
Good Beginnings and Endings: the Introduction, Methods, and Discussion of a Manuscript

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Introduction to manuscript writing



“Writing is thinking. To write well is to think clearly. That's why it's so hard.”

- David McCullough, 2002

Getting started and maintaining momentum



- Don't write from scratch– try to layer your writing on earlier proposals, protocols, or analysis plans
- Write *early* in the research process (no need to wait until all of your results are available)
- Write *often* during the research process (set aside multiple times per week to write)

Overcoming early (and late) writer's block



- Start with an outline rather than complete paragraphs
- Try a preliminary “talk through” with a mentor or peer
- Ask co-authors to draft small manuscript components
- Use students or mentees to get first words on paper

Making a Writing Schedule

Working Schedule						
TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
8:00am	✓					✓
9:00am		✓				
10:00am				✓		
11:00am			✓			
12:00am					✓	
1:00pm						
2:00pm						
3:00pm						

wiki How to Write a Master's Thesis

First steps: consider your audience

What are your first and second target journals?

Who is likely to be asked to review your paper?

What are the length or formatting instructions?

Example: Target journals for research about urinary incontinence in women

Urology or urogynecology journals

Gynecology or women's health journals

Geriatrics or aging journals

General medicine journals

Factors to weigh in selecting a journal

- Recommendations from mentors and colleagues
- Priorities and special interests of journals and editors
- Impact factor (see 'Journal Citation Reports' via UCSF library)
- Restrictions on manuscript length or format
- Empiric matching of terms (<http://jane.biosemantics.org/>)

Selecting a manuscript format



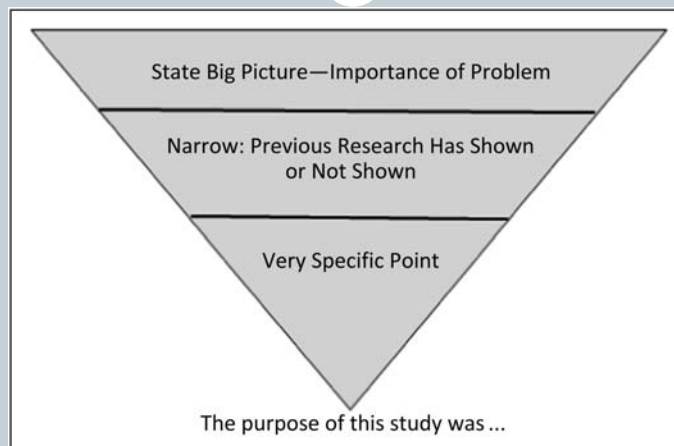
- Full-length original research manuscripts
- Brief reports that include structured abstracts
- Research letters of 500 to 600 words
- Review articles (solicited and unsolicited)

Questions?

Overview of the introduction section

- **Purpose:** To provide contextual information necessary to frame the study goals, offer a rationale for the research, and establish the specific objectives
- **Length:** Varies by journal, but typically ~3 paragraphs for most clinical research journals, and usually <20% of the total length of the manuscript text
- **Structure:** Funnel or 'inverted triangle' structure versus "Problem-gap-hook" structure

The 'funnel' approach to the introduction



from RJ Teufel, AL Andrew, DJ Williams, "A Practical Guide to Manuscript Writing With Particular Relevance to the Field of Pediatric Hospital Medicine" [Hospital Pediatrics](#), 2014

Funnel introduction example



“There is growing concern about the way medical residents spend their time and how this affects the quality and safety of the care they provide. Residents’ care of their patients can be affected not only by the way they spend time during clinical assignments, but also before and after clinical assignments. We conducted a study to examine the way residents spend time post-call, since this has not received much attention in prior research.”

Problem-Gap-Hook approach to the introduction



- 1) Identify a problem in the world that is of potential interest to the scientific or clinical community
- 2) Establish a gap in the current knowledge or thinking about the problem
- 3) Articulate a “hook” that convinces readers that this gap is of consequence

Lorelei Lingard, *Perspectives in Medical Education* (2015)

Gap-Problem-Hook example

“Duty hours reform is predicated on the assumption that working fewer consecutive hours will result in more and better-quality sleep hours, which will yield residents who will provide safer patient care.¹⁻³ Existing research is focused on interventions and outcomes related to residents’ on-duty experiences; results of these studies are conflicting and have been used variably to justify or criticize duty hours reform.^{2,4-8} With very little research into what residents do post-call, we do not know what influences residents’ decisions about their post-call time. Without more insight into this issue, we cannot design effective educational or organizational strategies to influence their post-call behavior.”

Part 1. Outline the broader problem



- Describe the broader clinical or scientific challenge that is the underlying motivator for the research
- While the problem should inform the research question, it is not simply the lack of an answer to the question
- The problem is usually linked to a specific obstacle to clinical care or scientific inquiry

Strategies for outlining the broader problem



There are limits to how “broad” you should be:

INSTEAD OF: “Obesity is a widespread chronic disorder with a prevalence rate that continues to increase in some population groups (1–4). Obesity is associated with multiple adverse health effects, including cardiovascular disease, cancer, functional disability (5–9)...”

Strategies for outlining the broader problem



There are limits to how “broad” you should be:

CONSIDER: “Despite the short-term effectiveness of behavioral interventions for treating obesity, many individuals regain weight within a 1-year period (1,2). Exercise enhances short-term weight loss when combined with dietary modification (3,4) and is one of the best predictors of long-term maintenance of weight loss (5). However, adherence to exercise in overweight or obese individuals attempting to lose weight is poor (6).”

Strategies for outlining the broader problem



Emphasize difficulty before discussing opportunity:

INSTEAD OF: “The acute respiratory distress syndrome (ARDS) is a common and frequently fatal clinical condition characterized by disruption of the alveolar–capillary barrier with the formation of non–cardiogenic, protein–rich pulmonary edema (1). By conducting research to investigate possible heterogeneity within ARDS, we may be able to develop more tailored treatment strategies for this condition.”

Strategies for outlining the broader problem



Emphasize difficulty before discussing opportunity:

CONSIDER: “The acute respiratory distress syndrome (ARDS) is a common and frequently fatal clinical condition characterized by disruption of the alveolar–capillary barrier with the formation of non–cardiogenic, protein–rich pulmonary edema (1). Unfortunately, despite decades of research, treatment is limited to supportive care, such as low tidal–volume mechanical ventilation (2). In part, this failure to identify effective pharmacotherapies may be a result of the clinical and biologic heterogeneity within ARDS.”

Strategies for outlining the broader problem



Bring the problem to the level of the patient:

INSTEAD OF: “Postmenopausal estrogen therapy has protective effects for some health conditions such as osteoporosis, but adverse effects on other conditions such as cardiovascular disease, breast cancer, uterine cancer, and cognitive impairment. There is a need for more data on both the cumulative and specific health risks of long-term estrogen therapy.”

Strategies for outlining the broader problem



Bring the problem to the level of the patient:

CONSIDER: “Postmenopausal estrogen therapy protects women against fractures,²⁻³ and also decreases common menopausal symptoms such as hot flashes.⁴ However, prolonged use of estrogen after menopause increases women’s risk of cardiovascular disease,⁵⁻⁷ as well as other serious conditions such as breast cancer,⁸ uterine cancer,⁹ and dementia.⁹ As a result, the millions of women who contemplate use of estrogen after menopause face complex and difficult questions about its effects on different health problems.”

Part 2. Identify the gap in the literature

- Briefly describe prior research about the problem in a way that calls attention to any major limitations
- Don't attempt a comprehensive review of all knowledge related to your topic
- Summarize findings across studies in order to justify the need for your own work

Strategies for describing the knowledge gap

Identify relevant shortcomings of prior work:

“Several small studies have reported beneficial effects of participation in short-term yoga programs for management of back pain,²⁻⁴ but these were either single-arm studies that did not control for placebo effect, or studies that did not examine long-term persistence of treatment benefits beyond the end of the yoga program...”

Strategies for describing the knowledge gap



But don't be disparaging or dismissive:

NOT: “A prior clinical trial reported a benefit of yoga for management of back pain,⁴ but the validity of that study was compromised by its poor design, inadequate follow-up, and major lapses in methodological rigor.”

Strategies for describing the knowledge gap



Point out when there's a need for a paradigm shift in current research:

“Prior efforts to reduce socioeconomic disparities in pregnancy outcomes have emphasized care *during* pregnancy,²⁻⁴ which may be inadequate to address early pregnancy complications and long-term health consequences. Very little attention has been focused on the improvement of *interconception* (i.e., between pregnancy) health among low-income and minority women, whose use of such care may be limited.”

Strategies for describing the knowledge gap:



Consider letting someone else do the talking:

“To date, studies of vaginal atrophy have relied on laboratory measures to assess disease severity and evaluate treatment effects, although these do not reflect the impact of vaginal symptoms on women’s day-to-day lives.^{1,5,6} At the 2006 New Interventions for Menopausal Symptoms conference, an expert panel expressed concern about the lack of validated measures to assess vaginal symptomatology across diverse populations and called for better methods for measuring improvement in quality of life with symptom treatment.⁷”

Strategies for describing the knowledge gap



Go into detail only if there is one seminal study that sets up your own research:

“Data from the seminal Harvard Alumni Health Study suggest that all cause mortality risk might be lower in men with a ‘weekend warrior’ pattern of leisure physical activity than in sedentary men.⁴ Seventy-three deaths occurred in the 580 weekend warriors in this study, and the authors acknowledged limited statistical power to investigate mortality risk in the weekend warrior, insufficient, and regular physical activity patterns.⁴”

Other tips on summarizing the literature

- Don't provide a literature review that refers only to work that was published 10 or more years ago
- Don't cite an excessive number of articles at the end of a sentence to support a minor point
- Don't "cut and paste" word for word anything from the published literature or on the internet – ever

- Martin Caon – "What should not be in a manuscript submitted to a scientific journal"

Part 3: The Hook

- Guide the reader in understanding why filling the knowledge gap you've identified is necessary
- Point out ways in which a better understanding would advance the scientific field or improve care
- Keep in mind that implications of your research that are obvious to you may not be obvious to others

Strategies for articulating the hook



Describe the problematic state of affairs that will continue exist if the gap is not filled:

“At this time, there is a critical need for sensitive, reliable self-administered instruments to assess the impact of vaginal symptoms on functioning and wellbeing in postmenopausal women of diverse backgrounds. In the absence of such instruments, clinical research cannot adequately address the primary purpose of treating conditions such as vaginal atrophy in postmenopausal women—improving women’s health-related quality of life.”

Strategies for articulating the hook



Emphasize any special “at risk” populations:

“Very little attention has been given to the substantial minority of women who continue to have hot flushes 5 or more years after menopause, even though it is these women who are at greatest risk of suffering adverse effects from using estrogen to treat their symptoms.⁶ *At this time, the prevalence of hot flushes in older postmenopausal women has not been established, predictors of these symptoms in older postmenopausal women have not been examined, and it is not clear why hot flushes resolve in some women, but continue for decades in others.*”

Strategies for articulating the hook



Highlight controversy and differences of opinion:

“Since the results of the Women’s Health Initiative (WHI) postmenopausal estrogen trials were released in 2002,¹ controversy has surrounded the use of estrogen therapy after menopause.” While some providers interpret the WHI results as incontrovertible evidence of the net adverse effects of estrogen therapy, others have called for more research to explore differences in the effects by age and other key clinical characteristics...”

Part 4: Provide a clear objective statement



- State the objective that the reader should be starting to guess after reading the earlier parts of the introduction
- If there is any doubt about what your research hypothesis may be, spell this out as well
- After stating the study objective, remind the reader of the broader implications (another ‘hook’)

Example: Objective→Implications



“We measured serum estradiol in baseline blood samples from a large sample of women enrolled in the WHI hormone therapy trials in order to determine whether endogenous estradiol levels modify the effects of estrogen therapy on conditions such as cardiovascular disease, breast cancer, dementia, and fracture. *Our goal was to assess whether clinical measurement of estradiol levels may be useful in identifying which postmenopausal women are most likely to benefit or take harm from estrogen therapy.*”

Example: Objective→Implications



“We examined postvoid residual bladder (PVR) volumes in a prospective, population-based cohort of older women and assessed relationships between PVR volume and lower urinary tract symptoms in this population. Our goal was to provide insight into the prevalence, natural history, and clinical significance of elevated PVR among older women characteristic of those seen in primary care, *to help inform clinical decisions about measurement and interpretation of PVR volume measurements in this setting.*”

Questions?

The Methods Section

- **Purpose:** To describe the design and conduct of the research in a way that permits accurate evaluation of its strengths and weaknesses
- **Length:** Varies by journal, but typically ~1/4 of the manuscript text for most clinical research journals
- **Structure:** Study Design, Participants/Setting, Interventions (if any), Outcomes /Measurements, Statistical Analyses

Considerations for the methods section

- Only a few people will read the methods section in detail, but those who do matter a great deal
- Ideally this section builds on earlier protocols or analysis plans (but is more concise)
- A strong methods section anticipates readers' concerns about the design or conduct of the study

CONSORT trial methods checklist

Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons
Participants	4a	Eligibility criteria for participants
	4b	Settings and locations where the data were collected
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed
	6b	Any changes to trial outcomes after the trial commenced, with reasons
Sample size	7a	How sample size was determined
	7b	When applicable, explanation of any interim analyses and stopping guidelines
Randomisation:		
Sequence	8a	Method used to generate the random allocation sequence
generation	8b	Type of randomisation; details of any restriction (such as blocking and block size)
Allocation	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned
concealment		
mechanism		
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses

STROBE cohort methods checklist

Study design	4	Present key elements of study design early in the paper
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up (b) For matched studies, give matching criteria and number of exposed and unexposed
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	9	Describe any efforts to address potential sources of bias
Study size	10	Explain how the study size was arrived at
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding (b) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed (d) If applicable, explain how loss to follow-up was addressed (e) Describe any sensitivity analyses

Component 1: Study design



Summarize the design in one sentence, sometimes in combination with the population or setting:

“We conducted a cross-sectional analysis of baseline data from the Study of Osteoporotic Fractures (SOF), an observational cohort of community-dwelling women aged 65 years and older recruited from 6 clinical sites in the United States.”

Strategies for describing the design



Don't pretend your design is stronger than it is, but don't undermine your approach either:

"We conducted ~~secondary~~ analyses of a ~~baseline~~ cross-sectional dataset from a randomized placebo-controlled trial of a cognitive behavioral treatment program for older adults with insomnia."

Strategies for describing the design



Be as specific as you need to be, but don't inflate the design with unnecessary terms:

"We conducted a randomized, ~~parallel-group~~, 12-week ~~single-site~~, placebo-controlled ~~clinical~~ trial to determine the effects of high-dose vitamin D supplementation (50,000 IU weekly) on adolescents with vitamin D deficiency."

Component 2: Population or setting



Give a concise summary of eligibility criteria:

“To be eligible for this cohort, women had to be between 40 and 69 years of age as of January 1, 1999, to have been continuously enrolled in Kaiser Permanente Northern California since age 21, and to have given birth to at least half of any children at a Kaiser Permanente facility....”

Strategies for describing the population



Anticipate your readers' questions about generalizability or selection bias:

“Prior research has indicated that adults in the highest and lowest income categories may be underrepresented in this sample, but that this cohort is otherwise otherwise similar in racial/ethnic distribution to the general California population at large.⁴”

Strategies for describing the population



Conserve words by referring to prior publications (but throw your readers a bone):

“Participants were drawn from the MaTURE randomized trial of paced respiration to treat menopausal hot flashes. Details of the eligibility criteria have previously been reported.¹³ Briefly, participants were women recruited from the San Francisco Bay Area who were between 40 and 60 years of age, peri- or postmenopausal, and experiencing 4 or more hot flashes per day....”

Component 3: Measurements and outcomes



- Describe the predictor and then the outcome variables (usually in that order)
- Distinguish between primary and secondary outcome variables
- Include timing of measurements, efforts to promote data quality, special training of staff obtaining data
- Don't include measures if you don't provide any results for those measures

Strategies for describing outcomes & measures



Describe standard, validated measures briefly:

“Depression was evaluated using the short form of the Geriatric Depression Scale (GDS), a 30-item, self-administered depression screening instrument validated in elderly populations, in which scores ≥ 6 are consistent with clinical depression [9].”

Strategies for describing outcomes & measures



Justify less standardized outcome measures:

“Sexual function was assessed using structured-item self-report measures adapted from the validated Female Sexual Function Index (FSFI)³¹ and administered in multiple prior women’s health studies.^{4,32} All items used Likert response scales and were adapted to reflect the 3 months prior to women’s visits rather than restricting participation to women with partnered sexual activity in the past 4 weeks as would be required by the FSFI (Suppl Table 1)…”

Strategies for describing outcomes & measures



Specify (and justify) any variable thresholds or categories used in your analysis:

“We categorized women as having “clinically relevant” nocturia if they reported two or more episodes of nocturia per night, based upon literature suggesting that nocturia does not become subjectively bothersome or interfere with functioning unless it occurs at least twice per night.³”

Component 5: Statistical analyses



- Seek input from your statistical collaborator (if you have one), but don't just assign this to a statistician
- Goal is to enable a knowledgeable reader with access to the data to verify the reported results
- For any and all results presented in the paper, be sure to describe your analytic methods
- Prepare for the possibility that your text may be reviewed by a statistical editor

Statistical Analyses and Methods in the Published Literature (SAMPL) guidelines

- Identify any statistical procedures used to modify raw data before analysis
- Identify the variables used in the analysis and summarize each with descriptive statistics
- Describe the main methods for analyzing the primary objectives of the study
- Make clear which method was used for each analysis, rather than just listing all methods used in one place
- Verify that that data conformed to the assumptions of the test used to analyze them.

Strategies for the analysis section

For primary effects, address the *effect size*, its *precision*, and its *statistical significance*:

“We determined the relative risks for ischemic and hemorrhagic stroke in Asian compared with Latino participants, along with their 95% confidence intervals, after adjusting for age, blood pressure, serum lipids, and prior stroke or transient ischemic attacks using Cox proportional hazards models.”

Strategies for the analysis section



Explain why you did an analysis -- don't just list the statistical tests that were used:

“The primary analyses were stratified by 5-year age groups, *to account for the differences in age between those who used sedative/hypnotic medications and those who did not.*”

Taking a last look at the methods



- What are your greatest points of weakness with regard to study methods?
- Have you attempted to address readers' major concerns in advance?
- Will your terms be understood by a reader with a general background in your field?

Questions?

The Discussion Section

Goals:

- 1) Point out the most important study finding(s),
- 2) Interpret the findings in light of prior research,
- 3) Acknowledge any strengths or limitations,
- 4) Convey a sense of the broader implications

Length:

Up to 1/4 of the total manuscript length, depending on the specific journal guidelines

Elements of the discussion

- Summary of the major findings
- What you think the results mean
- How the results compare to prior studies
- Strengths and limitations of your study
- Conclusions and implications
- What should happen next?

Part 1: Summary of the major findings

**Remind the reader of the question,
then signal that it has been answered**

QUESTION POSED IN THE INTRODUCTION:

“First-day weight loss is routinely measured for newborns, but no studies have examined whether greater weight loss in the first day predicts subsequent weight loss.”

ANSWER THAT OPENS THE DISCUSSION:

“Our study reveals that newborn weight loss in the first 24 hours is a strong predictor of eventual weight loss during birth hospitalization.”

Strategies for summarizing the findings



Don't repeat detailed data from the results, but do give a sense of the magnitude of effects:

“In particular, infants who lost more than 5% of their weight in the first 24 hours had an over three-fold increased odds of losing excessive weight by hospital discharge, independent of other demographic and clinical factors.”

Spell out the main implications of the finding



DOT #1:

“Since exclusive breastfeeding is an important preventive intervention, and”

DOT #2

“since weight loss of more than 10% is often considered an indication for formula supplementation,”

CONNECTION OF DOTS 1 & 2:

“infants with high early weight loss should be considered a priority for lactation assistance to promote continued exclusive breastfeeding.”

Another example



**Remind the reader of the issue,
then signal that it has been addressed**

ISSUE POSED IN THE INTRODUCTION:

“Decisions regarding blood pressure targets are particularly difficult in poor functioning older adults who frequently do not meet the inclusion criteria of randomized controlled trials.”

ANSWER THAT OPENS THE DISCUSSION:

“In this national sample of elderly adults, we found that the association of blood pressure with mortality varied markedly by walking speed.”

Another example



**Don't repeat detailed data from the results,
but give a sense of the magnitude of effects:**

“Higher systolic BP was associated with an increased risk of mortality only among elderly adults who had a medium to fast walking pace. In contrast, among slower walking older adults, there was not an association between elevated systolic or diastolic BP and mortality. *Strikingly, we found elevated systolic and diastolic blood pressure was strongly and independently associated with a lower mortality risk in participants who did not complete the walk test.*”

Another example



DOT #1:

“Since systolic blood pressure is associated with an increased risk of mortality in adults with medium to fast walking speed”

DOT #2

“...but the association of BP and mortality is less clear in slower walking adults”

CONNECTION OF DOTS 1 & 2:

“Our findings suggest that walking speed may be useful measure to identify older adults who are most at risk for the adverse effects of high blood pressure..”

Strategies for summarizing the findings



If your results shed light on a controversial issue, consider restating the controversy first:

“Routine screening for prostatic cancer among asymptomatic older men continues to be controversial, in part because of the indolent nature of many prostate cancers for which early detection and treatment may not offer substantive benefit.... Our findings provide new insight into factors that may identify older men who are more likely to have aggressive cancer subtypes and benefit from more proactive screening strategies.”

Framing the wrap-up

- What grabbed you personally about your study results?
- Was there an expected or unexpected research finding?
- Are you presenting a new theory to explain an old phenomenon?
- Does your work have implications for research policy or social policy?

Segues about context and other interesting things

- These results are consistent with...
- Our research findings suggest that...
- These findings are surprising in light of...
- Contrary to prior research, we found...
- Several other interesting observations...

Discussion of the prior literature

- Synthesize the results of prior studies – don't review studies one-by-one
- Describe limitations of prior studies without being derogatory
- Try to explain discrepancies between your findings and other people's

Tips for discussion of the literature

Be objective but tactful in pointing out limitations of previous studies:

“Prior studies have found gynecological factors such as parity (24,27,28) and post-menopausal status (28) to be associated with nocturia, although these did not emerge as independent predictors of nocturia in our analyses. However, those studies were conducted in younger females (27), in less diverse populations (24), or had a smaller number of participants who reported nocturia (28).”

Tips for discussion of the literature



Discuss how your own results extend current knowledge about your topic

“In contrast to prior work examining nocturia in the setting of other lower urinary tract syndromes, our study indicates that a substantial proportion of women develop this problem in the absence of other established urinary tract disorders, suggesting that nocturia should not simply be viewed a manifestation of another primary urologic disorder, but as a potential clinical entity in its own right.”

The Limitations Paragraph



- *Careful, not defensive*, explanation of up to three limitations of the research
- When possible, anticipate critiques earlier by presenting the reasoning behind your choices
- For each limitation, consider whether you can point to a mediating factor
- This is *not* “Mea Culpa, Mea Culpa, Mea Maxima Culpa”

Strategies for the limitations paragraph



Consider pointing out a few strengths before outlining weaknesses:

“This research benefits from an ethnically-diverse participant sample, administration of multiple validated anxiety measures, and high rates of follow-up over time. However, several limitations of this research should be noted....”

Strategies for the limitations paragraph



Don't just list the limitation, but acknowledge potential impact on the validity of the results:

“Due to the observational nature of this research, our estimates of the association between vitamin A supplement use and visual acuity may be susceptible to confounding, limiting our ability to assess causality.”

Strategies for the limitations paragraph



Where possible, counteract each limitation with steps taken to minimize their impact:

“Due to the observational nature of this research, our estimates of the association between vitamin A supplement use and visual acuity may be susceptible to confounding, limiting our ability to assess causality. *However, we measured multiple known confounders and controlled for these using multivariable models.*”

Conclusions and Implications



- What is the take-home message for providers, patients, or policymakers?
- Take a position, but avoid under- or over-assertive statements:
 - ❖ “Our results might have clinical significance, but there are many limitations”
 - ❖ “The meaning of these research results is still unclear”
 - ❖ “Clinical practice should be complete changed based on these results”

What should happen next?

- Should...
 - ❖ Approaches to screening, diagnosis, or management for the disease change?
 - ❖ Scientists think about the etiology or classification of the condition differently?
 - ❖ Researchers start using different measures, developing or validating new instruments?
- Avoid
 - ❖ “Additional research is needed” unless you point to a very specific avenue of future research

Strategies for the conclusions

Conclude with an implication and the road ahead:

“Infants with high weight loss at <24 hours appear to be at increased risk of greater subsequent weight loss. These infants should be considered for priority lactation support if resources are limited. Further research should explore the relationship between weight changes early in hospitalization and infant inpatient and outpatient outcomes, adjusting for clinical predictors available early in hospitalization.”

Questions?

Revising your draft



‘Hell is sitting on a hot stone reading
your own scientific publications ’

- Erik Ursin

First, your own critical review:

- Set it aside for a few days, then re-examine with a fresh perspective
- Read your introduction and discussion sections to yourself out loud
- Print out and read each section draft directly on paper

Then get feedback from others:

- Criticism is surgery, and humility is the anesthetic that allows us to tolerate it. Lie naked on the table, and let them cut!
—Molly Cochran
- When readers tell you something's wrong or doesn't work for them, they are almost always right. When they tell you... how to fix it, they are almost always wrong.
—Neil Gaiman

Soliciting feedback from co-authors



- Respect co-authors' time— good feedback may come around only once
- Specify a timeline (a minimum of a week, and more often two weeks)
- Send reminders to non-responders 2 to 3 days before your original deadline
- Send a (polite) ultimatum to stragglers ("If I don't hear from you, I'll assume you approve...")

A manuscript can have only two parents



- Co-authors may have conflicting opinions, and it may not be possible to reconcile them all
- First and senior author must exercise judgment in reconciling ideas and prioritizing limited space
- Being the first author is both a privilege and a burden—you must make the tough decisions

Reconciling differences of opinion



“Thank you all for your feedback on our draft paper. I’ve tried to make revisions to reflect the thoughtful suggestions you’ve made. In some cases where there was a difference of opinion, I did my best to reconcile your viewpoints and come up with a good compromise. Attached is the updated version– please let me know within the next 5 days (i.e., by XX date) if you feel strongly that further changes need to be made. If I don’t hear back from you, I’ll assume that I can proceed with formatting for submission.”

Questions?

**Reminder: Assignment #2 due by
5 pm on Monday, May 8**



- Assignment #2 is the draft title and ~3-paragraph manuscript introduction section for a project you have recently completed or are currently conducting
- Upload your assignment (as a Word document) *directly onto the course website* using the assignment upload link
- Please use the template provided on the website and include your first and last name