Sources for Ideas

A general idea or question, such as "Why do women, on average, live longer than men?" or a more specific question, such as "What made the butterfly ballot in Florida so hard for voters to use in the 2000 presidential election?" is the usual starting point.

The sources for these ideas are diverse, but include:

1. *Common Sense*. Cultures have many ideas about behavior, norms, etc. Examining these is one way to take behavioral science beyond common sense.

2. *Observation*. Our own observations can lead us to ask why or how something comes about. That is, curiosity is the source for some ideas.

3. *Current Theories*. Studies are done to test theories by examining whether their predictions are confirmed or whether their assumptions are valid.

4. *Past Research*. Science is self-correcting. Many studies are done based on previous research leading to alternative interpretations. New studies are done to elaborate. For example, does facilitated communication work to help autistic children? (see Montee et al., 1995)

5. *Practical Problems*. We return to the Florida butterfly ballot. Was the proportion of ballots marked in error higher, lower or the same as voting by other means? If higher, why?

The process of investigating a general question or using current theory and past research to formulate a new question involves finding out what has been done before.

I. Reading a Journal Article

A) Main sections and elements
1. Title and Abstract
2. Introduction
3. Methods
4. Results
5. Discussion
6. References

B) Title and Abstract

These are concise summaries of the article.

C) Introduction

This section describes the question being investigated, reviews and summarizes previous research and relevant theories, states the hypotheses under investigation and details any predictions.

D) Methods

This section describes the details of how the research was done. It has subsections:

1. Subjects or Participants (who)
2. Materials or Apparatus (what)
3. Procedure (how, where)
4. Design

E) Results

This section describes the data and their statistical treatment. Tables and graphs are often used to convey the data.

1. Most data is presented using descriptive statistics (mean, std. dev., etc.)

2. The original hypotheses are assessed using inferential statistics, which give the odds that the results were due to chance.

3. Choice of Figure or Table depends upon whether it is more critical to convey an overall impression or trend (Figure) or to give precise values (Table).

4. Type of figure depends upon nature of variables.

The scale for the data in a Figure can be used to exaggerate or minimize the impact of the data (lying with statistics).

F) Discussion

Interpretation of data and how it relates to original hypothesis. Implications of data for theories and other experimental work.

G) References

Other published work discussed and cited in the paper (not a bibliography).

Bar Graph Example
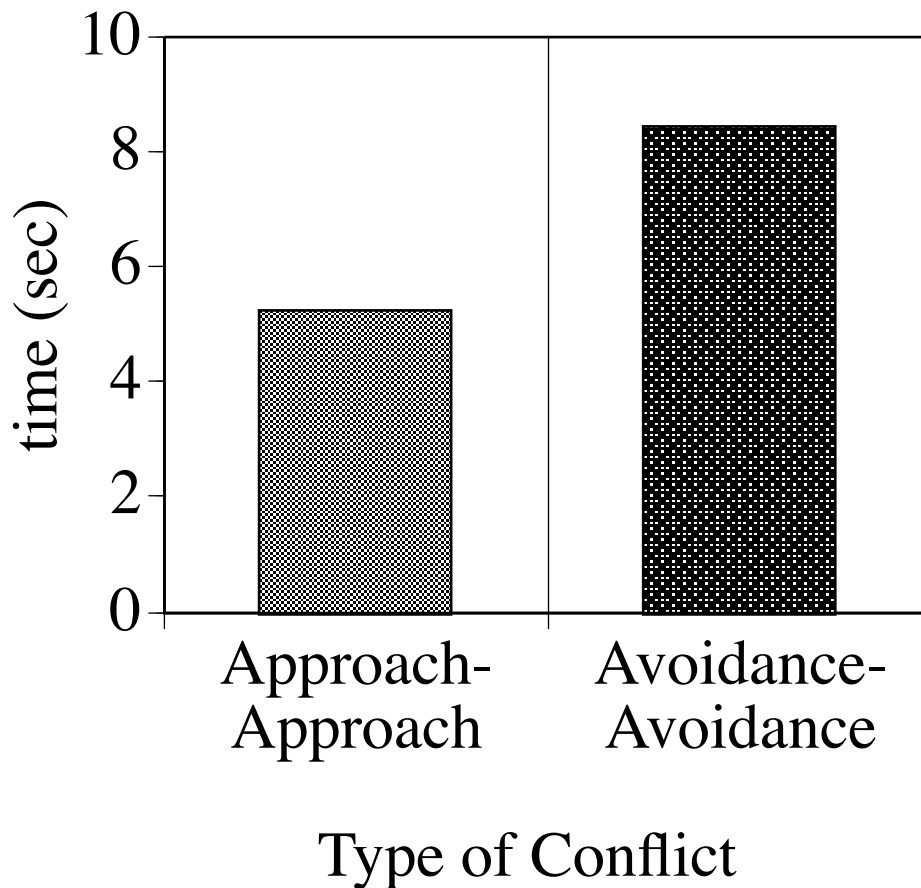
Independent variable (Type of Conflict) is placed on abscissa (x-axis)

Dependent variable (time in sec) is placed on ordinate (y-axis)
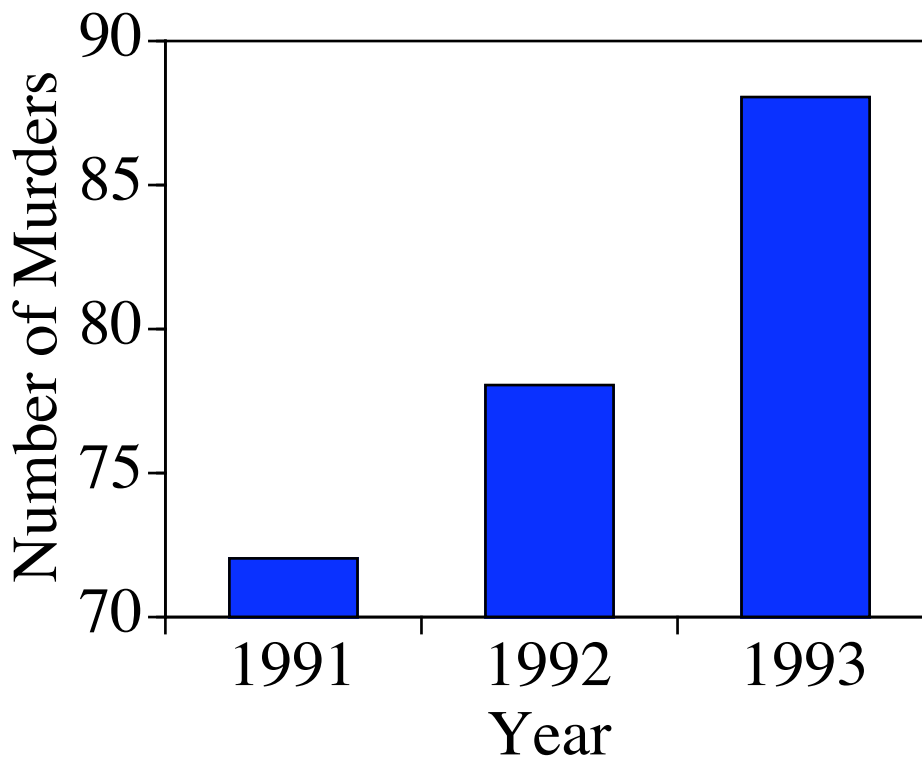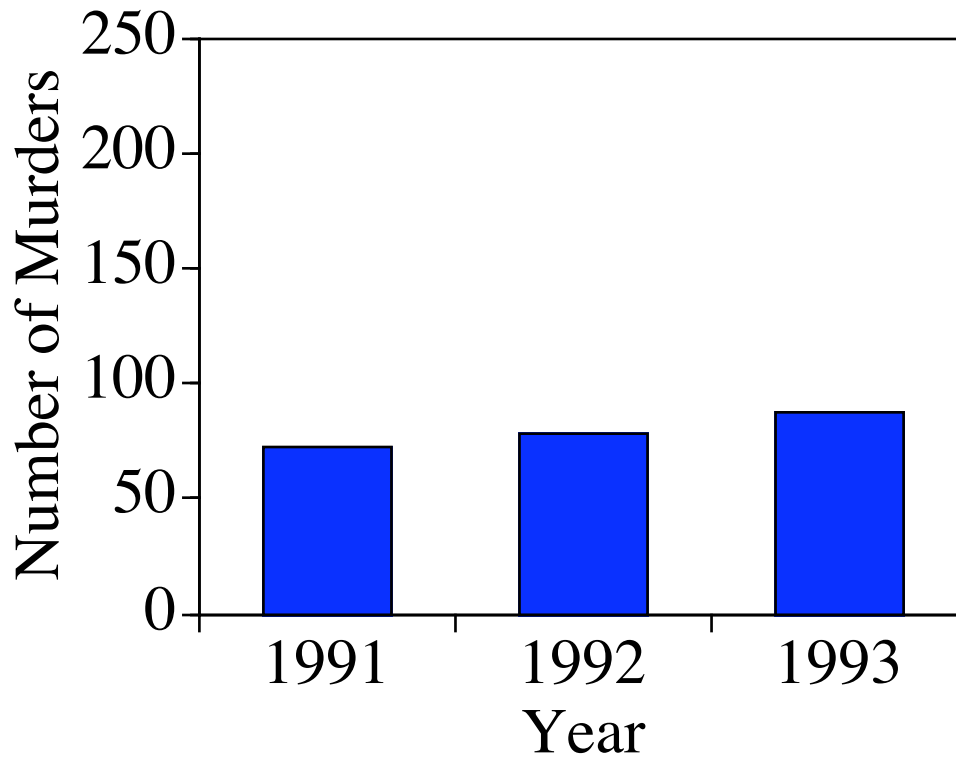
Line Graph Example
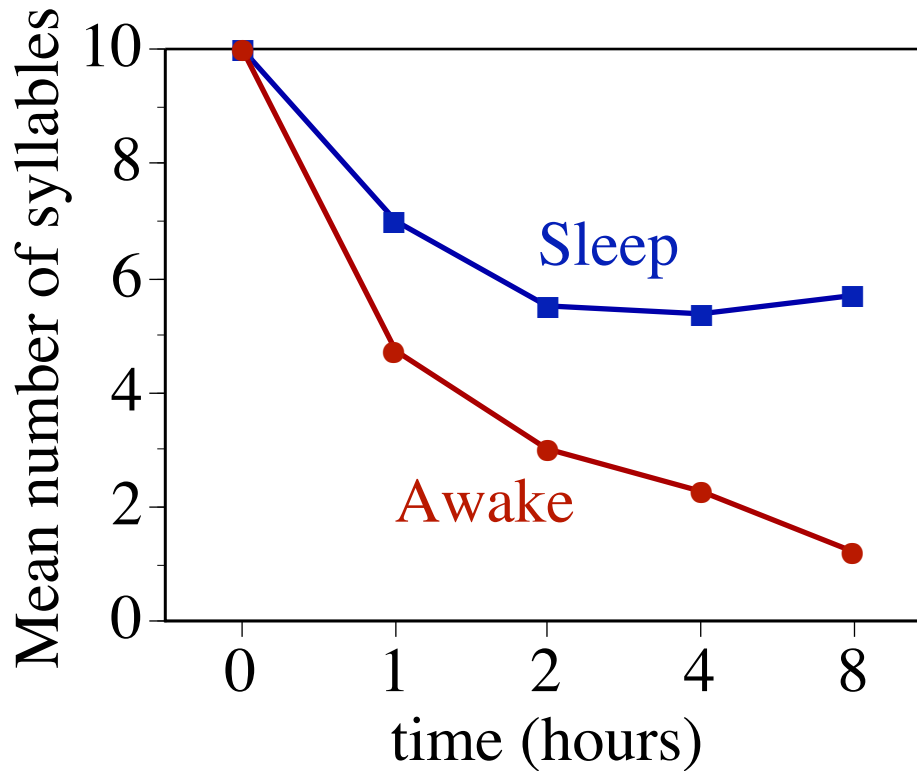
Effect of activity (sleep versus awake) on recall. Data from Jenkins & Dallenbach (1924)

Effect of scale on graph of data.
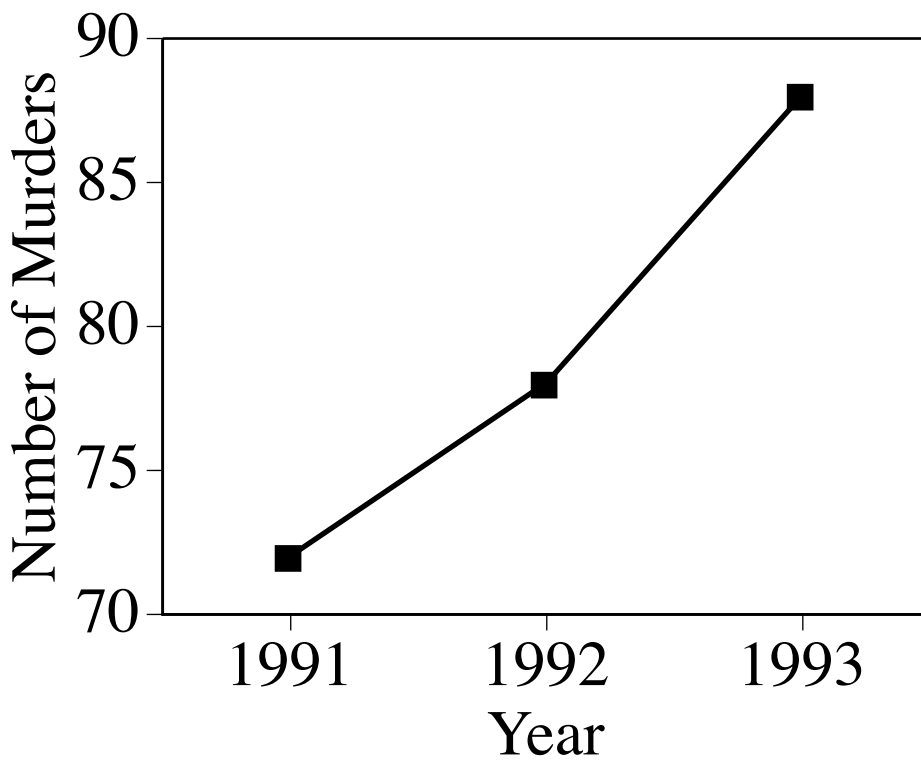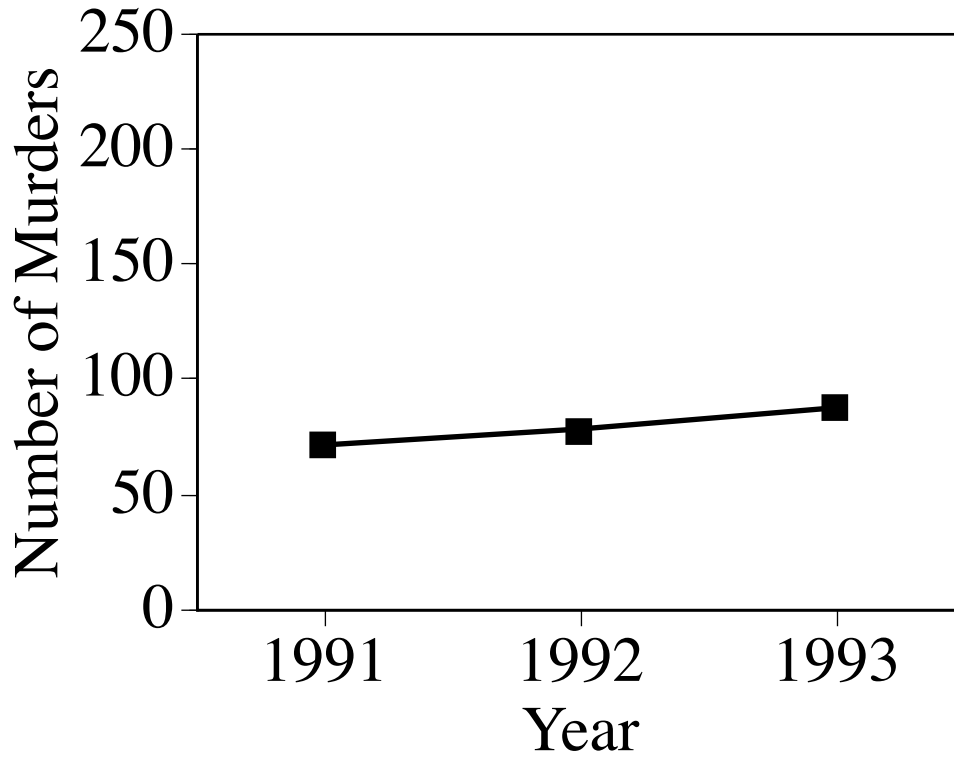
Effect of scale on graph of data.

The key here is that the scale (vertical axis) can be used to make small differences look large or large differences look small.

A study needs to use a consistent scale (the same scale) for all of the results reported. Secondly, the scale should set the work in an appropriate context rather than being chosen to "lie with statistics". One approach to this question is to choose a scale based on what has been done for similar data before.

II. Literature Review

Purpose of reviewing literature is to find out what has been done before.

1. Current and past theories
2. Specific hypotheses previously explored
3. Methods in use
4. Variables that must be controlled
5. Operational definitions that have been used for variables.

Literature searches should use the scientific literature rather than all sources (e.g. doing a Google search). This is the focus of one of the study questions below.

A. Peer Review

Scientific journals are peer reviewed. Peer review means that manuscripts submitted for publication are sent out to expert reviewers. They provide a review that addresses strengths and weaknesses in the manuscript and the research that it describes. The role of the journal editor is to mediate and ensure that the work published meets the standards of the discipline.

This ensures that:
1. The work meets scientific standards for the methods used.
2. The author has properly described prior research and the basis for the hypotheses that are being investigated.
3. The data have been analyzed and interpreted using the standards of the discipline.
4. The writing is clear and unambiguous.

As a part of the article, the author describes the details of what was done. This allows other researchers to use these methods or the hypothesis to "replicate" the study. This is a part of how science is "self correcting".

B) Prior Research

1. Starting

Scientific journals (electronic and hard copy) and books are where scientists publish their findings and ideas. If your starting point is an idea, use a computerized search (e.g. Google Scholar, *PsychLIT*) to find items on that topic. The Web of Science or Google Scholar can also be used to search by author(s). Generally, a search looking for the co-occurrence (conjunction) of topics will yield a reasonable sized list of relevant material.

If the search is too broad, too many irrelevant articles are found. If you searched for "depression", you would find too much information.

If the search is too narrow, relevant material will be missed.

Note – *PsychLIT* and most similar on-line systems index journals, but omit most books.

Google Scholar can find material in books.

Hand searching should focus on using the same search topics and *Psychological Abstracts*. This journal has the abstracts of articles and a topic index. *PsychLIT* is a computerized database of *Psychological Abstracts*.

Psychological Abstracts has the abstracts published with journal articles. These are concise summaries. Once the relevant articles are identified, obtain copies of the articles.

All of these sources are available thru the University Libraries. Google Scholar is publicly available. Our example searches, and Extra Credit Exercise 1, use Google Scholar.

B) Continuing

The search can be continued from particular journal articles in two ways:

1. Backward - from reference list in article

2. Forward - using a citation index

The citation index can be searched on-line. It lists articles written since the one you are interested in that have cited it (the one you have) in their reference lists. Both the Web of Science and Google Scholar can show you who is citing a particular work.

C) Citation counts

Google Scholar and the Web of Science show citation counts. This tells you how many times other researchers have referred to (cited) an article or book in their own written work.

What is the utility of a citation count? Why would one article be cited more or less than another even though they deal with similar topics?

D) Reviews (great sources)

1. *Psychological Bulletin* – Contains review articles

2. *Annual Review of Psychology* – Review/overview chapters

III. Electronic Search Example

In this example, we'll use Google Scholar. Note that you *can not do this*, realistically, using normal Google.

http://scholar.google.com

A) Topic search.

   "Facilitated Communication" yielded over 703,000 hits. "Facilitated Communication and autism" yielded 31,600 which is a lot, but a bit more manageable.

   From the titles, an article is selected (clickable link). This pulls up the abstract. Use this to see if it is relevant (what you are looking for).
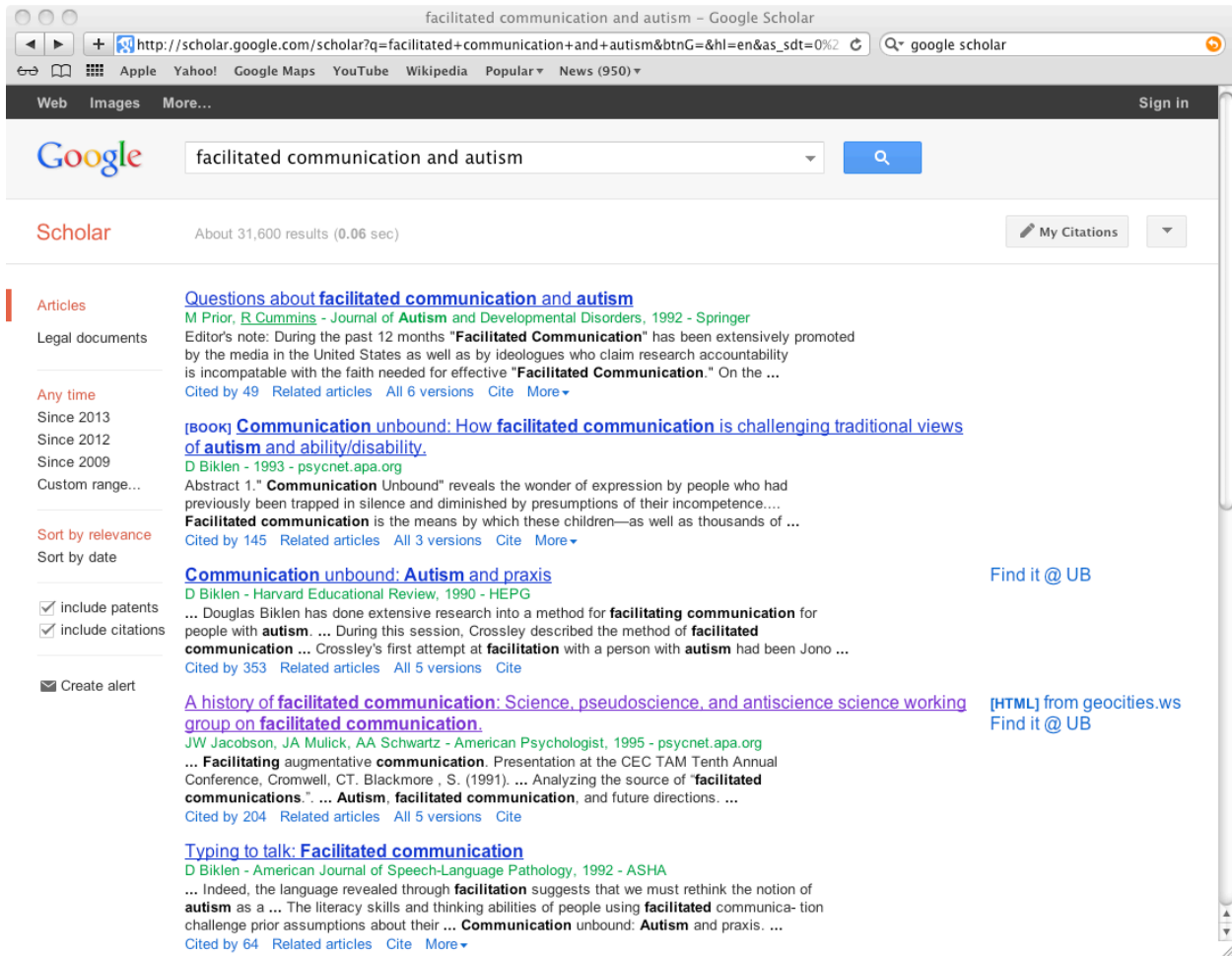
First page of Google Scholar search for articles on facilitated communication and autism. Article shown highlighted in purple was selected and that is in the next slide.

Abstract of article on topic of facilitated communication and autism. Article was published in *American Psychologist*.

B) Author Search.

    If you know particular authors, use them to do the search. Common names will yield lots of hits, so you may need a conjunction of authors.

C) Citation Search and Citation Counts.

    You can use the citation counts as an index for how important the article or book is to researchers. In my example above for choosing the topic then choosing the article, I used the title of the article and the citation count. You can also look at the journal that the article was published in. You can click on the citation count and get a list of articles that cited the one you identified.

A more recent article that does a review. This article was found from the list of those citing the earlier one.

Answers for Chapter 1 Review Questions

1. – a; 2. – a; 3. – d; 4. – c; 5. – b

Conceptual Review

What is the difference between a journal article from a scientific journal (such as Psychological Review) and an article or other written description found from other sources via an internet search (e.g. Googling a topic)?

How is a Wikipedia article different from one from a scientific journal or simply Googling a topic?

Answering this integrates the material from Chapter 1 with that of Chapter 2.

Sample Questions for Chapter 2

1. Reviewing previous research is useful for determining: a) what variables must be controlled and methods of control b) what theories have already been proposed c) how previous studies have been done d) all of the above

2. The "method" section of a journal article has as its major purpose: a) to provide the detailed information for the reader to replicate the study b) to give the reader a general idea of why the study was conducted c) to provide the reader with the raw data from the study d) a & c above

3. Which of the following should be included in the "introduction" section of a journal article? a) the hypothesis b) the apparatus c) the obtained results e) all of the above