

How to Write a Research Paper, Proposal, or Thesis

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Overview + General Tips

Don't know how to write or where to start when writing a research proposal? Here is a simple guide to get your thinking pointed in the right direction.

Checklist for a successful paper:

Quality of the Study

- Appropriate research design
- Rigorous and feasible methods
- Qualified research team
- Informative title
- Self-sufficient and convincing abstract
- Clear research questions
- Scholarly and pertinent background and rationale
- Relevant previous work
- Appropriate population and sample
- Appropriate methods of measurement and manipulation
- Quality control
- Adequate sample size
- Sound analysis plan
- Ethical issues well addressed
- Tight budget
- Realistic timetable

Quality of the Presentation

- Clear, concise, well-organized
- Helpful table of contents and subheadings
- Good schematic diagrams and tables
- Neat and free of errors

I'd revisit this checklist periodically as you work through writing the different sections of the paper.

Below is a general list of the major elements in most research papers. Remember you may or may not have some of these depending on what is required and how you are conducting your study. For example, a content analysis wouldn't have a Participants section and some people like to put the Study Problem and Relevance of the Project together in the same section. Basically follow the guidelines you are given and do what works best for you, remember this is a guide not a rigorous set of rules.

Research Proposal Elements

1. Title
2. Abstract
3. Introduction
4. Study Problem
5. Relevance of the Project
6. Literature Review
7. Objectives/Research Questions/Hypotheses
8. Research Methods
9. Research/Study Design
10. Participants
11. Data collection
12. Results/Findings/Data Analysis
13. Discussion/Conclusion
14. Ethical Considerations
15. Work Plan
16. Budget
17. Bibliography/Works Cited

All these elements will be covered in the following pages. Refer to the table of contents on page 2 if you wish to jump to a specific section.

Title, Abstract, Introduction

Writing the title and abstract can be the easiest and most frustrating part of writing a research paper. There are two major things to keep in mind when writing your title and abstract:

- **Be clear and concise.** You want everyone to know exactly what your paper is about simply by reading the title.
- **Write the title, abstract (and introduction) last.** This may seem a little strange to a lot of people but it makes the most sense to write them once you understand what you studied, what your results were, and what you want your audience to take away from reading it.

Title

The title should describe what you are studying and to what effect. For example, my thesis was called: The Hero Soldier: Portrayals of Soldiers in War Films (You can access it here if you are interested: <http://bit.ly/Nza12Y>) This title hits all the main points:

What: soldiers as heroes

Where: war films

Concept: the way they are portrayed

This hits the basics and only the basics, don't include your research methods, your results, or your pet's name (seriously). Hit the main points that people will:

1. Be searching for (Google, Library Databases, etc.)
2. Catch their attention
3. Tell the audience exactly what the study is about

That's all. I didn't call my thesis: A Qualitative In-depth Analysis of the Conception of the the Hero as Portrayed by Soldiers in War Films. I could have, because that's what it is about, but it impedes comprehension. It needs to be to the point and convey exactly what that person will read.

Abstract

Outside the title the abstract is the only place where someone can get a quick overview of your study, think of the title as the abstract-lite, without the conclusions or big words.

Basically your abstract should only be a paragraph long (that's 3-4 sentences MAX!). Don't ramble on for 15 sentences. There are only a few basic things you need to cover in your abstract:

1. What you are studying + why it's important
2. How you are studying it (method)
3. What you learned/found/argue and its significance

That's it! The point of an abstract is to summarize your entire paper in a paragraph so someone looking at it can get a brief idea what it is about and determine if they want to keep reading the entire paper. If you can't write a brief and succinct abstract then you clearly don't know what your own paper is about.

Introduction

The introduction should cover the same topics as your abstract but in a bit more detail. You also need to include:

- Thesis statement
- Overview of the study methods
- Theoretical framework (if you have one)
- The reasons why the study has value to the research area you're contributing to
- If you've finished your research be sure to give us a good idea about your findings

Many times, when beginning any writing project it is suggested that you start with a "hook" to get your reader interested in your topic, this is not necessary in a research paper. It can however, add to your paper. It's acceptable but not required.

After covering everything mentioned above, provide a one paragraph roadmap of your paper. This gives us an idea of how you will attack the rest of the document we are about to read. For example:

"In the following pages I will first discuss the relevant literature and previously conducted studies that relate to my study about goldfish and their love for beer. Second, I then outline the method by which the research was conducted, followed last by a discussion of the results as well as future implications of the goldfish/beer relationship."

You'll notice that I use "I" in that statement. It is perfectly acceptable to use "I" from time to time in a paper as long as you don't overuse it.

Don't write your introduction first. As it is a preview of the study it's usually best to write your introduction and abstract last.

Background + Literature Review

Background

The background section is not always necessary. However, the point of a background section is to give your reader all the pertinent information so they can read your study as an informed individual. This includes all the cultural, social, socio-economic, etc. information that is relevant to your study.

Basically ask yourself what the reader needs to know to understand your rationale within your study and provide them all that information. A good place to start here is to ask yourself what made you want to study this topic, and what brought you to that point.

Literature Review

A critical summary of research on a topic of interest, generally prepared to put a research problem in context or to identify gaps and weaknesses in prior studies so as to justify a new investigation (your study). Be sure to:

- Be thorough and complete
- Present a logical case
- Include recent research as justification (RECENT being the important word here. If all your literature is from the 1950s, you have a problem and probably just didn't look hard enough)
- Propose original research (or if duplicating, note that you are)
- Include primary sources
- Include a critical appraisal of your study
- Build a case for new study

One of the most important functions of the literature review is to define or explicate your concept, or the basis for your study. A key to research that can be used and repeated is the careful definition of the major concepts in the study. A hazy definition of a concept may enter into relationships with other variables, but since the concept was ill-defined the meaning of those relationships can be no better than ill-defined. The process by which concepts are defined for scientific and social scientific purposes is called explication, that's your ten-dollar-impress-your-professor word of the day. Also in academia the word often substitutes for the word "explanation" because it sounds much, much cooler.

So, before we can begin defining our concept, we need to choose what we will be studying...

Selecting the Concept

You have to start with at least a basic idea of what you want to study, or a commonly used label is the object of analysis (don't know what that is? Check out the Theory Words + Definitions section). In the beginning of your writing journey about the only thing you can choose is your focal topic. Your thinking about that concept or focal

variable should (and undoubtedly will) change quite a bit as you study it. Keep in mind that you should try to select a concept that is possible to be empirically observed, meaning that there is an actual way in which it can be studied, and likely to fit into relationships that are important and relevant to your area of study. Avoid using operational definitions from other people's research. You can make your best contribution (also win friends and influence people) by a creating a fresh start that might lead to innovative studies.

Once you have decided roughly what your focus is to be (focal variable!), scour research journals, books, articles, etc. in search of studies that have dealt with your area of focus (DO NOT use Wikipedia - a Department Chair clubs a baby seal every time you do).

Your goal is to locate the various definitions that have been used. Keep a running list of all the ways that the concept has been defined for research purposes and where. A spreadsheet or Google Doc can be very handy for this. You can ignore purely abstract definitions, those where the concept is given a meaning that doesn't seem to relate to the real world or any place where your term is used and no definition is provided. There will undoubtedly be cases where your concept has been given some other name – keep track of those too. It is the empirical usage or main idea of the concept that is truly important, not the label that is put on it. However, be sure to note in your writing that the concept can go by different names and list those names.

Definition Levels: Sort out the various definitions you have found, into one of the three basic types:

1. **Nominal Definition:** When an object, procedure, or idea is given an arbitrary name without any reduction statements linking the name to the object, procedure, or idea, the definition is a nominal one. A reduction statement is a statement which breaks down the various pieces of the concept. This is the most common type of definition and sadly, the least useful. It can usually be spotted by the obvious gap between the label and the definition. Examples:
 - A. A thermometer measures temperature. Ok, but this still tells me nothing about what a thermometer actually is, and doesn't tell me what temperature is either. A reduction statement here would be: "temperature is a scale which measures the heat content of the immediate area." Which is a start but still needs more explication.
 - B. Consensus consists of a majority vote. Right, but what does it mean? 51%? More? Does it apply to other situations? We are still missing a lot of the meat of what consensus actually is.
2. **Real Definition – Meaning Analysis:** A much more useful type of definition is to express the meaning of a top level term by listing the lower level concepts that compose it. The lower terms are less complex in that they are more clearly tied to actual definitions. This list of lower concepts is expandable and replaceable usually – new items can be added and others may be removed. Any changes of this sort change the meaning of the concept. Examples:

- A. Mass media are newspapers, books, magazines, radio, television... (Note that this list is clearly able to go on and on, however depending on what you add, can change the meaning).
- B. Legal controls on the press include laws against libel, sedition, obscenity, blasphemy... (There is actually a much longer list that sadly expands).
3. **Real definition – Empirical analysis:** This form of definition is the listing of the necessary and sufficient conditions for observation of the concept. This is the most useful type of definition for our purposes since changes in the lower concepts do not change the nature of the higher concept. In a way, these definitions are hypotheses or suggestions, and can be modified as we learn more about the concept. In social science research, this type of definition is rare, and frankly, awesome to come across. Some cursory efforts, as examples:
 - A. Communication requires that a symbol be transmitted by one person and received by a second person, and a signal or meaning (represented by the symbol) must be shared, at least in part, by the transmitter and the receiver.
 - B. Information seeking consists of a person undertaking some action to increase his [or her] input of a specific type of communication content; that he [she] be, to some extent, uncertain what content he [she] will receive; and that his [her] action is to some extent motivated by uncertainty.
 - C. In both these cases you can see how clearly we've defined the term. It's not 100% there but we're way past giving examples or listing things that are part of it.

Level of Analysis: The next step is to distinguish between two kinds of attributes that are called property terms and relational terms.

A property term is an attribute that is observable for one person or object (or, you know, a property of that object), in isolation from other persons or objects. A relational term is only observable in the interaction of two persons, or the comparison of two objects, or in some similar two-unit relationship (not rocket science here).

Early in the process of explication (admit it, it sounds cooler) you should decide whether your concept is a property or a relation. Any further work with the concept should stick to whichever level of analysis you have decided on. Examples:

- Income is a property, but socioeconomic status is a relational term. So if you are interested in SES but have data only on income, you should be treating that data as relational. Easy cheesy.
- Information interpretation (seeing, hearing, thinking, etc.) can be thought of as a property of an individual. But it may be relational to other forms of behavior. For instance, it precedes other forms of communication. So your explication might well lead you into defining various forms of communication which are mutually exclusive. This is very frequent in social research, and provides a rich source of hypotheses.
- It should be clear that such concepts as conservatism, obedience, power, I.Q., relevance, knowledge, etc. are relational for most purposes. It *should* be clear. It isn't always that way.

Apply Defining Criteria: By this point in your defining you should start culling down your thinking to a few definitions. The more specific you can get, the better. Analyze them by means of these criteria:

- **Specificity**, or how specific the definition currently is, in terms both of details of observation and lack of sentences linking the various elements of the concept (the fewer the better). The more general the definition the worse off you are. Examples:
 - It is more useful to write that Jim-Bob “watched Channel 13 from 7 to 9 p.m. yesterday evening” than to say he “watched TV last night.”
 - A definition of “dissonance” as “any cognitive discrepancy” is less helpful than an extended definition that catalogs the various kinds of cognitions that can be discrepant with one another, the various means by which they might be that way, etc. (Not all the examples are hilarious, we need to learn here too).
- **Non-reification**, Ok we’re getting a bit more complex here. Nothing insane, just pay attention. Avoid giving names to attributes that you might imagine exist, but that cannot be observed. You may think that there is a key factor that has not been observed, but that could be given empirical meaning by careful research. If this is the case, you are proposing a hypothetical construct (the hypothesis being that it does, in fact, exist). If you really need to do this, the first task of your research should then be a “validity check” on its existence. Now stay with me - when you provide evidence of a hypothetical construct, it attains the more secure status of as a variable. If a hypothetical construct remains unobserved, it is considered a reification (see, took me a while, but we got around to the definition), and other researchers are unlikely to be persuaded by your reference to it. The important thing is to recognize the status of all elements of your definition, and to design research that will demonstrate their content. Examples:
 - Some common reifications in communication research are terms “catharsis,” “dissonance,” “group cohesiveness,” “coorientation,” and “attitude.” So far, none of these things has ever been observed, yet they hold important positions in certain theoretical formulations. The danger is that they may not exist, except in the minds of the theoreticians.
 - By careful research, some hypothetical constructs that have gradually been converted into variables including: “empathy,” “understanding,” “learning,” and “conformity.” However, these concepts are tied to very specific definitions, and when they are used to cover other kinds of situations they are simply reified terms.
- **Invariance of usage**. This is a simple one – the same person should use a term consistently. Sadly, this isn’t always the case. Some writers use the same term to refer to different things at different times. Even more common is the switching levels of analysis without making any distinction between terms. Examples:
 - Marshall McLuhan jumps from discussion of individual differences in perception to statements about national character, historical epochs, and other macroscopic concepts (no surprise there though, McLuhan was a bit all over the place).

- The term “generation” is a term used appropriately for analyzing families and other relational properties. It can be misapplied to differences between age groups in society as a whole in the notion of a “generation gap” or “generation X.”
- **Inter-observer agreement-** the measure of scientific usage would be that everyone uses the concept to mean the same thing. This level of agreement is practically impossible to achieve. But it is a useful goal to strive for, and careful application of the criteria for the concept and explanation can move you toward that goal. Some very common concepts share this agreement but these concepts are usually things like “what constitutes bread” and not that useful in abstract thinking/postulating.

Set boundaries. Perhaps the most important step in explication is to decide on clear boundaries for your concept. In meaning analysis, this is simply a matter of considering whether or not to include various lower concepts in your definition. In empirical analysis, boundaries are set by understanding which conditions are necessary and/or sufficient, and which are neither necessary or sufficient. In both cases, this stage of explication consists of stripping the concept of extra meanings or setting boundaries. Examples:

- A study shows that the strength of an expressed opinion can be increased by reinforcing it through social approval. The author’s conclusion is that reinforcement is a necessary condition for opinion formation. A later study shows that there are conditions under which opinions change without reinforcement. Holy hell! So the definition is watered-down - in that reinforcement becomes a sufficient condition, rather than a necessary one. Finally, it is found that in some instances opinions shift in a directly opposite to the pattern of reinforcement. So, the element of reinforcement is eliminated from the definition of opinion formation, because it is neither necessary or sufficient.

Tentatively define. Try to develop a satisfactory definition via empirical analysis. You may find that it is surprisingly brief and simplified. Simpler is better as long as you are satisfied that it covers what you want the concept to mean, and does not cover anything else. If an empirical definition eludes you, more research may be needed. So turn to meaning analysis and work on a list of lower concepts. Keep in mind, though, that this is a middle stage in the development of your concept.

Define operationally. For each element of each concept that you retain in your final definition, you must specify at least one operational definition. The more specific the better, and the more carefully each operation is linked to your conceptual definition by clear reduction statements the better. It is not necessary to attempt to list all operational definitions; indeed, if your concept is not trivial, it will be impossible to list them all.

But it is necessary to demonstrate that each element of your definition is able to be observed in real world experiences. Operational definitions consists of stating the observable indicators of the attributes (properties or relations) involved, so that someone else can recognize what you’re talking about. Operational definitions might be understood in the form of interview questions, experiments, unobtrusive observations,

content categories, etc. The key to wrapping up your concept definition is that all your reasoning and concept interdependencies are spelled out as clearly as possible so that someone else reading your work will know what you have done, what you think it represents conceptually, and why.

In the early stages of planning a research project, it is unnecessary to reduce operational definitions to such exacting terms. What what you need to do is demonstrate that you can do so when needed.

I know this piece on concept explication was very long, dry, and detailed. But that's for a good reason. The proper definition of your concept is the foundation of your study. If you lay a crappy foundation, your study will collapse, that's just science. So, now that we have done the proper research and laid the groundwork we can move on to the actual literature review. Don't act so excited.

Writing the Literature Review

There are two important things to keep in mind when crafting a literature review:

- Keep an open mind - in your research about the work already done on your topic you may stumble across perspectives or ideas about that which you are studying that had not occurred to you yet. It's alright to present opposing viewpoints in the lit. review, but remember that you'll need to openly state that you disagree with them, and then show why later on.
- You aren't writing the definitive work on the subject. Seriously, you're not. Unless of course you are, in which case ignore this bullet. What you are trying to accomplish in a lit. review is a cross section of the research and ideas about your topic, it needs to be generally comprehensive but does not need to include all the work ever done on the subject. However, you will almost always be expected to cover all the main ideas that surround that which you're focusing on.

The process is actually quite simple, yet so many times it can become overwhelming. Follow these steps and you should power through it with ease.

1. Gather
2. Read
3. Plan
4. Write

First, **gather** anything and everything: books, articles, documentaries, web pages (either print them out or keep a folder of bookmarks), news, etc. Whatever is applicable to your topic, As you search you find related search terms that you can use to pull topically relevant materials together. Personally it really helps me to print everything out (recycle or file it when you are done of course). If I have everything printed it helps me when I get to the read and plan stages. Gathering should be relatively easy depending on how much research has been done of your topic, if there is not much be sure to state

that in your lit. review based on how little your topic has been studied. If you're going to do that though, be sure you're right because if you're wrong you'll look like an idiot.

Tip: If you find a good article, the references for that article is a GREAT place to look for more sources.

Second, **read** it all. With highlighters, lots of highlighters. As you read through different categories should form in your mind. For example, some articles might deal more with the definition of your topic or treat it in a certain context. Write the keywords about the main areas on which the article touches on the cover (and DON'T write on it if it's a library book). Read it again. By the time you finish reading you should already be half an expert on your topic.

Now you **plan**. Figure out the different areas in which your literature falls. Lay out your definition based on the literature. Put your articles in piles that have a relation to each other. Write an outline as to the lit. review. For example:

Definition → Earliest understanding of the concept → Evolution of the concept →
Controversial studies → Current understanding of the concept

And finally you **write**. Sit down and write. Don't tackle it all at once or you'll lose your mind. In writing my Master's thesis I picked two articles a night and wrote on them, when I was done I was done. Breaking it down to small pieces is much easier to tackle providing you budget your time wisely.

The entire time you're writing be sure to relate and interweave your main idea throughout the lit. review, always be asking yourself "How does this relate to the question my study is asking?"

After you finish, put it down and leave it alone for a full 24 hours. Come back and read it, make sure it walks the reader through the concept from where it began to where you want it to go (your study) if you find significant holes or gaps do a bit more research and see if someone has wrote something that can fill out those ideas. The literature review is a background and the groundwork for the study, it is the story that leads us up to the present. Your paper or study should be that next logical step in the story. Once you finish writing your lit. review you should be an expert on your topic.

Study Purpose + Relevance

The study problem or purpose is usually a broad statement indicating the goals of the project. This was commonly called the “who gives a s***?” question in my grad work. Ask yourself that simple question and address it. If the answer is “no one,” rethink your study.

In your statement be sure to be:

- Clear and to the point
- Relevant to someone
- Logical and reasoned
- Documented in the literature review

Part of answering the question of study relevance is relating it to a real world problem or question. Sometimes the answer may actually be: “Because I was curious.” This is a perfectly acceptable answer that you should keep to yourself. No joke.

You may find something fascinating and want to study it but no one will care unless they can see the relevance to them and the burden of proving that is on you. Let’s walk through an examples:

Your reason: “I want to study the effects of organizational communication in a hospital because it’s always interested me and I want to know how it all works.”

What you need to say: “This study will examine the effects and effectiveness of organizational communication in a hospital and shed light on how communication is currently ineffective and may suggest how it can be made more efficient.”

The second sentence gives people a reason to care and that’s exactly what you’re trying to achieve. Now, your study may only be able to reveal the inefficiencies and have no clear solution. That’s alright, revealing what’s wrong is better than finding nothing and it gives you a clear focus for your next paper. As long as you show that and frame it correctly in your conclusion you’ll be in good shape.

This section can be as long or short as you need it to be. Just make sure you argue a good case for it’s relevancy, if you can do that in three paragraphs - great, if not, keep writing.

Objectives/Research Questions/Hypotheses

Identifying the research problem and developing a question to be answered are the first steps in the actual research process. The research question will guide the remainder of your work, design, and thinking for the project.

This is a short section, simply list your research questions and provide their justification as well as predictions (if appropriate).

Research Objectives

Your objective is a clear statement of the specific purposes of the study, which identifies the key study variables and their possible interrelationships. Here is where it becomes incredibly important to have a clear concept definition.

Research Question

The specific purpose stated in the form of a question. Your study will be the answer to this question. Examples:

- Do goldfish love beer? And if so, what types of beer do they love most? Why?
- How are teenage girls portrayed in coming-of-age films?

Hypotheses

A tentative prediction or explanation of the relationship between two or more variables. A prediction of the answer to the research question is usually a hallmark of a quantitative study, qualitative studies are usually have far more open ended and don't always contain predictions. Examples:

- Based on past experience, I suspect that goldfish do in fact love beer, and that they have a penchant for stouts because all goldfish originate in Ireland. (Obviously this is a joke, but you get the idea).

Functions (Proposal Only)

- Show that you have a clear picture of what you want to accomplish.
- Form the foundation for the rest of the proposal.
- Will be used to assess the adequacy/appropriateness of the study's proposed methods.

Successful RQs are:

- Clear and consistent.
- Identify the key concepts.
- Include the independent and dependent variables (if applicable).
- Measurable.

Successful Hypotheses:

- Clearly predict a relationship between variables.
- Relevant or novel

Research/Study Design

The study design is the overall plan for obtaining an answer to the research question or for testing the research hypothesis.

Your design should be chosen based on:

- Research question(s)/hypothesis.
- Strengths and weaknesses of alternative designs.
- Feasibility, resources, timeframe, ethics.
- Type of study: Qualitative, quantitative, or mixed.

How to be successful:

- Clearly identify and label the study design using standard terminology:
 - Quantitative/qualitative
 - Cross-sectional/longitudinal
 - True experiment/quasi-experiment
- Be sure that you specify the major elements of the design, including:
 - Variables, instruments
 - Participants: sampling frame, sample size, selection procedures
 - Timing of testing/intervention
- Use a diagram to illustrate the process
- Keep design consistent with objectives/hypotheses.
- Always, always justify the choice of design or why you picked it over others. Be sure to give a reason why your specific design is the appropriate choice to answer question, is unbiased, is precise, feasible, and ethical.

Writing Good Qualitative Research Questions

Here are the steps for writing good qualitative research questions, a lot of these can be applied to quantitative research as well:

First, specify the research problem: the practical issue that leads to a need for your study.

Complete these sentences:

- “The topic for this study will be...”
- “This study needs to be conducted because...”

How to write a good qualitative purpose statement: a statement that provides the major objective or intent or roadmap to the study. Fulfill the following criteria:

- One or two sentences
- Include the purpose of the study
- Include the central phenomenon
- Use qualitative words e.g. explore, understand, discover
- Note the participants (if any)
- State the research site (if any)

A good place to start: The purpose of this _____ (narrative, phenomenological, grounded theory, ethnographic, case, etc.) study is (was? will be?) will be to _____ (understand, describe, develop, discover) the _____ (central phenomenon of the study) for _____ (the participants) at (the site). At this stage in the research, the _____ (central phenomenon) will be generally defined as _____ (a general definition of the central concept).

Research questions serve to narrow the purpose. There are two types. First is **central**, the most general questions you could ask. Second come the **sub-questions** which subdivide the central question into more specific topical questions. Be sure to limit the number of sub questions, more than a handful is too many.

Use good qualitative wording for these questions.

- Begin with words such as “how” or “what”
- Tell the reader what you are attempting to “discover,” “generate,” “explore,” “identify,” or “describe”
- Ask “what happened?” to help craft your description
- Ask “what was the meaning to people of what happened?” to understand your results
- Ask “what happened over time?” to explore the process
- Avoid words such as: relate, influence, impact, effect, cause

Scripts to help design qualitative central and sub-questions:

Central question script (usually use only one):

- “What does it mean to _____ (central phenomenon)?”
- “How would _____ (participants) describe (central phenomenon)?”

Sub-question script:

- “What _____ (aspect) does _____ (participant) engage in as a result of _____ (central phenomenon)?”

Remember, never say never in qualitative research. There are endless possibilities... short of murdering your subjects of course.

Writing Good Quantitative Research Questions

There are three main types of questions that a researcher can ask when writing a quantitative study. They are:

- Causal
- Descriptive
- Predictive

Causal Questions

Causal questions are exactly what they sound like - a question that tries to compare two or more phenomena and determine (or at least suggest) a relationship between the two (or more).

For example: “Does reading the How To Write A Research Paper eBook increase the average research paper grades in a class?” (The answer, of course, is yes. Everyone gets an A++).

Quantitative questions rely on an independent variable or one that remains the same (the students reading the eBook, in the example above). These questions often involve the manipulation of an independent variable and the comparison of the outcome of this manipulation.

Generally the script for a causal question follows this formula:

Does the _____ (change) in _____ (independent variable) produce change (increase, decrease, not affect) the _____ (a dependent variable)?

Descriptive Questions

Once again, these are pretty much what you would expect them to be: descriptive research questions ask “how often?”, “how much?”, or “what is the change over time or in a different situation?” questions.

Generally the script for a descriptive question follows this formula:

How often do _____ (participants) do _____ (variable being studied) at _____ (research site)?

For example: “How often do college students need to use the bathroom during a test?” (Obviously the research site is implied here - at college).

Many times descriptive questions involve the degree or existence of relationship that exists between two or more variables. The script for a descriptive relationship question usually follows the below formula:

What is the relationship between _____ (variable) and _____ (variable) for _____ (participants)?

For example: “How often do college students need to use the bathroom during a test as compared to during a normal class?”

Descriptive questions usually lead to further questions that your study was never meant to answer and it is a BIG MISTAKE to suggest so. In the example above one could deduce that if college students use the bathroom quite a bit more during tests that they may be cheating, or just more nervous, but you don't know that! Don't speculate until the very end and say exactly that: “This could mean many different things. However, more study is required to determine the reason(s).” The answer “why” is an entirely different study and almost always a qualitative one.

Predictive Questions

Predictive questions are questions that try to predict (no way!) whether one or more variables can be used to predict an outcome. Predictive questions and studies are always highly controversial, be sure to cover all your bases when trying to predict something, more often than not there are about 3,000 variables that come together to create an outcome and trying to link only a few of those to always get the same outcome can be a huge mistake (especially in social science).

Generally the script for a predictive question follows this formula:

Does _____ (cause variable) lead to/create _____ (outcome variable) in _____ (setting)?

For example: “Does the color of a person’s hair lead to higher grades in school?”

As a general suggestion, especially early on, stay away from predictive studies. They can be some of the most fun, but more often than not people get far too excited and overstep the bounds of their study. For example, in answering the above question, you come to the conclusion that yes, people with black and very dark brown hair always get higher grades in school. But unless you explore the ALL possible variables you can’t claim that. Maybe IQ changes someone’s genes and smarter people always have darker hair. Maybe due to the “dumb blonde” stereotype teachers always give preferential treatment to non-blondes. You just don’t know - be very careful in these types of studies. (Obviously the example was meant to be humorous, but you get the point).

Participants

Obviously based on your type of study you may or may not have participants. A content analysis, for example, wouldn't include this section. Participants is usually a sub-section of the research/study design.

Be sure to cover:

- Who will be studied?
- How will they be selected?
- How will they be recruited?
- How will they be divided into groups? (If necessary)

Who Will Be Studied: Specify the eligible participants

- Target population: demographic characteristics
- Accessible population: temporal & geographic characteristics
- Inclusion/Exclusion Criteria - are a certain type/gender/etc. of people who will be excluded for a reason. Specify the reason and justify it!

How Will They Be Selected: Sampling

The process of selecting a portion of the population to represent the entire population.

Types of Sampling

1. Probability: each element in the population has an equal, independent chance of being selected.
 - A. Simple random sampling
 - B. Stratified random sampling
 - C. Cluster sampling
 - D. Systematic sampling
2. Nonprobability: this type needs to be justified, why are you using this method - there is a bigger inherent risk of study criticism in non-probability.
 - A. Convenience sampling
 - B. Snowball sampling
 - C. Judgmental sampling

Be sure to have a(an):

- Clear description of study population.
- Appropriate inclusion/exclusion criteria.
- Justification of study population and sampling method (bias).
- Clear description of sampling methods.

How Will They Be Recruited?

Describe what methods will be used to recruit participants. Important to document that the study will be feasible and that there will be no ethical problems.

Methods of Randomization

- Drawn from a hat
- Random number table
- Computer generated

Sample Size

To make a rough estimate of how many participants are required for answering the research question. During the design of the study, the sample size calculation will indicate whether the study is feasible. During the review phase, it will reassure the reviewers that not only the study is feasible, but also that resources are not being wasted by recruiting more participants than is necessary.

Hypothesis-based sample sizes indicate the number of participants necessary to reasonably test the study's hypothesis. Hypotheses can be proven wrong, but they can never be proven correct (think about that one). This is because the investigator cannot test all potential cases in the world. Hence, the researcher attempts to test the research hypothesis through a sample of the larger population. They can be proven "well-that-seems-to-be-the-case-but-we'll-never-know-100%."

Successful sampling:

- Justifies the sample size - why did you pick the sample size you did? Make a good case for your decision.
- Provides data necessary to calculate and state how the sample estimates were obtained, including desired power, Alpha level, one/two-sided tests, estimated effect size.

Data Collection + Analysis

Data collection and analysis endeavors to identify the dependent or outcome variables (the presumed effect) and the independent or predictor variables (the presumed cause). Remember that variables are not inherently independent or dependent and in descriptive and exploratory studies, this distinction is not made.

Measures/Instruments

Questionnaire: A method of gathering self-report information from respondents through self-administration of questions in a paper and pencil format.

Variables: Characteristic or quality of an object that takes on different values.

Ask yourself:

- Are the words simple, direct and familiar to all?
- Is the question as clear and specific as possible?
- Is it a double-barreled question?
- Does the question have a double negative?
- Is the question too demanding?
- Are the questions leading or biased?
- Is the question applicable to all respondents?
- Can the item be shortened with no loss of meaning?
- Will the answers be influenced by response styles?
- Have you assumed too much knowledge?
- Is an appropriate time referent provided?
- Does the question have several possible meanings?
- Are the response alternatives clear and mutually exclusive (and exhaustive)?

Scale: A measure of an attribute, consisting of several items that have a logical or empirical relationship to each other; involves the assignment of a score to place participants on a continuum with respect to the attribute.

Examples of Scales

- Quality of Life
- Customer Satisfaction
- Source Credibility
- Social Economic Status (SES)

Keep in mind when selecting an instrument:

- Objective of the study
- Definitions of concept and measuring model
- Reliability: degree of consistency with which an instrument or rater measures a variable (i.e., internal consistency, test-retest reproducibility, inter-observer reliability).
- Validity: degree to which an instrument measures what it is intended to measure (i.e., content validity, concurrent validity and construct validity).
- Sensitivity: ability to detect change.

- Interpretability: the degree to which one can assign qualitative meaning to an instruments quantitative scores.
- Burden or ease of use

Remember to always pretest questionnaires and indicate if a questionnaire has been pretested.

The Survey Questionnaire

The complex art of question writing has been investigated by many researchers. Survey research is traditionally almost always used in quantitative research, however it can be integrated into qualitative research with some creative thinking.

Keep the language simple & relax your grammar.

Analyze your audience and write on their level. Whenever possible, always avoid using technical terms/jargon. Remember, the simpler the better and if someone can misunderstand something, they certainly will. Relaxing your grammar can make much more formal questions sound a bit more personable, for instance feel free to use “who” in an instance where formal tradition might suggest that “whom” is, in fact, correct.

Write short questions and a short questionnaire.

Long questions can become ambiguous and confusing. A survey respondent, in trying to understand a long question, may forget part of the question and thus misunderstand question. Above all, draw a distinction between what is essential to know, what is useful, and what is unnecessary. Keep the essential, keep the useful to a minimum, and throw out anything unnecessary.

Always apply the “So what?” and “Who cares?” tests to each question. Remember, however, to keep in mind that you should not leave out questions that would yield necessary data just because it will shorten your survey. If the information is needed, ask the question.

Limit each question to one idea or concept.

A question consisting of more than one idea may confuse the respondent and lead to a pointless answer. Consider this question: “Are you in favor of raising taxes and lowering deficit?” What the hell would either answer mean? Would a yes mean both only? Or just one?

Don’t write leading questions.

These questions are worded in a manner that suggests an answer. Some respondents may give the answer you are looking for whether or not they think it is right. Think about what you assume when you ask each question. For example, if you ask “What is the best day of the week to schedule the new review meeting?” you’re assuming that that everyone taking the questionnaire even wants/needs another meeting.

Remember a perfectly worded question gives the respondent no idea as to which answer you may believe to be correct.

Avoid subjective words & double negatives.

These terms mean different things to different people (hence, subjective...). One person's "fair" may be another person's "god awful." How much is "often" and how little is "seldom?" You can easily confuse respondents when involving two negative words. So tell me, don't you not like reading this eBook?

Allow for all possible answers.

Respondents who can't find their answer among your list will be forced to give an invalid reply or, possibly, become frustrated and refuse to complete the survey. Wording the question to reduce the number of possible answers is the first step.

Avoid dichotomous questions. If you cannot avoid them, add a third option, such as no opinion, don't know, or other. These may not get the answers you need but they will minimize the number of invalid responses. A great number of "don't know" answers to a question in a fact-finding survey can be a useful piece of information. But a majority of other answers may mean you have a poor question, and perhaps should be cautious when analyzing the results.

Avoid emotional/morally charged questions.

This one kind of speaks for itself. It's OK to ask about a person's morals, etc. just don't write leading questions.

Assure a common understanding.

Write questions that everyone will understand in the same way. Don't assume that everyone has the same understanding of the facts or a common basis of knowledge. Identify even commonly used abbreviations to be certain that everyone understands.

Start with interesting questions.

Start the survey with questions that are likely to sound interesting and attract the respondents' attention. Save the questions that might be difficult or threatening for later.

Don't make the list of choices too long.

If the list of answer categories is long and unfamiliar, it is difficult for respondents to evaluate all of them. Keep the list of choices short.

Avoid difficult recall questions.

People's memories are increasingly unreliable as you ask them to recall events farther and farther back in time. You will get far more accurate information from people if you ask, "About how many times in the last month have you gone out and seen a movie in a movie theater or drive-in?" rather than, "About how many times last year did you go out and see a movie in a movie theater or drive-in?"

Use closed-ended questions rather than open-ended ones.

Most questionnaires rely on questions with a fixed number of response categories from which respondents select their answers. These are useful because the respondents know clearly the purpose of the question and are limited to a set of choices where one answer is right for them. An open-ended question is a written response. For example: "If you don't like the moldy cheese, please explain why." If there are an excessive number of written response questions, it reduces the quality and attention the respondents give to the answers.

Put your questions in a logical order.

The issues raised in one question can influence how people think about subsequent questions. It is good to ask a general question and then ask more specific questions. For example, you should avoid asking a series of questions about a free product sample and then question about the most important factors in selecting a product.

Understand the should-would question.

Formulate your questions and answers to obtain exact information and to minimize confusion.

For example, does "How old are you?" mean on your last or your nearest birthday? By including instructions like "Answer all questions as of (a certain date)", you can alleviate many such conflicts.

Include a few questions that can serve as checks on the accuracy and consistency of the answers as a whole.

Have some questions that are worded differently, but are soliciting the same information, in different parts of the questionnaire. These questions should be designed to identify the respondents who are just marking answers randomly or who are trying to game the survey (giving answers they think you want to hear). If you find a respondent who answers these questions differently, you have reason to doubt the validity of their entire set of responses. For this reason, you may decide to exclude their response sheet(s) from the analysis.

Organize the pattern of the questions:

- Place demographic questions at the end of the questionnaire.
- Have your opening questions arouse interest.
- Ask easier questions first.
- To minimize conditioning, have general questions precede specific ones.
- Group similar questions together.
- If you must use personal or emotional questions, place them at the end of the questionnaire.

Pretest the questionnaire.

This is the most important step in preparing your questionnaire. The purpose of the pretest is to see just how well your opening motivates your respondents and how clear

your instructions, questions, and answers are. You should choose a small group of people (from three to ten should be sufficient) you feel are representative of the group you plan to survey. After explaining the purpose of the pretest, let them read and answer the questions without interruption. When they are through, ask them to critique the opening, instructions, and each of the questions and answers. Don't be satisfied with learning only what confused or alienated them. Question them to make sure that what they thought something meant was really what you intended it to mean. Use the above hints as a checklist, and go through them with your pilot test group to get their reactions on how well the questionnaire satisfies these points. Finally, rewrite any parts of the questionnaire that are weak.

And have fun in the wild world of survey research you freaking rebel!

Data Analysis

Data analysis is usually specific to quantitative research but can have a place in qualitative. However, in qualitative this section is usually called discussion. When analyzing your data be sure you detail your procedures for:

- Recording, storing and reducing data
- Assessing data quality
- Statistical analysis

Step 1: Descriptive statistics

- Describe the shape, central tendency, and variability - what's the main thing your data is saying.
- Looking at variables one at a time: mean, median, range, proportion

Purposes

- Summarize the important features of numerical data
- Pick up data entry errors: i.e. 3 genders, age 150
- Characterize participants
- Determine distribution of variables (figure out your range e.g. everyone who took your survey was between 32 and 57).

Step 2: Analytic/inferential statistics

- Looking at associations among two or more variables

Purposes

- Estimate pattern and strength of associations among variables
- Test hypotheses

This is meant to be a very broad overview of statistical analysis. When analyzing your actual data, I recommend picking up a stats textbook as I can't cover how to run all the statistics tests here.

Ethical Considerations

Many time you'll need to certify your study with your school's approval board for research on human subjects, pretty much so you don't repeat the [Stanford Prison Experiment](#).

Remember to keep ethical principles in mind and consider their implications.

- Ethical Principles
 - Respect for persons (autonomy)
 - Non-maleficence (do not harm)
 - Beneficence (do good)
 - Justice (exclusion)
- Ethical Considerations
 - Scientific validity – is the research scientifically sound and valid?
 - Recruitment – how and by whom are participants recruited?
 - Participation – what does participation in the study involve?
 - Harms and benefits – what are real potential harms and benefits of participating in the study?
 - Informed consent – have the participants appropriately been asked for their informed consent?

Sometimes when researching something controversial or potentially harmful you need to spend an inordinate amount of time considering the ethics. Don't skimp on this! There is plenty of great research that needs to be conducted on risky or at-risk populations. Just because you need to keep a lot in mind doesn't mean you should shy away from those types of studies.

Budget

Any research project is going to need a budget. Budget is usually only a section of a proposal for a research study, most likely only a thesis or a grant application. Now a small paper may need nothing more than your time and a few copies from your library. In those cases there is no need to include the budget in your proposal.

When writing a budget you have to have already figured out your entire study design. The next step is to simply work through the plan for your study and see where there will be expenses.

For example, will you need to drive long distances? Do you need to purchase tech (recorders, cameras, etc.), maybe you can rent them, etc. Just work through the various options for the things you need and calculate how much it will cost. This should be the easiest part of the proposal if you've done your research design properly.

How to be successful:

- Read instructions especially if applying for grants
- Itemization of costs
 - Personnel (salary and benefits)
 - Consultants (salary) – Equipment
 - Supplies (be complete, include cost per item)
 - Travel
 - Other expenses
 - Indirect costs
- Do not inflate the costs
- Find and study a successful application
- Start early, pay attention to instructions/criteria
- Carefully develop research team
- Have others review your proposal

One of the most important parts is to justify the your budget and expenditures. But sure to have an answer as to why you need the more expensive camera, or why you need 3 research assistants and not two. It's OK to have a big budget, just make sure you justify everything you include.

Results + Analysis

Results (or Findings)

Depending on the study you're conducting you will most likely have a results or Findings section. This is simple. Just describe exactly what you found. Report your findings simply and objectively. Do not add editorial, explanation, or assumption. Say what happened and what you found. That's it.

Obviously if you're writing a proposal you won't have a results/findings or an analysis/discussion section, just jump straight to the conclusion.

Unless your research has data collection or observation there is a good chance you won't have a results section. For example, as critical, rhetorical, or historical piece will probably not have a results section as there were no results to give. You simply reviewed the literature and jump straight into discussion about it.

On the other hand - most quantitative and some qualitative (in-depth interviews, focus groups, and the like) will need a results section.

Be sure you:

- Describe exactly what you found
- Leave out the editorial
- Assess your hypothesis (yes or no) - you can get into why it's yes or no in your discussion/analysis
- Are clear - after reading this section your reader should know exactly what you found NOT what you think it means or how it relates to the wider world

Analysis (or Discussion)

The purpose of this section is to take the results and findings from the previous section and make them make sense.

Answer:

- What's significant? Remember, the absence of something can be just as significant as its presence. This is where you really need to do some hard thinking.
- What are the takeaways? What are the few main points that are most important and the reader should take with them?

If you don't have a specific set of results (you may be analyzing a text, an interview, etc.) the analysis can be more of an "unpacking of meaning." This means that you need to take the reader through all the important parts and explain (explicate!) what it means.

If you have a theoretical framework for your study (always a good idea) this is the area where you use the theory as a lens to view your research. What you found can disprove the theory or show that it works, use the theory to make sense of what you found and vice versa.

This section is really the only original thinking you'll be doing. The intro, abstract, and conclusion will be a summation of the thinking you do here. This is one of the shortest sections in the this manual, but one of the most complex and longest in yours. Take your time, talk it out. Put everything that hits your head down on the paper. You can always throw it out later.

Remember - think!

Conclusion + Final Thoughts

Writing the conclusion is both fun and difficult at once. You need to sum up your entire study from a macro level. The conclusion should briefly touch on what you found but the point is to answer the “What does it all mean?” question. It may not mean a lot, it may be world changing. Say whichever it is and suggest where the next step in the research is. It’s OK to speculate in the conclusion, but be sure to state that you are speculating. Basically, wrap up all the loose ends you’ve created throughout the paper. As always, don’t forget to:

PROOFREAD!

When you think you’ve finished proofreading, do it two more times. Nothing takes a great paper to a crappy paper faster than bad proofreading. If you can’t tell the difference between “then” and “than” no one will believe your study will be that good. You will most likely miss a few things. I’m sure I have in this manual. It’s OK, just make sure you’ve done everything possible to make sure your mistakes are minimized.

I know I’ve harped on this a lot throughout but one of the most important things really is to justify everything. If you can make a good argument for all the things you do you’ll avoid criticism, move your project forward much more quickly, and get a much better grade. When you read through your writing look for anywhere that a reader could ask themselves: “Why did they do that?” and immediately answer the question so they’ll never have the need to ask you.

Be careful about cause and effect. It’s OK to observe perceived effects but suggesting clear cause and effect relationships can seriously put you down the wrong path. Always CYA (cover your ass). Always include phrases such as “...the results suggest that this may be one cause of...” Unless you’re 100% sure and want to spend a lot of time defending that belief leave yourself a way out.

Checklist for success in a conclusion:

- Review/summarize: Avoid using the same words you already have, say it in a new and interesting way so you don’t sound repetitive.
- Significance: How and why is your study significant?
- Implications: What does it mean for other students, researchers, teachers, etc.?
- Strengths: What are the strong points of the study?
- Weaknesses: Outline where the study may have fallen down, state the limitations, this preempts someone else pointing the finger at you.
- Future Research: What’s next? What are the logical next steps that your research suggests?
- Nail the Ending: One of my grad professors said: “Punch your readers in the face with something memorable.” Do it. Give them some final, memorable thought to take away.

Just one final thought for you that comes from my personal take on the search for truth (research) and how to interpret it. Many people, social scientists and scientists included believe that there is one, true ultimate reality and through social research we can discover this. I'd caution against this - we all construct and co-create our realities on a day-to-day basis. Sometimes what was true one day, may not be true the next when it comes to people and human interaction. Of course this idea only applies to socio-cultural constructs, not scientific inquiry (after all, the boiling point of water never changes... that we know of).

I'm not suggesting that science is the only source of truth (that's called positivism). Our realities are an evolving, staged production. Therefore, the possibility of certainty must be rejected. Realize that your study only captures the exact moment in time on which it was focused. Nothing more. Not to say that this isn't valuable - it absolutely is. But be aware of this when trying to apply what you learned to other situations.

Always resist the urge to generalize your findings, claim "truth," and imply that you have found more than a temporary answer. We'll never find truth through research, only clarity. Research is exactly that - a search for clarity and not truth. Focus on that and you'll find your work more rewarding and you'll see the richness of the subject you study.

Bibliography/Works Cited

You can present either a Works Cited list at the end of your proposal OR a Bibliography there is a specific difference between the two. A few general tips in regard to quotations and citing works:

- Never quote sources who are quoting sources. This means if you like the quote that someone quoted, find the original source and read it yourself.
- Don't use vague modifiers (very, a lot, really, etc.) kill these, let your quotes + facts stand for themselves.
- Don't use quotes that are opinions to validate your own claims.
- Minimize your use of long block quotes. The purpose of long block quotes is so you don't have to paraphrase and explain. The point of your writing should be to paraphrase and explain.

Works Cited is a list of only the works you have summarized, paraphrased, or quoted from in the paper directly. If you never cited or referenced the work, it doesn't go here. If you read it and it may have sort of influenced your thinking, it doesn't go here.

Bibliography includes everything that you would have in a works cited (the works you have summarized, paraphrased, or quoted from in the paper directly) however, it also includes anything you read, watched, etc. that contributed to the paper.

Citation Styles: There are a few different types of citation styles that are generally acceptable for academic work. However, APA is the most widely used and the one which will be covered (albeit briefly) here. The others are Chicago and MLA.

For the full rundown of how to cite in-text and how to cite various works, you need to pick up either the APA stylebook or the pocket guide (you can find Amazon links to both on my site: MassCommTheory.com)

Here are the most important ones and a quick example for easy reference:

Book:

Authorlastname, A. A. (Year). *Title of work: Capital letter starts the subtitle.*
Location: Publisher.

So for example:

Durden, T. A. (1998). *The rules of fight club.* Somewhere, NY: Club Publishing.

Remember, for "Location," always write the city and state using the two letter abbreviation without periods (e.g. New York, NY). Also, pay attention to the capitalization of the title, just the first letter and the first letter of the subtitle (if it has one), unless there is a proper noun in the title.

Simple. There are a few other variations that you may run across:

Edited Book, No Author:

Dunn, G., & Brooks, T. (Eds.). (1999). *Consequences of country music*. Boston, MA: Russell Sage Foundation.

Edited Book with an Author or Authors:

Note that the first author listed is the author of the article you're using.

Geyeant, N. Y. (2011). *The best sports team ever*. T. V. Coughlin (Ed.). New York, NY: Anchor.

Film:

I include this one because so many get it wrong and as students of the media (maybe?) hopefully you'll find this useful.

Producer, P. P. (Producer), & Director, D. D. (Director). (Date of publication). *Title of film* [Motion picture]. Country of origin: Studio or distributor.

If the film has 8,000 producers (a lot do) it would look like this:

Producer, P. P., Producer, P. P., Producer, P. P., & Producer, P. P. (Producers), & Director, D. D. (Director). (Date of publication). *Title of film* [Motion picture]. Country of origin: Studio or distributor.

If there are multiple directors, follow the same format.

Journal Articles:**Print:**

Author, T. T. (Year). Title of article: Subtitle starts with a capital letter. *Name of the Journal, Volume #*(Issue #), page-page.

For example:

Weaver, T. J., & Lacer, J. (2011). The new weave. *The Journal of Advanced Basket Weaving, 8*(2), 90-104.

Online:

Author, A. A., & Author, B. B. (Year). Title of article. *Title of Online Periodical, volume number*(issue number if available). Retrieved from <http://www.website.com/>

Overall pretty straight forward, there are myriad online resources dedicated to citation styles, just search the style you're looking for and you should have no trouble understanding how to properly cite it.

Theory Words + Definitions

There are a lot of terms that get thrown around in the academic lexicon, sometimes they align with those you'll find in a dictionary, sometimes they don't. So I thought I'd outline a good handful for you here that will be helpful as you wade through creating and understanding the foundation of research. This list is based on Reynolds's book: a primer in theory construction (a must have for aspiring theorists), citation in the index.

Those which are covered here are:

1. Assumptions
2. Causality
3. Concepts
4. Conceptual Definition
5. Dependent Variables + Independent Variables
6. Empirical Testing
7. Explication
8. Hypothesis
9. Measurement
10. Models and Paradigms
11. Necessary Condition
12. Object of Analysis
13. Operational Definitions
14. Postulates
15. Relations
16. Reliability
17. Sufficient Condition
18. Theoretical Statement
19. Type I and Type II Errors
20. Validity

1. **Assumptions:** These are statements about the concepts used in the theory. Assumptions are taken for granted in the theory being tested. They are not investigated, but the falsification of that theoretical statement may result in the revision of the assumption in the future. Assumptions (or revised assumptions) may serve as hypotheses in subsequent research. Two or more assumptions provide the premises from which the theoretical statements (and hypotheses) are derived through logic.
2. **Causality:** As you may know by now, this is a "can of worms." It's probably better to think of establishing causality between two variables as something that we move toward than to think of it as being capable of being "discovered" through an experiment. Realize that it is better to think in terms of various types of causes than to look for "the cause" of something. To work toward causality, three conditions have to be met: There has to be an association (correlation) between the two variables; a time order has to be established such that the presumed cause precedes the effect; and other explanations have to be ruled out, such as that some third variable causes

both of the two variables of interest. If this last is the case, then we say the relationship we thought was causal was really spurious.

3. **Concepts:** The most basic elements in theory, they are the attributes of the object that we are trying to explain and those that we are using to provide the explanation. They are abstractions from reality. We also use them in everyday life, of course, but research concepts are supposed to be more precise. Concepts are interesting to researchers only when they vary; we call a concept that can be observed to have different values a variable (as contrasted to a constant). Often called constructs because scientific concepts are carefully constructed from observation.
4. **Conceptual Definition:** Each concept in a theoretical system (a collection of interrelated theoretical statements) should have a clear and unambiguous definition that is consistently used by the individual theorist and in agreement with the way other theorists define the concept. But that is seldom the case in social science. Careful definition of concepts is where we must begin with theory building (Normally I hate italics, but dammit, that sentence is important, write it down!).
5. **Dependent Variables + Independent Variables:** The dependent variable is the “effect” that we are seeking to explain; the independent variable is the presumed “cause” of that effect. We often say “x” is the independent variable that is the cause of the dependent variable “y,” (the effect). There are various names for third variables: extraneous variable, intervening variable, mediating variable, etc. that alter the relationship between the independent and dependent variables.
6. **Empirical Testing:** A good theory must be capable of being tested by observation in the “real world.” Most frequently, statistics are used to make this test. Note that we test theory indirectly through hypotheses and operational definitions. It is made even more indirect by the fact that we test the null hypothesis: the statistical hypothesis of no difference – that the relationship is not strong enough to reject chance. If the data is judged to be not strong enough to reject the null hypothesis, then we have falsified the theoretical statement. If the observations are judged sufficient to reject the null hypothesis, then theory merely remains viable or tenable.
7. **Explication:** The process by which conceptual and operational definitions are connected. This is done either by analysis using the logical criteria of definition or through empirical analysis using research data to clarify measurement to distinguish the concept from other concepts. Abstract concepts often need to be broken down into two or more lower order (less abstract) concepts before they can be translated into hypotheses. Basically a fancy way of saying “explain.”
8. **Hypothesis:** A statement of the relationship between two or more operational definitions. It should be capable of being stated in an “if, then” form, and is less abstract than theoretical statements, assumptions, and postulates. The type of research you are doing will largely dictate how to phrase your hypothesis.
9. **Measurement:** The assignment of values to objects on the basis of rules relevant to the concept being measured. Reynolds describes four levels of measurement: nominal, ordinal, interval, and ratio. The quality of measurement is assessed by reliability and validity.
10. **Models and Paradigms:** Social scientists sometimes find it useful to employ simplified versions of reality to gain insight and to illustrate their theoretical ideas. A model is a conceptual structure borrowed from some field of study other than the

one at hand; it needs not include causal statements, but it does specify structural relationships among variables. A paradigm is a conceptual structure designed specifically for the field of application; it also specifies structural relationships. When a model or paradigm incorporates causal statements, it is usually called a theory. Models and paradigms can be assessed on the basis of their usefulness in helping us construct valid theory.

11. **Necessary Condition:** A situation that must be present for some effect to take place. This is one type of cause. Sometimes a necessary condition describes the level of a third variable that is essential for the relationship between two other variables to hold. In this case the third variable can also be called a contingent condition. Third variables that make the relationship stronger or weaker but don't totally limit its domain (are not necessary conditions) are called contributory conditions.
12. **Object of Analysis:** The system whose properties we are trying to explain. The research problem should determine what attributes of the system we are interested in. If the attributes are those of the individual person (e.g., a personality characteristic, attitude change), then it probably belongs to cognitive theory. If the attributes are those of a group of persons (e.g., community status, rate of diffusion), then it lies in the social systems realm. Societies, communities, large organizations, and primary groups are types of social systems.
13. **Operational Definitions:** The set of procedures a researcher uses to measure (or manipulate as in experiments) a given concept. These should follow clearly and logically from the conceptual definition of the concept. These are less abstract than conceptual definitions. They tell us "how to measure it," ideally using more than one method.
14. **Postulates:** Ideas, biases, and strategies of a particular theorist that help to explain why his theory is constructed as it is and why he does the kind of research he does (nothing to do with posteriors). These statements are more abstract than assumptions or theoretical statements and not usually testable. They may represent statements about human nature, causation, the nature of data, and the broad type of causal forces in society – in short, what's important to look at and how you should do it.
15. **Relations:** (No not that kind, get your mind out of the gutter) The connection between concepts can be stated in a number of forms: that one variable causes another, that two variables are associated, and more complicated relations are possible.
16. **Reliability:** The stability and precision of measurement of a variable. Stability overtime is called test-retest reliability (i.e., do those scoring high at one time also score high at a second point in time). A second form, equivalence, looks at the level of agreement across items (internal consistency) or forms, or between coders doing the measurement.
17. **Sufficient Condition:** A situation that if present is enough to produce all effects. This implies that there are no contingent conditions. Experiments are probably more suited to finding sufficient conditions than are nonexperimental sample surveys and other methods. Social scientists would like to find necessary and sufficient conditions, but that is a goal, not an immediate reality.

18. **Theoretical Statement:** The statement specifying the relation between two or more concepts (variables). Reynolds calls these relational statements and distinguishes these from existence statements that include postulates, definitions and assumptions. Other people call theoretical statements axioms, theorems or propositions. Seriously, the label doesn't matter, just so we know what we're referring to.
19. **Type I and Type II Errors:** One of the problems of doing research is that you can be wrong in the inferences you make from research evidence. You can be wrong if you decide to reject the null hypothesis and say that the result is consistent with your theory. That's a type I error. If your results don't look very supportive and you decide you can't reject the null hypothesis, you can be wrong too. In that case you incorrectly gave up on your research hypothesis (indirectly falsifying your theory), but there really was support in the "real world" and your research wasn't good enough to detect it. That is a type II error.
20. **Validity:** The degree to which you're really measuring what you think you're measuring. There are two different approaches: you find external independent evidence (e.g., a criterion group known to possess the characteristic) against which to compare your measurement (pragmatic validity), or you look at the extent to which the empirical relationships of the concept to other concepts fit your theory (construct validity).

Considerations

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Literature Review:

The content referring to concept explication is based on a handout from my grad work and the monograph:

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If you have any questions or want to open a dialogue about pretty much anything, you can reach me at gavindavie@me.com.