

Writing Well: Techniques to Maximize the Success of Fellowship and Grant Applications.

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What Makes Writing Good or Bad?

- “Me fail English? that’s unpossible!”
– Ralph Wiggum (1994)



What Makes Writing Good or Bad?

Good writing is...

- Clear and Concise (within sentence level)
 - Comprehension is effortless for the reader.
- Cohesive (between sentence level)
 - Information flows unambiguously and logically from sentence to sentence.
- Coherent (paragraph level)
 - The structure is well organized and does not wander among multiple topics or major ideas.

Bad writing is...

- Confusing and Ambiguous
 - Comprehension requires substantial effort.
- Disjointed
 - The structure is poorly organized and wanders from topic to topic.

What Makes Writing Good or Bad?

- Write with clarity
- Better organize your writing
- Avoid “overwriting”
- Be succinct
- Improve the “flow”
- Use correct grammar



What Makes Writing Good or Bad?

- Put characters into subjects
- Put actions into verbs
- Avoid nominalization
- Avoid “to be” verbs
- Put new information last
- Avoid subject shifting
- Omit needless words



Lesson I

Clarity

Understanding Sentences

- The reader needs answers to two questions to understand the whole picture.
 1. Who is the sentence about (main character)
-subject
 2. What are they doing (main action)
– verb

Put Actions Into Verbs

- Most readers expect the main action of a clause to be found in a verb.
- Avoid nominalizations.
 - They make the reader work too hard to determine where the intended action is.

Put Actions Into Verbs

Verb (Action)	Noun (nominalization)
Analyze	Analysis
Investigate	Investigation
Perform	Performance
Occur	Occurrence
Understand	Understanding
Refuse	Refusal

Put **Actions** Into **Verbs**

- We performed an analysis on the data.

Put **Actions** Into **Verbs**

- We **performed** an **analysis** on the data.

Put **Actions** Into **Verbs**

- We **performed** an **analysis** on the data.
- We **analyzed** the data.

Put **Actions** Into **Verbs**

- Our database has been subject to different improvements, modifications, and extensions in structure and content over the years.

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Put **Actions** Into **Verbs**

- Our database **has been subject to** different **improvements, modifications, and extensions** in structure and content over the years.
- Our database **has been improved, modified, and extended** in structure and content over the years.
- We **improved** the structure and content of our database.

Put Characters Into Subjects

- The character is the entity performing the action.
- Readers expect the main character in a clause to be found in the subject.

Put Characters Into Subjects

- Communication of termites is accomplished through the use of pheromone scents.

Put Characters Into Subjects

- **Communication** of **termites** is accomplished through the use of pheromone scents.

Put Characters Into Subjects

- **Communication** of **termites** is accomplished through the use of pheromone scents.
- **Termites** communicate using pheromone scents.

Keep Subjects Near Verbs

- Who is the sentence about (main character)?
- What are they doing (main action)?
- When the main character (subject) and action (verb) are far apart, readers become confused because they can't piece together the whole picture efficiently.

Keep **Subjects** Near **Verbs**

- Alpha males that were once betas and either inherited their partner's territory or budded-off to form a territory de nova before their partner's death are more common.

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- **Alpha males** that were once betas and either inherited their partner's territory or budded-off to form a territory de nova before their partner's death **are more common**.
- **The most common Alpha males** **are** those that were once betas and either inherited their partner's territory or budded-off to form a territory de nova before their partner's death.

Keep **Subjects** Near **Verbs**

We predicted that birds with a weaker association strength with their future partner, and/or lower rank of their future partner (in terms of the association strength) with their opposite sex associates in the winter in which they paired would divorce more often between breeding season t and $t + 1$.

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Keep **Subjects** Near **Verbs**

We predicted that **birds** **would more likely divorce** between breeding seasons if they had weaker association strength or lower rank with their future partner during the winter.

Keep **Subjects** Near **Verbs**

- Peanuts, shell fish, tree nuts, corn, soy, strawberries, milk and milk products, and wheat or anything with gluten all represent things that people are commonly allergic to.

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- Peanuts, shell fish, tree nuts, corn, soy, strawberries, milk and milk products, and wheat or anything with gluten all represent things that people are commonly allergic to.
- **People are** commonly allergic to peanuts...

Lesson II

Cohesion & Coherence

Avoid Subject Shifting

- Writing is easier to follow when the string of subjects in a paragraph reflects the topic.
 1. Maintain a common subject throughout a one-topic paragraph.
 2. Shift the subject appropriately according to the story.

Avoid **Subject** Shifting

- To understand the evolution of cooperative breeding, reliable genetic data are necessary. For example, siring success and maternal fitness determination requires genetic information from offspring. Fortunately, scientists can now analyze genetic data at relatively low costs.

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- To understand the evolution of cooperative breeding, **reliable genetic data** are necessary. For example, **genetic information** from offspring are needed to determine siring success and maternal fitness. Fortunately, such **genetic data** continues to become increasingly affordable to analyze.

Put New Information Last

- Begin sentences with familiar (old) information and conclude sentences with unfamiliar (new) information.
- New information at the beginning of a sentence, is without context. Readers are forced to figure out how it is connected to familiar information. After reading the rest of the sentence, the reader may have to revise his or her understanding. Going backwards like this confuses and slows the reader down.

Put New Information Last

- Farmers try to provide optimal growing conditions for crops by using soil additives to adjust soil pH. Garden lime, or agricultural limestone, is made from pulverized chalk, and can be used to raise the pH of the soil. Clay soil, which is naturally acidic, often requires addition of agricultural lime.

Put **New Information** Last

- Farmers try to provide optimal growing conditions for crops by using **soil additives to adjust soil pH**.
- **Garden lime, or agricultural limestone, is made from pulverized chalk**, and can be used to raise the **pH of the soil**.
- **Clay soil**, which is naturally acidic, often requires addition of **agricultural lime**.

Put **New Information** Last

- Farmers try to provide optimal growing conditions for crops by using **soil additives to adjust soil pH**.
- One way to raise the **pH of the soil** is an additive made from **pulverized chalk called garden lime or agricultural limestone**.
- **Agricultural limestone** is often added to **naturally acidic soils, such as clay soil**.

One Paragraph = One Topic

- Readers expect thoughts to be expressed in paragraph units.
- The study of Circadian rhythms is an emerging frontier in biology. The first historical record of a circadian rhythm was made by Androstenes in the 4th Century B.C.E. He was a captain that served under Alexander the Great. Alexander the Great built one of the largest empires of the ancient world through a series of unprecedented military campaigns. Military campaigns today rely heavily on technological advances, such as radar, GPS, drones, robots, and guided munitions.

Lesson III

Conciseness and Simplicity

Using Passive Voice

- Active: We analyzed the data.
subject → verb → object
- Passive: The data were analyzed by us.
object → verb → subject
- Passive: The data were analyzed.
- Passive voice is not inherently bad nor is it inherently scientific.

Potential Problems with Passive Voice

1. Ambiguous characters

- Telomeres were quantified using the terminal restriction fraction method (Hausmann et al. 2017).

Potential Problems with Passive Voice

2. Dangling modifiers.

- A modifying phrase whose implicit subject does not match the explicit subject of the clause it modifies.
- **Using the voltage clamp technique**, ion currents of hippocampal neurons were measured.
- Using the voltage clamp technique, we measured ion currents of hippocampal neurons.

Potential Problems with Passive Voice

3. Reliance of “to be” verbs.

- On April 19, 1775, arms **were** seized at Concord, precipitating the American Revolution.
- On April 19, 1775, British soldiers seized arms at Concord, precipitating the American Revolution.

Potential Problems with Passive Voice

4. Wordiness.

All else being equal, more concise writing is better, passive voice tends to increase length (however slightly).



- Active: We analyzed the data.
- Passive: The data were analyzed.

Advantage of Passive Voice

Use passive voice when it moves the old information to the front and new information to the back.

- Memory consolidation is the process by which short-term memories transition to long-term memories. Exposure to various hormones can either impair or enhance memory consolidation. For example, one such hormone, cortisol, enhances memory consolidation.
- Memory consolidation is the process by which short-term memories transition to long-term memories. Memory consolidation can be enhanced or impaired by exposure to various hormones. For example, one such hormone, cortisol, enhances memory consolidation.

Omit Needless Words

- Consider each word in your writing. If you can cut a word or phrase with no loss of information, then do it!
- 1. Ineffectual Phrases
- 2. wordy normalizations
- 3. redundant phrases

Omit Needless Words

- Ineffectual Phrases

- “The intent of those who use ineffectual phrases is to make it appear as though their sentences are more substantial than they actually are, but not one sentence is made more meaningful by their inclusion.” (Fiske, 2002, p.17).

- Fiske, Robert Hartwell. (2002). *The Dimwit's Dictionary: 5,000 Overused Words and Phrases and Alternatives to Them*. Marion Street Press, Inc. Portland, OR.

Omit Needless Words

Ineffectual Phrase	Better Alternative
for the purpose of	for
as a matter of fact	actually
by virtue of the fact that	because
with the exception of	except
It is interesting to note that	interestingly
In order to	to
It is important to realize	-
It has been shown that	-

Omit Needless Words

ineffectual Phrase	Better Alternative
The questions as to whether	whether
This is a hypothesis that	This hypothesis
A large majority of	most
At this point in time	now
Due to the fact that	because
In the event that	if
Both groups were equally effected	The groups were equally effected

Omit Needless Words

Wordy Nominalization	Better Alternative
gave consideration to	considered
made the assumption	assumed
performed an analysis of	analyzed
resulted in a reduction of	reduced
reached the conclusion	concluded
made the discovery	discovered
Observed the occurrence of	occurred

Search and destroy “-ion” words

Omit Needless Words

Redundant Phrase	Better Alternative
close proximity	close
new innovation	innovation
exactly the same	The same
prior experience	experience
close scrutiny	scrutiny
combine together	combine
used for X purposes	used for X
may suggest	suggests

Use Simple Subjects

- Academic writing abounds with complex subjects. This increases the distance between the subject and verb. Often, scientists and scholars want to define a complex abstract entity (the subject), and then describe something that it does in a single sentence. Instead, it is usually more clear to split these tasks into multiple sentences, some to define the subject and others to describe what it does.

Use Simple Subjects

- Concentrations of blood plasma glucocorticoids from adult Individuals that were previously conditioned to avoid the novel predator and exhibited an extinction of their threat response over time were among the very lowest and highest from among the sampled groups.

Use Simple Subjects

- Concentrations of blood plasma glucocorticoids from adult Individuals that were previously conditioned to avoid the novel predator and exhibited an extinction of their threat response over time were among the very lowest and highest from among the sampled groups.

Use Simple Subjects

- Some adult individuals conditioned to avoid the novel predator exhibited an extinction of their threat responses over time. These birds showed among the very highest and lowest concentrations of blood glucocorticoids from among the sampled groups.

Use Simple Subjects

- Some adults conditioned to avoid the novel predator exhibited memory extinction. These birds showed some of the highest and lowest concentrations of plasma glucocorticoids.

Miscellaneous Common Mistakes

- Effect vs Affect

Effect Affect


Most of the time *effect* is a noun and *affect* is a verb.

If you're unsure, try substituting a different verb and see if it works.

As a child, he was *affected* by his parents.

As a child, he was ~~affected~~ eaten by his parents.

A verb works here so you should use "affected."



C'MERE, RANDALL
I want to ingest you, just like I did your obnoxious parakeet

You ate him?!
But he sang only of love and beauty!
You're a monster, Dad!

The illustration shows a parakeet with its mouth wide open, ready to eat. A man with a mustache and a speech bubble looks shocked. The speech bubble contains the text: "You ate him?! But he sang only of love and beauty! You're a monster, Dad!". The parakeet's speech bubble says: "C'MERE, RANDALL I want to ingest you, just like I did your obnoxious parakeet".

Miscellaneous Common Mistakes

- Data is plural

Wrong	Correct
Data is	Data are
Data was	Data were
Data shows	Data show

Strategies for writing and editing applications

Preparing Essays for Competitive Applications

Grant/Fellowship Writing Advice:

Assume that it's 10pm, your reviewer is exhausted, has a full-time job and a lecture in the morning, and just (finally) ate dinner and had a glass of wine.

Writing the Essays: Things to Avoid

- Quotations – Offer your thoughts, not another's
- Clichés – E.g., 'since I was a child'..., 'from a young age...', 'I've always been fascinated by...', 'I have a thirst for knowledge', 'the world we live in today...'
- Ambiguous Claims - E.g., 'I am highly motivated', 'I believe I have the skills to...' Instead give examples that provide evidence.

Writing the Essays: Things to Avoid

- Excuses– Focus on the positive. If there is something that can't be ignored, then explain how you've change or fixed the problem rather than give excuses.
- Pretentious Language – You're writing risks coming across as unnatural, fake, amateurish, or just plain wrong (e.g., 'I was encapsulated by The Origin of Species', '...by virtue of the fact that...')

Writing the Essays: Things to Avoid

- Exaggerations – It's too risky. If a reviewer thinks your being untruthful then your finished.
- Humor – It's too much of a liability. If one reviewer doesn't get or misinterprets your joke, then may God have mercy on your application.
- Irrelevant Facts– Make sure everything ties into your big-picture narrative.

Possible Scenario

- Plan for multiple drafts :
 - Write it.
 - Read it 1-3 days later, and re-write it
 - Give it to a lab-mate
 - Get it back 1-5 days later, re-write it
 - Give it to your advisor
 - Get it back X days later, re-write it
 - Re-read it 1-3 days later. Re-write.
 - Done? (4 drafts)



Be Judicious with Reviewers

- No one is a good reviewer after multiple reviews. Spread the responsibility.
- Ask different people to read your work sequentially to maximize the benefit of their effort (make changes between reviewers).

Receiving Reviews

- Brace yourself. Don't take reviews personal.
- The more red the better.
- Give your reviewers time, but let them know when you need it back.
- Consider all the comments, even if you don't end up making any changes.
- Return the favor.

Review Strategy

- Have someone not particularly familiar with your field read the project description without taking notes.
- Then, have him/her tell you from memory what you are planning to do, how you will do it, and why it is significant.
- If this is not easy for them or they don't get it, then edit more.

Finding Motivation

Setting Goals

The conceptual framework, temporal strategy, and level of detail influence the likelihood of attaining a goal.

Success

- Promoting positive outcomes
- Proximate timeframes
- Specific standards

Failure

- Preventing negative outcomes
- Distal timeframes
- Ambiguous standards

Setting Goals

“Mental Contrasting”

Imagine the attainment of a desired future.

Then reflect on the present reality that stands
in the way of the desired future.

Setting Goals

Indulge

Imagine the attainment of a desired future.

Setting Goals

Dwell

Then reflect on the present reality that stands
in the way of the desired future.

Setting Goals

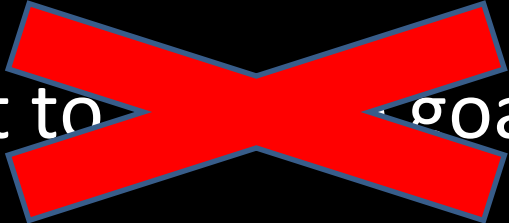
“Mental Contrasting”

Allows individuals to...

1. Assess the feasibility of a goal and
2. Realize that they must act on status quo to attain a goal.
3. Prepare for upcoming roadblocks and challenges in attaining a goal

Attaining Goals

Plan Goal Implementation in Advance

- I want to  goal X!
- If situation Y arises, then I will initiate behavior Z!
- Specify the where, when, and how.

Attaining Goals

Plan Goal Implementation in Advance

- I will apply ~~for~~ **NSF GRFP!**
- If I don't have to teach in the morning, then I will work on writing my GRFP essays for no less than two hours!

Attaining Goals

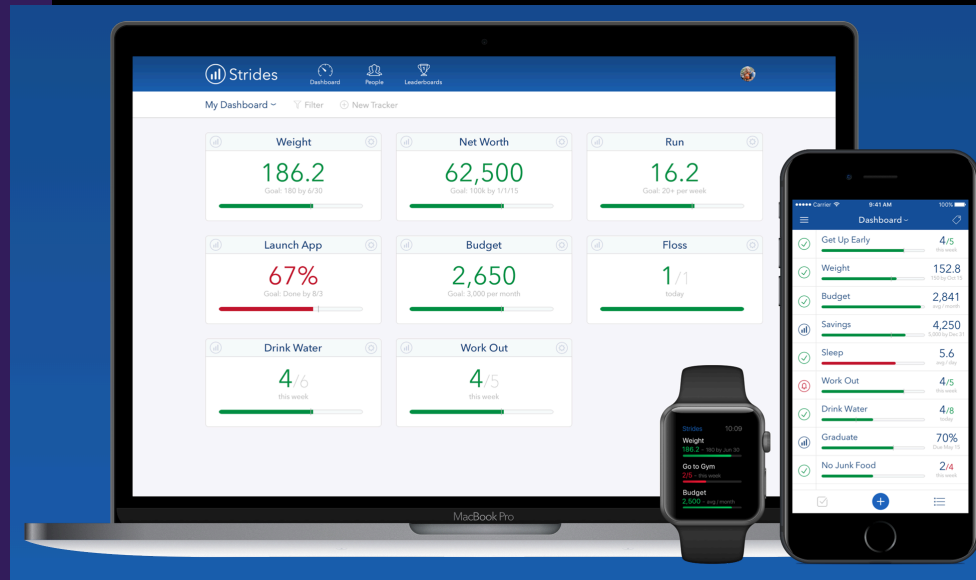
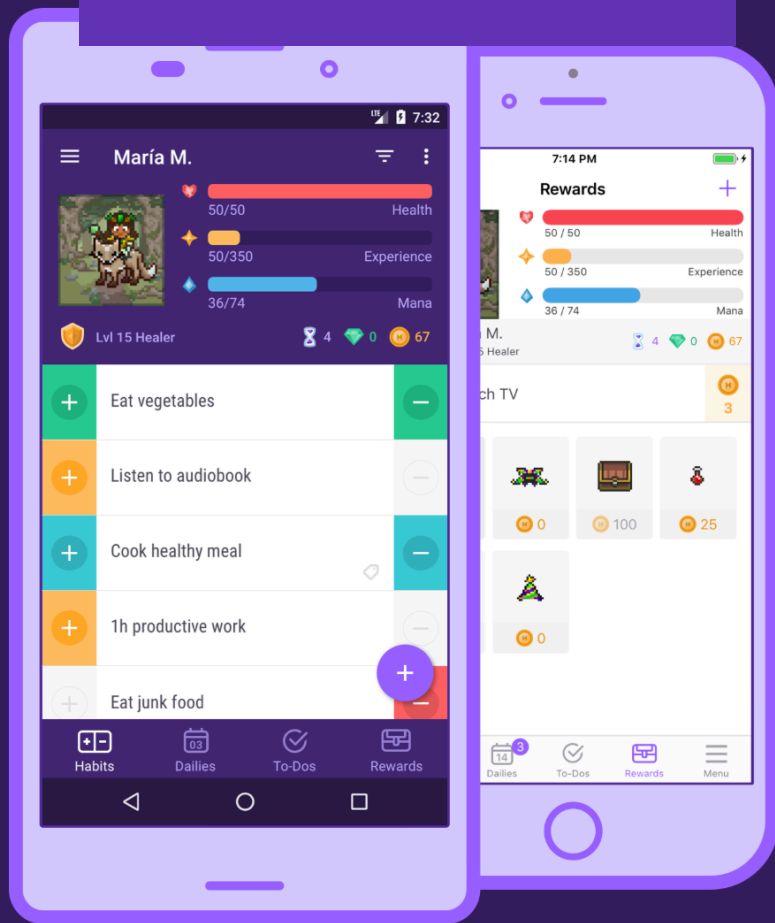
Implementation Intentions”

- Helps recall specific situation, the “if” part of the plan.
- Makes the response (the “then” part of the plan) automatic, efficient, redundant, habitual.

Attaining Goals

- Make discreet, small goals that build to an ultimate goal.
- Write your goals down and share them with another person.
- Set up rewards (or punishments) for reaching (failing to reach) goals, and make sure the mechanism is independently triggered.
- Incorporate competition.

Attaining Goals



Summary

- Make sure your writing is concise, clear, cohesive, and coherent.
- Your writing should be reviewed a lot by yourself and others.
- Set feasible goals by visualizing the future and realizing how to get there.

Thank You and Good Luck!

Questions?