

CHARM DATABASE SEMINARS

SESSION 6:

MONDAY, NOVEMBER 11, 2024

THOUGHTS ON SCIENTIFIC PROPOSAL
WRITING

CHARM WRITING RETREAT IN THE SPRING!

Stay tuned for the announcement

TWO KEY WRITING PRINCIPLES TO KEEP IN MIND

1. THE TEXT MUST BE CLEAR TO AN EDUCATED LAYMAN. *Can someone outside your field understand your proposal?*
2. ALL WRITING IS REWRITING. *Expect to write many drafts of your proposal.*

WRITING SCIENTIFIC PROPOSALS: FIVE ISSUES TO CONSIDER

1. CLARITY
2. TONE
3. EXPERTISE
4. WORDINESS
5. GRAMMAR

FIVE ASPECTS OF GOOD SCIENTIFIC WRITING

1. **Clarity** – Is it easy for the reviewer to understand exactly what you are saying?
2. **Tone** – Do you use a tone appropriate to the reviewer's situation and knowledge?
3. **Expertise** - Do you convey a sense that you know the field well?
4. **Wordiness** – Do you waste words?
5. **Grammar** – Do you make grammatical or spelling errors?

PENALTIES FOR POOR WRITING

1. **Lack of Clarity** – Reviewer gets tired of trying to understand what you are saying; may unconsciously substitute views to you that you do not hold (nature abhors a vacuum)
2. **Improper Tone** – Reviewer may be offended by the tone you use (condescending, arrogant, puffed-up)
3. **Lack of expertise** – The reviewer may think you are not qualified to undertake this research.
4. **Wordiness** – The reviewer may think you have a bloated project, because you use bloated sentences to describe it.
5. **Bad Grammar** – The reviewer may think you ignorant or careless.

OBSTACLES TO CLARITY:

1. **Relationships** between sections of the proposal are cloudy, because the **route map** is absent or weak.
2. **Topic sentences** are missing. Ideas become clear only in retrospect.
3. **List or hierarchy?** How do the ideas fit together?
4. **Linkages are missing.** Sentences are not linked by transitions or connectives.
5. **Linkages are wrong.** Phrases linked by **because** and **therefore** must truly have a causal relationship.
6. Argument is presented in the wrong **order**
7. **Maintain parallelism** – don't shift metrics unless there is a reason to.

1. WHEN THERE IS NO ROUTE MAP, RELATIONSHIPS ARE UNCLEAR

Without sections that have headings (preferably numbered or lettered sections) you fail to provide a **route map for your argument**, and often lose the reader.

- Make an **outline** of your proposal before writing
- **Number** the sections of your application
- Make sure that sections have **sub-sections** and the relation of each part of the application to every other part is clear.

2. NO TOPIC SENTENCE

- Highlight the **most important sentence** in a paragraph.
- If you highlight the **last sentence** in a paragraph, rather than the first, you have a problem .
- Most paragraphs need a first sentence orienting the reader to where the paragraph is going (**the topic sentence**).
- The reviewer will **lose patience** if all becomes clear only in the final sentence of a paragraph.
- Ask, of every paragraph, does the first sentence tell me **where the paragraph is going?**

3. LACK OF HIERARCHY

- An argument is a bumpy surface, not a flat one.
- Arguments inevitably have sub-arguments, examples, analogies.
- If one simply presents these as lists (i.e. without it being clear how things relate to each other) the contours of the landscape of ideas will be missed.
- A special problem is wording that does not make clear when an idea is a component of another idea or is truly a new idea.

4. FAILURE TO LINK

- You convey the notion of relationships and hierarchy in an argument by using connectives:
- Examples: **while, because, yet, since, however, but, and, thus, moreover**, etc.
- Connectives make the logic flow.
- Avoid providing a series of unlinked declarative sentences, without transitions or connectives.

5. LINKAGES ARE WRONG

- Avoid non-sequiturs (a statement that does not logically follow from the previous statement).
- Phrases linked by **because** and **therefore** must truly have a causal relationship.
- Likewise, **while**, **however**, etc. convey an antagonism between phrases that must really be there.

6. LACK OF ORDERLINESS

- Finish one type of argument before starting another.
Avoid **interrupting your own argument**
- Avoid presenting an idea whose understanding **depends upon another idea presented later.**
- If you have to define something, **define it before**, not after, you say something about it.
- Avoid going back and forth in **level of evidence** – e.g. going from general arguments to specific points or from qualitative to quantitative data.
- Avoid changes in **type of evidence** – e.g. moving back and forth between animal and human studies.

7. MAINTAIN PARALLELISM

If you are making quantitative comparisons, retain the same metric.

COMPARE:

- Hypothyroidism occurs once in every 5,000 births, phenylketonuria has an incidence of 4 per 100,000 births, and 15 cases of MPSU are diagnosed at birth annually in the US.

TO

- Hypothyroidism occurs once in every 5,000 births, phenylketonuria once in 25,000 births, and MPSU once in every 250,000 births.

SUMMARY OF WAYS TO GAIN CLARITY

1. Make clear how the ideas **fit together in sequence**. Follow a **route map** or outline
2. Make sure the ideas **fit together hierarchically**. **Diagrams** of relationships among ideas, concepts or variables help.
3. Make sure you have **topic sentences**. Without topic sentences, ideas become clear only in retrospect.
4. Make sure **ideas are linked to each other**. Do not omit transitions or connectives.
5. Make sure **the linkages are the right ones**.
6. **Order is critical**. For example, things must be **described** before they are compared, analyzed, dissected, etc.
7. **Be consistent** in your use of metrics or explain the change

PROBLEMS WITH TONE

1. Presuming reader knowledge
2. Self-praise
3. Too many adjectives
4. Wrong level of detail

1. PRESUMING READER KNOWLEDGE

- Never use **terminology** without defining the term in the way you use it.
- Never use an **abbreviation** without explanation, no matter how obvious it may seem to you. MS is mitral stenosis to a cardiologist, multiple sclerosis to a neurologist and the way to address a woman to everybody else.
- Excessive use of abbreviations is called **“abbrevobabble”** and can really irritate reviewers
(See Bruback R: ABRV (or abbrevobabble revisited) J Child Neurol 2009;24:1477-9)

2. SELF-PRAISE

Exaggeration and self-praise must be avoided like the plague. The following words have no place in a proposal in relation to your own work:

Innovative, dramatic, new, the first, thorough, detailed, striking.

Principle: Supply the information that will give the reviewers reason to supply those adjectives.

3. MINIMIZE ALL USE OF ADJECTIVES

From a book review (by Peter Medawar) of Teilhard de Chardin's "*The Phenomenon of Man*" (1959)

“Teilhard is forever shouting at us: things or affairs are, in alphabetical order, astounding, colossal, endless, enormous, fantastic, giddy, hyper-, immense, implacable, indefinite, inexhaustible, inextricable, infinite, infinitesimal, innumerable, irresistible, measureless, mega-, monstrous, mysterious, prodigious, relentless, super-, ultra-, unbelievable, unbridled or unaparalleled. When something is described as merely huge we feel let down.”

Medawar P: Critical Notice. [Mind](#).70;277: 99-106. Oxford University Press. 1961.

Mark Twain on adjectives

“If you see an adjective, kill it”

4. WRONG LEVEL OF PRECISION OR DETAIL

You must be able to judge **just how much precision and detail** to supply in an argument.

Do not say: *Studies find an incidence of 0.393%.*

But also do not say: *Jones' study found that 40% of men smoke, while Smith found 50% and Doe 60%.*

WORDINESS

PROBLEMS WITH WORDINESS

1. Be sure to use the right word
2. Be concise – avoid excessive framing and, converting verbs to nouns, providing excessive information
3. Avoid being vague

ON HAVING THE RIGHT WORD

“The difference between the right word and the almost right word is the difference between lightning and a lightning bug.”

Mark Twain

ON AVOIDING WORDINESS

“Vigorous writing is **concise**. A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should have no unnecessary lines and a machine no unnecessary parts. Writing is concise.” - William Strunk Jr. *The Elements of Style*

“Say all you have to say in the **fewest possible words**, or your reader will be sure to skip them; and in the **plainest possible words** or he will certainly misunderstand them.” – John Ruskin

SOME EXAMPLES OF WORDINESS

Suggest ways to simplify the passages below:

- It is known to be related
- Results of the study show
- May be able to explain

- WHAT IS THE ERROR ALL THE ABOVE HAVE IN COMMON?

THE EASIEST WAY TO BE WORDY IS TO LOSE VERBS

Verbs move a narrative forward. Use verbs!

Verbs are lost by

1. Conversion of verbs to nouns
2. Excessive framing
3. Using “there is”

INSERTING THE VERB

Making your nouns back into verbs

- Has an **influence** on
 - Includes a **comparison** of medical outcomes
 - Race is a **predictor**
 - Has an **inhibitory effect** on
1. **Influences**
 2. **Compares** medical outcomes
 3. Race **predicts**
 4. **Inhibits**

Get rid of the frame

5. Has **been shown to influence**
5. **Influences**

THE “THERE IS” PROBLEM

“There is/are” hides the verb, and therefore slows down the narrative

- “There is little information on medication error.”
- Insert the missing verb: We **lack** data on medication errors
- “There are a dozen studies regarding birthweight and later intelligence”
- A dozen studies **show** that birthweight and intelligence are correlated

Avoid “there is” constructions wherever possible

MORE HIDDEN VERBS

A common error is to assume the verb is understood, when in fact a series of different verbs are needed

- Pediatricians were more likely than family practitioners to use all treatment modalities examined, mental health services, medication and educational services
- Pediatricians were more likely than family practitioners to use all treatment modalities examined, **including recommending** mental health **and educational** services, and **prescribing** medication

WORDS CONNOTING VAGUENESS

- Words to avoid: those, in order to, various, regarding
- “those” is usually inexact. Replace it with the exact concepts you are referring to.
- “In order to” can usually simply be removed
- “various” is almost always excessive
- “regarding” is usually vague

PROVIDING INFORMATION THAT IS NOT NEEDED

Don't provide information that is implicit in the rest of the sentence, as when you describe a process used to generate the data (unless you have something important to say about the process) Notice how omitting the yellow doesn't change anything.

- Jones et al **examined children with mild unilateral and bilateral hearing loss and normal controls and** found that children with mild hearing loss fared worse than normal hearing controls in tests of language comprehension
- **We will hire a study nurse, and** our study nurse will examine all subjects...

MORE ON IMPLICIT INFORMATION

We studied the prevalence of hearing loss in high risk infants and found it was 10/1,000

The prevalence of hearing loss is 10/1,000 high risk infants

When we compare men sampled for the study to those who enrolled, we find that participation rates do not vary significantly by ethnicity or social class

Enrolled men and sampled men were similar in ethnicity and social class.

GRAMMAR

COMMON CONFUSIONS

TO COMMA OR NOT TO COMMA?

The main comma rule to remember is this:

Commas separate full clauses in sentences, i.e. those that contain separate subjects and objects

- I enjoy eating both strawberries and raspberries (no comma)
- I enjoy strawberries, but Joe prefers raspberries (comma, because a new subject has appeared)

ADJECTIVES and ADVERBS

- What is wrong with the sentence below?

A few hospitals perform their second stage screening as **close** as possible to the time of discharge.

AN ALL-TOO-COMMON ERROR

- *Don't confuse its and it's*

Its is used when you want to say that it owns something. **My dog wags its tail**

- **It's** is used when you want to abbreviate it is. **It's time to party!**

NEVER SAY PRINCIPLE INVESTIGATOR!

Principle means a **concept or theory**. The principle of gravity is that apples fall down from trees

Principal means **first or leading**, as in the principal investigator, or the principal of a school.

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