably want to keep your material close to hand (at least until after your session is done).

STRENGTHENING YOUR PUBLIC SPEAKING SKILLS

There are many steps that students can take to become more effective speakers. Practice is central to strengthening speaking skills and to developing control over the negative emotions that can accompany speaking in public. So take every opportunity to give talks, as long as you are knowledgeable about the subject and have time to prepare properly.

Another way to strengthen your skills is to observe examples of effective speakers. Many illustrations of good (and bad) speaking appear in the media. Teachers and scientific talks provide additional examples that may be more relevant to scientific speaking. Analyze the presentations of good and bad speakers to determine what aspects of the presentation (e.g., content, organization, delivery) determine its quality.

You can also read about public speaking. There are many good books on the topic, from such classics as Carnegie (1926/1956) and Fowler (1915) to more contemporary works (Drummond, 1993). Books written specifically for people preparing scientific talks are especially useful (e.g., Anholt, 1994). These and other books are available in university libraries or in bookstores for a reasonable price. Articles on public speaking are also published in psychology and related journals.

Knowledge and Appreciation

- Encourages students to think for themselves and promotes intellectual curiosity.
- Expands students' knowledge and appreciation of the subject.
- Helps students develop skills related to the course (e.g., critical thinking, writing, ...).

Organization of Individual Lessons

- Offers well-prepared and organized classes.
- Gives useful indicators for following lessons (e.g., outlines, states objectives, reviews main points, ...).
- Course elements (e.g., lectures, texts, readings, labs, ...) are integrated to help students appreciate and learn the course material.

Clarity of Explanations

- Provides clear explanations for concepts and principles, with concrete examples where appropriate.
- Emphasizes major or difficult points (e.g., asks if students understand, repeats complex ideas, pauses, ...).

Quality of Presentation

- Speaks in a clear, well-paced, and expressive manner.
- Uses appropriate teaching aids effectively (e.g., blackboard, overhead projector, handouts, ...).

Stimulation of Interest

- Shows enthusiasm and interest in the course.
- Stimulates and maintains student interest.

Participation and Openness to Ideas

- Encourages student participation (e.g., asks questions, responds well to student questions or comments, ...).
- Respects alternative and challenging viewpoints.

Rapport and Concern

- Treats students with respect in and out of class.
- Is available for consultation outside of class time.
- Is sensitive to whether students understand course material.

Disclosure and Fairness

- Provides helpful feedback (e.g., useful comments on student work, takes up tests in class, ...).
- Evaluates students fairly (e.g., tests important material; gives reasonable work load; assigns appropriate percentages for termwork, tests, and exams; ...).
- Marks and returns work in a reasonable time.
- Course objectives, assignments, and grading criteria are clear.

Box 13.4. University of Winnipeg Instructor Evaluation Questions.

Another source of much literature on effective communication is research on the effectiveness of teaching. If your university uses a course evaluation instrument, examine it to

identify some of the characteristics of effective presentations. Box 13.4 shows the qualities of effective instruction measured at the University of Winnipeg, my institution. Many of these items are relevant to scientific presentations and all will become increasingly important skills as you register in seminar classes, perhaps eventually lecture, or participate in many other types of verbal interactions with an educational purpose. So strengthening the kinds of competencies described in this chapter will stand you in good stead in other areas.

Giving a good talk is no simple task. There are many complex skills involved in preparing the content and making the actual presentation. So do not expect everything to work perfectly the first time and do expect to spend considerable time and effort learning how to give good talks. Concentrate on the major elements first and then use each successive talk to improve different aspects of your presentation. You will soon find an effective style that corrects any weaknesses and takes advantage of your strengths.

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